ONE DISEASE · ONE PAGE

A E T C M

General Practitioner's Companion

300 common problems in general practice — clinical features, diagnostic tests and treatment with drug doses and duration

Indian disease patterns · National programme guidance · Adult & paediatric doses

AETCM
Academy for Emergency, Trauma & Critical care Medicine

By

Dr. Gireesh Kumar K.P.

For general practitioners, family physicians, casualty medical officers, interns and MBBS students

ONE DISEASE · ONE PAGE

AETCM General Practitioner's Companion

300 common problems in general practice — clinical features, diagnostic tests and treatment with drug doses and duration

- Fever and infections, respiratory, cardiovascular, endocrine, GI and liver, renal, neurology, musculoskeletal
- Skin, eye, ENT and oral, obstetrics and gynaecology, paediatrics, haematology, psychiatry
- Emergencies and injuries, surgical problems seen in the clinic, and general care
- Indian disease patterns and national programme guidance (NTEP, NCVBDC, NACO, NIS, IMNCI)
- Adult doses with paediatric doses where children commonly present

For general practitioners, family physicians, casualty medical officers, interns and MBBS students

Dr. Gireesh Kumar K.P. · AETCM · First edition

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Preface

General practice is where most illness is first seen and much of it is finished. The general practitioner meets fever, cough, back pain, a rash, a worried mother with a crying baby and a man with crushing chest pain, often in the same hour, with limited investigations and little time. What is needed in that moment is a clear, reliable page: what this condition looks like, what single test settles it, what to prescribe, in what dose and for how long, and when the patient must go elsewhere.

This book gives 300 such pages. The topics were drawn from the problems that actually fill an Indian outpatient clinic and casualty, guided by the practical drug notes that general practitioners pass to one another and by our one-disease-one-page crash course series. Each condition is reduced to a single, consistently organised page so that the whole of it can be taken in at a glance.

Treatment is given as generic drug names with adult dose, route, frequency and duration; paediatric doses are added where children commonly present. Recommendations follow current international guidance adapted to Indian practice and to national programmes — the National TB Elimination Programme, the National Centre for Vector Borne Diseases Control, NACO, the National Immunisation Schedule and IMNCI.

Doses, preferred drugs and thresholds change as evidence evolves, and every patient is different. Check doses against current national guidelines, the product literature and your institutional protocols before prescribing, adjust for renal and hepatic function, pregnancy, age and interactions, and refer early when in doubt. This book supports clinical judgement; it does not replace it.

We welcome corrections and suggestions from readers for future editions.

With best wishes,



Dr. Gireesh Kumar K.P.
AETCM · Academy for Emergency, Trauma & Critical care Medicine
October 2026

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How to Use This Book

Every condition occupies exactly one page, and every page follows the same order. Once you know the template you will always know where to look.

Section	What it gives you
Header bar and title	Disease number and chapter, the name, and a one-line summary of the condition.
Definition	A short working definition, with the cause or threshold that matters in practice.
Symptoms and signs	What the patient tells you and what you find — the basis of a quick clinical diagnosis.
Diagnostic tests	Tests in the order a GP would order them, from bedside and first-line to confirmatory, with the expected finding.
Treatment	Step-wise management: general measures, first-line drugs with dose, route and frequency, alternatives, and the duration of each.
Refer / red flags	Features that mean the patient needs admission, a specialist or urgent investigation.
GP pearls	Two practical points: common pitfalls and bedside wisdom.

Abbreviations used in doses

Abbreviation	Meaning
OD / BD / TDS / QID	Once / twice / three times / four times daily
HS / SOS / stat	At bedtime / as needed / immediately, once
PO / IV / IM / SC / PR	Oral / intravenous / intramuscular / subcutaneous / per rectum
mg/kg/d; mg/kg/dose	Total daily dose per kg (to be divided) ; single dose per kg
ORS / RL / NS / DNS	Oral rehydration solution / Ringer lactate / 0.9% saline / dextrose-normal saline
CBC, RFT, LFT, CRP, ESR	Complete blood count, renal and liver function tests, C-reactive protein, erythrocyte sedimentation rate
NTEP, NCVBDC, NACO, NIS	National TB Elimination Programme, National Centre for Vector Borne Diseases Control, National AIDS Control Organisation, National Immunisation Schedule

BEFORE YOU PRESCRIBE

- Doses are for adults with normal renal and hepatic function unless stated. Adjust in the elderly, in renal or liver impairment and in pregnancy.
- Children: never exceed the adult dose; calculate by weight and round to a measurable volume.
- Ask about allergy, pregnancy, breastfeeding and current medicines every time.

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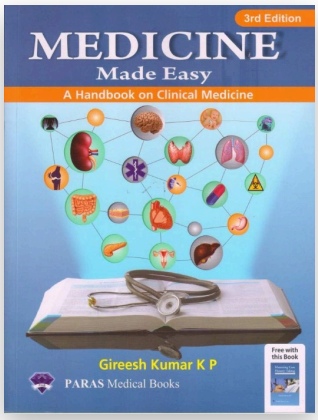
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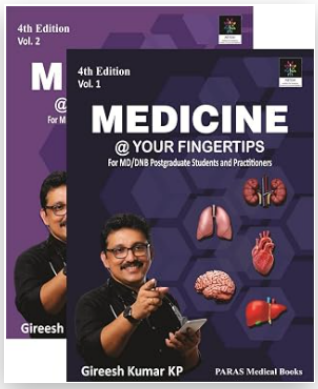
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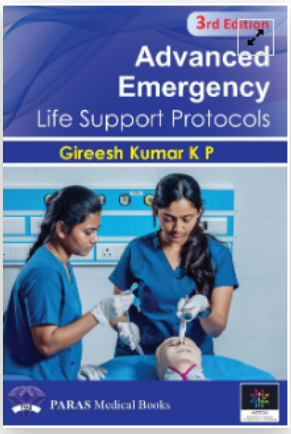
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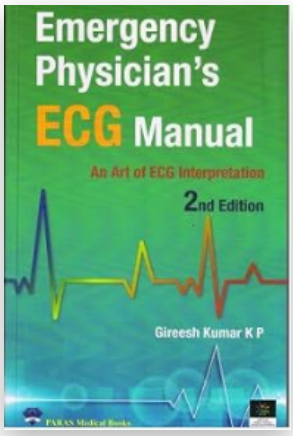
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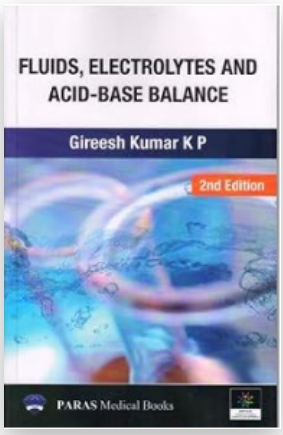
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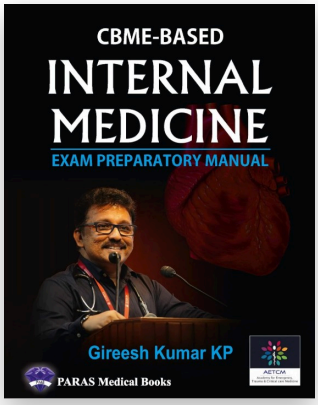
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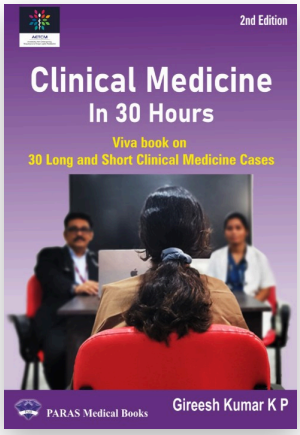
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DISEASE 1 OF 300 | FEVER & INFECTIONS

Acute Fever — Approach in the Clinic

Most fevers are self-limiting viral illnesses — the GP's job is to find the few that are not.

DEFINITION

Fever is a core temperature above 38.0 °C (oral >37.8 °C, 100.4 °F). Acute fever lasts under 7 days. In India the commonest causes are viral fevers, dengue, malaria, typhoid, scrub typhus, leptospirosis, UTI and respiratory infection; the pattern, season and local outbreaks guide testing.

SYMPTOMS

- Feeling hot, chills or rigors, sweating
- Headache, body ache, joint pain
- Localising symptoms: cough, sore throat, dysuria, loose stools, rash
- Duration, travel, exposure to floodwater, animals, sick contacts
- Danger symptoms: breathlessness, confusion, bleeding, reduced urine

SIGNS

- Temperature, pulse, BP, RR, SpO_2, capillary refill
- Rash: petechial, maculopapular, vesicular, eschar
- Throat, ears, chest, abdomen, renal angle tenderness
- Lymph nodes, liver and spleen
- Neck stiffness, altered sensorium, jaundice

DIAGNOSTIC TESTS

Test	Finding / purpose
CBC with platelet count	Leucocytosis (bacterial), leucopenia and thrombocytopenia (dengue, malaria, rickettsia)
Malaria RDT / peripheral smear	All fevers in endemic areas or with travel; repeat if negative and suspicion persists
Dengue NS1 (day 1–5), IgM (after day 5)	In the monsoon season or with leucopenia and low platelets
Urine routine	Pus cells, nitrite — UTI; proteinuria in leptospirosis
Blood culture (before antibiotics)	Fever >5 days, suspected typhoid or sepsis
Scrub typhus IgM ELISA, Leptospira IgM, LFT, RFT, CXR	Fever >5 days, eschar, jaundice, AKI, cough or hypoxia

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
General	Oral fluids 2.5–3 L/day, rest, tepid sponging; light diet	Until afebrile
Antipyretic	Paracetamol 500–1000 mg PO 6-hourly SOS (max 4 g/day; 3 g in liver disease/alcohol). Child 15 mg/kg/dose 6-hourly	3–5 days
High fever, vomiting	Paracetamol 1 g IV infusion over 15 min (child 15 mg/kg) or IM paracetamol 150 mg/ml 2 ml	Stat
Avoid	NSAIDs/aspirin until dengue is excluded; no empirical steroids	—
Specific	Treat the confirmed cause (see the individual disease pages)	As per cause
Empirical (fever >5 days, no focus, tests pending, not sick)	Doxycycline 100 mg BD (covers scrub typhus and leptospirosis) — if malaria and dengue negative	7 days

REFER / RED FLAGS

- Hypotension, SpO_2 <94%, RR >24, altered sensorium
- Bleeding, platelets <20,000/µL, rising haematocrit
- Jaundice, oliguria, seizures, neck stiffness
- Fever in infants <3 months, pregnancy, immunocompromised

GP PEARLS

★ *Antibiotics are not antipyretics: a 2–3 day viral fever with a normal examination needs paracetamol, fluids and a review plan.*

★ *Always look for an eschar (groin, axilla, under the breast, waistband) — it clinches scrub typhus.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever, body ache	*Hepatotoxic in overdose; check combination products*
Oral rehydration salts (low osmolarity)	200–400 ml after each loose stool; 75 ml/kg over 4 h for some dehydration	Oral fluids in fever	*Use clean water; correct mixing*

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DISEASE 2 OF 300 | FEVER & INFECTIONS

Viral Fever & Influenza

Abrupt fever, myalgia and cough — supportive care for most, oseltamivir for those at risk.

DEFINITION

Acute self-limiting febrile illness caused by respiratory viruses (influenza A/H1N1, H3N2, B, adenovirus, rhinovirus, RSV). Influenza has a sudden onset with high fever, prostration and dry cough; most recover in 5–7 days, but the elderly, pregnant women, young children and those with chronic disease may develop pneumonia.

SYMPTOMS

- Sudden fever with chills
- Severe myalgia, headache, backache
- Dry cough, sore throat, nasal discharge
- Fatigue and malaise lasting 1–2 weeks
- Vomiting or diarrhoea, especially in children

SIGNS

- Fever 38–40 °C, flushed face
- Congested pharynx, mild conjunctival injection
- Chest usually clear
- Tachypnoea or crepitations suggest pneumonia
- Check SpO_2 in all with breathlessness

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	Sufficient for mild, typical illness during an outbreak
CBC	Normal or low WBC; very high WBC suggests bacterial infection
Influenza RT-PCR (nasopharyngeal swab)	Hospitalised, high-risk or atypical cases; surveillance
Malaria / dengue tests	Fever beyond 2–3 days in endemic season
Chest X-ray, SpO_2	Breathlessness, crepitations, SpO_2 <94%

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Supportive	Rest, oral fluids, steam inhalation, saline gargles	5–7 days
Fever and pain	Paracetamol 500–1000 mg 6-hourly SOS; child 15 mg/kg/dose	3–5 days
Nasal symptoms	Cetirizine 10 mg HS or levocetirizine 5 mg HS; saline nasal drops	5 days
Antiviral — high risk or severe (MoHFW category B/C)	Oseltamivir 75 mg BD; child <15 kg 30 mg BD, 15–23 kg 45 mg BD, 23–40 kg 60 mg BD; renal adjustment if CrCl <60	5 days (start within 48 h)
Secondary bacterial infection	Amoxicillin-clavulanate 625 mg TDS or azithromycin 500 mg OD (3 days)	5–7 days
Prevention	Annual influenza vaccine 0.5 ml IM for elderly, pregnant, chronic disease, health workers	Yearly

REFER / RED FLAGS

- Breathlessness, SpO_2 <94%, chest pain
- Altered sensorium, persistent vomiting
- Haemoptysis, hypotension
- Worsening after initial improvement (secondary pneumonia)

GP PEARLS

★ *Antibiotics do not shorten viral fever; prescribe only for a clear bacterial complication.*

★ *High-risk patients (pregnancy, age >65, diabetes, heart/lung disease) benefit from oseltamivir even after 48 hours if unwell.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever, myalgia	*Hepatotoxic in overdose; check combination products*
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	Rhinorrhoea, sneezing	*Mild sedation; reduce dose in CKD*
Oseltamivir (neuraminidase inhibitor)	75 mg PO 12-hourly ×5 days	High-risk influenza (≤48 h)	*Start within 48 h; nausea*
Xylometazoline 0.1% nasal drops	2 drops each nostril 8–12-hourly, ≤5 days	Nasal block (≤5 days)	*Rebound congestion if used >5 days*
Dextromethorphan (cough suppressant)	10–20 mg PO 6–8-hourly	Dry irritating cough	*Not for productive cough; not under 4 years*
Influenza vaccine (inactivated)	0.5 ml IM annually	Annual prevention	*Egg allergy no longer a contraindication*

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DISEASE 3 OF 300 | FEVER & INFECTIONS

COVID-19 — Mild Illness at Home

Most cases are mild; identify the few who become hypoxic.

DEFINITION

Infection with SARS-CoV-2. Mild disease means upper respiratory symptoms or fever without breathlessness or hypoxia (SpO_2 ≥94% on room air). Moderate disease is RR ≥24/min or SpO_2 90–93%; severe is SpO_2 <90% or RR >30. Risk is higher with age >60, diabetes, CKD, obesity, immunosuppression and in the unvaccinated.

SYMPTOMS

- Fever, sore throat, dry cough
- Myalgia, fatigue, headache
- Loss of smell or taste
- Diarrhoea, nausea
- Breathlessness or chest tightness (warning)

SIGNS

- Fever, tachycardia
- Mild pharyngeal congestion
- Chest usually clear early
- SpO_2 at rest and after a 6-minute walk
- Tachypnoea, crepitations in moderate disease

DIAGNOSTIC TESTS

Test	Finding / purpose
Rapid antigen test	Quick, specific; negative test with symptoms → RT-PCR
RT-PCR (nasal/throat swab)	Confirmatory test
Pulse oximetry	Home monitoring 3–4 times daily; fall ≥3% on exertion is significant
CBC, CRP, D-dimer, blood sugar	High-risk or moderate cases; lymphopenia and high CRP predict severity
Chest X-ray / HRCT	Only if hypoxic or worsening — not routine in mild disease

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Home isolation	Separate room, mask, hand hygiene, fluids, prone/side lying if breathless	At least 5–7 days and 3 days afebrile
Fever, body ache	Paracetamol 650 mg up to 4 times daily	3–5 days
Cough	Warm saline gargles, steam; dextromethorphan 10–20 mg TDS or budesonide inhaler 800 µg BD if cough persists >5 days	5–7 days
Do not use	Antibiotics, ivermectin, hydroxychloroquine, favipiravir, steroids in mild disease	—
Moderate (SpO_2 90–93%)	Refer for admission: oxygen, dexamethasone 6 mg OD, prophylactic enoxaparin 40 mg SC OD	Up to 10 days
Diabetes	Monitor capillary glucose 4 times daily; continue usual drugs, stop metformin if vomiting	During illness

REFER / RED FLAGS

- SpO_2 ≤93% or RR ≥24
- Persistent fever >5 days, chest pain
- Confusion, inability to drink
- High-risk patient with uncontrolled sugar

GP PEARLS

★ *The 6-minute walk test unmasks "silent hypoxia" before the patient feels breathless.*

★ *Steroids in mild COVID-19 do harm — they belong to hypoxic patients only.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever, myalgia	*Hepatotoxic in overdose; check combination products*
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	Rhinitis symptoms	*Mild sedation; reduce dose in CKD*
Dextromethorphan (cough suppressant)	10–20 mg PO 6–8-hourly	Dry cough	*Not for productive cough; not under 4 years*
Oral rehydration salts (low osmolarity)	200–400 ml after each loose stool; 75 ml/kg over 4 h for some dehydration	Maintain hydration	*Use clean water; correct mixing*
Budesonide nebuliser (ICS)	0.5–1 mg neb 12-hourly	Persistent cough (inhaled steroid)	*Rinse mouth; use mask/spacer in children*

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DISEASE 4 OF 300 | FEVER & INFECTIONS

Dengue Fever

Fever, myalgia and falling platelets — the danger comes as the fever settles.

DEFINITION

Acute arboviral infection (DENV 1–4) transmitted by Aedes aegypti. The illness has febrile (days 1–3), critical (days 3–7, around defervescence, when plasma leak causes shock) and recovery phases. WHO classifies dengue without warning signs, with warning signs and severe dengue (plasma leak with shock, severe bleeding or organ failure).

SYMPTOMS

- High fever 2–7 days, retro-orbital pain
- Severe myalgia, backache ("break-bone fever")
- Nausea, vomiting, anorexia
- Rash on days 3–5, itching in recovery
- Warning: abdominal pain, persistent vomiting, bleeding, lethargy

SIGNS

- Flushed face, positive tourniquet test
- Petechiae, "islands of white in a sea of red" rash
- Tender hepatomegaly
- Pleural effusion, ascites (plasma leak)
- Narrow pulse pressure ≤20 mmHg, cold extremities (shock)

DIAGNOSTIC TESTS

Test	Finding / purpose
NS1 antigen (days 1–5)	Positive in early febrile phase
IgM ELISA (after day 5)	Confirms recent infection
CBC daily from day 3	Leucopenia, platelets <100,000/µL; rising haematocrit ≥20% = plasma leakage
LFT	AST > ALT elevation common
USG abdomen / chest X-ray	Gall-bladder wall oedema, ascites, effusion — early plasma leak

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Group A — no warning signs, drinking well	Oral fluids 2.5–3 L/day (ORS, juices, coconut water); rest; daily review	Until 48 h after fever settles
Fever	Paracetamol 500–650 mg 6-hourly (max 3–4 g/day); child 10–15 mg/kg/dose; tepid sponging	Febrile phase
Avoid	NSAIDs, aspirin, IM injections, steroids, antibiotics	—
Group B — warning signs	Admit; IV crystalloid (NS/RL) 5–7 ml/kg/h for 1–2 h, then taper to 3–5 and 2–3 ml/kg/h guided by haematocrit and urine output	24–48 h
Group C — shock	NS/RL 20 ml/kg bolus over 15–30 min, reassess, repeat; refer to ICU	Immediate
Platelet transfusion	Only for active significant bleeding, or platelets <10,000/µL — not prophylactically	As needed

REFER / RED FLAGS

- Any warning sign: abdominal pain, persistent vomiting, mucosal bleed, lethargy, liver >2 cm
- Rising haematocrit with rapid fall in platelets
- Pregnancy, infants, elderly, comorbidities
- Urine output <0.5 ml/kg/h or postural hypotension

GP PEARLS

★ *The patient is most at risk on the day the fever comes down — tell families to come back, not to celebrate.*

★ *Haematocrit, not platelet count, drives fluid therapy.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever and pain (only analgesic)	*Hepatotoxic in overdose; check combination products*
Oral rehydration salts (low osmolarity)	200–400 ml after each loose stool; 75 ml/kg over 4 h for some dehydration	Oral fluids 2.5–3 L/day	*Use clean water; correct mixing*
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Warning signs/shock (IV fluids)	*Fluid overload in HF/CKD*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Vomiting	*QT; constipation*
Pantoprazole (PPI)	40 mg PO before breakfast; 40–80 mg IV	Gastric protection if needed	*Long-term: B12, Mg deficiency, fractures*

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DISEASE 5 OF 300 | FEVER & INFECTIONS

Chikungunya

High fever with severe, symmetrical small-joint pain that may linger for months.

DEFINITION

Acute febrile illness caused by the chikungunya alphavirus, transmitted by Aedes mosquitoes. The acute phase lasts 7–10 days; post-acute (up to 3 months) and chronic (>3 months) inflammatory arthritis occur in a substantial minority, especially older patients.

SYMPTOMS

- Sudden high fever
- Severe polyarthralgia — wrists, hands, ankles, feet
- Morning stiffness, inability to walk or grip
- Headache, myalgia, fatigue
- Itchy maculopapular rash

SIGNS

- Symmetrical joint swelling and tenderness
- Tenosynovitis, ankle oedema
- Maculopapular rash on trunk and limbs
- Nasal hyperpigmentation ("chik sign")
- Mild lymphadenopathy

DIAGNOSTIC TESTS

Test	Finding / purpose
RT-PCR (days 1–5)	Confirms acute infection
Chikungunya IgM ELISA (after day 5)	Confirms recent infection
CBC	Lymphopenia; platelets usually normal (helps differentiate from dengue)
Dengue NS1/IgM, malaria test	Co-circulating infections must be excluded
ESR/CRP, RA factor, anti-CCP	Chronic arthritis beyond 3 months

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Acute phase	Rest, oral fluids, cold compresses to joints	7–10 days
Fever and pain	Paracetamol 650–1000 mg 6-hourly (max 4 g/day)	Acute phase
Joint pain after dengue excluded	Naproxen 250–500 mg BD or ibuprofen 400 mg TDS after food, with pantoprazole 40 mg OD	1–2 weeks
Post-acute severe arthritis	Prednisolone 10 mg OD for 5 days then taper over 10 days (if NSAIDs fail)	Up to 3 weeks
Chronic arthritis (>3 months)	Rheumatology referral; hydroxychloroquine 200–400 mg OD or methotrexate 7.5–15 mg once weekly + folic acid 5 mg weekly	6–12 weeks, review
Rehabilitation	Range-of-motion exercises, physiotherapy	Ongoing

REFER / RED FLAGS

- Neonates, elderly, pregnancy near term
- Neurological signs (encephalitis, GBS)
- Bleeding, hypotension, oliguria
- Disabling arthritis beyond 6 weeks

GP PEARLS

★ *Avoid NSAIDs until dengue is excluded — both viruses share the same mosquito and season.*

★ *Joint pain severe enough to stop a patient getting out of bed in a monsoon fever is chikungunya until proved otherwise.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever and arthralgia	*Hepatotoxic in overdose; check combination products*
Naproxen (NSAID)	250–500 mg PO 12-hourly after food	Arthritis after dengue excluded	*GI bleed risk; lower CV risk than other NSAIDs*
Etoricoxib (COX-2 inhibitor)	60–90 mg PO once daily (120 mg for acute gout ≤8 days)	Persistent joint pain	*Avoid in IHD, stroke, uncontrolled BP*
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	Severe subacute arthritis (short)	*Hyperglycaemia; taper if >3 weeks*
Hydroxychloroquine (DMARD)	200–400 mg PO daily (≤5 mg/kg)	Chronic post-chikungunya arthritis	*Annual eye screening*
Emollient (white soft paraffin / urea cream)	Apply liberally twice daily and after bath	Rash and itching	*Fire risk with paraffin on dressings*

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DISEASE 6 OF 300 | FEVER & INFECTIONS

Vivax Malaria

Chloroquine for the blood stage, primaquine for the liver stage — both are needed.

DEFINITION

Infection with Plasmodium vivax transmitted by female Anopheles mosquitoes. Causes periodic fever with rigors (tertian), anaemia and splenomegaly. Dormant liver hypnozoites cause relapses unless eradicated with primaquine. Severe vivax malaria (thrombocytopenia, ARDS, AKI) is increasingly recognised in India.

SYMPTOMS

- Fever with chills and rigors, then sweating
- Alternate-day pattern after the first few days
- Headache, body ache, vomiting
- Fatigue and pallor
- History of previous episodes (relapse)

SIGNS

- Fever, tachycardia
- Pallor
- Splenomegaly, mild hepatomegaly
- Mild icterus may occur
- Check for signs of severity: hypotension, jaundice, respiratory distress

DIAGNOSTIC TESTS

Test	Finding / purpose
Peripheral smear (thick and thin)	Gold standard; species and parasite count
Malaria RDT (bivalent)	Pv-LDH positive; useful when microscopy unavailable
CBC	Anaemia, thrombocytopenia
G6PD test	Before primaquine where available
LFT, RFT, blood glucose	If any feature of severity

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Blood stage (NCVBDC)	Chloroquine 25 mg base/kg over 3 days: 10 mg/kg day 1, 10 mg/kg day 2, 5 mg/kg day 3. Adult: 600 mg, 600 mg, 300 mg base	3 days
Radical cure (liver stage)	Primaquine 0.25 mg/kg OD with food (adult 15 mg). Not in pregnancy, infants <6 months, G6PD deficiency	14 days
G6PD deficient	Primaquine 0.75 mg/kg once weekly under supervision	8 weeks
Pregnancy	Chloroquine full course; withhold primaquine until after delivery and breastfeeding of infant beyond 6 months	3 days
Fever	Paracetamol 500–1000 mg 6-hourly SOS	3 days
Severe vivax malaria	Refer: IV artesunate 2.4 mg/kg at 0, 12, 24 h then daily	Until oral tolerated

REFER / RED FLAGS

- Any severity feature: altered sensorium, jaundice, SpO_2 <94%, oliguria, bleeding
- Persistent vomiting — cannot take oral drugs
- Pregnancy with high fever
- Parasitaemia not clearing by day 3

GP PEARLS

★ *Primaquine for 14 days is what prevents next month's relapse — complete it and explain why.*

★ *Treat mixed or unidentified infection as falciparum.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Chloroquine (antimalarial)	25 mg base/kg over 3 days (10, 10, 5 mg/kg)	Blood schizonticide (vivax)	*Pruritus; not for P. falciparum in India*
Primaquine (antimalarial)	0.25 mg/kg PO daily ×14 days (vivax)	Radical cure 14 days (G6PD)	*Check G6PD; avoid in pregnancy, infants*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever	*Hepatotoxic in overdose; check combination products*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Vomiting with doses	*QT; constipation*
Artemether–lumefantrine (ACT)	80/480 mg PO 12-hourly ×3 days with fatty food	Mixed infection/NE States	*NE States regimen; QT caution*

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DISEASE 7 OF 300 | FEVER & INFECTIONS

Falciparum Malaria (Uncomplicated)

Can turn severe within hours — treat with ACT the day you diagnose it.

DEFINITION

Infection with Plasmodium falciparum without features of severe malaria. Untreated, it can progress rapidly to cerebral malaria, severe anaemia, AKI, ARDS, hypoglycaemia and death. India uses artemisinin-based combination therapy (ACT): artesunate + sulfadoxine-pyrimethamine (AS+SP), and artemether-lumefantrine (AL) in the north-eastern states.

SYMPTOMS

- Irregular fever with chills
- Headache, myalgia, vomiting
- Malaise, anorexia
- Recent travel to or residence in an endemic area
- Warning: drowsiness, dark urine, breathlessness

SIGNS

- Fever, tachycardia
- Pallor, mild icterus
- Splenomegaly, tender liver
- Normal sensorium (else severe)
- No shock, bleeding or respiratory distress

DIAGNOSTIC TESTS

Test	Finding / purpose
Peripheral smear	Ring forms, gametocytes; parasite count (>5% = severe)
Malaria RDT (Pf-HRP2)	Positive; may remain positive for weeks after treatment
CBC	Anaemia, thrombocytopenia
Blood glucose, RFT, LFT	Exclude hypoglycaemia, AKI, jaundice (severity)
Repeat smear day 3	Assess response

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
ACT — rest of India (NCVBDC)	Artesunate 4 mg/kg OD × 3 days (adult 200 mg) + sulfadoxine 25 mg/kg–pyrimethamine 1.25 mg/kg on day 1 (adult 1500/75 mg)	3 days
ACT — North-East states	Artemether-lumefantrine 80/480 mg BD (adult >35 kg) with fatty food; weight-based for children	3 days
Gametocytocidal	Primaquine 0.75 mg/kg single dose on day 2 (adult 45 mg); not in pregnancy or infants <6 months	Single dose
Pregnancy 1st trimester	Quinine 10 mg/kg TDS + clindamycin 10 mg/kg BD (ACT acceptable if quinine unavailable)	7 days
Pregnancy 2nd–3rd trimester	ACT as for adults (AL in North-East)	3 days
Fever, antiemetic	Paracetamol 500–1000 mg SOS; ondansetron 4 mg SOS. Repeat ACT dose if vomited within 30 min	As needed

REFER / RED FLAGS

- Altered sensorium, convulsions, prostration
- Jaundice, urine output <400 ml/day, Hb <7 g/dl
- Respiratory distress, hypotension, hypoglycaemia
- Parasitaemia >5%, vomiting all doses

GP PEARLS

★ *A drowsy falciparum patient has cerebral malaria until proven otherwise — give IV/IM artesunate 2.4 mg/kg and refer.*

★ *Do not rely on RDT to assess cure — HRP2 persists; use smear.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Artesunate + sulfadoxine-pyrimethamine (ACT)	Artesunate 4 mg/kg ×3 days + SP day 1	First-line ACT (most of India)	*Avoid SP in sulfa allergy*
Artemether–lumefantrine (ACT)	80/480 mg PO 12-hourly ×3 days with fatty food	ACT in North-East States	*NE States regimen; QT caution*
Primaquine (antimalarial)	0.25 mg/kg PO daily ×14 days (vivax)	Single 0.75 mg/kg gametocidal	*Check G6PD; avoid in pregnancy, infants*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever	*Hepatotoxic in overdose; check combination products*
Artesunate injection	2.4 mg/kg IV at 0, 12, 24 h, then daily	Severe malaria (refer)	*Severe malaria; delayed haemolysis*

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DISEASE 8 OF 300 | FEVER & INFECTIONS

Enteric (Typhoid) Fever

Step-ladder fever with relative bradycardia — treat with cefixime or azithromycin, not ciprofloxacin.

DEFINITION

Systemic infection by Salmonella Typhi or Paratyphi A/B acquired through contaminated food or water. Incubation 7–14 days. Untreated, complications in the third week include intestinal perforation and haemorrhage. Fluoroquinolone resistance is now widespread in India.

SYMPTOMS

- Gradually rising fever over a week
- Headache, malaise, anorexia
- Abdominal discomfort, constipation or diarrhoea
- Dry cough
- Apathy or confusion in severe cases

SIGNS

- Coated tongue
- Relative bradycardia
- Tender abdomen, hepatosplenomegaly
- Rose spots (rare)
- Toxic look; peritonism suggests perforation

DIAGNOSTIC TESTS

Test	Finding / purpose
Blood culture (first week)	Diagnostic; sensitivity data guide therapy
CBC	Normal or low WBC, relative lymphocytosis, eosinopenia
LFT	Mild transaminase rise
Widal test	Poor value; a single titre is unreliable — only a 4-fold rise is meaningful
Typhidot IgM / stool and urine culture	Supportive; stool culture positive later

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Uncomplicated — first choice	Azithromycin 500 mg BD (or 1 g OD); child 10–20 mg/kg/day	7 days
Alternative oral	Cefixime 200 mg BD (20 mg/kg/day in 2 doses for children)	10–14 days
Unable to take orally / severe	Ceftriaxone 2 g IV OD (child 75–80 mg/kg/day)	10–14 days or 5 days after defervescence
Fever	Paracetamol 500–1000 mg SOS; tepid sponging	As needed
Diet	Soft, high-calorie, high-protein diet; plenty of fluids	Through illness
Severe with delirium or shock	Refer: dexamethasone 3 mg/kg IV then 1 mg/kg 6-hourly (8 doses)	48 h

REFER / RED FLAGS

- Abdominal pain with guarding (perforation)
- Melaena or bleeding per rectum
- Altered sensorium, shock
- Fever persisting after 5 days of appropriate therapy

GP PEARLS

★ *Do not diagnose typhoid on a single Widal report; send a blood culture before the first antibiotic.*

★ *Expect fever to take 4–6 days to settle on treatment — do not switch antibiotics too early.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Azithromycin (macrolide)	500 mg PO once daily ×3 days (child 10 mg/kg)	Uncomplicated enteric fever	*QT prolongation; avoid with other QT drugs*
Cefixime (oral 3rd-gen cephalosporin)	200 mg PO 12-hourly (child 8 mg/kg/day)	Oral alternative	*Diarrhoea; poor Gram-positive cover*
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	Complicated/vomiting cases	*Biliary sludge; not with calcium IV in neonates*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever	*Hepatotoxic in overdose; check combination products*
Oral rehydration salts (low osmolarity)	200–400 ml after each loose stool; 75 ml/kg over 4 h for some dehydration	Hydration	*Use clean water; correct mixing*
Typhoid conjugate vaccine (TCV)	0.5 ml IM single dose	TCV prevention	*Mild local reactions*

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DISEASE 9 OF 300 | FEVER & INFECTIONS

Scrub Typhus

Fever with an eschar — doxycycline works within 48 hours.

DEFINITION

Acute febrile illness caused by Orientia tsutsugamushi, transmitted by the bite of larval trombiculid mites (chiggers) in scrub vegetation. Common in India after the monsoon. Untreated it may cause pneumonitis, ARDS, myocarditis, meningoencephalitis, AKI and shock.

SYMPTOMS

- Fever with chills, 5–14 days
- Severe headache, myalgia
- Dry cough, breathlessness
- Nausea, abdominal pain
- Farm work, gardening, rural exposure

SIGNS

- Eschar: painless black scab with red rim (axilla, groin, waist, under breasts)
- Regional or generalised lymphadenopathy
- Hepatosplenomegaly
- Conjunctival suffusion, maculopapular rash
- Crepitations, hypotension or confusion in severe disease

DIAGNOSTIC TESTS

Test	Finding / purpose
Scrub typhus IgM ELISA	Positive after day 5 (cut-off as per local lab)
CBC	Thrombocytopenia, normal or high WBC
LFT	Raised transaminases, low albumin
RFT, urine routine	AKI, proteinuria
Chest X-ray	Interstitial infiltrates, effusions
Malaria, dengue tests	Exclude co-infection

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
First line	Doxycycline 100 mg BD after food (child >8 kg: 2.2 mg/kg BD)	7 days
Alternative / pregnancy	Azithromycin 500 mg OD (child 10 mg/kg OD)	5 days
Severe (refer)	IV doxycycline 100 mg BD, or doxycycline + azithromycin combination (INTREST trial)	7 days
Fever and pain	Paracetamol 500–1000 mg 6-hourly SOS	As needed
Empirical	Start doxycycline if eschar present — do not wait for serology	Immediately

REFER / RED FLAGS

- Hypotension, SpO_2 <94%, RR >24
- Altered sensorium, seizures
- Jaundice, oliguria, rising creatinine
- No defervescence after 48 h of doxycycline

GP PEARLS

★ *Expect the fever to break within 48 h of doxycycline; if not, rethink the diagnosis.*

★ *Examine the whole body, including skin folds — eschars hide.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Doxycycline (tetracycline)	100 mg PO 12-hourly after food, upright	Drug of choice ×7 days	*Avoid in pregnancy and <8 years; photosensitivity*
Azithromycin (macrolide)	500 mg PO once daily ×3 days (child 10 mg/kg)	Pregnancy, children	*QT prolongation; avoid with other QT drugs*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever	*Hepatotoxic in overdose; check combination products*
Oral rehydration salts (low osmolarity)	200–400 ml after each loose stool; 75 ml/kg over 4 h for some dehydration	Hydration	*Use clean water; correct mixing*
Dextrose 25%/50% IV	25% dextrose 100 ml IV (child 2–5 ml/kg 10%)	Hypoglycaemia in severe disease	*Thrombophlebitis; recheck glucose 15 min*

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DISEASE 10 OF 300 | FEVER & INFECTIONS

Leptospirosis

Fever, calf pain and red eyes after wading through floodwater.

DEFINITION

Zoonotic spirochaetal infection (Leptospira interrogans) acquired through skin or mucosa exposed to water or soil contaminated by rodent urine. Most cases are a mild biphasic febrile illness; 5–10% develop Weil's disease (jaundice, AKI, haemorrhage) or pulmonary haemorrhage syndrome.

SYMPTOMS

- Abrupt fever, rigors, severe headache
- Intense calf and lumbar muscle pain
- Red eyes
- Exposure: paddy fields, sewage, floodwater, cattle
- Jaundice, reduced urine, cough with blood (severe)

SIGNS

- Conjunctival suffusion (without discharge)
- Calf muscle tenderness
- Icterus, hepatomegaly
- Oliguria, bleeding manifestations
- Crepitations, hypoxia (pulmonary haemorrhage)

DIAGNOSTIC TESTS

Test	Finding / purpose
Leptospira IgM ELISA (after day 5)	Supports diagnosis; MAT is the reference test
CBC	Neutrophilic leucocytosis, thrombocytopenia
RFT, electrolytes	Non-oliguric AKI, hypokalaemia
LFT, CPK	Raised bilirubin with mild transaminase rise; high CPK
Urine routine	Proteinuria, haematuria, casts
Chest X-ray	Alveolar infiltrates in pulmonary haemorrhage

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Mild (outpatient)	Doxycycline 100 mg BD (child >8 y 2 mg/kg BD)	7 days
Alternative / pregnancy	Amoxicillin 500 mg TDS (child 25–50 mg/kg/day) or azithromycin 500 mg OD × 3 days	7 days
Severe (refer)	Ceftriaxone 1–2 g IV OD or crystalline penicillin 1.5 MU IV 6-hourly	7 days
Supportive	Paracetamol, fluids; avoid NSAIDs and nephrotoxic drugs	As needed
Chemoprophylaxis (high-risk exposure, flood relief)	Doxycycline 200 mg once weekly during exposure (single 200 mg dose after one-time exposure)	Duration of exposure

REFER / RED FLAGS

- Jaundice, oliguria, rising creatinine
- Haemoptysis, breathlessness, hypoxia
- Bleeding, hypotension
- Myocarditis: arrhythmia, chest pain

GP PEARLS

★ *Conjunctival suffusion + calf tenderness + jaundice in the monsoon = leptospirosis.*

★ *Pulmonary haemorrhage can kill within hours: any haemoptysis with fever after floods needs urgent referral.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Doxycycline (tetracycline)	100 mg PO 12-hourly after food, upright	Mild disease 100 mg BD ×7 d	*Avoid in pregnancy and <8 years; photosensitivity*
Amoxicillin (penicillin)	500 mg PO 8-hourly (child 15–25 mg/kg 8-hourly)	Alternative (pregnancy/children)	*Penicillin allergy; rash in EBV*
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	Severe leptospirosis (refer)	*Biliary sludge; not with calcium IV in neonates*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever, myalgia	*Hepatotoxic in overdose; check combination products*
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Hypotension/AKI support	*Fluid overload in HF/CKD*

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DISEASE 11 OF 300 | FEVER & INFECTIONS

Infectious Mononucleosis

Sore throat, nodes and fatigue in a young adult — and a rash after amoxicillin.

DEFINITION

Acute Epstein–Barr virus infection, usually in adolescents and young adults, characterised by fever, exudative pharyngitis and lymphadenopathy with atypical lymphocytosis. Self-limiting in 2–4 weeks; fatigue may last months. Splenic rupture is a rare but serious complication.

SYMPTOMS

- Sore throat, fever
- Marked fatigue and malaise
- Swollen neck glands
- Headache, anorexia
- Left upper abdominal discomfort

SIGNS

- Exudative tonsillitis, palatal petechiae
- Posterior cervical lymphadenopathy
- Splenomegaly (50%), hepatomegaly
- Eyelid oedema
- Maculopapular rash, especially after amoxicillin

DIAGNOSTIC TESTS

Test	Finding / purpose
CBC with smear	Lymphocytosis with >10% atypical lymphocytes
Monospot (heterophile antibody)	Positive in most adults; often negative in children <4 years
EBV VCA IgM	Confirms acute infection
LFT	Mild transaminitis
Throat swab	Exclude streptococcal co-infection if very exudative

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Supportive	Rest, fluids, saline gargles	2–4 weeks
Fever, throat pain	Paracetamol 500–1000 mg 6-hourly or ibuprofen 400 mg TDS after food	5–7 days
Avoid	Amoxicillin/ampicillin (rash in ~90%); antivirals not useful	—
Airway compromise from tonsils	Prednisolone 40–60 mg OD, then taper (refer)	5–7 days
Activity	Avoid contact sports and heavy lifting	At least 3–4 weeks (until spleen normal)

REFER / RED FLAGS

- Stridor or difficulty swallowing saliva
- Sudden left upper abdominal or shoulder-tip pain (splenic rupture)
- Jaundice, haemolysis, thrombocytopenia
- Symptoms beyond 6 weeks

GP PEARLS

★ *A florid rash after amoxicillin for "tonsillitis" is a clue to EBV, not true penicillin allergy.*

★ *Advise no contact sport for at least a month.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever, sore throat	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain (if no contraindication)	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Benzydamine mouthwash / triamcinolone oral paste	Rinse 15 ml 8-hourly / apply to ulcer 8-hourly	Sore throat gargle	*Numbness; short use*
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	Airway threat from tonsils (specialist)	*Hyperglycaemia; taper if >3 weeks*
Oral rehydration salts (low osmolarity)	200–400 ml after each loose stool; 75 ml/kg over 4 h for some dehydration	Hydration	*Use clean water; correct mixing*

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DISEASE 12 OF 300 | FEVER & INFECTIONS

Chickenpox (Varicella)

Crops of itchy vesicles in different stages — acyclovir for adults and high-risk patients.

DEFINITION

Highly contagious primary infection with varicella-zoster virus, spread by droplets and contact with vesicle fluid. Incubation 10–21 days; infectious from 2 days before the rash until all lesions crust. Usually mild in children; more severe in adults, pregnancy, neonates and the immunocompromised.

SYMPTOMS

- Mild fever, malaise 1–2 days before rash
- Intensely itchy rash
- Rash starts on the trunk and face, spreads to limbs
- Contact with a case 2–3 weeks earlier
- Cough or breathlessness (pneumonia in adults)

SIGNS

- Macules → papules → vesicles ("dewdrop on rose petal") → crusts
- Lesions in different stages at the same time
- Centripetal distribution; mucosal lesions
- Secondary infection: pustules, cellulitis
- Tachypnoea or crepitations: varicella pneumonia

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	Usually sufficient
Tzanck smear	Multinucleated giant cells (not specific)
VZV PCR of vesicle fluid	Atypical cases, immunocompromised
Chest X-ray, SpO_2	Adults with cough or breathlessness
LFT	Hepatitis in severe disease

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
General	Isolation until crusted, short nails, cotton clothes, daily bath	About 7 days
Itch	Calamine lotion; cetirizine 10 mg OD (child 0.25 mg/kg/day) or chlorpheniramine 4 mg TDS	5–7 days
Fever	Paracetamol only — avoid aspirin (Reye's) and NSAIDs (soft tissue infection)	As needed
Adults, adolescents >12 y, chronic skin or lung disease	Acyclovir 800 mg 5 times daily (start within 24–72 h); valacyclovir 1 g TDS alternative	7 days
Children (if indicated)	Acyclovir 20 mg/kg (max 800 mg) QID	5 days
Secondary bacterial infection	Cephalexin 500 mg QID or amoxicillin-clavulanate 625 mg TDS	5–7 days

REFER / RED FLAGS

- Pregnancy, neonates, immunocompromised
- Breathlessness, cough, chest pain
- Ataxia, confusion, seizures
- Haemorrhagic lesions or severe abdominal pain

GP PEARLS

★ *Pregnant contacts who are non-immune need varicella zoster immunoglobulin within 10 days — ask about pregnancy in the household.*

★ *Two doses of varicella vaccine 3 months apart prevent most cases.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever (avoid aspirin)	*Hepatotoxic in overdose; check combination products*
Acyclovir (antiviral)	800 mg PO 5 times daily ×7 days (zoster)	Adults/high-risk within 24 h	*Hydrate; reduce dose in CKD*
Calamine lotion (antipruritic)	Apply 8-hourly to itchy areas	Itching	*Drying; soothing only*
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	Pruritus	*Mild sedation; reduce dose in CKD*
Mupirocin 2% ointment (topical antibiotic)	Apply 8-hourly ×5–7 days	Secondarily infected lesions	*Resistance with long use*

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DISEASE 13 OF 300 | FEVER & INFECTIONS

Measles

Fever, the 3 Cs and Koplik spots — give vitamin A to every child.

DEFINITION

Acute, highly contagious paramyxovirus infection spread by airborne droplets. After a 10–14 day incubation, a prodrome of fever, cough, coryza and conjunctivitis precedes a maculopapular rash that starts behind the ears and face. Complications include pneumonia, diarrhoea, otitis media, encephalitis and malnutrition.

SYMPTOMS

- High fever 3–4 days before rash
- Cough, coryza, red watery eyes
- Rash beginning on face and spreading downwards
- Irritability, loss of appetite
- Unvaccinated child or outbreak contact

SIGNS

- Koplik spots on buccal mucosa (before rash)
- Confluent maculopapular rash, face → trunk → limbs
- Conjunctivitis, photophobia
- Lymphadenopathy
- Brownish staining and fine desquamation as rash fades

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	Notify the case to the district surveillance officer
Measles IgM ELISA	Confirms diagnosis (outbreak surveillance)
CBC	Leucopenia
Chest X-ray	If tachypnoea or crepitations

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Vitamin A (all cases)	<6 months: 50,000 IU; 6–11 months: 1,00,000 IU; ≥12 months: 2,00,000 IU orally on day 1 and day 2 (third dose at 4–6 weeks if eye signs)	2 days
Fever	Paracetamol 15 mg/kg/dose 6-hourly SOS	As needed
Eyes	Clean with boiled cooled water; chloramphenicol or tetracycline eye ointment if purulent	5–7 days
Nutrition and hydration	Continue breastfeeding and feeding; ORS for diarrhoea	Throughout
Pneumonia or otitis	Amoxicillin 40–45 mg/kg/dose BD (adult 500 mg TDS)	5 days
Isolation	Keep child home	Until 4 days after rash onset

REFER / RED FLAGS

- Respiratory distress, SpO_2 <94%
- Severe dehydration or refusal to feed
- Convulsions, altered sensorium
- Corneal clouding or ulcer, severe malnutrition

GP PEARLS

★ *Vitamin A halves measles mortality — give it even if the child has had routine supplementation.*

★ *Weight loss after measles is common; follow the child's growth for a month.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Vitamin A (megadose)	1 lakh IU (<1 y) / 2 lakh IU (>1 y) PO	Vitamin A 2 doses (all children)	*Avoid repeat within 1 month (except measles schedule)*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever	*Hepatotoxic in overdose; check combination products*
Oral rehydration salts (low osmolarity)	200–400 ml after each loose stool; 75 ml/kg over 4 h for some dehydration	Hydration	*Use clean water; correct mixing*
Zinc sulphate (child diarrhoea)	20 mg daily ×14 days (10 mg <6 months)	Diarrhoea in measles	*Vomiting if taken empty stomach*
Amoxicillin (penicillin)	500 mg PO 8-hourly (child 15–25 mg/kg 8-hourly)	Secondary pneumonia/otitis	*Penicillin allergy; rash in EBV*
MMR / MR vaccine	0.5 ml SC at 9 and 16–24 months (NIS)	Prevention (NIS)	*Live vaccine — avoid in pregnancy, immunosuppression*

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DISEASE 14 OF 300 | FEVER & INFECTIONS

Mumps

Painful parotid swelling that lifts the ear lobe — watch for orchitis in adults.

DEFINITION

Acute viral infection (paramyxovirus) spread by droplets, with painful swelling of one or both parotid glands. Incubation 16–18 days; infectious from 2 days before to 5 days after swelling. Complications: orchitis (post-pubertal males), oophoritis, pancreatitis, aseptic meningitis and sensorineural deafness.

SYMPTOMS

- Fever, malaise, headache
- Ear ache and pain on chewing
- Swelling in front of and below the ear
- Dry mouth
- Testicular pain 4–8 days later (orchitis)

SIGNS

- Tender parotid enlargement obscuring angle of the jaw, lifting the ear lobe
- Red, swollen Stensen's duct opening
- Bilateral in 70%
- Testicular swelling and tenderness
- Neck stiffness (meningitis)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	Usually sufficient
Serum amylase	Raised (salivary); lipase raised in pancreatitis
Mumps IgM / PCR	Atypical cases
USG scrotum	Orchitis; exclude torsion

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
General	Rest, soft diet, fluids, warm or cold compresses; avoid sour foods	7–10 days
Pain and fever	Paracetamol 500–1000 mg 6-hourly or ibuprofen 400 mg TDS after food; child paracetamol 15 mg/kg/dose	5–7 days
Oral hygiene	Warm saline mouthwashes	Throughout
Orchitis	Scrotal support, ice packs, ibuprofen 400 mg TDS; bed rest	7–10 days
Isolation	Keep away from school or work	5 days after onset of swelling
Prevention	MMR vaccine — 2 doses (catch-up for adolescents)	—

REFER / RED FLAGS

- Severe headache, neck stiffness, vomiting
- Severe abdominal pain (pancreatitis)
- Hearing loss
- Fluctuant swelling, pus from duct (suppurative parotitis — needs antibiotics)

GP PEARLS

★ *A unilateral, red, very tender parotid with pus from the duct is bacterial parotitis, not mumps.*

★ *Reassure couples: mumps orchitis rarely causes sterility.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever, parotid pain	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain (if hydrated)	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Oral rehydration salts (low osmolarity)	200–400 ml after each loose stool; 75 ml/kg over 4 h for some dehydration	Soft diet, fluids	*Use clean water; correct mixing*
Naproxen (NSAID)	250–500 mg PO 12-hourly after food	Orchitis pain	*GI bleed risk; lower CV risk than other NSAIDs*
MMR / MR vaccine	0.5 ml SC at 9 and 16–24 months (NIS)	Prevention	*Live vaccine — avoid in pregnancy, immunosuppression*
Benzydamine mouthwash / triamcinolone oral paste	Rinse 15 ml 8-hourly / apply to ulcer 8-hourly	Oral hygiene	*Numbness; short use*

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DISEASE 15 OF 300 | FEVER & INFECTIONS

Hand, Foot and Mouth Disease

Mouth ulcers with vesicles on palms and soles in a toddler — mostly self-limiting.

DEFINITION

Common enteroviral infection (coxsackievirus A16, A6; enterovirus 71) of children under 5 years, spread by faeco-oral and respiratory routes. Characterised by painful oral ulcers and a vesicular rash on hands, feet and buttocks. Resolves in 7–10 days; EV71 may rarely cause encephalitis or myocarditis.

SYMPTOMS

- Low-grade fever, sore throat
- Refusal to eat or drink, drooling
- Rash on palms, soles, buttocks
- Irritability
- Nail shedding weeks later (coxsackie A6)

SIGNS

- Shallow oral ulcers on tongue, buccal mucosa, palate
- Grey oval vesicles with red halo on palms and soles
- Papules on buttocks, knees, elbows
- Signs of dehydration
- Lethargy, myoclonus, tachycardia (red flags)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	Usually sufficient
Enterovirus PCR (throat / vesicle swab)	Outbreaks, severe or atypical illness
CBC, blood sugar	If unwell; hyperglycaemia and leucocytosis indicate severity

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Hydration	Small frequent cold fluids, ORS, soft cool food	Until eating normally
Fever and pain	Paracetamol 15 mg/kg/dose 6-hourly SOS or ibuprofen 10 mg/kg/dose 8-hourly after food	3–5 days
Oral ulcers	Lignocaine 2% viscous gel or choline salicylate-free gel applied before feeds (age >2 y)	5 days
Skin	Calamine lotion; keep lesions clean	7 days
Infection control	Hand-washing, exclude from crèche until fever settles and ulcers heal	7–10 days

REFER / RED FLAGS

- Dehydration, refusal of all fluids
- Lethargy, myoclonic jerks, vomiting, ataxia
- Tachycardia, breathlessness, poor perfusion
- Infants <6 months

GP PEARLS

★ *Most children are back to normal within a week — the main job is keeping them drinking.*

★ *Do not confuse with chickenpox: HFMD favours palms and soles; varicella favours the trunk.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (child)	15 mg/kg PO 6-hourly; max 60 mg/kg/day	Fever, pain	*Use weight-based dose; avoid adult tablets*
Benzydamine mouthwash / triamcinolone oral paste	Rinse 15 ml 8-hourly / apply to ulcer 8-hourly	Painful mouth ulcers	*Numbness; short use*
Oral rehydration salts (low osmolarity)	200–400 ml after each loose stool; 75 ml/kg over 4 h for some dehydration	Prevent dehydration	*Use clean water; correct mixing*
Calamine lotion (antipruritic)	Apply 8-hourly to itchy areas	Rash itching	*Drying; soothing only*
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	Pruritus	*Mild sedation; reduce dose in CKD*
Ibuprofen (child)	5–10 mg/kg PO 8-hourly after food	Pain if well hydrated	*Avoid in dehydration, dengue, asthma flares*

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DISEASE 16 OF 300 | FEVER & INFECTIONS

Pulmonary Tuberculosis

Cough for two weeks needs sputum testing — and every patient gets notified.

DEFINITION

Infection of the lungs by Mycobacterium tuberculosis, spread by airborne droplets. India carries the largest burden worldwide. Under NTEP all patients receive free diagnosis (NAAT — CBNAAT/Truenat) and treatment with daily fixed-dose combinations, nutritional support (Ni-kshay Poshan Yojana) and mandatory notification.

SYMPTOMS

- Cough >2 weeks, sputum, haemoptysis
- Fever, especially evening rise
- Night sweats
- Weight loss, loss of appetite
- Chest pain, breathlessness

SIGNS

- Low BMI, pallor
- Crepitations or bronchial breathing over upper zones
- Signs of pleural effusion
- Clubbing (chronic)
- Lymphadenopathy

DIAGNOSTIC TESTS

Test	Finding / purpose
Sputum NAAT (CBNAAT / Truenat)	Detects MTB and rifampicin resistance — first-line test under NTEP
Sputum smear microscopy (2 samples)	If NAAT unavailable; also for follow-up
Chest X-ray	Upper-lobe infiltrates, cavities; screens presumptive TB
HIV test, blood sugar	Mandatory for every TB patient
LFT, RFT, CBC (baseline)	Before starting treatment
Line probe assay / culture-DST	Resistance testing (isoniazid and others)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Intensive phase (drug-sensitive)	HRZE FDC daily by weight (75/150/400/275 mg tablet): 25–34 kg 2 tabs; 35–49 kg 3; 50–64 kg 4; 65–75 kg 5; >75 kg 6	8 weeks
Continuation phase	HRE FDC daily, same weight bands	16 weeks (extend to 7–10 months in CNS/bone TB)
Pyridoxine	Pyridoxine 10–25 mg OD (to prevent INH neuropathy)	Throughout
Nutrition	Ni-kshay Poshan Yojana DBT; high-protein diet	Throughout
Rifampicin resistant	Refer to DR-TB centre — BPaLM / longer oral regimens	As per NTEP
Follow-up	Sputum at end of IP and end of treatment; weight monthly; LFT if jaundice or vomiting	Monthly

REFER / RED FLAGS

- Massive haemoptysis, breathlessness, SpO_2 <94%
- Drug-induced hepatitis (jaundice, vomiting)
- Rifampicin resistance, HIV co-infection
- Children, pregnancy, extrapulmonary TB

GP PEARLS

★ *Every TB case must be notified on Ni-kshay — private practitioners included.*

★ *Rifampicin turns urine orange and reduces the efficacy of oral contraceptives — warn every woman.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
HRZE fixed-dose combination (anti-TB)	Weight-band FDC tablets daily (NTEP)	Intensive phase HRZE (NTEP)	*Hepatotoxicity; red urine; visual checks*
Pyridoxine (vitamin B6)	10–25 mg PO daily with isoniazid	Prevent INH neuropathy	*Prevents INH neuropathy*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever	*Hepatotoxic in overdose; check combination products*
Pantoprazole (PPI)	40 mg PO before breakfast; 40–80 mg IV	Gastric upset	*Long-term: B12, Mg deficiency, fractures*
Cotrimoxazole (sulfonamide combination)	960 mg PO 12-hourly; prophylaxis 960 mg daily	HIV-TB co-infection	*Rash, SJS, hyperkalaemia, marrow suppression*

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DISEASE 17 OF 300 | FEVER & INFECTIONS

TB Preventive Treatment & Contact Screening

Rule out active TB first, then protect the household.

DEFINITION

Treatment of latent TB infection to prevent progression to active disease. Under NTEP, TB preventive treatment (TPT) is offered to household contacts of pulmonary TB patients, people living with HIV, and patients on immunosuppression (anti-TNF, dialysis, transplant, silicosis) after active TB has been excluded.

SYMPTOMS

- Usually none
- Screen every contact for cough, fever, weight loss, night sweats
- History of household TB contact
- HIV, immunosuppressive drugs, dialysis
- Children <5 years in contact

SIGNS

- Normal examination expected
- Weight and BMI
- Lymph nodes
- Chest examination
- Look for hepatic disease before starting drugs

DIAGNOSTIC TESTS

Test	Finding / purpose
Symptom screen	Any symptom → investigate for active TB (NAAT, CXR)
Chest X-ray	Must be normal before TPT in adults
IGRA or Mantoux (TST)	Recommended for contacts ≥5 years where available; not mandatory for <5 y or PLHIV
LFT	Baseline in alcohol use, liver disease, elderly

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Preferred (≥2 years)	3HP: rifapentine + isoniazid once weekly (adult >30 kg: rifapentine 900 mg + INH 900 mg)	12 weekly doses
Alternative	6H: isoniazid 5 mg/kg OD (adult 300 mg; child 10 mg/kg)	6 months
Alternative (short)	3RH: rifampicin 10 mg/kg + isoniazid 5 mg/kg daily	3 months
With isoniazid	Pyridoxine 10–25 mg OD	Throughout
Contacts of MDR-TB	Refer — fluoroquinolone-based TPT (levofloxacin) per NTEP	6 months

REFER / RED FLAGS

- Any symptom or abnormal CXR (treat as active TB)
- Jaundice, vomiting on TPT
- Contact of drug-resistant TB
- Pregnancy (3HP not recommended)

GP PEARLS

★ *Never give TPT without excluding active TB — monotherapy breeds resistance.*

★ *Children under 5 in a TB household are the highest priority for TPT.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Isoniazid (TB preventive)	5 mg/kg (max 300 mg) daily with pyridoxine	6H TPT	*Hepatitis; neuropathy*
Rifapentine + isoniazid (3HP)	Weekly ×12 doses as per NTEP	3HP weekly ×12	*Flu-like reaction; drug interactions*
Pyridoxine (vitamin B6)	10–25 mg PO daily with isoniazid	With isoniazid	*Prevents INH neuropathy*
Cotrimoxazole (sulfonamide combination)	960 mg PO 12-hourly; prophylaxis 960 mg daily	HIV-positive contacts (as indicated)	*Rash, SJS, hyperkalaemia, marrow suppression*
HRZE fixed-dose combination (anti-TB)	Weight-band FDC tablets daily (NTEP)	Only if active TB found	*Hepatotoxicity; red urine; visual checks*
Multivitamin–mineral supplement	1 tablet PO daily	Nutritional support	*Not a substitute for diet*

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DISEASE 18 OF 300 | FEVER & INFECTIONS

HIV Infection — GP Care

Test, link to ART and keep the patient on treatment — undetectable means untransmittable.

DEFINITION

Chronic infection with human immunodeficiency virus causing progressive CD4 depletion and opportunistic infections. Under NACO "Test and Treat", everyone diagnosed is started on antiretroviral therapy (ART) at an ART centre regardless of CD4 count. The GP's role is testing, linkage, adherence, managing intercurrent illness and screening for TB.

SYMPTOMS

- Often asymptomatic for years
- Recurrent fevers, weight loss, chronic diarrhoea
- Persistent cough (TB)
- Oral thrush, recurrent herpes zoster
- Risk factors: unprotected sex, IV drug use, transfusion

SIGNS

- Generalised lymphadenopathy
- Oral candidiasis, hairy leukoplakia
- Seborrhoeic dermatitis, pruritic papular eruption
- Weight loss, pallor
- Signs of opportunistic infection

DIAGNOSTIC TESTS

Test	Finding / purpose
HIV testing (3 tests, NACO strategy)	With pre-test information and post-test counselling; consent and confidentiality
CD4 count	Baseline; guides prophylaxis
Viral load	6 months after ART start then yearly — target <1000 copies (ideally undetectable)
TB screen (4-symptom), CXR	At every visit
HBsAg, anti-HCV, VDRL, CBC, RFT, LFT, sugar, lipids	Baseline

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
First-line ART (NACO)	TLD: tenofovir 300 mg + lamivudine 300 mg + dolutegravir 50 mg, one tablet OD	Lifelong
Co-trimoxazole prophylaxis	Co-trimoxazole 960 mg OD if CD4 <350 or WHO stage 3–4	Until CD4 >350 on ART
TB preventive therapy	INH 300 mg OD + pyridoxine (6 months) or 3HP after excluding active TB	3–6 months
Rifampicin co-therapy	Dolutegravir 50 mg BD while on rifampicin	TB treatment + 2 weeks
Adherence	Counselling, pill boxes, link to ART centre; >95% adherence needed	Every visit
Vaccines	Hepatitis B, influenza, pneumococcal; avoid live vaccines if CD4 <200	As per schedule

REFER / RED FLAGS

- All newly diagnosed — link to ART centre the same week
- Fever with headache or neck stiffness (cryptococcal, TB meningitis)
- Breathlessness (PCP), focal neurology (toxoplasmosis)
- Pregnancy (PPTCT)

GP PEARLS

★ *Never disclose status without consent — confidentiality is a legal duty (HIV/AIDS Act 2017).*

★ *Dolutegravir interacts with antacids and iron — give 2 h before or 6 h after.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Tenofovir–lamivudine–dolutegravir (TLD)	1 tablet PO daily	First-line ART (ART centre)	*Weight gain; check renal function*
Cotrimoxazole prophylaxis (HIV)	960 mg PO daily	Cotrimoxazole prophylaxis	*Rash; monitor CBC*
Isoniazid (TB preventive)	5 mg/kg (max 300 mg) daily with pyridoxine	TB preventive therapy	*Hepatitis; neuropathy*
Fluconazole (azole antifungal)	150 mg PO single dose (vaginal); 150 mg weekly (tinea)	Oral/oesophageal candidiasis	*QT; hepatotoxic; avoid in pregnancy*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever	*Hepatotoxic in overdose; check combination products*
Hepatitis B vaccine	20 µg IM at 0, 1, 6 months (adult)	Vaccinate if non-immune	*Check anti-HBs in healthcare workers*

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DISEASE 19 OF 300 | FEVER & INFECTIONS

Needlestick Injury & PEP

Wash, assess, and start HIV PEP within 2 hours — not later than 72.

DEFINITION

Percutaneous or mucous-membrane exposure to blood or body fluids carrying a risk of HIV (~0.3%), hepatitis B (up to 30% if HBeAg positive) and hepatitis C (~1.8%) transmission. Risk is highest with hollow-bore needles, deep injury, visible blood and high viral load in the source.

SYMPTOMS

- Needle or sharp injury, splash to eyes or mouth
- Time since exposure
- Type of device and depth
- Vaccination status for hepatitis B
- Source patient status if known

SIGNS

- Site of injury
- Depth of puncture, bleeding
- Mucosal contact
- Pregnancy status of the exposed person

DIAGNOSTIC TESTS

Test	Finding / purpose
Exposed person — baseline	HIV, HBsAg, anti-HBs titre, anti-HCV, LFT, RFT, CBC, pregnancy test
Source patient (with consent)	Rapid HIV, HBsAg, anti-HCV
Follow-up of exposed person	HIV at 6 weeks, 3 and 6 months; HCV RNA/anti-HCV and HBsAg at 3–6 months

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Immediate first aid	Wash with soap and running water; do not squeeze or scrub; flush eyes/mouth with water or saline	Immediately
HIV PEP (NACO)	TLD: tenofovir 300 mg + lamivudine 300 mg + dolutegravir 50 mg OD — start within 2 h, up to 72 h	28 days
Hepatitis B — unvaccinated	HBIG 0.06 ml/kg IM (≤24 h, up to 7 days) + hepatitis B vaccine 1 ml IM at 0, 1, 6 months	Course
Hepatitis B — vaccinated, anti-HBs ≥10 mIU/ml	No treatment needed	—
Hepatitis B — non-responder / unknown titre	HBIG + booster dose of vaccine (or HBIG × 2 for known non-responders)	As advised
Hepatitis C	No PEP; follow up and treat early infection with DAAs	—

REFER / RED FLAGS

- All exposures — report to the hospital infection control / PEP centre
- Source HIV positive on ART with unknown viral load
- Pregnant or breastfeeding exposed person
- Side effects interfering with completion of PEP

GP PEARLS

★ *Do not wait for the source's report to start HIV PEP — stop it later if the source is negative.*

★ *Advise safe sex and no blood donation for 6 months.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Tenofovir–lamivudine–dolutegravir (TLD)	1 tablet PO daily	HIV PEP 28 days (≤72 h)	*Weight gain; check renal function*
Hepatitis B vaccine	20 µg IM at 0, 1, 6 months (adult)	Non-immune HBV exposure	*Check anti-HBs in healthcare workers*
Povidone-iodine (antiseptic)	5–10% solution/ointment for wound cleaning	Wound cleaning (no squeezing)	*Avoid large areas in thyroid disease*
Tenofovir (TDF/TAF)	TDF 300 mg or TAF 25 mg PO daily	HBV/HIV component	*Renal and bone effects with TDF*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	PEP-related nausea	*QT; constipation*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*

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DISEASE 20 OF 300 | FEVER & INFECTIONS

Animal Bite & Rabies PEP

Rabies is 100% fatal and 100% preventable — wash, vaccinate, infiltrate.

DEFINITION

Exposure to a potentially rabid animal (dog, cat, monkey, mongoose, bat, livestock). WHO/NRCP categories: I — touching, licks on intact skin (no PEP); II — nibbling, minor scratches without bleeding (vaccine); III — transdermal bites or scratches, licks on broken skin or mucosa, any bat exposure (vaccine + rabies immunoglobulin).

SYMPTOMS

- Bite, scratch or lick by an animal
- Provoked or unprovoked attack
- Animal's vaccination and current status
- Previous anti-rabies vaccination
- Tetanus immunisation status

SIGNS

- Number, site and depth of wounds
- Bleeding (category III)
- Bites on head, neck, hands (high risk)
- Signs of wound infection
- Hydrophobia, aerophobia (clinical rabies — refer)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical categorisation	No laboratory test needed before PEP
Observe the dog or cat	If alive and healthy after 10 days, the vaccine course can be modified
Wound swab	Only if infected

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Wound care (all)	Wash with soap and running water for 15 min; apply povidone-iodine; do not suture immediately (if must, after RIG infiltration)	Immediately
Vaccine — intramuscular (Essen)	Cell-culture vaccine 1 dose IM deltoid (anterolateral thigh in infants) on days 0, 3, 7, 14, 28	5 doses
Vaccine — intradermal (updated Thai Red Cross)	0.1 ml ID at 2 sites on days 0, 3, 7 and 28	4 visits
Category III — immunoglobulin	Equine RIG 40 IU/kg or human RIG 20 IU/kg (or rabies monoclonal antibody) infiltrated into and around all wounds on day 0	Day 0 (up to day 7)
Previously vaccinated	2 booster doses IM on days 0 and 3 (no RIG)	Days 0, 3
Antibiotic (deep, hand or cat bites)	Amoxicillin-clavulanate 625 mg TDS (child 25 mg/kg/dose BD)	5 days
Tetanus	Td 0.5 ml IM ± TIG as per tetanus prophylaxis	Stat

REFER / RED FLAGS

- Category III bite where RIG is not available
- Severe facial, scalp or hand injuries
- Signs of clinical rabies
- Immunocompromised patients (always need RIG)

GP PEARLS

★ *There is no contraindication to rabies PEP — pregnancy and infancy included.*

★ *Never delay vaccine to "wait and watch" the dog; start at once, modify later.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Anti-rabies vaccine (cell culture)	IM days 0, 3, 7, 14, 28 or ID schedule	Post-exposure vaccine	*Complete the course; never delay*
Rabies immunoglobulin / monoclonal antibody	HRIG 20 IU/kg infiltrated into wounds	Category III bites	*Infiltrate all wounds; same day as vaccine*
Povidone-iodine (antiseptic)	5–10% solution/ointment for wound cleaning	Wound wash (15 min soap+water)	*Avoid large areas in thyroid disease*
Tetanus–diphtheria (Td) vaccine	0.5 ml IM	Tetanus prophylaxis	*Booster if last dose >5 y (dirty wound) or >10 y (clean)*
Amoxicillin–clavulanate (penicillin + β-lactamase inhibitor)	625 mg PO 8-hourly (child 25–45 mg/kg/day amox)	Infected/high-risk bite wounds	*Diarrhoea, cholestatic jaundice*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*

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DISEASE 21 OF 300 | FEVER & INFECTIONS

Tetanus Prophylaxis in Wounds

Two questions decide it: how dirty is the wound, and how many doses has the patient had?

DEFINITION

Prevention of tetanus (Clostridium tetani toxin) after wounds. Tetanus-prone wounds are those >6 hours old, puncture or crush wounds, those with devitalised tissue, contamination with soil or manure, burns, compound fractures, animal bites, and wounds in patients with sepsis. India now uses Td (tetanus-diphtheria) in place of TT.

SYMPTOMS

- Mechanism and time of injury
- Soil, rust, manure contamination
- Number of previous tetanus doses
- Time since last dose
- Jaw stiffness, muscle spasms (established tetanus)

SIGNS

- Wound depth and devitalised tissue
- Foreign body
- Signs of infection
- Trismus, risus sardonicus (clinical tetanus — refer)

DIAGNOSTIC TESTS

Test	Finding / purpose
None routinely	Decision is clinical
X-ray	If a radio-opaque foreign body is suspected

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Clean minor wound — ≥3 doses, last <10 years	No vaccine needed	—
Clean minor wound — ≥3 doses, last ≥10 years	Td 0.5 ml IM booster	Stat
Tetanus-prone wound — ≥3 doses, last <5 years	No vaccine needed	—
Tetanus-prone wound — ≥3 doses, last ≥5 years	Td 0.5 ml IM booster	Stat
Unknown or <3 doses — any wound	Td 0.5 ml IM now, then at 1 month and 6–12 months	3 doses
Unknown or <3 doses — tetanus-prone wound	Above + human tetanus immunoglobulin 250 IU IM (500 IU if >24 h or heavy contamination) at a different site	Stat
Wound	Thorough cleaning, debridement of dead tissue, remove foreign bodies	Immediately

REFER / RED FLAGS

- Trismus, neck stiffness, dysphagia, spasms
- Heavily contaminated deep wounds needing debridement
- Crush injury, compound fracture
- Neonate with poor feeding and spasms

GP PEARLS

★ *Pregnant women get two doses of Td (or one booster) — this also prevents neonatal tetanus.*

★ *Give TIG and Td with separate syringes at separate sites.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Tetanus–diphtheria (Td) vaccine	0.5 ml IM	Booster as per wound type	*Booster if last dose >5 y (dirty wound) or >10 y (clean)*
Tetanus immunoglobulin (TIG)	250 IU IM (500 IU if heavily contaminated)	Tetanus-prone, unimmunised	*Different site from Td*
Povidone-iodine (antiseptic)	5–10% solution/ointment for wound cleaning	Wound cleaning	*Avoid large areas in thyroid disease*
Amoxicillin–clavulanate (penicillin + β-lactamase inhibitor)	625 mg PO 8-hourly (child 25–45 mg/kg/day amox)	Contaminated/bite wounds	*Diarrhoea, cholestatic jaundice*
Metronidazole (nitroimidazole)	400 mg PO 8-hourly (child 7.5 mg/kg)	Anaerobic contamination	*No alcohol; metallic taste*

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DISEASE 22 OF 300 | FEVER & INFECTIONS

Sepsis — Recognition & First Dose

Every hour of delay in antibiotics increases mortality — recognise it in the clinic.

DEFINITION

Life-threatening organ dysfunction caused by a dysregulated host response to infection. Septic shock is sepsis with persistent hypotension needing vasopressors and lactate >2 mmol/l. In the clinic, qSOFA (RR ≥22, altered mentation, SBP ≤100 mmHg; ≥2 = high risk) helps identify patients who need urgent referral.

SYMPTOMS

- Fever or hypothermia, rigors
- Breathlessness, confusion, drowsiness
- Reduced urine output
- Source symptoms: cough, dysuria, abdominal pain, cellulitis
- Elderly may present only with falls or confusion

SIGNS

- RR ≥22, SpO_2 low
- SBP ≤100 mmHg, HR >100
- Altered sensorium (GCS <15)
- Mottled skin, cold peripheries, capillary refill >3 s
- Focus of infection

DIAGNOSTIC TESTS

Test	Finding / purpose
Capillary glucose, SpO_2	Immediately
Blood cultures × 2	Before antibiotics — but do not delay the first dose
CBC, CRP, lactate	Leucocytosis or leucopenia; lactate >2 = hypoperfusion
RFT, LFT, electrolytes, ABG	Organ dysfunction
Urine routine and culture, CXR	Source identification

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Oxygen	Target SpO_2 94–98% (88–92% in COPD)	Continuous
Fluids (hypotension or lactate ≥4)	Crystalloid (RL or NS) 30 ml/kg IV within 3 h, in 500 ml boluses with reassessment	First 3 h
First antibiotic dose (before transfer)	Ceftriaxone 2 g IV (child 80–100 mg/kg) — or as per local antibiogram	Within 1 hour
If unable to cannulate	Ceftriaxone 1 g IM; IO access if trained	Stat
Fever	Paracetamol 1 g IV/PO	Stat
Transfer	Refer to hospital with ICU; send a note with vitals, drugs and doses given	Urgent

REFER / RED FLAGS

- All suspected sepsis with qSOFA ≥2
- Hypotension not responding to 1–2 boluses
- Lactate ≥4, urine output <0.5 ml/kg/h
- Neonates, elderly, immunocompromised with fever

GP PEARLS

★ *A high respiratory rate is the earliest and most missed sign of sepsis — count it for a full minute.*

★ *Give the first antibiotic dose before referral; it is the single most effective thing a GP can do.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	First dose before referral	*Biliary sludge; not with calcium IV in neonates*
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Fluid bolus 30 ml/kg	*Fluid overload in HF/CKD*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever	*Hepatotoxic in overdose; check combination products*
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	SpO2 <94%	*Avoid hyperoxia in COPD CO2 retainers*
Piperacillin–tazobactam	4.5 g IV 6–8-hourly	Hospital broad-spectrum	*Hospital use; renal dose adjustment*
Dextrose 25%/50% IV	25% dextrose 100 ml IV (child 2–5 ml/kg 10%)	Hypoglycaemia	*Thrombophlebitis; recheck glucose 15 min*

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DISEASE 23 OF 300 | FEVER & INFECTIONS

Suspected Meningitis & Encephalitis

Fever, headache and neck stiffness — give the first antibiotic dose and refer.

DEFINITION

Meningitis is inflammation of the meninges (bacterial — pneumococcus, meningococcus, H. influenzae; viral; tuberculous). Encephalitis involves the brain parenchyma (HSV, Japanese encephalitis, Nipah, dengue), causing altered sensorium, seizures or focal deficits. Bacterial meningitis is a medical emergency.

SYMPTOMS

- Fever, severe headache, vomiting
- Photophobia, neck pain
- Drowsiness, confusion, seizures
- Rash (meningococcal)
- Infants: poor feeding, irritability, high-pitched cry

SIGNS

- Neck stiffness, Kernig's and Brudzinski's signs
- Altered GCS
- Petechial or purpuric rash
- Focal neurological signs, papilloedema
- Bulging fontanelle in infants

DIAGNOSTIC TESTS

Test	Finding / purpose
Capillary glucose	Immediately — exclude hypoglycaemia
Blood culture, CBC, CRP	Before antibiotics if no delay
CT head before LP	If focal deficit, papilloedema, GCS <10, seizures, immunosuppression
Lumbar puncture (CSF)	Bacterial: high neutrophils, low glucose, high protein; viral: lymphocytes, normal glucose; TB: lymphocytes, very high protein, low glucose
Malaria test, JE IgM, MRI brain	As indicated in encephalitis

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Pre-referral antibiotic (do not delay)	Ceftriaxone 2 g IV/IM (child 100 mg/kg, max 2 g)	Stat
Hospital — bacterial meningitis	Ceftriaxone 2 g IV 12-hourly (child 100 mg/kg/day); add ampicillin 2 g IV 4-hourly if >50 y or immunocompromised (Listeria); vancomycin if resistant pneumococcus suspected	7–14 days
Steroid (suspected pneumococcal)	Dexamethasone 0.15 mg/kg (10 mg adult) IV 6-hourly, first dose before or with antibiotic	4 days
Suspected HSV encephalitis	Acyclovir 10 mg/kg IV 8-hourly	14–21 days
Seizures	Lorazepam 4 mg IV or midazolam 10 mg IM/buccal (child 0.2–0.3 mg/kg)	Stat
Close contacts (meningococcal)	Ciprofloxacin 500 mg single dose or rifampicin 600 mg BD × 2 days	As stated

REFER / RED FLAGS

- Every suspected case — urgent referral after first dose
- Purpuric rash (meningococcaemia)
- GCS ≤12, seizures, focal deficit
- Shock

GP PEARLS

★ *A child with fever and a non-blanching rash gets ceftriaxone before anything else.*

★ *Lumbar puncture must never delay antibiotics.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	2 g IV first dose before LP/referral	*Biliary sludge; not with calcium IV in neonates*
Dexamethasone (corticosteroid)	4–8 mg IV/IM/PO; 0.15–0.6 mg/kg child	Before/with first antibiotic	*Hyperglycaemia; GI bleeding*
Acyclovir (antiviral)	800 mg PO 5 times daily ×7 days (zoster)	Suspected encephalitis 10 mg/kg IV	*Hydrate; reduce dose in CKD*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever	*Hepatotoxic in overdose; check combination products*
Midazolam (benzodiazepine)	10 mg buccal/IM (0.2–0.3 mg/kg child)	Seizures	*Respiratory depression*

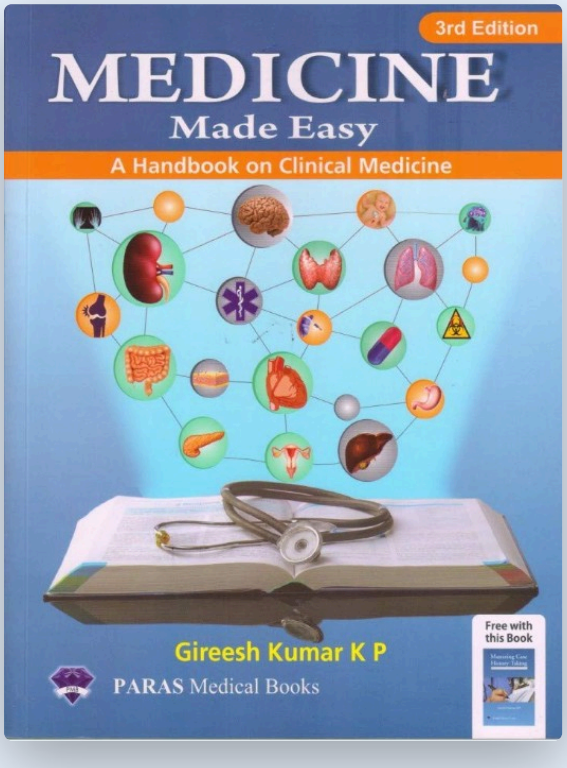
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DISEASE 24 OF 300 | RESPIRATORY

Common Cold (Acute Coryza)

Self-limiting viral rhinitis — symptomatic relief, no antibiotics.

DEFINITION

Acute viral infection of the nose and nasopharynx (rhinovirus, coronavirus, RSV, adenovirus). Symptoms peak at 2–3 days and resolve within 7–10 days; cough may persist up to 3 weeks. Adults have 2–4 colds a year and young children 6–8.

SYMPTOMS

- Sneezing, runny then blocked nose
- Scratchy sore throat
- Mild fever, malaise
- Cough, hoarse voice
- Headache, facial fullness

SIGNS

- Congested nasal mucosa, watery discharge
- Mild pharyngeal redness
- Clear chest
- Low-grade fever
- Tympanic membranes normal

DIAGNOSTIC TESTS

Test	Finding / purpose
None	Clinical diagnosis
CBC, throat swab	Only if atypical or prolonged course

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
General	Rest, warm fluids, steam inhalation, saline gargles	5–7 days
Nasal saline	Saline nasal drops/spray 2–3 drops each nostril 4–6 times daily (safe in infants)	5–7 days
Nasal blockage (adults, >6 y)	Oxymetazoline 0.05% nasal spray 2 sprays BD (child 6–12 y: 0.025%)	Max 3–5 days
Rhinorrhoea, sneezing	Cetirizine 10 mg HS or chlorpheniramine 4 mg TDS; or combination with phenylephrine 10 mg for adults	5 days
Fever, aches	Paracetamol 500–650 mg 6-hourly SOS; child 15 mg/kg/dose	3 days
Children <2 years	Avoid OTC cough-cold combinations; saline drops, suction, feeding	—

REFER / RED FLAGS

- Infant with poor feeding or fast breathing
- High fever >3 days, ear pain, facial pain >10 days
- Breathlessness, wheeze
- Symptoms >2 weeks

GP PEARLS

★ *Green nasal discharge alone does not mean bacterial infection.*

★ *Decongestant sprays beyond 5 days cause rebound congestion (rhinitis medicamentosa).*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever, headache	*Hepatotoxic in overdose; check combination products*
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	Sneezing, rhinorrhoea	*Mild sedation; reduce dose in CKD*
Saline nasal drops/spray	2–3 drops each nostril as needed	Nasal congestion	*Safe in infants and pregnancy*
Xylometazoline 0.1% nasal drops	2 drops each nostril 8–12-hourly, ≤5 days	Severe block ≤5 days	*Rebound congestion if used >5 days*
Dextromethorphan (cough suppressant)	10–20 mg PO 6–8-hourly	Night cough	*Not for productive cough; not under 4 years*

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DISEASE 25 OF 300 | RESPIRATORY

Acute Cough — Approach

Most acute coughs are viral — look for the few red flags.

DEFINITION

Cough lasting less than 3 weeks. The commonest causes are viral upper respiratory infection and acute bronchitis; others include pneumonia, asthma exacerbation, allergic rhinitis, pertussis, foreign body (children), heart failure and pulmonary embolism. Subacute cough (3–8 weeks) is usually post-infectious.

SYMPTOMS

- Dry or productive cough, colour of sputum
- Fever, runny nose, sore throat
- Wheeze, breathlessness
- Haemoptysis, chest pain
- Smoking, occupational exposure, drug history (ACE inhibitors)

SIGNS

- RR, SpO_2, temperature
- Throat and nose
- Wheeze, crepitations, bronchial breathing
- Signs of heart failure
- Unilateral reduced air entry (foreign body in children)

DIAGNOSTIC TESTS

Test	Finding / purpose
None	For uncomplicated cough <3 weeks
Chest X-ray	Focal signs, haemoptysis, smoker >40 y, persistent fever, SpO_2 <94%
CBC, CRP	Suspected pneumonia
Sputum NAAT	Cough >2 weeks — TB
Peak flow / spirometry	Wheeze or recurrent cough

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
General	Warm fluids, honey 1–2 tsp at bedtime (not <1 y), steam inhalation	Until settled
Dry irritating cough (adult)	Dextromethorphan 10–20 mg TDS or levocloperastine 20 mg TDS	5 days
Productive cough	Ambroxol 30 mg TDS or guaifenesin syrup 10 ml TDS (adult)	5 days
Allergic / postnasal drip	Cetirizine 10 mg HS; fluticasone nasal spray 2 sprays OD	1–2 weeks
Wheeze	Salbutamol MDI 100 µg 2 puffs 6-hourly with spacer	5–7 days
Bacterial features (high fever, purulent sputum, focal signs)	Amoxicillin 500 mg TDS (child 40–45 mg/kg/dose BD) or see pneumonia	5 days

REFER / RED FLAGS

- SpO_2 <94%, RR >24, chest pain
- Haemoptysis
- Sudden choking episode in a child (foreign body)
- Cough >3 weeks — investigate as chronic

GP PEARLS

★ *Codeine linctus is unsafe in children under 12 and in breastfeeding mothers.*

★ *An ACE inhibitor cough can start months after the drug — switch to an ARB.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever	*Hepatotoxic in overdose; check combination products*
Dextromethorphan (cough suppressant)	10–20 mg PO 6–8-hourly	Dry cough	*Not for productive cough; not under 4 years*
Ambroxol (mucolytic)	30 mg PO 8-hourly	Sticky sputum	*Limited evidence; GI upset*
Levosalbutamol inhaler (SABA)	50–100 µg 1–2 puffs as needed via spacer	Wheeze-associated cough	*Tremor, tachycardia; overuse = poor control*
Amoxicillin (penicillin)	500 mg PO 8-hourly (child 15–25 mg/kg 8-hourly)	Clinical pneumonia only	*Penicillin allergy; rash in EBV*
Montelukast (leukotriene antagonist)	10 mg PO at night (4–5 mg child)	Cough-variant asthma trial	*Neuropsychiatric effects (dreams, mood)*

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DISEASE 26 OF 300 | RESPIRATORY

Chronic Cough

Cough beyond 8 weeks: TB, postnasal drip, asthma, reflux — and the patient's own medicines.

DEFINITION

Cough persisting more than 8 weeks in adults (4 weeks in children). In non-smokers with a normal chest X-ray, upper airway cough syndrome (postnasal drip), cough-variant asthma and GERD account for most cases. In India, tuberculosis must be excluded first.

SYMPTOMS

- Duration, timing (nocturnal — asthma; after meals/lying — GERD)
- Throat clearing, nasal drip
- Heartburn, sour belch
- Weight loss, fever, haemoptysis
- Smoking, biomass fuel, ACE inhibitor use

SIGNS

- Nasal mucosa, postnasal drip, cobblestone pharynx
- Wheeze
- Clubbing, crackles
- Lymph nodes
- BMI

DIAGNOSTIC TESTS

Test	Finding / purpose
Sputum NAAT × 1–2	Exclude TB (cough >2 weeks)
Chest X-ray	Mandatory in all chronic cough
Spirometry with bronchodilator reversibility	Asthma, COPD
CBC with eosinophils	Eosinophilia — asthma, allergy, tropical eosinophilia
HRCT / bronchoscopy	Abnormal CXR, haemoptysis, smokers (refer)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Stop triggers	Stop smoking; switch ACE inhibitor to ARB; reduce biomass smoke	Ongoing
Postnasal drip	Fluticasone or mometasone nasal spray 2 sprays each nostril OD + cetirizine 10 mg HS	4 weeks trial
Cough-variant asthma	Budesonide-formoterol 200/6 µg 1–2 puffs BD (or ICS alone)	4–8 weeks trial then review
GERD	Pantoprazole 40 mg BD before meals + lifestyle measures	8 weeks
Tropical pulmonary eosinophilia	Diethylcarbamazine 6 mg/kg/day in 3 doses	3 weeks
Tuberculosis	NTEP regimen — see Pulmonary TB	6 months

REFER / RED FLAGS

- Haemoptysis, weight loss, smoker >40 y
- Abnormal chest X-ray
- Persistent cough despite trials of therapy
- Hoarseness >3 weeks, dysphagia

GP PEARLS

★ *Treat one cause at a time with an adequate trial — many patients have two causes.*

★ *Tropical eosinophilia: nocturnal cough with eosinophils >3000/µL responds dramatically to DEC.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Pantoprazole (PPI)	40 mg PO before breakfast; 40–80 mg IV	Reflux-related cough	*Long-term: B12, Mg deficiency, fractures*
Budesonide–formoterol inhaler (ICS-LABA)	200/6 µg 1–2 puffs 12-hourly (also as reliever)	Asthma/cough-variant asthma	*Rinse mouth; oral thrush*
Montelukast (leukotriene antagonist)	10 mg PO at night (4–5 mg child)	Allergic cough	*Neuropsychiatric effects (dreams, mood)*
Fluticasone nasal spray (50 µg)	2 sprays each nostril once daily	Post-nasal drip	*Epistaxis; correct technique needed*
HRZE fixed-dose combination (anti-TB)	Weight-band FDC tablets daily (NTEP)	Confirmed TB only	*Hepatotoxicity; red urine; visual checks*
Dextromethorphan (cough suppressant)	10–20 mg PO 6–8-hourly	Symptomatic relief (short)	*Not for productive cough; not under 4 years*

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DISEASE 27 OF 300 | RESPIRATORY

Acute Bronchitis

A chest cold — cough for up to 3 weeks; antibiotics rarely help.

DEFINITION

Self-limiting inflammation of the large airways, usually viral, presenting with cough (with or without sputum) lasting up to 3 weeks in a patient without pneumonia or chronic lung disease. Purulent sputum does not by itself indicate bacterial infection.

SYMPTOMS

- Cough, initially dry then productive
- Chest soreness on coughing
- Mild wheeze or breathlessness
- Preceding cold or sore throat
- Low-grade fever

SIGNS

- Normal vital signs (HR <100, RR <24, temp <38 °C)
- Scattered rhonchi or wheeze
- No focal crepitations or bronchial breathing
- SpO_2 normal

DIAGNOSTIC TESTS

Test	Finding / purpose
None	Clinical diagnosis in most
Chest X-ray	If vital signs abnormal or focal signs (exclude pneumonia)
CRP (if available)	<20 mg/l — no antibiotic; >100 mg/l — consider antibiotic

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Reassurance	Explain expected duration (2–3 weeks); fluids, steam inhalation, honey	—
Cough	Dextromethorphan 10–20 mg TDS (dry cough) or ambroxol 30 mg TDS (sticky sputum)	5–7 days
Wheeze	Salbutamol MDI 100 µg 2 puffs 6-hourly SOS via spacer	1 week
Fever	Paracetamol 500–650 mg SOS	3 days
Antibiotic only if elderly with comorbidity or suspected pertussis	Amoxicillin 500 mg TDS or azithromycin 500 mg OD (3 days); pertussis — azithromycin 500 mg day 1, then 250 mg days 2–5	5 days

REFER / RED FLAGS

- Abnormal vital signs, SpO_2 <94%
- Focal chest signs (pneumonia)
- Cough >3 weeks
- Haemoptysis

GP PEARLS

★ *Explain that cough may last 3 weeks — it prevents repeat visits and antibiotic demands.*

★ *Paroxysmal cough with whoop or post-tussive vomiting suggests pertussis even in adults.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever, chest discomfort	*Hepatotoxic in overdose; check combination products*
Dextromethorphan (cough suppressant)	10–20 mg PO 6–8-hourly	Troublesome dry cough	*Not for productive cough; not under 4 years*
Levosalbutamol inhaler (SABA)	50–100 µg 1–2 puffs as needed via spacer	Wheeze	*Tremor, tachycardia; overuse = poor control*
Ambroxol (mucolytic)	30 mg PO 8-hourly	Sputum	*Limited evidence; GI upset*
Doxycycline (tetracycline)	100 mg PO 12-hourly after food, upright	Pertussis/atypical suspected	*Avoid in pregnancy and <8 years; photosensitivity*

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DISEASE 28 OF 300 | RESPIRATORY

Community-Acquired Pneumonia

Use CURB-65 to decide home versus hospital.

DEFINITION

Acute infection of the lung parenchyma acquired outside hospital. Common organisms are Streptococcus pneumoniae, H. influenzae, atypicals (Mycoplasma, Chlamydophila, Legionella) and viruses. Severity is scored by CURB-65: confusion, urea >7 mmol/l (>42 mg/dl), RR ≥30, BP <90/≤60, age ≥65. Score 0–1: home; 2: consider admission; ≥3: severe.

SYMPTOMS

- Fever, chills, rigors
- Productive cough, rusty sputum
- Pleuritic chest pain
- Breathlessness
- Confusion in the elderly

SIGNS

- Tachypnoea, tachycardia, SpO_2 low
- Dullness on percussion
- Bronchial breathing, crepitations
- Increased vocal resonance
- Herpes labialis (pneumococcal)

DIAGNOSTIC TESTS

Test	Finding / purpose
Chest X-ray PA	Consolidation confirms diagnosis
SpO_2	<92% → hospital
CBC, CRP	Leucocytosis; CRP >100
Urea / RFT, electrolytes, glucose	CURB-65 scoring
Sputum Gram stain, culture; NAAT	Admitted patients; exclude TB if not resolving

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Mild (CURB-65 0–1), no comorbidity	Amoxicillin 1 g TDS (child 40–45 mg/kg/dose BD)	5 days
Mild, with comorbidity or recent antibiotics	Amoxicillin-clavulanate 625 mg TDS + azithromycin 500 mg OD (3 days)	5–7 days
Penicillin allergy	Doxycycline 100 mg BD or levofloxacin 750 mg OD (avoid FQ if TB not excluded)	5–7 days
Moderate–severe (refer)	Ceftriaxone 1–2 g IV OD + azithromycin 500 mg IV/PO OD	5–7 days
Supportive	Oxygen to SpO_2 94–98%, fluids, paracetamol 650 mg SOS	As needed
Review	Clinical review at 48–72 h; CXR at 6 weeks if smoker >50 y or persistent symptoms	—

REFER / RED FLAGS

- CURB-65 ≥2
- SpO_2 <92%, RR ≥30
- Multilobar involvement, effusion
- Not improving at 72 h

GP PEARLS

★ *Fluoroquinolones mask TB — avoid them as first-line in India unless TB has been excluded.*

★ *In the elderly, new confusion may be the only sign of pneumonia.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Amoxicillin (penicillin)	500 mg PO 8-hourly (child 15–25 mg/kg 8-hourly)	Outpatient CAP 1 g 8-hourly	*Penicillin allergy; rash in EBV*
Azithromycin (macrolide)	500 mg PO once daily ×3 days (child 10 mg/kg)	Atypical cover	*QT prolongation; avoid with other QT drugs*
Doxycycline (tetracycline)	100 mg PO 12-hourly after food, upright	Alternative to macrolide	*Avoid in pregnancy and <8 years; photosensitivity*
Amoxicillin–clavulanate (penicillin + β-lactamase inhibitor)	625 mg PO 8-hourly (child 25–45 mg/kg/day amox)	Comorbidities/elderly	*Diarrhoea, cholestatic jaundice*
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	Severe — first dose before referral	*Biliary sludge; not with calcium IV in neonates*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever	*Hepatotoxic in overdose; check combination products*

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DISEASE 29 OF 300 | RESPIRATORY

Bronchial Asthma — Long-Term Care

Every asthmatic needs an inhaled steroid — reliever-only treatment is no longer acceptable.

DEFINITION

Chronic inflammatory airway disease with variable airflow obstruction and bronchial hyper-responsiveness, causing recurrent wheeze, breathlessness, chest tightness and cough, often worse at night and with triggers. GINA 2024 recommends ICS-formoterol as the reliever ("MART") rather than salbutamol alone for adults and adolescents.

SYMPTOMS

- Episodic wheeze and breathlessness
- Night or early-morning cough
- Triggers: dust, cold air, smoke, exercise, viral infection
- Personal or family history of atopy
- Symptom-free periods

SIGNS

- Often normal between attacks
- Bilateral expiratory wheeze
- Prolonged expiration
- Allergic rhinitis, eczema
- Check inhaler technique

DIAGNOSTIC TESTS

Test	Finding / purpose
Spirometry with reversibility	FEV_1/FVC <0.75 with ≥12% and 200 ml improvement after salbutamol
Peak expiratory flow variability	>10% diurnal variation (if spirometry unavailable)
CBC with eosinophils, IgE	Eosinophilic / allergic phenotype
Chest X-ray	Exclude other diagnoses at first visit

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Steps 1–2 (mild)	Budesonide-formoterol 200/6 µg 1 puff as needed (max 12/day)	Ongoing
Step 3	Budesonide-formoterol 200/6 µg 1–2 puffs BD + as needed (MART)	Review 3 monthly
Step 4	Budesonide-formoterol 400/12 µg 1–2 puffs BD (or 200/6, 2 puffs BD) + as needed	Review
Step 5 (refer)	Add tiotropium 2.5 µg 2 puffs OD; biologics in specialist care	Specialist
Alternative	Low-dose ICS (budesonide 200 µg BD or fluticasone 125 µg BD) + salbutamol 100 µg SOS	Ongoing
Child 6–11 y	Low-dose ICS (budesonide 100–200 µg BD) via MDI + spacer; montelukast 5 mg HS add-on	Review 3 monthly
Step down	When controlled for 3 months, reduce ICS dose by 25–50%	—

REFER / RED FLAGS

- Two or more courses of oral steroids in a year
- Night waking despite step 3
- Pregnancy with uncontrolled asthma
- Diagnostic doubt

GP PEARLS

★ *Check inhaler technique and adherence before stepping up — it is the commonest reason for poor control.*

★ *Rinse mouth after ICS to prevent oral thrush.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Budesonide–formoterol inhaler (ICS-LABA)	200/6 µg 1–2 puffs 12-hourly (also as reliever)	Maintenance + reliever (MART)	*Rinse mouth; oral thrush*
Levosalbutamol inhaler (SABA)	50–100 µg 1–2 puffs as needed via spacer	Reliever as needed	*Tremor, tachycardia; overuse = poor control*
Fluticasone–salmeterol (ICS-LABA)	250/50 µg 1 puff 12-hourly	Maintenance ICS-LABA	*Rinse mouth; pneumonia risk in COPD*
Montelukast (leukotriene antagonist)	10 mg PO at night (4–5 mg child)	Allergic rhinitis + asthma	*Neuropsychiatric effects (dreams, mood)*
Tiotropium (LAMA)	18 µg inhaled once daily	Add-on in severe asthma	*Dry mouth, urinary retention, glaucoma*
Influenza vaccine (inactivated)	0.5 ml IM annually	Annual vaccine	*Egg allergy no longer a contraindication*

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DISEASE 30 OF 300 | RESPIRATORY

Acute Asthma Attack

Salbutamol, oxygen and oral steroid — and know when to refer.

DEFINITION

Acute worsening of asthma symptoms. Moderate: talks in phrases, PEF >50% predicted, SpO_2 ≥92%. Severe: talks in words, RR >30, HR >120, PEF ≤50%, accessory muscle use. Life-threatening: silent chest, cyanosis, exhaustion, confusion, SpO_2 <92%, PEF <33%.

SYMPTOMS

- Rapidly increasing breathlessness
- Wheeze, chest tightness
- Cough
- Inability to complete sentences
- Exhaustion, drowsiness (life-threatening)

SIGNS

- Tachypnoea, tachycardia
- Accessory muscle use, tripod position
- Widespread wheeze
- Pulsus paradoxus
- Silent chest, cyanosis

DIAGNOSTIC TESTS

Test	Finding / purpose
SpO_2	Immediately; <92% = severe
PEF (if able)	% of predicted or best
ABG	Severe — normal or rising $PaCO_2$ is ominous
Chest X-ray	If pneumothorax or pneumonia suspected, or no response

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Oxygen	Via mask to SpO_2 93–95% (children 94–98%)	Continuous
Bronchodilator	Salbutamol 4–10 puffs via MDI + spacer every 20 min for 1 h, or nebulised salbutamol 5 mg (child 2.5 mg)	First hour, then 1–4 hourly
Add in severe	Ipratropium 500 µg nebulised (child 250 µg) every 20 min × 3	First hour
Steroid	Prednisolone 40–50 mg OD (child 1–2 mg/kg, max 40 mg) or hydrocortisone 100 mg IV 6-hourly	5–7 days (no taper)
Severe not responding (refer/ICU)	Magnesium sulphate 2 g IV over 20 min (child 40 mg/kg)	Single dose
On discharge	Start or step up ICS-formoterol; check technique; written action plan; review within 1 week	—

REFER / RED FLAGS

- Any life-threatening feature
- SpO_2 <92% after initial treatment
- PEF <50% after 1 hour
- Previous ICU admission, pregnancy

GP PEARLS

★ *A "quiet" chest in a breathless asthmatic is a pre-arrest sign, not improvement.*

★ *MDI with spacer is as effective as a nebuliser for most attacks.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Salbutamol (SABA)	MDI 100 µg 2–4 puffs; neb 2.5–5 mg	Repeated nebs/MDI with spacer	*Tremor, hypokalaemia, tachycardia*
Ipratropium (short-acting antimuscarinic)	Neb 500 µg (250 µg child) 6–8-hourly	Severe attack (add to salbutamol)	*Dry mouth; protect eyes in glaucoma*
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	40–50 mg ×5 days	*Hyperglycaemia; taper if >3 weeks*
Hydrocortisone (corticosteroid)	100–200 mg IV stat, then as needed	Unable to swallow/severe	*Hyperglycaemia; fluid retention*
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	SpO2 93–95%	*Avoid hyperoxia in COPD CO2 retainers*
Magnesium sulphate	4 g IV over 15–20 min loading (eclampsia)	2 g IV in severe (hospital)	*Monitor reflexes, RR, urine; antidote calcium gluconate*

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DISEASE 31 OF 300 | RESPIRATORY

COPD — Stable Disease

Smoke and biomass are the causes; stopping exposure, inhalers and rehabilitation are the cures.

DEFINITION

Chronic obstructive pulmonary disease: persistent, progressive airflow limitation (post-bronchodilator $FEV_1/FVC < 0.70$) caused by tobacco smoke and, in India, biomass fuel exposure. Classified by GOLD into groups A, B and E (exacerbations) to guide inhaler therapy.

SYMPTOMS

- Progressive breathlessness on exertion
- Chronic cough with sputum
- Wheeze
- Recurrent "chest infections" in winter
- Smoking >10 pack-years or long biomass exposure

SIGNS

- Barrel chest, pursed-lip breathing
- Hyper-resonance, reduced breath sounds
- Prolonged expiration, wheeze
- Cyanosis, pedal oedema (cor pulmonale)
- Weight loss in advanced disease

DIAGNOSTIC TESTS

Test	Finding / purpose
Spirometry	Post-bronchodilator $FEV_1/FVC < 0.70$ confirms; FEV_1% grades severity
Chest X-ray	Hyperinflation; exclude TB and cancer
CBC	Polycythaemia; eosinophils ≥300 favour ICS
SpO_2 / ABG	Chronic hypoxia — assess for long-term oxygen
ECG, echo	Cor pulmonale

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
All	Stop smoking and biomass exposure; influenza and pneumococcal vaccines; pulmonary rehabilitation	Ongoing
Group A	Salbutamol 100 µg 2 puffs SOS or tiotropium 9 µg (2 puffs) / 18 µg OD	Ongoing
Group B	LAMA + LABA: tiotropium + formoterol or glycopyrronium-formoterol 1–2 puffs BD	Ongoing
Group E (exacerbations), eosinophils ≥300	LAMA + LABA + ICS (triple inhaler, e.g. glycopyrronium-formoterol-budesonide 2 puffs BD)	Ongoing
Frequent exacerbations despite triple therapy	Azithromycin 250 mg OD or 500 mg three times weekly (former smokers; check ECG and hearing)	1 year
Chronic hypoxia (PaO_2 ≤55 or SpO_2 ≤88%)	Long-term oxygen ≥15 h/day	Lifelong

REFER / RED FLAGS

- Diagnostic uncertainty or young patient
- Cor pulmonale, need for oxygen assessment
- Frequent exacerbations
- Haemoptysis, weight loss

GP PEARLS

★ *Smoking cessation is the only intervention that slows decline in lung function.*

★ *In Indian women with "asthma" in later life, ask about years of cooking with firewood.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Tiotropium (LAMA)	18 µg inhaled once daily	LAMA maintenance	*Dry mouth, urinary retention, glaucoma*
Fluticasone–salmeterol (ICS-LABA)	250/50 µg 1 puff 12-hourly	Frequent exacerbations (ICS-LABA)	*Rinse mouth; pneumonia risk in COPD*
Levosalbutamol inhaler (SABA)	50–100 µg 1–2 puffs as needed via spacer	Reliever	*Tremor, tachycardia; overuse = poor control*
Doxofylline (xanthine)	400 mg PO 12-hourly	Add-on if others unavailable	*Fewer interactions than theophylline; palpitations*
Pneumococcal vaccine (PCV13 / PPSV23)	0.5 ml IM as per schedule	Pneumococcal vaccine	*Mild local reactions*
Influenza vaccine (inactivated)	0.5 ml IM annually	Annual influenza vaccine	*Egg allergy no longer a contraindication*

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DISEASE 32 OF 300 | RESPIRATORY

COPD Exacerbation

More breathless, more sputum, more purulent — bronchodilators, steroid and often an antibiotic.

DEFINITION

An acute worsening of respiratory symptoms in COPD over less than 14 days, usually triggered by viral or bacterial infection or pollution. Antibiotics are indicated when sputum purulence increases with either more breathlessness or more sputum volume (Anthonisen criteria).

SYMPTOMS

- Increased breathlessness
- Increased sputum volume
- Change to purulent sputum
- Wheeze, chest tightness
- Drowsiness, headache (CO_2 retention)

SIGNS

- Tachypnoea, accessory muscles
- Wheeze, reduced air entry
- Cyanosis, SpO_2 low
- Flapping tremor, confusion (hypercapnia)
- Pedal oedema

DIAGNOSTIC TESTS

Test	Finding / purpose
SpO_2	Target 88–92%
ABG	pH <7.35 with $PaCO_2$ >45 → NIV in hospital
Chest X-ray	Pneumonia, pneumothorax, heart failure
CBC, CRP, RFT, glucose	Infection, comorbidity
ECG	Arrhythmia, ischaemia

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Oxygen (controlled)	Venturi mask 24–28% or nasal prongs 1–2 l/min to SpO_2 88–92%	Continuous
Short-acting bronchodilators	Salbutamol 2.5–5 mg + ipratropium 500 µg nebulised (or MDI + spacer 4–8 puffs)	4–6 hourly
Steroid	Prednisolone 40 mg OD	5 days
Antibiotic (purulent sputum)	Amoxicillin-clavulanate 625 mg TDS or doxycycline 100 mg BD or azithromycin 500 mg OD (3 days)	5 days
Hospital (refer)	Ceftriaxone 1 g IV OD ± NIV; theophylline not routinely	5–7 days
After recovery	Review inhaler, technique; pulmonary rehabilitation within 4 weeks	—

REFER / RED FLAGS

- SpO_2 <88% despite oxygen, confusion, drowsiness
- RR >30, accessory muscles, cyanosis
- Cannot cope at home, new arrhythmia
- Failure to respond to outpatient treatment in 48 h

GP PEARLS

★ *Too much oxygen kills COPD patients — titrate to 88–92%.*

★ *Five days of prednisolone is as effective as 14 days.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Salbutamol (SABA)	MDI 100 µg 2–4 puffs; neb 2.5–5 mg	Nebulised bronchodilator	*Tremor, hypokalaemia, tachycardia*
Ipratropium (short-acting antimuscarinic)	Neb 500 µg (250 µg child) 6–8-hourly	Add to salbutamol	*Dry mouth; protect eyes in glaucoma*
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	40 mg ×5 days	*Hyperglycaemia; taper if >3 weeks*
Amoxicillin (penicillin)	500 mg PO 8-hourly (child 15–25 mg/kg 8-hourly)	Purulent sputum	*Penicillin allergy; rash in EBV*
Doxycycline (tetracycline)	100 mg PO 12-hourly after food, upright	Antibiotic alternative	*Avoid in pregnancy and <8 years; photosensitivity*
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	Target SpO2 88–92%	*Avoid hyperoxia in COPD CO2 retainers*

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DISEASE 33 OF 300 | RESPIRATORY

Bronchiectasis

Daily copious sputum for years — often after childhood TB or pneumonia.

DEFINITION

Permanent abnormal dilatation of bronchi with impaired mucociliary clearance, leading to chronic cough, sputum and recurrent infections. In India, post-tuberculous bronchiectasis is the commonest type; others follow severe childhood pneumonia, ABPA, immunodeficiency or cystic fibrosis.

SYMPTOMS

- Chronic cough with large volume purulent sputum
- Recurrent chest infections
- Haemoptysis (may be massive)
- Breathlessness, fatigue
- Past TB or severe pneumonia

SIGNS

- Clubbing
- Coarse crepitations that change with coughing
- Halitosis
- Wheeze
- Cor pulmonale (late)

DIAGNOSTIC TESTS

Test	Finding / purpose
HRCT chest	Diagnostic: dilated bronchi, signet-ring sign, tram tracks
Sputum culture and NAAT	Pseudomonas, H. influenzae; exclude active TB
Spirometry	Obstructive pattern
IgE, Aspergillus-specific IgE	Exclude ABPA
CBC, immunoglobulins	Underlying immunodeficiency

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Airway clearance (cornerstone)	Daily chest physiotherapy, postural drainage, active cycle of breathing; nebulised hypertonic saline 3–7% 5 ml BD	Lifelong
Exacerbation — empirical	Amoxicillin-clavulanate 625 mg TDS or ciprofloxacin 750 mg BD if Pseudomonas	14 days
Frequent exacerbations (≥3/year)	Azithromycin 250 mg OD or 500 mg three times weekly	6–12 months
Wheeze	Bronchodilators (salbutamol SOS, LAMA/LABA)	Ongoing
Prevention	Influenza and pneumococcal vaccines; stop smoking	—

REFER / RED FLAGS

- Haemoptysis >100 ml/day (bronchial artery embolisation)
- Pseudomonas colonisation
- Hypoxia, cor pulmonale
- Localised disease suitable for surgery

GP PEARLS

★ *Treat exacerbations for 14 days — shorter courses fail.*

★ *Not every post-TB patient with sputum has relapsed TB: check NAAT before restarting ATT.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Amoxicillin–clavulanate (penicillin + β-lactamase inhibitor)	625 mg PO 8-hourly (child 25–45 mg/kg/day amox)	Exacerbation (14 days)	*Diarrhoea, cholestatic jaundice*
Ciprofloxacin (fluoroquinolone)	500 mg PO 12-hourly	Pseudomonas colonisation	*Tendinopathy, QT, avoid in pregnancy/children*
Azithromycin (macrolide)	500 mg PO once daily ×3 days (child 10 mg/kg)	Frequent exacerbations (prophylaxis)	*QT prolongation; avoid with other QT drugs*
Ambroxol (mucolytic)	30 mg PO 8-hourly	Mucus clearance	*Limited evidence; GI upset*
Levosalbutamol inhaler (SABA)	50–100 µg 1–2 puffs as needed via spacer	Bronchospasm	*Tremor, tachycardia; overuse = poor control*
Pneumococcal vaccine (PCV13 / PPSV23)	0.5 ml IM as per schedule	Vaccination	*Mild local reactions*

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DISEASE 34 OF 300 | RESPIRATORY

Haemoptysis

Small amounts are common; >100 ml in 24 h is a life-threatening emergency.

DEFINITION

Expectoration of blood originating below the vocal cords. Common causes in India: tuberculosis (active or sequelae), bronchiectasis, lung cancer, pneumonia, mitral stenosis, pulmonary embolism and bleeding disorders. Massive haemoptysis (>100–600 ml/24 h or causing respiratory compromise) is life-threatening by asphyxia.

SYMPTOMS

- Blood-streaked or frank blood with cough
- Distinguish from haematemesis (vomited, dark, acidic) and nasal bleed
- Fever, weight loss (TB, cancer)
- Chronic purulent sputum (bronchiectasis)
- Sudden breathlessness, chest pain (PE)

SIGNS

- Vital signs, SpO_2
- Clubbing, lymph nodes
- Localised crepitations
- Mitral stenosis murmur
- Calf swelling (DVT)

DIAGNOSTIC TESTS

Test	Finding / purpose
Chest X-ray	Cavity, mass, consolidation, bronchiectasis
Sputum NAAT, smear	Tuberculosis
CBC, coagulation profile, RFT	Anaemia, bleeding disorder
CT chest / CT pulmonary angiography	Cancer, bronchiectasis, PE
Bronchoscopy	Localise source; smokers >40 y

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Mild (streaks)	Treat the cause; reassure; avoid antiplatelets/NSAIDs	As per cause
Antifibrinolytic	Tranexamic acid 500–1000 mg PO TDS (or 1 g IV 8-hourly)	5–7 days
Cough suppression	Codeine 15–30 mg TDS (adults; avoid in COPD with CO_2 retention)	Short course
Infection	Amoxicillin-clavulanate 625 mg TDS if bronchiectasis/infective exacerbation	7–14 days
Massive haemoptysis	Lie on the bleeding side, oxygen, IV access, tranexamic acid 1 g IV, urgent transfer	Immediate

REFER / RED FLAGS

- Any haemoptysis >30 ml or recurrent
- Hypoxia, hypotension
- Smoker >40 y (cancer)
- Suspected PE or mitral stenosis

GP PEARLS

★ *Place the patient with the bleeding lung down — it protects the good lung.*

★ *Haemoptysis in a treated TB patient may be bronchiectasis, aspergilloma or relapse — get a CT.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Tranexamic acid (antifibrinolytic)	500–1000 mg PO 8-hourly (HMB); 1 g IV in trauma	Mild haemoptysis (adjunct)	*Avoid in active thrombosis*
Dextromethorphan (cough suppressant)	10–20 mg PO 6–8-hourly	Cough suppression	*Not for productive cough; not under 4 years*
Amoxicillin–clavulanate (penicillin + β-lactamase inhibitor)	625 mg PO 8-hourly (child 25–45 mg/kg/day amox)	Infective cause	*Diarrhoea, cholestatic jaundice*
HRZE fixed-dose combination (anti-TB)	Weight-band FDC tablets daily (NTEP)	Confirmed TB	*Hepatotoxicity; red urine; visual checks*
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	Hypoxia	*Avoid hyperoxia in COPD CO2 retainers*
Ethamsylate (haemostatic)	500 mg PO 6–8-hourly	Adjunct haemostatic	*Limited evidence; adjunct*

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DISEASE 35 OF 300 | RESPIRATORY

Pleural Effusion

In India, a lymphocytic exudate with high ADA is tuberculosis until proved otherwise.

DEFINITION

Abnormal fluid collection in the pleural space. Transudates (heart failure, cirrhosis, nephrotic syndrome, hypoalbuminaemia) arise from altered pressures; exudates (TB, parapneumonic, malignancy, PE) from pleural disease. Light's criteria distinguish them: pleural/serum protein >0.5, pleural/serum LDH >0.6, or pleural LDH >2/3 upper limit of normal = exudate.

SYMPTOMS

- Breathlessness
- Pleuritic chest pain
- Dry cough
- Fever, weight loss (TB, malignancy)
- Orthopnoea, oedema (heart failure)

SIGNS

- Reduced chest movement
- Stony dull percussion
- Absent breath sounds, reduced vocal resonance
- Tracheal shift away (large effusion)
- Signs of cause: oedema, ascites, nodes

DIAGNOSTIC TESTS

Test	Finding / purpose
Chest X-ray PA / lateral	Blunted CP angle, meniscus sign
USG thorax	Confirms, detects loculation, guides tap
Diagnostic tap	Protein, LDH, glucose, cell count, ADA, Gram stain, culture, cytology
ADA	>40 IU/l with lymphocytes — tuberculous effusion
Serum protein, LDH, RFT, LFT, echo	Light's criteria; cause of transudate

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Transudate	Treat cause: furosemide 40 mg OD for heart failure etc.	Ongoing
Tuberculous	NTEP HRZE (as pulmonary TB); therapeutic tap if large	6 months
Parapneumonic	Amoxicillin-clavulanate 1.2 g IV TDS or ceftriaxone 2 g OD + metronidazole; chest tube if empyema (pH <7.2, pus)	2–6 weeks
Large symptomatic effusion	Therapeutic aspiration up to 1–1.5 l at a time	As needed
Malignant	Refer: drainage, pleurodesis, oncology	—

REFER / RED FLAGS

- All new exudates
- Breathlessness at rest, large effusion
- Empyema (pus, fever)
- Suspected malignancy

GP PEARLS

★ *Do not drain >1.5 l at once — re-expansion pulmonary oedema can follow.*

★ *Bilateral effusions with oedema are usually transudates; unilateral ones need a tap.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pleuritic pain, fever	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pleuritic pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
HRZE fixed-dose combination (anti-TB)	Weight-band FDC tablets daily (NTEP)	TB effusion (confirmed)	*Hepatotoxicity; red urine; visual checks*
Amoxicillin–clavulanate (penicillin + β-lactamase inhibitor)	625 mg PO 8-hourly (child 25–45 mg/kg/day amox)	Parapneumonic effusion	*Diarrhoea, cholestatic jaundice*
Furosemide (loop diuretic)	20–40 mg PO daily; 40–80 mg IV in LVF	Cardiac effusion	*Hypokalaemia, dehydration, gout*
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	Breathlessness	*Avoid hyperoxia in COPD CO2 retainers*

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DISEASE 36 OF 300 | RESPIRATORY

Spontaneous Pneumothorax

Sudden one-sided chest pain and breathlessness in a tall thin young man.

DEFINITION

Air in the pleural space without trauma. Primary spontaneous pneumothorax occurs in healthy young (often tall, thin, smoking) males due to apical blebs; secondary occurs with underlying lung disease (COPD, TB, asthma). Tension pneumothorax — progressive air trapping with mediastinal shift and shock — is a life-threatening emergency.

SYMPTOMS

- Sudden pleuritic chest pain
- Breathlessness
- Dry cough
- Severe distress, sweating (tension)
- Previous episodes

SIGNS

- Reduced chest expansion on affected side
- Hyper-resonant percussion
- Absent or reduced breath sounds
- Tachycardia, hypotension, distended neck veins, tracheal shift (tension)
- Subcutaneous emphysema

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis for tension	Do not wait for X-ray
Chest X-ray PA	Visible pleural line, absent lung markings; size at hilum (>2 cm = large)
SpO_2, ABG	Hypoxia
CT chest	Small, uncertain cases; blebs

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Tension pneumothorax	Needle decompression: 14–16G cannula in 4th–5th intercostal space mid-axillary line (or 2nd ICS mid-clavicular), then chest drain	Immediate
Primary, small (<2 cm), minimal symptoms	Oxygen, observation, analgesia, repeat CXR in 4–6 h; outpatient review in 2–4 days	Until resolved
Primary, large or symptomatic	Needle aspiration (16–18G) or small-bore chest drain (refer)	As needed
Secondary	Admit; chest drain usually required	As needed
Pain	Paracetamol 1 g QID ± tramadol 50 mg TDS	3–5 days
Advice	Stop smoking; no flying until 1 week after resolution; no scuba diving ever	—

REFER / RED FLAGS

- All except small primary with no symptoms
- Tension features — decompress first
- Recurrent pneumothorax (surgery)
- Underlying lung disease

GP PEARLS

★ *Tension pneumothorax is a clinical diagnosis — an X-ray delays life-saving decompression.*

★ *Smoking increases recurrence risk many-fold.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	High-flow O2 (aids resorption)	*Avoid hyperoxia in COPD CO2 retainers*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Tramadol (weak opioid)	50–100 mg PO 6–8-hourly; max 400 mg/day	Severe pain	*Seizures, serotonin syndrome; dependence*
Lidocaine 2% (local anaesthetic) for procedures	Max 3 mg/kg (7 mg/kg with adrenaline)	Local for aspiration/drain	*No adrenaline on digits as per local practice*
Dextromethorphan (cough suppressant)	10–20 mg PO 6–8-hourly	Cough	*Not for productive cough; not under 4 years*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*

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DISEASE 37 OF 300 | RESPIRATORY

Pulmonary Embolism

Unexplained breathlessness with tachycardia and a clear chest — think PE.

DEFINITION

Obstruction of the pulmonary arteries by thrombus, usually from deep veins of the legs. Risk factors: immobility, surgery, long travel, pregnancy and postpartum, oral contraceptives, malignancy, previous VTE and thrombophilia. Massive PE causes hypotension and is rapidly fatal without reperfusion.

SYMPTOMS

- Sudden breathlessness
- Pleuritic chest pain
- Haemoptysis
- Syncope
- Unilateral leg swelling

SIGNS

- Tachycardia, tachypnoea, hypoxia
- Chest often clear
- Raised JVP, loud P2 (large PE)
- Hypotension (massive)
- Signs of DVT

DIAGNOSTIC TESTS

Test	Finding / purpose
Wells score	Clinical probability
D-dimer	Normal in low probability rules out PE
ECG	Sinus tachycardia; S1Q3T3, RBBB, right axis
CT pulmonary angiography	Diagnostic
Echo, troponin, BNP	RV strain — risk stratification
Compression USG legs	DVT

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Immediate	Oxygen, IV access, urgent referral	—
Anticoagulation (start if high suspicion)	Enoxaparin 1 mg/kg SC 12-hourly or unfractionated heparin 80 U/kg IV bolus	Until oral anticoagulant effective
Oral	Rivaroxaban 15 mg BD × 21 days then 20 mg OD, or apixaban 10 mg BD × 7 days then 5 mg BD; or warfarin to INR 2–3	3 months (provoked); longer if unprovoked
Massive PE (hypotension)	Thrombolysis — alteplase 100 mg IV over 2 h (hospital)	Single
Pregnancy	LMWH throughout pregnancy and 6 weeks postpartum (no DOAC/warfarin)	≥3 months total

REFER / RED FLAGS

- All suspected PE — urgent
- Hypotension, syncope, SpO_2 <90%
- Pregnancy
- Active bleeding with suspected PE

GP PEARLS

★ *A clear chest X-ray in a hypoxic, breathless patient should make you think of PE.*

★ *Unprovoked PE in an older patient — look for occult malignancy.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Enoxaparin (LMWH)	1 mg/kg SC 12-hourly (treatment); 40 mg daily prophylaxis	Start while awaiting imaging	*Bleeding; adjust in CKD*
Rivaroxaban (DOAC)	15 mg 12-hourly ×21 days then 20 mg daily (VTE)	Outpatient low-risk PE	*Take with food; bleeding*
Apixaban (DOAC)	5 mg PO 12-hourly (2.5 mg if criteria)	Alternative DOAC	*Bleeding; renal/age dose rules*
Unfractionated heparin	5000 IU IV bolus then infusion (aPTT)	Unstable/high-risk (hospital)	*Bleeding, HIT*
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	Hypoxia	*Avoid hyperoxia in COPD CO2 retainers*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pleuritic pain	*Hepatotoxic in overdose; check combination products*

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DISEASE 38 OF 300 | RESPIRATORY

Tobacco Cessation

Ask, advise, assist — every visit. Quitting doubles with drug support.

DEFINITION

Tobacco use (smoked — cigarettes, bidi; smokeless — gutka, khaini, betel quid) is the leading preventable cause of death in India, causing cancers, cardiovascular disease, COPD and TB. Nicotine dependence is a chronic relapsing disorder; brief advice plus pharmacotherapy greatly increases quit rates. National Tobacco Quitline: 1800-11-2356.

SYMPTOMS

- Type and amount of tobacco, years of use
- Time to first use after waking (<30 min = high dependence)
- Previous quit attempts
- Withdrawal: irritability, craving, poor sleep, weight gain
- Readiness to quit

SIGNS

- BP, BMI
- Oral cavity — leukoplakia, submucous fibrosis
- Chest signs of COPD
- Peripheral pulses
- Stained fingers and teeth

DIAGNOSTIC TESTS

Test	Finding / purpose
Fagerström score	Severity of nicotine dependence
Spirometry, CXR	Smokers >40 y with symptoms
Oral examination	Screen smokeless tobacco users for premalignant lesions
Lipids, glucose	CV risk

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
5 A's / 5 R's	Ask, Advise, Assess, Assist, Arrange; motivational counselling if not ready	Every visit
Nicotine gum / lozenge	2 mg (4 mg if >20 cig/day or first use <30 min) every 1–2 h, max 24/day; chew-and-park	8–12 weeks, then taper
Nicotine patch	21 mg/24 h (>10 cig/day) for 6 weeks → 14 mg × 2 weeks → 7 mg × 2 weeks	10 weeks
Bupropion SR	150 mg OD × 3 days then 150 mg BD; quit date in week 2. Avoid in seizures, eating disorders	7–12 weeks
Varenicline	0.5 mg OD days 1–3, 0.5 mg BD days 4–7, then 1 mg BD; quit date day 8	12 weeks
Follow-up	Review within 1 week of quit date and monthly; quitline referral	3–6 months

REFER / RED FLAGS

- Psychiatric illness or seizure disorder (specialist choice of drug)
- Pregnancy (counselling first; NRT with caution)
- Oral premalignant lesions
- Repeated relapse — tobacco cessation centre

GP PEARLS

★ *Combination NRT (patch + gum) is more effective than either alone.*

★ *Smokeless tobacco is not a safe alternative — it causes oral cancer.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Nicotine replacement (gum 2/4 mg; patch)	Gum 1 piece every 1–2 h; patch 14–21 mg/day	Nicotine gum/patch	*Mouth irritation; sleep disturbance*
Bupropion SR (smoking cessation)	150 mg daily ×3 days then 12-hourly	Craving and withdrawal	*Seizure risk; insomnia*
Varenicline (partial nicotinic agonist)	0.5 mg daily ×3 d → 1 mg 12-hourly ×12 weeks	Most effective single drug	*Nausea, vivid dreams*
Sertraline (pruritus/depression)	25–50 mg PO daily	Depression during quitting	*GI upset*
Multivitamin–mineral supplement	1 tablet PO daily	Weight-gain counselling (no drug)	*Not a substitute for diet*

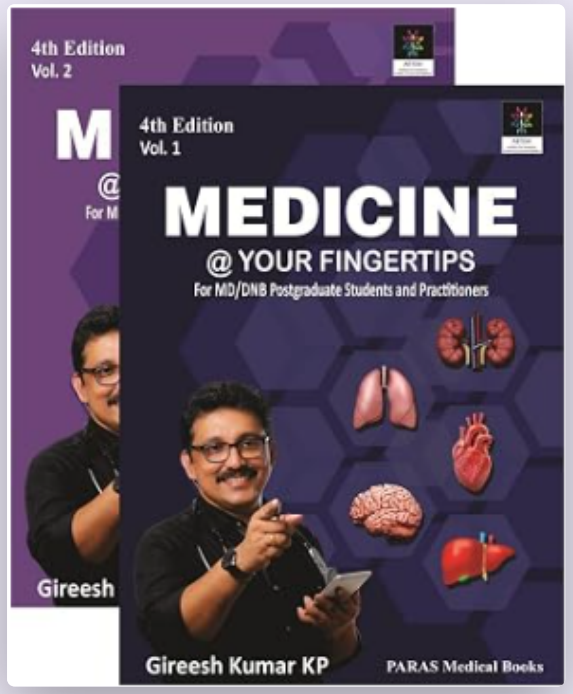
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DISEASE 39 OF 300 | CARDIOVASCULAR

Hypertension — Newly Detected

Confirm with repeated readings, assess risk, then treat to target.

DEFINITION

Persistently raised office BP ≥140/90 mmHg on at least two visits (or home BP ≥135/85). Grade 1: 140–159/90–99; grade 2: ≥160/≥100. About 95% is essential; secondary causes (renal disease, renal artery stenosis, hyperaldosteronism, thyroid disease, sleep apnoea, drugs) are suspected in the young, in resistant cases or with hypokalaemia.

SYMPTOMS

- Usually asymptomatic
- Headache, giddiness (non-specific)
- Symptoms of target-organ damage: breathlessness, chest pain, visual change
- Palpitations, sweating (phaeochromocytoma)
- Family history, salt, alcohol, NSAIDs, steroids, OCPs

SIGNS

- BP in both arms, correct cuff size, seated after 5 min rest
- BMI, waist circumference
- Fundus — hypertensive retinopathy
- Radio-femoral delay (coarctation), renal bruit
- Signs of LVH, heart failure

DIAGNOSTIC TESTS

Test	Finding / purpose
Urine routine, albumin-creatinine ratio	Renal damage
Serum creatinine, eGFR, electrolytes	CKD, hypokalaemia (aldosteronism)
Fasting glucose / HbA1c, lipid profile	Cardiovascular risk
ECG	LVH, ischaemia
TSH; echo; renal Doppler	If indicated
Home or ambulatory BP	White-coat hypertension

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Lifestyle (all)	Salt <5 g/day, DASH-type diet, 30 min brisk walk 5 days/week, weight loss, limit alcohol, stop tobacco	Lifelong
Grade 1, low risk	Lifestyle measures and re-check	3–6 months
Grade 1 high risk, or grade 2	Start drug: amlodipine 5 mg OD or telmisartan 40 mg OD	Lifelong
Grade 2 / BP >20/10 above target	Start dual therapy: telmisartan 40 mg + amlodipine 5 mg OD (single-pill)	Lifelong
Targets	<130/80 in most adults <65 y; <140/90 in elderly if tolerated	—
Review	Every 2–4 weeks until controlled, then 3 monthly; creatinine and K^+ 2 weeks after ACEi/ARB	—

REFER / RED FLAGS

- Age <30 y or suspected secondary cause
- BP ≥180/110 with symptoms or organ damage
- Resistant hypertension (3 drugs incl. diuretic)
- Pregnancy

GP PEARLS

★ *Measure BP twice with a correctly sized cuff — a small cuff overestimates BP in obese arms.*

★ *Hypokalaemia in a hypertensive patient not on diuretics: think Conn's syndrome.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Amlodipine (dihydropyridine CCB)	2.5–10 mg PO daily	First-line (CCB)	*Ankle oedema; headache*
Telmisartan (ARB)	20–80 mg PO daily	First-line ARB	*Hyperkalaemia; avoid in pregnancy*
Chlorthalidone (thiazide-like)	6.25–12.5 mg PO daily	Thiazide-like option	*Hyponatraemia, hypokalaemia*
Enalapril (ACE inhibitor)	2.5–20 mg PO 12-hourly	ACE inhibitor alternative	*Cough, angioedema, avoid in pregnancy*

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DISEASE 40 OF 300 | CARDIOVASCULAR

Hypertension — Drug Selection & Follow-up

A + C + D: ARB/ACEi, calcium channel blocker, thiazide-like diuretic — in that order.

DEFINITION

Pharmacological management of essential hypertension. First-line classes are ACE inhibitors or ARBs (A), dihydropyridine calcium channel blockers (C) and thiazide-like diuretics (D). Beta-blockers are added for specific indications (angina, post-MI, heart failure, AF). Most patients need two or more drugs; single-pill combinations improve adherence.

SYMPTOMS

- Side effects: ankle swelling (CCB), cough (ACEi), frequent urination (diuretic)
- Adherence and home BP readings
- Symptoms of postural hypotension
- Erectile dysfunction
- New chest pain or breathlessness

SIGNS

- BP sitting and standing
- Ankle oedema
- Pulse rate (beta-blocker)
- Weight
- Signs of organ damage

DIAGNOSTIC TESTS

Test	Finding / purpose
Creatinine, K^+	1–2 weeks after starting or increasing ACEi/ARB/diuretic, then yearly
Sodium	Thiazides — hyponatraemia in elderly
Uric acid, glucose	On diuretics
Urine ACR, lipids, ECG	Yearly

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Step 1	Telmisartan 40 mg OD (or losartan 50 mg OD, ramipril 5 mg OD) or amlodipine 5 mg OD	—
Step 2	ARB/ACEi + amlodipine (e.g. telmisartan 40 + amlodipine 5)	—
Step 3	ARB/ACEi + amlodipine + chlorthalidone 12.5 mg OD (or indapamide 1.5 mg SR)	—
Step 4 (resistant)	Add spironolactone 25 mg OD if K^+ <4.5; refer	—
Specific indications	Diabetes/CKD with albuminuria: ACEi/ARB; angina, AF, HF: add metoprolol 25–100 mg OD / bisoprolol 2.5–10 mg OD	—
Avoid	ACEi + ARB together; ACEi/ARB in pregnancy; beta-blocker with verapamil	—

REFER / RED FLAGS

- Uncontrolled on 3 drugs
- Creatinine rise >30% after ACEi/ARB
- K^+ >5.5 mmol/l
- Hypertension in pregnancy

GP PEARLS

★ *Amlodipine ankle oedema improves when an ACEi/ARB is added — no need to add a diuretic.*

★ *Use one tablet with two drugs rather than two tablets — adherence improves.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Amlodipine (dihydropyridine CCB)	2.5–10 mg PO daily	CCB 5–10 mg	*Ankle oedema; headache*
Telmisartan (ARB)	20–80 mg PO daily	ARB (diabetes, CKD)	*Hyperkalaemia; avoid in pregnancy*
Chlorthalidone (thiazide-like)	6.25–12.5 mg PO daily	Add-on diuretic	*Hyponatraemia, hypokalaemia*
Spironolactone (aldosterone antagonist)	25–100 mg PO daily (up to 400 mg in ascites)	Resistant hypertension	*Hyperkalaemia, gynaecomastia*
Bisoprolol (β-blocker)	1.25–10 mg PO daily	IHD/HF	*Bradycardia; titrate slowly in HF*
Prazosin (α-blocker)	1–5 mg PO 12-hourly at night start	Add-on (BPH)	*First-dose hypotension*

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DISEASE 41 OF 300 | CARDIOVASCULAR

Hypertensive Urgency & Emergency

The number does not decide — organ damage does.

DEFINITION

Severe hypertension, usually ≥180/120 mmHg. Hypertensive emergency has acute target-organ damage (encephalopathy, stroke, ACS, acute pulmonary oedema, aortic dissection, AKI, eclampsia, malignant retinopathy) and needs IV therapy in hospital. Hypertensive urgency has no acute organ damage and is treated with oral drugs over 24–48 hours.

SYMPTOMS

- Severe headache, vomiting, confusion (encephalopathy)
- Chest pain, back pain (dissection)
- Breathlessness (pulmonary oedema)
- Visual blurring
- Weakness, speech difficulty (stroke)

SIGNS

- BP in both arms (difference — dissection)
- Fundus: haemorrhages, exudates, papilloedema
- Crepitations, raised JVP
- Focal neurological deficit
- Altered sensorium

DIAGNOSTIC TESTS

Test	Finding / purpose
ECG, troponin	Ischaemia, LVH
Urine routine, creatinine, electrolytes	AKI, haematuria, proteinuria
Chest X-ray	Pulmonary oedema, widened mediastinum
CT head	Neurological symptoms
Pregnancy test	Women of reproductive age (eclampsia)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Urgency — rest	Rest 30 min in a quiet room and re-measure; many settle	—
Urgency — oral	Amlodipine 5–10 mg OD or restart missed medication; or labetalol 100–200 mg BD; or captopril 12.5–25 mg	Reduce BP over 24–48 h
Avoid	Sublingual nifedipine — causes precipitous fall, stroke and MI	—
Emergency (refer, ICU)	IV labetalol 20 mg bolus then 20–80 mg every 10 min (max 300 mg) or infusion; IV nitroglycerin 5–100 µg/min for pulmonary oedema/ACS	Lower MAP by ≤25% in first hour
Aortic dissection	Target SBP <120 within 20 min — IV labetalol/esmolol (hospital)	Immediate
Eclampsia	Magnesium sulphate + labetalol/nifedipine — see Hypertension in pregnancy	—

REFER / RED FLAGS

- Any acute organ damage — emergency referral
- Pregnancy ≥20 weeks with BP ≥160/110
- Chest or back pain with BP asymmetry
- Confusion, seizures, focal deficit

GP PEARLS

★ *Lowering BP too fast in an asymptomatic patient causes more harm than the high reading.*

★ *Ask whether the patient simply ran out of tablets.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Amlodipine (dihydropyridine CCB)	2.5–10 mg PO daily	Urgency — oral, lower slowly	*Ankle oedema; headache*
Labetalol (α/β-blocker)	100–200 mg PO 12-hourly; 20 mg IV	Emergency/pregnancy (hospital)	*Avoid in asthma*
Nifedipine retard (CCB)	10–20 mg PO 12-hourly (retard only)	Retard — never sublingual	*Never sublingual short-acting*
Telmisartan (ARB)	20–80 mg PO daily	Restart regular drugs	*Hyperkalaemia; avoid in pregnancy*
Furosemide (loop diuretic)	20–40 mg PO daily; 40–80 mg IV in LVF	Pulmonary oedema	*Hypokalaemia, dehydration, gout*
Nitroglycerin/Isosorbide dinitrate (nitrate)	GTN 0.4 mg SL or ISDN 5 mg SL; repeat ×3	Chest pain	*Hypotension; avoid with sildenafil, RV infarct*

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DISEASE 42 OF 300 | CARDIOVASCULAR

Chest Pain — Approach

Rule out the five killers first: ACS, aortic dissection, PE, tension pneumothorax, oesophageal rupture.

DEFINITION

Chest pain is a common GP presentation with causes ranging from life-threatening (acute coronary syndrome, dissection, pulmonary embolism, pneumothorax, perforation) to benign (musculoskeletal, GERD, anxiety). An ECG within 10 minutes is mandatory for any adult with non-traumatic chest pain.

SYMPTOMS

- Character: pressure/tightness (cardiac), tearing to back (dissection), pleuritic (PE, pneumonia), burning (GERD)
- Radiation to arm, jaw, back
- Sweating, nausea, breathlessness, syncope
- Relation to exertion, meals, posture, breathing
- Risk factors: diabetes, smoking, hypertension, family history

SIGNS

- Pulse, BP both arms, SpO_2
- Sweating, pallor
- Chest wall tenderness (reproducible)
- Breath sounds, pericardial rub
- Calf swelling, abdominal tenderness

DIAGNOSTIC TESTS

Test	Finding / purpose
12-lead ECG (within 10 min)	ST elevation, ST depression, T inversion; repeat if pain persists
Troponin (hs)	At presentation and 3 h (or point-of-care)
Chest X-ray	Pneumothorax, widened mediastinum, pneumonia
SpO_2, glucose	Hypoxia
D-dimer / CTPA, echo	PE, dissection, pericardial effusion

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Suspected ACS	Aspirin 325 mg chewed + clopidogrel 300 mg (600 mg if PCI) + atorvastatin 80 mg; sublingual nitroglycerin 0.4 mg if SBP >90	Stat; refer
Oxygen	Only if SpO_2 <90%	—
Musculoskeletal	Ibuprofen 400 mg TDS after food or diclofenac gel; reassurance	5–7 days
Reflux	Pantoprazole 40 mg OD before breakfast	4–8 weeks
Anxiety / panic	Reassurance after excluding organic cause; breathing techniques	—

REFER / RED FLAGS

- Any ECG change, raised troponin
- Ongoing pain, sweating, hypotension
- Tearing pain with BP difference
- Pleuritic pain with hypoxia or tachycardia

GP PEARLS

★ *Diabetics, women and the elderly often present with breathlessness or epigastric discomfort rather than chest pain.*

★ *Pain reproduced by pressing the chest wall does not exclude ACS — do the ECG anyway.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Aspirin (antiplatelet)	300 mg chewed stat; 75–150 mg daily	Suspected ACS 300 mg	*GI bleed; avoid in children <16*
Nitroglycerin/Isosorbide dinitrate (nitrate)	GTN 0.4 mg SL or ISDN 5 mg SL; repeat ×3	Angina (if SBP >90)	*Hypotension; avoid with sildenafil, RV infarct*
Atorvastatin (statin)	10–80 mg PO daily (80 mg in ACS)	ACS high dose	*Myalgia; check LFT; CYP3A4 interactions*
Pantoprazole (PPI)	40 mg PO before breakfast; 40–80 mg IV	Reflux/dyspepsia pain	*Long-term: B12, Mg deficiency, fractures*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Musculoskeletal pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	SpO2 <90%	*Avoid hyperoxia in COPD CO2 retainers*

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DISEASE 43 OF 300 | CARDIOVASCULAR

Stable Angina

Exertional chest tightness relieved by rest — symptom control plus prevention.

DEFINITION

Predictable chest discomfort due to myocardial ischaemia from fixed coronary stenosis (usually ≥70%), triggered by exertion or emotion and relieved within minutes by rest or nitroglycerin. Part of the spectrum of chronic coronary syndrome; new, worsening or rest angina is unstable and needs urgent referral.

SYMPTOMS

- Retrosternal tightness or heaviness on exertion
- Radiation to arm, jaw, epigastrium
- Lasts 2–10 min, relieved by rest
- Exertional breathlessness (angina equivalent)
- Provoked by cold, meals, emotion

SIGNS

- Often normal
- BP, BMI, xanthelasma, corneal arcus
- Signs of anaemia or thyrotoxicosis
- Ejection systolic murmur (aortic stenosis)
- Peripheral pulses

DIAGNOSTIC TESTS

Test	Finding / purpose
ECG at rest	Often normal; old Q waves, ST-T changes
Treadmill test	≥1 mm horizontal ST depression = positive
Echocardiography	LV function, regional wall motion, aortic stenosis
Lipids, HbA1c, Hb, creatinine, TSH	Risk factors and aggravating causes
CT coronary or invasive angiography	High risk or refractory symptoms (refer)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Acute relief	Nitroglycerin 0.4 mg SL (or isosorbide dinitrate 5 mg SL) at onset; repeat every 5 min up to 3 times	SOS
Anti-anginal (first line)	Metoprolol succinate 25–100 mg OD or bisoprolol 2.5–10 mg OD (target HR 55–60)	Long term
If BB contraindicated or add-on	Amlodipine 5–10 mg OD; isosorbide mononitrate 30–60 mg OD; ranolazine 500 mg BD; ivabradine 5 mg BD	Long term
Prevent events	Aspirin 75–150 mg OD + atorvastatin 40–80 mg OD (target LDL <55 mg/dl)	Lifelong
Risk factors	BP <130/80, HbA1c <7%, stop smoking, exercise, weight control	Lifelong

REFER / RED FLAGS

- New-onset, worsening, or rest angina (unstable)
- Positive stress test or LV dysfunction
- Symptoms despite two anti-anginals
- Aortic stenosis murmur

GP PEARLS

★ *Never combine sildenafil or tadalafil with nitrates — profound hypotension.*

★ *Teach the patient: if pain is not relieved by 3 nitroglycerin doses over 15 minutes, call for help — it may be an MI.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Nitroglycerin/Isosorbide dinitrate (nitrate)	GTN 0.4 mg SL or ISDN 5 mg SL; repeat ×3	Acute attack SL	*Hypotension; avoid with sildenafil, RV infarct*
Metoprolol succinate (β-blocker)	25–100 mg PO daily	First-line anti-anginal	*Avoid in asthma, bradycardia, acute HF*
Amlodipine (dihydropyridine CCB)	2.5–10 mg PO daily	β-blocker intolerance	*Ankle oedema; headache*
Isosorbide mononitrate (nitrate)	20–30 mg PO 12-hourly (eccentric)	Add-on	*Headache; nitrate-free interval*
Aspirin (antiplatelet)	300 mg chewed stat; 75–150 mg daily	Secondary prevention	*GI bleed; avoid in children <16*
Atorvastatin (statin)	10–80 mg PO daily (80 mg in ACS)	High-intensity statin	*Myalgia; check LFT; CYP3A4 interactions*

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DISEASE 44 OF 300 | CARDIOVASCULAR

Acute Coronary Syndrome — First Contact

ECG in 10 minutes, loading dose of antiplatelets, and reperfusion within the hour.

DEFINITION

Spectrum of acute myocardial ischaemia from plaque rupture and thrombosis: ST-elevation MI (STEMI), non-ST-elevation MI (NSTEMI, raised troponin without ST elevation) and unstable angina. STEMI needs reperfusion — primary PCI within 120 min of diagnosis, or thrombolysis within 30 min if PCI is not available (ideally within 12 h of symptom onset).

SYMPTOMS

- Central chest pain or pressure >20 min, at rest
- Radiation to arm, jaw, back
- Sweating, nausea, vomiting
- Breathlessness, giddiness, syncope
- Atypical in diabetics, women, elderly: epigastric pain, fatigue

SIGNS

- Anxious, sweaty, pale
- Tachycardia or bradycardia (inferior MI)
- Hypotension, cold extremities (shock)
- Basal crepitations, S3
- New murmur (MR, VSD)

DIAGNOSTIC TESTS

Test	Finding / purpose
12-lead ECG	ST elevation ≥1 mm in 2 contiguous leads (≥2 mm V2–V3), new LBBB; ST depression/T inversion in NSTE-ACS
Right-sided ECG (V4R)	In inferior MI — RV infarction
Troponin	Raised in MI; repeat at 3 h
CBC, RFT, electrolytes, glucose, lipids	Baseline
Echo	Wall motion, LV function, complications

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Antiplatelet loading	Aspirin 325 mg chewed + clopidogrel 300 mg (75 mg if >75 y for lysis; 600 mg before PCI) or ticagrelor 180 mg	Stat
Statin	Atorvastatin 80 mg	Stat, then OD
Pain	Nitroglycerin 0.4 mg SL (avoid if SBP <90, RV infarct, PDE5 inhibitor); morphine 2–4 mg IV + ondansetron 4 mg	SOS
Anticoagulant	Enoxaparin 1 mg/kg SC BD (30 mg IV bolus first in STEMI <75 y) or UFH 60 U/kg IV	Until PCI / up to 8 days
Thrombolysis (STEMI, PCI >120 min)	Tenecteplase 0.5 mg/kg IV bolus (30–50 mg by weight; half dose if ≥75 y) or streptokinase 1.5 MU IV over 60 min	Single
Long term	DAPT 12 months, statin, beta-blocker, ACEi, cardiac rehab	As advised

REFER / RED FLAGS

- Every suspected ACS — transfer to PCI-capable centre by ambulance
- Shock, arrhythmia, pulmonary oedema
- Mechanical complication
- Pain persisting after thrombolysis

GP PEARLS

★ *Time is muscle: do the ECG first, history later.*

★ *An ECG taken in a pain-free interval can be normal — repeat it with recurrence of pain.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Aspirin (antiplatelet)	300 mg chewed stat; 75–150 mg daily	300 mg chewed stat	*GI bleed; avoid in children <16*
Clopidogrel (P2Y12 inhibitor)	300–600 mg loading; 75 mg daily	300–600 mg loading	*Bleeding; PPI (omeprazole) interaction*
Atorvastatin (statin)	10–80 mg PO daily (80 mg in ACS)	80 mg stat	*Myalgia; check LFT; CYP3A4 interactions*
Nitroglycerin/Isosorbide dinitrate (nitrate)	GTN 0.4 mg SL or ISDN 5 mg SL; repeat ×3	Ongoing pain	*Hypotension; avoid with sildenafil, RV infarct*
Morphine (strong opioid)	IR 5–10 mg PO 4-hourly; 2–5 mg IV titrated	Severe pain	*Respiratory depression; give laxative; NDPS record*

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DISEASE 45 OF 300 | CARDIOVASCULAR

Chronic Heart Failure

Four pillars for reduced ejection fraction — and a diuretic for the fluid.

DEFINITION

Clinical syndrome of breathlessness, fatigue and fluid retention due to structural or functional cardiac abnormality. Classified by ejection fraction: reduced (HFrEF, EF ≤40%), mildly reduced (41–49%) and preserved (HFpEF, ≥50%). Common causes in India: ischaemic heart disease, hypertension, rheumatic valve disease and cardiomyopathy.

SYMPTOMS

- Exertional breathlessness (NYHA I–IV)
- Orthopnoea, paroxysmal nocturnal dyspnoea
- Ankle swelling, weight gain
- Fatigue, reduced exercise tolerance
- Nocturnal cough

SIGNS

- Raised JVP, hepatojugular reflux
- Bilateral basal crepitations
- S3 gallop, displaced apex
- Pitting pedal oedema, ascites, tender liver
- Murmurs of valvular disease

DIAGNOSTIC TESTS

Test	Finding / purpose
NT-proBNP / BNP	NT-proBNP <125 pg/ml makes HF unlikely (non-acute)
Echocardiography	EF, valves, wall motion — essential
ECG	Ischaemia, LVH, AF, LBBB
Chest X-ray	Cardiomegaly, congestion, effusions
CBC, RFT, electrolytes, TSH, HbA1c, LFT	Precipitants and drug monitoring

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Congestion	Furosemide 20–40 mg OD (titrate to dry weight; up to 80 mg BD) or torsemide 10–20 mg OD	As needed
HFrEF pillar 1	Sacubitril-valsartan 24/26 mg BD → 97/103 mg BD, or ramipril 1.25 → 5 mg BD / enalapril 2.5 → 10 mg BD	Lifelong
Pillar 2	Beta-blocker: bisoprolol 1.25 → 10 mg OD, metoprolol succinate 12.5 → 200 mg OD or carvedilol 3.125 → 25 mg BD (start low, go slow)	Lifelong
Pillar 3	Spironolactone 12.5–25 mg OD (K^+ <5.0, eGFR >30)	Lifelong
Pillar 4	Dapagliflozin 10 mg OD or empagliflozin 10 mg OD (also in HFpEF)	Lifelong
General	Salt <5 g/day, fluid 1.5–2 l if hyponatraemic, daily weight, vaccines, cardiac rehab	Lifelong

REFER / RED FLAGS

- New HF for echo and cause
- NYHA III–IV, hypotension, worsening renal function
- Weight gain >2 kg in 3 days despite diuretic
- Arrhythmia, syncope, valve disease

GP PEARLS

★ *Daily weighing is the patient's best early-warning system.*

★ *NSAIDs, pioglitazone and non-dihydropyridine CCBs worsen heart failure — avoid them.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Furosemide (loop diuretic)	20–40 mg PO daily; 40–80 mg IV in LVF	Congestion	*Hypokalaemia, dehydration, gout*
Sacubitril–valsartan (ARNI)	24/26–97/103 mg PO 12-hourly	HFrEF (ARNI)	*Not with ACE inhibitor (36-h gap)*
Bisoprolol (β-blocker)	1.25–10 mg PO daily	HFrEF β-blocker	*Bradycardia; titrate slowly in HF*
Spironolactone (aldosterone antagonist)	25–100 mg PO daily (up to 400 mg in ascites)	MRA	*Hyperkalaemia, gynaecomastia*
Dapagliflozin (SGLT2 inhibitor)	10 mg PO daily	SGLT2 inhibitor	*Genital infections; euglycaemic DKA*
Enalapril (ACE inhibitor)	2.5–20 mg PO 12-hourly	If ARNI unavailable	*Cough, angioedema, avoid in pregnancy*

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DISEASE 46 OF 300 | CARDIOVASCULAR

Acute Pulmonary Oedema (Acute LVF)

Sit up, oxygen, IV furosemide, nitrates — then find the cause.

DEFINITION

Rapid accumulation of fluid in the lungs due to raised left ventricular filling pressure, causing acute severe breathlessness. Precipitants: acute MI, hypertensive crisis, arrhythmia (AF), valve disease, fluid overload, infection, non-adherence, renal failure.

SYMPTOMS

- Sudden severe breathlessness, worse lying flat
- Cough with pink frothy sputum
- Sweating, anxiety, sense of suffocation
- Chest pain (if ischaemic)
- Palpitations

SIGNS

- Sitting upright, tachypnoea, cyanosis
- Cold clammy skin
- Bilateral crepitations, wheeze ("cardiac asthma")
- Tachycardia, gallop rhythm
- BP high (hypertensive) or low (cardiogenic shock)

DIAGNOSTIC TESTS

Test	Finding / purpose
SpO_2, ECG	Hypoxia; ischaemia, arrhythmia
Chest X-ray	Bat-wing shadows, Kerley B lines, effusions
Troponin, BNP	MI; confirms HF
RFT, electrolytes, ABG	Renal failure, acidosis
Echo	LV function, valves

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Position, oxygen	Sit upright with legs down; oxygen to SpO_2 ≥94%; CPAP/NIV in hospital	Immediate
Diuretic	Furosemide 40–80 mg IV (or 2.5 × usual oral dose)	Stat; repeat per response
Nitrate (if SBP >100)	Nitroglycerin 0.4 mg SL every 5 min or IV infusion 10–200 µg/min	Until settled
Anxiety, air hunger	Morphine 2–4 mg IV with antiemetic (use cautiously)	SOS
Hypotension (cardiogenic shock)	Avoid nitrates; refer for inotropes (dobutamine/noradrenaline)	Immediate
Treat cause	ACS — antiplatelets; AF — rate control; hypertensive — IV nitrate	—

REFER / RED FLAGS

- All cases — after initial treatment, by ambulance
- SBP <90, SpO_2 <90% despite oxygen
- ACS on ECG
- Rising creatinine, anuria

GP PEARLS

★ *Pink frothy sputum with crackles from base to apex is pulmonary oedema — do not give salbutamol and send home as asthma.*

★ *Lying the patient flat for an ECG can precipitate arrest — record it sitting up.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Furosemide (loop diuretic)	20–40 mg PO daily; 40–80 mg IV in LVF	40–80 mg IV	*Hypokalaemia, dehydration, gout*
Nitroglycerin/Isosorbide dinitrate (nitrate)	GTN 0.4 mg SL or ISDN 5 mg SL; repeat ×3	SL then infusion (SBP >100)	*Hypotension; avoid with sildenafil, RV infarct*
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	Hypoxia (sit upright)	*Avoid hyperoxia in COPD CO2 retainers*
Morphine (strong opioid)	IR 5–10 mg PO 4-hourly; 2–5 mg IV titrated	Small doses if distressed (caution)	*Respiratory depression; give laxative; NDPS record*
Enalapril (ACE inhibitor)	2.5–20 mg PO 12-hourly	After stabilisation	*Cough, angioedema, avoid in pregnancy*
Digoxin (cardiac glycoside)	0.125–0.25 mg PO daily	AF with fast rate	*Toxicity in CKD/hypokalaemia; levels*

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DISEASE 47 OF 300 | CARDIOVASCULAR

Atrial Fibrillation

Rate, rhythm and stroke prevention — anticoagulation is the life-saver.

DEFINITION

Chaotic atrial electrical activity producing an irregularly irregular ventricular rhythm. Types: paroxysmal (<7 days), persistent and permanent. Causes: hypertension, ischaemic and rheumatic heart disease (mitral stenosis), thyrotoxicosis, alcohol, heart failure. Stroke risk is assessed by CHA_2DS_2-VASc.

SYMPTOMS

- Palpitations
- Breathlessness, fatigue
- Giddiness, syncope
- Chest discomfort
- Stroke or TIA may be the first presentation

SIGNS

- Irregularly irregular pulse
- Pulse deficit (apex rate > radial rate)
- Variable first heart sound
- Signs of mitral stenosis, heart failure
- Thyroid signs

DIAGNOSTIC TESTS

Test	Finding / purpose
ECG	Absent P waves, irregular RR intervals, fibrillatory baseline
Echocardiography	Valve disease (MS), LA size, LV function, clot
TSH, electrolytes, RFT, CBC	Causes and baseline for anticoagulants
Holter	Paroxysmal AF

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Rate control	Metoprolol 25–100 mg BD or bisoprolol 2.5–10 mg OD; diltiazem 30–60 mg TDS (avoid in HFrEF); add digoxin 0.125–0.25 mg OD in HF	Target resting HR <110 (<80 if symptomatic)
Stroke prevention — CHA_2DS_2-VASc ≥2 (men) / ≥3 (women)	Apixaban 5 mg BD (2.5 mg BD if 2 of: age ≥80, wt ≤60 kg, creatinine ≥1.5) or rivaroxaban 20 mg OD with food (15 mg if CrCl 15–49)	Lifelong
Mitral stenosis or mechanical valve	Warfarin (start 5 mg OD; INR 2–3, 2.5–3.5 for mechanical mitral)	Lifelong
Score 1 (men) / 2 (women)	Consider anticoagulation (shared decision)	—
Avoid	Aspirin alone for stroke prevention in AF	—
Rhythm control	Refer if young, symptomatic, new onset <48 h — cardioversion, amiodarone, ablation	Specialist

REFER / RED FLAGS

- HR >150, hypotension, chest pain, pulmonary oedema (urgent)
- New AF for echo and anticoagulation plan
- AF with WPW (wide irregular QRS)
- Bleeding on anticoagulants

GP PEARLS

★ *The decision to anticoagulate depends on stroke risk, not on whether AF is paroxysmal or permanent.*

★ *Check thyroid function in every new AF.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Metoprolol succinate (β-blocker)	25–100 mg PO daily	Rate control	*Avoid in asthma, bradycardia, acute HF*
Diltiazem (non-DHP CCB)	30–60 mg PO 8-hourly; SR 90–180 mg 12-hourly	Rate control (no HFrEF)	*Avoid with β-blocker IV, HFrEF*
Digoxin (cardiac glycoside)	0.125–0.25 mg PO daily	Sedentary/HF	*Toxicity in CKD/hypokalaemia; levels*
Apixaban (DOAC)	5 mg PO 12-hourly (2.5 mg if criteria)	Stroke prevention (CHA_2DS_2-VASc)	*Bleeding; renal/age dose rules*
Warfarin (vitamin K antagonist)	Start 2–5 mg daily; INR 2–3	Valvular AF	*Many interactions; bleeding*
Amiodarone (antiarrhythmic)	200 mg PO 8-hourly ×1 week then taper	Rhythm control (specialist)	*Thyroid, liver, lung toxicity; interactions*

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DISEASE 48 OF 300 | CARDIOVASCULAR

Palpitations & SVT

Most palpitations are benign; a regular narrow-complex tachycardia responds to vagal manoeuvres.

DEFINITION

Palpitations are an awareness of heartbeat, from sinus tachycardia, ectopics, SVT, AF or VT. Paroxysmal supraventricular tachycardia (AVNRT, AVRT) is a regular narrow-complex tachycardia at 150–250/min with abrupt onset and offset, common in young people with structurally normal hearts.

SYMPTOMS

- Fast, regular pounding with sudden start and stop (SVT)
- Skipped or extra beats (ectopics)
- Giddiness, breathlessness, chest discomfort
- Polyuria after an episode
- Triggers: caffeine, alcohol, stress, thyroid disease, anaemia

SIGNS

- Pulse rate and regularity during episode
- BP, perfusion
- Signs of thyrotoxicosis, anaemia
- Murmurs, heart failure
- Usually normal between episodes

DIAGNOSTIC TESTS

Test	Finding / purpose
ECG during symptoms	Regular narrow QRS, no visible P waves (SVT)
ECG at rest	Short PR, delta wave (WPW), long QT
CBC, TSH, electrolytes, glucose	Anaemia, thyrotoxicosis, hypokalaemia
Holter / event recorder	Infrequent episodes
Echo	Structural heart disease

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Stable SVT — vagal manoeuvre	Modified Valsalva: blow into a 10 ml syringe for 15 s semi-recumbent, then lie flat with legs raised	Immediate
If vagal fails	Adenosine 6 mg rapid IV push with 20 ml flush; then 12 mg (warn of transient chest discomfort)	Stat
Alternative (no asthma)	Verapamil 5 mg IV over 2 min (not with beta-blockers or wide QRS)	Stat
Unstable (hypotension, chest pain, LOC)	Synchronised DC cardioversion — refer to emergency	Immediate
Prevention	Metoprolol 25–50 mg BD or verapamil 40–80 mg TDS; teach Valsalva; refer for ablation (curative)	Long term
Benign ectopics / sinus tachycardia	Reassure; reduce caffeine, alcohol, nicotine; treat cause	—

REFER / RED FLAGS

- Syncope, chest pain, breathlessness with palpitations
- Wide-complex tachycardia (treat as VT)
- Pre-excitation (WPW) on ECG
- Family history of sudden death

GP PEARLS

★ *Ask the patient to tap out the rhythm — regular fast suggests SVT; irregular suggests AF.*

★ *A wide-complex tachycardia in a patient with heart disease is VT until proven otherwise.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Adenosine (antiarrhythmic)	6 mg rapid IV push, then 12 mg	SVT termination	*Transient asystole; avoid in asthma*
Metoprolol succinate (β-blocker)	25–100 mg PO daily	Prevention/rate control	*Avoid in asthma, bradycardia, acute HF*
Verapamil (non-DHP CCB)	40–120 mg PO 8-hourly	SVT alternative	*Avoid in HFrEF, with β-blockers*
Propranolol (non-selective β-blocker)	10–40 mg PO 8–12-hourly	Anxiety-related palpitations	*Avoid in asthma; masks hypoglycaemia*
Diltiazem (non-DHP CCB)	30–60 mg PO 8-hourly; SR 90–180 mg 12-hourly	Rate control	*Avoid with β-blocker IV, HFrEF*
Amiodarone (antiarrhythmic)	200 mg PO 8-hourly ×1 week then taper	Specialist rhythm control	*Thyroid, liver, lung toxicity; interactions*

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DISEASE 49 OF 300 | CARDIOVASCULAR

Syncope

Most faints are vasovagal — find the few cardiac ones.

DEFINITION

Transient loss of consciousness due to global cerebral hypoperfusion, with rapid onset, short duration and spontaneous complete recovery. Causes: reflex (vasovagal, situational), orthostatic hypotension (drugs, dehydration, autonomic failure) and cardiac (arrhythmia, aortic stenosis, HOCM) — the last carries a high risk of sudden death.

SYMPTOMS

- Prodrome: light-headedness, sweating, nausea, blurred vision (vasovagal)
- Trigger: standing long, pain, fear, micturition, cough
- Syncope on exertion or lying down (cardiac)
- Palpitations before collapse
- Brief jerks possible; no prolonged confusion

SIGNS

- Lying and standing BP (drop ≥20/10 = orthostatic)
- Pulse rate and rhythm
- Ejection systolic murmur
- Injuries, tongue bite (seizure)
- Neurological examination

DIAGNOSTIC TESTS

Test	Finding / purpose
12-lead ECG (all)	Bradycardia, heart block, long QT, Brugada, WPW, LVH, Q waves
Capillary glucose, Hb	Hypoglycaemia, anaemia
Electrolytes, pregnancy test	As indicated
Echo	Murmur, exertional syncope, abnormal ECG
Holter / tilt-table test	Recurrent unexplained episodes

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Vasovagal	Explain and reassure; recognise prodrome — lie down or sit with legs raised; physical counter-pressure manoeuvres (leg crossing, hand gripping)	—
Hydration	Fluids 2–3 l/day and extra salt if not hypertensive	Ongoing
Orthostatic	Review drugs (diuretics, alpha-blockers, nitrates); rise slowly; compression stockings	—
Recurrent orthostatic (refer)	Fludrocortisone 0.1 mg OD or midodrine 2.5–10 mg TDS	Specialist
Cardiac cause	Refer: pacemaker, ablation, valve surgery	—
Driving advice	Avoid driving until cause established if unexplained or cardiac	—

REFER / RED FLAGS

- Syncope on exertion or while supine
- Abnormal ECG, murmur, heart failure
- Family history of sudden death <40 y
- Syncope with injury or no prodrome in the elderly

GP PEARLS

★ *Syncope during exercise is cardiac until proven otherwise.*

★ *A few seconds of jerking after a faint is common and does not mean epilepsy.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Orthostatic/volume depletion	*Fluid overload in HF/CKD*
Dextrose 25%/50% IV	25% dextrose 100 ml IV (child 2–5 ml/kg 10%)	Hypoglycaemia	*Thrombophlebitis; recheck glucose 15 min*
Metoprolol succinate (β-blocker)	25–100 mg PO daily	Not if bradycardic (review)	*Avoid in asthma, bradycardia, acute HF*
Atropine (antimuscarinic)	1.8–3 mg IV, double every 5 min to atropinisation	Symptomatic bradycardia	*Monitor for toxicity; target dry chest*
Aspirin (antiplatelet)	300 mg chewed stat; 75–150 mg daily	If TIA/cardiac cause	*GI bleed; avoid in children <16*

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DISEASE 50 OF 300 | CARDIOVASCULAR

Dyslipidaemia

Treat the risk, not just the number — LDL is the target.

DEFINITION

Abnormal plasma lipids: raised LDL cholesterol, raised triglycerides or low HDL — a major modifiable risk factor for atherosclerotic cardiovascular disease (ASCVD). Indians develop coronary disease at younger ages and lower LDL levels. Lipid Association of India targets: LDL <100 mg/dl (moderate risk), <70 (high), <50 (very high/established ASCVD).

SYMPTOMS

- Usually asymptomatic
- Family history of premature CAD (<55 men, <65 women)
- Abdominal pain (pancreatitis with TG >1000)
- Diabetes, hypertension, smoking, CKD
- Drugs: steroids, thiazides, antiretrovirals

SIGNS

- Xanthelasma, corneal arcus (<45 y)
- Tendon xanthomas (familial hypercholesterolaemia)
- Eruptive xanthomas (very high TG)
- BMI, waist
- BP

DIAGNOSTIC TESTS

Test	Finding / purpose
Lipid profile (non-fasting acceptable)	TC, LDL, HDL, TG, non-HDL
Fasting glucose / HbA1c, TSH, LFT, creatinine	Secondary causes and baseline
Lp(a)	Once in a lifetime, premature CAD family history
CK	Only if muscle symptoms on statin

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Lifestyle	Reduce saturated and trans fats, refined carbs, alcohol; 150 min/week exercise; weight loss	Lifelong
Moderate intensity statin	Atorvastatin 10–20 mg or rosuvastatin 5–10 mg OD	Lifelong
High intensity (ASCVD, diabetes with risk, LDL ≥190)	Atorvastatin 40–80 mg or rosuvastatin 20–40 mg OD	Lifelong
LDL not at target on max statin	Add ezetimibe 10 mg OD; then refer for PCSK9 inhibitor	Lifelong
TG 500–1000 mg/dl	Fenofibrate 145–160 mg OD + diet, alcohol abstinence, glycaemic control	Long term
Monitoring	Lipids at 6–12 weeks after starting, then yearly; LFT at baseline	—

REFER / RED FLAGS

- LDL ≥190 mg/dl or suspected familial hypercholesterolaemia
- TG >1000 mg/dl (pancreatitis risk)
- Statin intolerance
- Premature CAD in family

GP PEARLS

★ *Muscle aches on statins are often nocebo — re-challenge with a lower dose or alternate-day rosuvastatin.*

★ *Statins are contraindicated in pregnancy — stop when planning conception.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Atorvastatin (statin)	10–80 mg PO daily (80 mg in ACS)	Moderate–high intensity statin	*Myalgia; check LFT; CYP3A4 interactions*
Rosuvastatin (statin)	5–40 mg PO daily	Alternative statin	*Myopathy; reduce in Asian/CKD patients*
Ezetimibe (cholesterol absorption inhibitor)	10 mg PO daily	Add-on to statin	*Add-on to statin*
Fenofibrate (fibrate)	145–160 mg PO daily	TG >500 mg/dl	*Myopathy with statins; renal dosing*
Aspirin (antiplatelet)	300 mg chewed stat; 75–150 mg daily	Established ASCVD	*GI bleed; avoid in children <16*
Metformin (biguanide)	500 mg daily–1 g 12-hourly with meals	Diabetes with dyslipidaemia	*GI upset; stop if eGFR <30, contrast, sepsis*

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DISEASE 51 OF 300 | CARDIOVASCULAR

Rheumatic Heart Disease & Secondary Prophylaxis

Monthly benzathine penicillin is the single most effective treatment.

DEFINITION

Chronic valvular damage (mitral more than aortic) following one or more attacks of acute rheumatic fever, an immune reaction to group A streptococcal pharyngitis. Still common in India among the young and poor. Secondary prophylaxis prevents recurrences and progression of valve disease.

SYMPTOMS

- Exertional breathlessness, orthopnoea
- Palpitations (AF in mitral stenosis)
- Haemoptysis
- Fatigue
- Past history of fever with migratory joint pain or chorea

SIGNS

- Mid-diastolic rumbling murmur at apex (MS)
- Pansystolic murmur radiating to axilla (MR)
- Early diastolic murmur (AR)
- Loud S1, opening snap
- Irregular pulse, signs of heart failure

DIAGNOSTIC TESTS

Test	Finding / purpose
Echocardiography	Diagnosis, severity, valve area, LA clot
ECG	P mitrale, AF, RVH
Chest X-ray	LA enlargement, pulmonary congestion
ASO titre, ESR, CRP	Acute rheumatic fever activity
INR	If on warfarin

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Secondary prophylaxis (first choice)	Benzathine penicillin G 1.2 MU deep IM every 3–4 weeks (0.6 MU if <27 kg); test dose / observe 30 min	See below
Duration	ARF without carditis: 5 y or till 18 y; mild RHD: 10 y or till 25 y; moderate–severe RHD: till 40 y or lifelong	—
Oral alternative	Penicillin V 250 mg BD; if allergic, erythromycin 250 mg BD or azithromycin 250 mg OD	Same duration
Heart failure	Furosemide 20–40 mg OD; beta-blocker for rate in MS	Ongoing
AF / mitral stenosis	Warfarin, INR 2–3 (DOACs not for moderate–severe MS)	Lifelong
Dental care	Good oral hygiene; IE prophylaxis (amoxicillin 2 g 1 h before) only for prosthetic valve or previous IE	As needed

REFER / RED FLAGS

- All newly diagnosed RHD for echo and intervention planning
- Symptomatic MS (balloon valvotomy)
- Pregnancy with RHD
- Fever with new murmur (endocarditis)

GP PEARLS

★ *Monthly injections are painful — mix with 1% lignocaine (0.5 ml) and give into the gluteal muscle slowly.*

★ *Treat every sore throat in a child with RHD — streptococcal reinfection drives progression.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Benzathine penicillin G	1.2 MU IM every 3 weeks (RHD prophylaxis); 2.4 MU for syphilis	1.2 MU every 3 weeks	*Test dose per local policy; keep adrenaline*
Phenoxymethylpenicillin (penicillin V)	250–500 mg PO 6-hourly ×10 days	Oral alternative	*Compliance for full 10 days*
Azithromycin (macrolide)	500 mg PO once daily ×3 days (child 10 mg/kg)	Penicillin allergy	*QT prolongation; avoid with other QT drugs*
Aspirin (antiplatelet)	300 mg chewed stat; 75–150 mg daily	Acute rheumatic arthritis	*GI bleed; avoid in children <16*
Warfarin (vitamin K antagonist)	Start 2–5 mg daily; INR 2–3	Mechanical valves/AF	*Many interactions; bleeding*
Furosemide (loop diuretic)	20–40 mg PO daily; 40–80 mg IV in LVF	Heart failure	*Hypokalaemia, dehydration, gout*

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DISEASE 52 OF 300 | CARDIOVASCULAR

Peripheral Arterial Disease

Calf pain on walking relieved by rest — a marker of disease everywhere.

DEFINITION

Atherosclerotic narrowing of the arteries of the lower limbs, presenting as intermittent claudication, or as critical limb ischaemia (rest pain, ulcers, gangrene). Strongly associated with smoking and diabetes; in young Indian male smokers consider thromboangiitis obliterans (Buerger's disease).

SYMPTOMS

- Cramping calf pain on walking, relieved by rest
- Rest pain at night in the foot, relieved by hanging the leg down
- Non-healing foot ulcers
- Cold, numb feet
- Erectile dysfunction (aorto-iliac)

SIGNS

- Weak or absent foot pulses
- Cool, shiny, hairless skin; thick nails
- Buerger's test — pallor on elevation, rubor on dependency
- Ulcers on toes, heel, pressure points
- Gangrene

DIAGNOSTIC TESTS

Test	Finding / purpose
Ankle-brachial index (ABI)	<0.9 diagnostic; <0.4 critical (falsely high in diabetics with calcified vessels)
Arterial Doppler	Site and severity of stenosis
Lipids, HbA1c, creatinine, ECG	Cardiovascular risk
CT / MR angiography	Before revascularisation

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Stop smoking	Absolute — the single most important measure (essential in Buerger's)	Lifelong
Exercise	Supervised walking 30–45 min, 3 times weekly, walk to near-maximal pain	≥12 weeks
Antiplatelet	Aspirin 75–150 mg OD or clopidogrel 75 mg OD	Lifelong
Statin	Atorvastatin 40–80 mg OD	Lifelong
Claudication symptoms	Cilostazol 100 mg BD (not in heart failure)	3–6 months, continue if benefit
Foot care	Daily inspection, proper footwear, treat infections early	Lifelong

REFER / RED FLAGS

- Rest pain, ulcer or gangrene (urgent vascular referral)
- Acute limb ischaemia: 6 Ps — pain, pallor, pulselessness, paraesthesia, paralysis, perishing cold (emergency)
- Lifestyle-limiting claudication
- ABI <0.5

GP PEARLS

★ *A cold white painful leg of sudden onset is an embolus — the limb survives only a few hours.*

★ *Claudication is a coronary risk equivalent: treat lipids and BP aggressively.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Aspirin (antiplatelet)	300 mg chewed stat; 75–150 mg daily	Antiplatelet	*GI bleed; avoid in children <16*
Clopidogrel (P2Y12 inhibitor)	300–600 mg loading; 75 mg daily	Alternative antiplatelet	*Bleeding; PPI (omeprazole) interaction*
Atorvastatin (statin)	10–80 mg PO daily (80 mg in ACS)	High-intensity statin	*Myalgia; check LFT; CYP3A4 interactions*
Cilostazol (PDE3 inhibitor)	100 mg PO 12-hourly	Claudication	*Avoid in heart failure*
Rivaroxaban (DOAC)	15 mg 12-hourly ×21 days then 20 mg daily (VTE)	2.5 mg BD + aspirin (selected)	*Take with food; bleeding*
Ramipril (ACE inhibitor)	2.5–10 mg PO daily	BP/CV protection	*Cough, hyperkalaemia; check creatinine*

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DISEASE 53 OF 300 | CARDIOVASCULAR

Varicose Veins

Common, mostly cosmetic — watch the skin for venous changes.

DEFINITION

Dilated, tortuous superficial veins of the leg (diameter ≥3 mm) due to valvular incompetence of the great or small saphenous system. Risk factors: prolonged standing (teachers, police, shop workers), pregnancy, obesity, family history, previous DVT. Complications: eczema, pigmentation, lipodermatosclerosis, ulceration, bleeding and thrombophlebitis.

SYMPTOMS

- Visible, bulging veins
- Heaviness, aching, worse at end of day
- Ankle swelling
- Itching over veins
- Night cramps

SIGNS

- Tortuous veins on standing (GSV medial, SSV posterior calf)
- Pitting ankle oedema
- Brown pigmentation, eczema near medial malleolus
- Lipodermatosclerosis
- Ulcer above medial malleolus

DIAGNOSTIC TESTS

Test	Finding / purpose
Venous duplex Doppler	Site of reflux (SFJ, SPJ, perforators), exclude DVT
ABI	Before compression therapy (exclude arterial disease)
Blood sugar	If ulcer present

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
General	Leg elevation, avoid prolonged standing, walking, weight loss	Ongoing
Compression	Class II graduated compression stockings (ABI >0.8), wear on waking	Long term
Venous eczema	Emollients; betamethasone valerate 0.1% cream OD	1–2 weeks
Symptoms	Micronised purified flavonoid fraction (diosmin-hesperidin) 1000 mg OD	2–3 months
Superficial thrombophlebitis	Warm compresses, NSAID (ibuprofen 400 mg TDS) + topical heparinoid; Doppler to exclude DVT	1–2 weeks
Bleeding varix	Elevate leg, firm direct pressure, compression bandage	Immediate

REFER / RED FLAGS

- Venous ulcer, skin changes, bleeding
- Recurrent thrombophlebitis
- Symptomatic varicosities for EVLA, RFA, sclerotherapy or surgery
- Suspected DVT

GP PEARLS

★ *Always check ABI before compression — compression on an ischaemic limb causes gangrene.*

★ *Ulcers above the medial malleolus are venous; on toes and pressure points they are arterial.*

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DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Flavonoids (diosmin–hesperidin)	1000 mg PO 12-hourly ×4 days then daily	Symptoms of venous insufficiency	*GI upset; adjunct only*
Pentoxifylline (haemorheologic)	400 mg PO 8-hourly	Venous ulcers	*GI upset; bleeding risk*
Emollient (white soft paraffin / urea cream)	Apply liberally twice daily and after bath	Skin care	*Fire risk with paraffin on dressings*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Aching	*Hepatotoxic in overdose; check combination products*
Mupirocin 2% ointment (topical antibiotic)	Apply 8-hourly ×5–7 days	Infected ulcer	*Resistance with long use*
Enoxaparin (LMWH)	1 mg/kg SC 12-hourly (treatment); 40 mg daily prophylaxis	Superficial thrombophlebitis (selected)	*Bleeding; adjust in CKD*

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DISEASE 54 OF 300 | CARDIOVASCULAR

Deep Vein Thrombosis

Unilateral swollen tender calf — Wells score, D-dimer, Doppler, anticoagulate.

DEFINITION

Thrombosis in the deep veins, usually of the leg, with the risk of pulmonary embolism and post-thrombotic syndrome. Risk factors: immobility, recent surgery or fracture, long-distance travel, pregnancy/postpartum, oestrogen therapy, malignancy, previous VTE, thrombophilia.

SYMPTOMS

- Unilateral leg swelling
- Calf pain or tenderness
- Warmth, redness
- Breathlessness or chest pain (PE)
- Risk factor in the past 3 months

SIGNS

- Calf circumference >3 cm larger than the other side (10 cm below tibial tuberosity)
- Pitting oedema confined to the symptomatic leg
- Tenderness along deep veins
- Dilated superficial collateral veins
- Phlegmasia (blue, swollen leg) in massive DVT

DIAGNOSTIC TESTS

Test	Finding / purpose
Wells score	DVT likely (≥2) or unlikely (≤1)
D-dimer	Normal in "unlikely" → excludes DVT
Compression duplex USG	Diagnostic
CBC, platelets, PT/INR, aPTT, creatinine	Before anticoagulation
Cancer screen	Unprovoked DVT — history, exam, age-appropriate screening

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
DOAC (preferred, no cancer/pregnancy)	Rivaroxaban 15 mg BD with food × 21 days then 20 mg OD; or apixaban 10 mg BD × 7 days then 5 mg BD	3 months
LMWH → warfarin	Enoxaparin 1 mg/kg SC BD + warfarin 5 mg OD; stop LMWH when INR 2–3 for 2 days (≥5 days overlap)	3 months
Pregnancy, cancer	Enoxaparin 1 mg/kg SC BD (cancer: DOAC or LMWH)	Pregnancy + 6 weeks postpartum; cancer ≥6 months
Unprovoked	Continue anticoagulation beyond 3 months (review bleeding risk)	Extended
Symptoms	Early mobilisation, leg elevation, compression stocking once pain allows	—
Prophylaxis (high-risk travel, surgery)	Mobilise, hydrate; enoxaparin 40 mg SC OD in high-risk cases	As needed

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REFER / RED FLAGS

- Suspected DVT for Doppler (same day)
- Breathlessness, chest pain, hypoxia (PE)
- Pregnancy, active bleeding, platelets <50,000
- Massive iliofemoral DVT, phlegmasia

GP PEARLS

★ *Bilateral leg swelling is rarely DVT — look for heart, liver, kidney or drug causes.*

★ *A ruptured Baker's cyst mimics DVT — Doppler distinguishes them.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Rivaroxaban (DOAC)	15 mg 12-hourly ×21 days then 20 mg daily (VTE)	15 mg BD ×21 d then 20 mg	*Take with food; bleeding*
Apixaban (DOAC)	5 mg PO 12-hourly (2.5 mg if criteria)	10 mg BD ×7 d then 5 mg BD	*Bleeding; renal/age dose rules*
Enoxaparin (LMWH)	1 mg/kg SC 12-hourly (treatment); 40 mg daily prophylaxis	1 mg/kg BD	*Bleeding; adjust in CKD*
Warfarin (vitamin K antagonist)	Start 2–5 mg daily; INR 2–3	With LMWH overlap	*Many interactions; bleeding*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*

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DISEASE 55 OF 300 | CARDIOVASCULAR

Pedal Oedema — Approach

One leg or two? Pitting or not? Check heart, liver, kidneys, thyroid and the drug chart.

DEFINITION

Swelling of the feet and ankles from accumulation of interstitial fluid. Unilateral causes: DVT, cellulitis, venous insufficiency, lymphoedema (filariasis), Baker's cyst. Bilateral causes: heart failure, nephrotic syndrome, CKD, cirrhosis, hypoalbuminaemia, hypothyroidism, pregnancy, drugs (amlodipine, NSAIDs, steroids, pioglitazone) and venous insufficiency.

SYMPTOMS

- Onset, duration, one or both legs
- Breathlessness, orthopnoea (heart)
- Frothy urine, facial puffiness (renal)
- Abdominal distension, jaundice, alcohol (liver)
- Drug history

SIGNS

- Pitting vs non-pitting (lymphoedema, myxoedema)
- JVP, crepitations, S3
- Facial puffiness, ascites, signs of chronic liver disease
- Calf tenderness, warmth
- Varicose veins, skin changes

DIAGNOSTIC TESTS

Test	Finding / purpose
Urine routine (protein)	Nephrotic syndrome
Serum albumin, LFT, creatinine	Liver and kidney disease, hypoalbuminaemia
CBC, TSH	Anaemia, hypothyroidism
ECG, echo, NT-proBNP	Heart failure
Venous Doppler	Unilateral swelling — DVT, venous reflux

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Drug-induced	Reduce or stop amlodipine (or add ARB), NSAIDs, pioglitazone	—
Cardiac / renal / hepatic oedema	Treat cause; salt <5 g/day; furosemide 20–40 mg OD (spironolactone 50–100 mg OD for cirrhosis)	As needed
Venous	Leg elevation, compression stockings (after ABI), walking	Long term
Idiopathic / dependent oedema	Elevation, exercise; avoid diuretic dependence	—
Cellulitis	See Cellulitis — cephalexin 500 mg QID	5–7 days
Filarial lymphoedema	Limb hygiene, elevation, exercise, bandaging; DEC + albendazole as per programme	Long term

REFER / RED FLAGS

- Unilateral swelling — exclude DVT
- Breathlessness, orthopnoea
- Proteinuria >3 g, rising creatinine
- Ascites, jaundice

GP PEARLS

★ *Never treat oedema with a diuretic without finding the cause.*

★ *Amlodipine is the commonest cause of ankle swelling seen in a GP clinic.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Furosemide (loop diuretic)	20–40 mg PO daily; 40–80 mg IV in LVF	Cardiac/renal oedema	*Hypokalaemia, dehydration, gout*
Spironolactone (aldosterone antagonist)	25–100 mg PO daily (up to 400 mg in ascites)	Cirrhosis oedema	*Hyperkalaemia, gynaecomastia*
Levothyroxine (thyroid hormone)	25–100 µg PO empty stomach (1.6 µg/kg/day)	Hypothyroid myxoedema	*Start low in elderly/IHD; separate from iron/calcium*
Hydrochlorothiazide (thiazide)	12.5–25 mg PO daily	Mild fluid retention	*Hyponatraemia, hypokalaemia, gout*
Human albumin 20%	6–8 g per litre of ascites removed (>5 L)	Severe hypoalbuminaemia (hospital)	*Expensive; fluid overload*

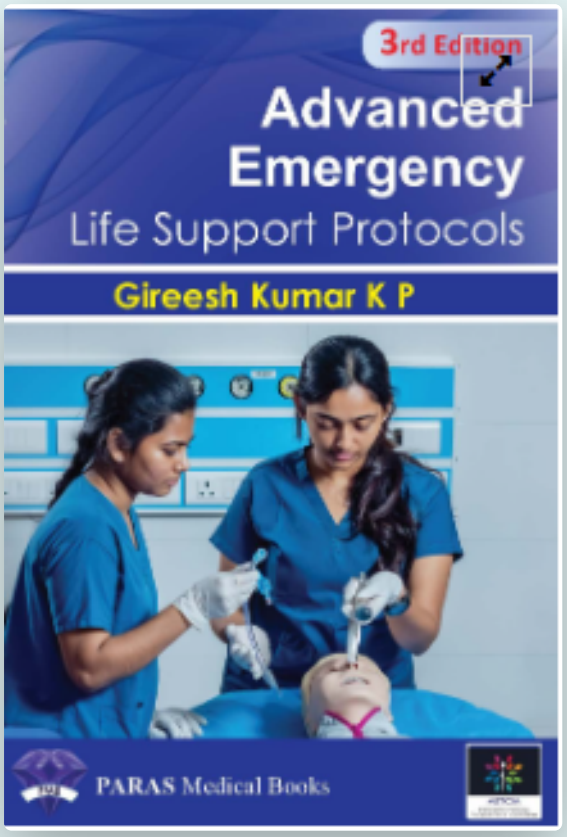
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DISEASE 56 OF 300 | ENDOCRINE & METABOLIC

Type 2 Diabetes — Diagnosis & First Visit

Confirm the diagnosis, screen for complications, set targets.

DEFINITION

Chronic hyperglycaemia from insulin resistance and progressive beta-cell failure. Diagnosis: fasting plasma glucose ≥126 mg/dl, 2-h OGTT ≥200 mg/dl, HbA1c ≥6.5%, or random glucose ≥200 with symptoms (confirm with a repeat test unless symptomatic). Prediabetes: FPG 100–125, 2-h 140–199 or HbA1c 5.7–6.4%. Indians develop diabetes younger and at lower BMI.

SYMPTOMS

- Often none — detected on screening
- Polyuria, polydipsia, weight loss
- Fatigue, blurred vision
- Recurrent infections: boils, UTI, genital candidiasis
- Tingling feet, delayed wound healing

SIGNS

- BMI, waist (≥90 cm men, ≥80 cm women)
- BP
- Acanthosis nigricans
- Foot exam: pulses, monofilament, vibration
- Fundus (dilated)

DIAGNOSTIC TESTS

Test	Finding / purpose
FPG, 2-h OGTT, HbA1c	Diagnosis
Lipid profile	Dyslipidaemia
Creatinine/eGFR, urine albumin-creatinine ratio	Nephropathy (ACR ≥30 mg/g)
ECG	Silent ischaemia
Fundus exam	Retinopathy — at diagnosis, then yearly
TSH, LFT, CBC	Baseline

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Prediabetes	Lose 5–7% weight, 150 min/week exercise; metformin 500 mg BD if BMI ≥25 and IGT/IFG with risk	Recheck yearly
Lifestyle (all)	Reduce refined carbs and sugar, more fibre/vegetables/protein; avoid fruit juices; 30–45 min walk daily	Lifelong
First drug	Metformin 500 mg OD with meals → up to 1 g BD (extended-release reduces GI upset)	Lifelong
HbA1c ≥9% or symptoms	Start dual therapy; insulin if HbA1c ≥10% or glucose ≥300 with symptoms/weight loss	—
Targets	HbA1c <7% (individualise <8% in elderly), FPG 80–130, PPG <180; BP <130/80; LDL <100 (<70 high risk)	—
Statin, BP	Atorvastatin 10–20 mg OD (age ≥40); ACEi/ARB if albuminuria or hypertension	Lifelong

REFER / RED FLAGS

- Young lean patient, ketones (type 1 / LADA)
- Glucose >300 with ketonuria or vomiting
- Retinopathy, nephropathy, foot ulcer
- Pregnancy

GP PEARLS

★ *Screen every adult over 30 for diabetes — NPCDCS opportunistic screening.*

★ *Check B12 every 1–2 years in long-term metformin users with neuropathy or anaemia.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Metformin (biguanide)	500 mg daily–1 g 12-hourly with meals	First-line	*GI upset; stop if eGFR <30, contrast, sepsis*
Atorvastatin (statin)	10–80 mg PO daily (80 mg in ACS)	Statin for age >40 / risk	*Myalgia; check LFT; CYP3A4 interactions*
Telmisartan (ARB)	20–80 mg PO daily	BP or albuminuria	*Hyperkalaemia; avoid in pregnancy*
Aspirin (antiplatelet)	300 mg chewed stat; 75–150 mg daily	Established ASCVD only	*GI bleed; avoid in children <16*
Cholecalciferol (vitamin D3)	60,000 IU weekly ×8 weeks, then monthly	Deficiency	*Hypercalcaemia if overused*

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DISEASE 57 OF 300 | ENDOCRINE & METABOLIC

Type 2 Diabetes — Oral & Non-insulin Drugs

Metformin first, then choose by heart, kidney, weight and cost.

DEFINITION

Glucose-lowering drugs added stepwise to metformin when HbA1c is above target after 3 months. Choice depends on comorbidity: SGLT2 inhibitors for heart failure or CKD, GLP-1 receptor agonists for ASCVD and obesity, sulfonylureas and pioglitazone when cost matters, DPP-4 inhibitors when hypoglycaemia must be avoided.

SYMPTOMS

- Hypoglycaemia symptoms (sulfonylurea)
- GI upset (metformin, GLP-1 RA)
- Genital itching (SGLT2i)
- Weight change
- Adherence and diet pattern

SIGNS

- Weight, BP
- Feet
- Genital candidiasis
- Oedema (pioglitazone)
- Signs of dehydration

DIAGNOSTIC TESTS

Test	Finding / purpose
HbA1c every 3 months	Until at target, then 6 monthly
SMBG / glucometer	Fasting and 2-h post-meal
eGFR	Dose adjustment: metformin max 1 g/day if eGFR 30–45, stop <30
B12	Long-term metformin

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Biguanide	Metformin 500 mg → 1000 mg BD with meals	Lifelong
Sulfonylurea	Glimepiride 1–4 mg OD before breakfast or gliclazide MR 30–120 mg OD (lower hypoglycaemia)	Long term
DPP-4 inhibitor	Sitagliptin 100 mg OD (50 mg eGFR 30–45), vildagliptin 50 mg BD, teneligliptin 20 mg OD, linagliptin 5 mg OD (no renal adjustment)	Long term
SGLT2 inhibitor (HF, CKD, ASCVD)	Dapagliflozin 10 mg OD or empagliflozin 10–25 mg OD; hold during acute illness, fasting, surgery	Long term
Thiazolidinedione	Pioglitazone 15–30 mg OD (avoid in HF, bladder cancer, osteoporosis)	Long term
GLP-1 RA (obesity, ASCVD)	Oral semaglutide 3 → 7 → 14 mg OD, or SC semaglutide 0.25 → 1 mg weekly; liraglutide 0.6 → 1.8 mg OD	Long term

REFER / RED FLAGS

- HbA1c >9% on 3 drugs (insulin)
- Recurrent hypoglycaemia
- eGFR <30
- Ketoacidosis on SGLT2i (euglycaemic DKA)

GP PEARLS

★ *Sulfonylureas in the elderly cause prolonged hypoglycaemia — prefer gliclazide and low doses.*

★ *Stop SGLT2 inhibitors 3 days before surgery and during vomiting illness ("sick-day rules").*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Metformin (biguanide)	500 mg daily–1 g 12-hourly with meals	First-line	*GI upset; stop if eGFR <30, contrast, sepsis*
Glimepiride (sulfonylurea)	1–4 mg PO before breakfast	Sulfonylurea add-on	*Hypoglycaemia; weight gain*
Sitagliptin (DPP-4 inhibitor)	100 mg PO daily (renal dose 25–50 mg)	DPP-4 inhibitor	*Pancreatitis rarely*
Dapagliflozin (SGLT2 inhibitor)	10 mg PO daily	SGLT2 (heart/kidney benefit)	*Genital infections; euglycaemic DKA*
Pioglitazone (glitazone)	15–30 mg PO daily	Insulin resistance	*Oedema, heart failure, fractures*
Voglibose (α-glucosidase inhibitor)	0.2–0.3 mg PO with meals	Post-meal glucose	*Flatulence*

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DISEASE 58 OF 300 | ENDOCRINE & METABOLIC

Starting Insulin in General Practice

Start basal, titrate by fasting sugar, teach hypoglycaemia.

DEFINITION

Insulin is indicated in type 2 diabetes when HbA1c remains above target on two or three oral agents, with HbA1c ≥10% or glucose ≥300 mg/dl with symptoms, catabolic weight loss, pregnancy, and during acute illness or surgery. Most patients can be started on a single bedtime basal insulin in the clinic.

SYMPTOMS

- Persistent hyperglycaemia despite oral drugs
- Weight loss, polyuria
- Fear of injections (address)
- Hypoglycaemia awareness
- Eating pattern and activity

SIGNS

- Injection sites — lipohypertrophy
- Weight
- Visual acuity (to read the pen/syringe)
- Manual dexterity

DIAGNOSTIC TESTS

Test	Finding / purpose
SMBG	Fasting daily during titration; pre-meal and 2-h post-meal for prandial insulin
HbA1c	Every 3 months
Creatinine	Lower doses in CKD

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Basal start	Insulin glargine 10 U SC at bedtime (or 0.1–0.2 U/kg) or NPH 10 U at bedtime; continue metformin ± DPP-4i/SGLT2i; stop or reduce sulfonylurea	Long term
Titration	Increase by 2 U every 3 days until FPG 80–130 mg/dl; reduce 10–20% if any hypo	Ongoing
Basal >0.5 U/kg and HbA1c high	Add prandial: regular/rapid-acting 4 U before largest meal (or 10% of basal), titrate by 1–2 U	Long term
Premixed alternative	30/70 premix 0.2–0.3 U/kg/day: 2/3 before breakfast, 1/3 before dinner (30 min before meals for human premix)	Long term
Hypoglycaemia	Rule of 15: 15 g glucose (3 tsp sugar in water), recheck in 15 min	SOS
Education	Injection technique, site rotation (abdomen, thigh), storage 2–8 °C (in-use pen at room temperature for 28 days), needle disposal	—

REFER / RED FLAGS

- Type 1 diabetes, DKA
- Pregnancy
- Recurrent or severe hypoglycaemia
- Insulin dose >1 U/kg with poor control

GP PEARLS

★ *Fasting sugar guides basal insulin; post-meal sugars guide prandial insulin.*

★ *Lumpy injection sites (lipohypertrophy) absorb insulin erratically — rotate sites.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Insulin glargine (basal analogue)	10 U or 0.1–0.2 U/kg at bedtime; titrate	Basal 10 U at night	*Hypoglycaemia (less nocturnal)*
Premixed / NPH insulin	Start 0.1–0.2 U/kg/day; titrate by FBG	Premixed twice daily	*Hypoglycaemia; teach injection & storage*
Regular / rapid-acting insulin	0.1 U/kg/h IV infusion in DKA; SC with meals	Prandial cover	*Check K+ before insulin in DKA*
Metformin (biguanide)	500 mg daily–1 g 12-hourly with meals	Continue with insulin	*GI upset; stop if eGFR <30, contrast, sepsis*
Glucagon	1 mg IM/SC (0.5 mg child <25 kg)	Severe hypo rescue	*Ineffective in alcohol/starvation*
Dextrose 25%/50% IV	25% dextrose 100 ml IV (child 2–5 ml/kg 10%)	Hypoglycaemia	*Thrombophlebitis; recheck glucose 15 min*

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DISEASE 59 OF 300 | ENDOCRINE & METABOLIC

Hypoglycaemia

Check sugar in every drowsy, sweaty or fitting patient.

DEFINITION

Plasma glucose <70 mg/dl (level 1), <54 mg/dl (level 2), or any level with altered mental status needing help (level 3, severe). Usually caused by insulin or sulfonylureas with missed meals, exercise, alcohol or renal impairment. Elderly and those with long-standing diabetes may lose warning symptoms.

SYMPTOMS

- Sweating, tremor, palpitations, hunger
- Anxiety, irritability
- Confusion, unusual behaviour, slurred speech
- Drowsiness, seizures, coma
- Nocturnal: nightmares, morning headache

SIGNS

- Pale, sweaty, tachycardia
- Altered sensorium
- Focal deficits (may mimic stroke)
- Seizure
- Hypothermia

DIAGNOSTIC TESTS

Test	Finding / purpose
Capillary blood glucose	Immediately — do not wait for lab
Venous glucose	Confirmation
Creatinine	CKD prolongs sulfonylurea and insulin action
Non-diabetic: insulin, C-peptide during hypo	Insulinoma, factitious (refer)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Conscious, can swallow	15–20 g fast glucose: 3–4 glucose tablets / 3 tsp sugar in water / 150 ml fruit juice; recheck in 15 min, repeat if <70	Repeat as needed
After recovery	Snack with complex carbohydrate (bread, biscuits) or next meal	—
Unconscious or cannot swallow	25% dextrose 100 ml IV (or 50% dextrose 50 ml); child 10% dextrose 2–5 ml/kg	Stat
No IV access	Glucagon 1 mg IM/SC (0.5 mg if <25 kg)	Stat
Sulfonylurea-induced	Admit: 10% dextrose infusion, observe 24–48 h (recurrence common)	24–48 h
Prevention	Review drugs and doses, meal timing, alcohol, exercise; carry sugar and ID card	—

REFER / RED FLAGS

- Sulfonylurea-induced hypoglycaemia
- Persistent altered sensorium after correction
- Recurrent or unexplained hypoglycaemia
- Hypoglycaemia in a non-diabetic

GP PEARLS

★ *Never send home a patient with sulfonylurea hypoglycaemia after one dextrose bolus — it recurs.*

★ *Do not give insulin to a drowsy diabetic before checking sugar.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Dextrose 25%/50% IV	25% dextrose 100 ml IV (child 2–5 ml/kg 10%)	IV dextrose if unable to swallow	*Thrombophlebitis; recheck glucose 15 min*
Glucagon	1 mg IM/SC (0.5 mg child <25 kg)	1 mg IM	*Ineffective in alcohol/starvation*
Glimepiride (sulfonylurea)	1–4 mg PO before breakfast	Review sulfonylurea dose	*Hypoglycaemia; weight gain*
Gliclazide (sulfonylurea)	40–160 mg PO 12-hourly (MR 30–120 mg daily)	Safer SU in elderly	*Hypoglycaemia, esp. elderly/CKD*
Thiamine (vitamin B1)	100 mg PO/IV daily (200–500 mg IV 8-hourly if Wernicke)	Alcohol users	*Give before glucose in alcohol users*
Insulin glargine (basal analogue)	10 U or 0.1–0.2 U/kg at bedtime; titrate	Review basal dose	*Hypoglycaemia (less nocturnal)*

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DISEASE 60 OF 300 | ENDOCRINE & METABOLIC

Hyperglycaemic Crisis — DKA & HHS (First Contact)

Fluids first, insulin second, potassium always.

DEFINITION

Diabetic ketoacidosis (DKA): glucose >250 mg/dl, ketonaemia/ketonuria, pH <7.3 or HCO_3 <18 — mainly type 1 or SGLT2i users (may be euglycaemic). Hyperosmolar hyperglycaemic state (HHS): glucose usually >600, osmolality >320, minimal ketones — elderly type 2. Precipitants: infection, missed insulin, MI, stroke, steroids.

SYMPTOMS

- Polyuria, polydipsia, weakness
- Nausea, vomiting, abdominal pain (DKA)
- Breathlessness (Kussmaul)
- Drowsiness, confusion
- Precipitating illness

SIGNS

- Dehydration, tachycardia, hypotension
- Deep sighing respiration, fruity breath (DKA)
- Altered sensorium
- Fever/focus of infection
- Focal deficits or seizures (HHS)

DIAGNOSTIC TESTS

Test	Finding / purpose
Capillary glucose, urine/blood ketones	At once
ABG / VBG	pH, bicarbonate, anion gap
Electrolytes (K^+), creatinine, urea	K^+ before insulin
CBC, urine and blood cultures, CXR, ECG	Precipitant
Serum osmolality	2Na + glucose/18 + urea/6

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Fluids (start in clinic)	0.9% NS 1 litre IV over 1 h (child 10–20 ml/kg; cautious in children), then 250–500 ml/h	First hours
Insulin (hospital, after K^+ known)	Regular insulin 0.1 U/kg/h IV infusion (no bolus needed); HHS 0.05 U/kg/h after fluids	Until ketones clear
Potassium	K^+ <3.3: replace before insulin; 3.3–5.3: add 20–40 mmol KCl per litre; >5.3: none, recheck	2-hourly checks
Glucose falls <250 (DKA)	Add 5–10% dextrose and continue insulin	Until pH >7.3
If no IV insulin	Regular insulin 0.2 U/kg IM then 0.1 U/kg IM hourly	During transfer
Precipitant	Antibiotic if infection; thromboprophylaxis in HHS	—

REFER / RED FLAGS

- All DKA and HHS — after starting fluids
- Children (cerebral oedema risk)
- Altered sensorium, shock
- pH <7.0, K^+ <3.3

GP PEARLS

★ *Insulin before knowing potassium can cause fatal hypokalaemia.*

★ *Euglycaemic DKA on SGLT2 inhibitors: sugar may be <250 — check ketones in any unwell patient on these drugs.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	1 L NS in first hour	*Fluid overload in HF/CKD*
Regular / rapid-acting insulin	0.1 U/kg/h IV infusion in DKA; SC with meals	0.1 U/kg/h after K^+ check	*Check K+ before insulin in DKA*
Potassium chloride (supplement)	Syrup 15–30 ml (20–40 mEq) PO 8–12-hourly	K^+ 3.5–5 in fluids	*Never IV bolus; GI irritation*
Dextrose 25%/50% IV	25% dextrose 100 ml IV (child 2–5 ml/kg 10%)	Add when glucose <250	*Thrombophlebitis; recheck glucose 15 min*
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	Hypoxia	*Avoid hyperoxia in COPD CO2 retainers*
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	If infection precipitant	*Biliary sludge; not with calcium IV in neonates*

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DISEASE 61 OF 300 | ENDOCRINE & METABOLIC

Diabetic Foot

Look at the feet every visit — most amputations start with a small ulcer.

DEFINITION

Infection, ulceration or tissue destruction of the foot in diabetes, resulting from neuropathy, peripheral arterial disease and infection. India has one of the world's highest rates of diabetic foot amputation, often due to barefoot walking and late presentation. Charcot neuroarthropathy is a hot, swollen, painless foot.

SYMPTOMS

- Painless ulcer (neuropathic)
- Painful ulcer, rest pain (ischaemic)
- Swelling, redness, discharge, smell
- Fever, rising sugars (infection)
- Hot swollen foot without wound (Charcot)

SIGNS

- Monofilament (10 g) loss of sensation
- Pulses — dorsalis pedis, posterior tibial
- Ulcer site, depth, probe to bone
- Cellulitis, abscess, crepitus (gas)
- Deformity, callus, nail problems

DIAGNOSTIC TESTS

Test	Finding / purpose
Capillary glucose, HbA1c	Glycaemic control
CBC, CRP/ESR, creatinine	Infection, renal function
X-ray foot	Osteomyelitis, gas, foreign body, Charcot
Deep tissue culture (not superficial swab)	Guides antibiotics
ABI / arterial Doppler	Ischaemia

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Off-loading	Rest, no barefoot walking, off-loading footwear or total contact cast	Until healed
Wound care	Debride callus and slough, saline cleaning, moist dressings; avoid soaking	Daily / alternate days
Mild infection (≤2 cm cellulitis)	Amoxicillin-clavulanate 625 mg TDS or cephalexin 500 mg QID	1–2 weeks
Moderate / severe (refer)	IV piperacillin-tazobactam 4.5 g 8-hourly or ceftriaxone 1 g + metronidazole 500 mg 8-hourly; surgical drainage	2–4 weeks; 6 weeks for osteomyelitis
Glycaemic control	Insulin usually needed during infection	Until healed
Prevention	Daily foot inspection, moisturise (not between toes), cut nails straight, proper footwear	Lifelong

REFER / RED FLAGS

- Spreading cellulitis, abscess, gangrene, fever
- Ischaemic foot (absent pulses, ABI <0.9)
- Probe-to-bone positive (osteomyelitis)
- Hot swollen foot (Charcot — immobilise)

GP PEARLS

★ *A neuropathic foot does not hurt — ask the patient to remove footwear at every visit.*

★ *Charcot foot is often misdiagnosed as cellulitis or DVT; X-ray and immobilise.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Amoxicillin–clavulanate (penicillin + β-lactamase inhibitor)	625 mg PO 8-hourly (child 25–45 mg/kg/day amox)	Mild infection	*Diarrhoea, cholestatic jaundice*
Clindamycin (lincosamide)	300 mg PO 6–8-hourly	Penicillin allergy	*C. difficile diarrhoea*
Ciprofloxacin (fluoroquinolone)	500 mg PO 12-hourly	Pseudomonas (with clindamycin)	*Tendinopathy, QT, avoid in pregnancy/children*
Povidone-iodine (antiseptic)	5–10% solution/ointment for wound cleaning	Wound care	*Avoid large areas in thyroid disease*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Metformin (biguanide)	500 mg daily–1 g 12-hourly with meals	Glycaemic control	*GI upset; stop if eGFR <30, contrast, sepsis*

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DISEASE 62 OF 300 | ENDOCRINE & METABOLIC

Diabetic Peripheral Neuropathy

Burning feet at night — control sugar, protect feet, treat pain.

DEFINITION

Length-dependent, symmetrical sensorimotor polyneuropathy caused by chronic hyperglycaemia, affecting up to half of people with long-standing diabetes. Loss of protective sensation predisposes to ulcers and Charcot foot. Exclude other causes: B12 deficiency (metformin), alcohol, hypothyroidism, CKD, drugs.

SYMPTOMS

- Burning, tingling, pins and needles in feet
- Pain worse at night
- Numbness, "walking on cotton wool"
- Unsteadiness in the dark
- Unnoticed injuries or burns

SIGNS

- Glove-and-stocking sensory loss
- Loss of 10-g monofilament and vibration (128 Hz)
- Absent ankle jerks
- Dry cracked skin, callus, deformity
- Romberg positive

DIAGNOSTIC TESTS

Test	Finding / purpose
Monofilament and tuning fork	Yearly screening
HbA1c	Control
B12, TSH, creatinine	Contributing causes
Nerve conduction study	Atypical, asymmetric or motor-predominant

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Glycaemic control	Optimise HbA1c without hypoglycaemia	Ongoing
Neuropathic pain — first line	Pregabalin 75 mg HS → 150 mg BD (reduce in CKD) or duloxetine 30 → 60 mg OD	≥4 weeks trial, then continue
Alternative	Amitriptyline 10 mg HS → 25–50 mg (avoid in elderly, glaucoma, heart disease); gabapentin 300 mg HS → 600 mg TDS	Long term
Add-on	Capsaicin 0.075% cream QID; tramadol 50 mg BD for breakthrough	As needed
B12 deficiency	Methylcobalamin 1500 µg OD (or IM if severe)	3 months
Foot care	Daily inspection, footwear, podiatry	Lifelong

REFER / RED FLAGS

- Foot ulcer or deformity
- Rapidly progressive, asymmetric or motor weakness
- Autonomic symptoms: postural fall, gastroparesis, bladder
- Pain uncontrolled on 2 agents

GP PEARLS

★ *Treat pain with an agent at an adequate dose for 4 weeks before switching.*

★ *Explain that pain-relief drugs do not restore sensation — foot protection remains essential.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Pregabalin (gabapentinoid)	75 mg PO 12-hourly, increase to 150 mg 12-hourly	Neuropathic pain	*Dizziness, misuse; renal dosing*
Duloxetine (SNRI)	30–60 mg PO daily	Neuropathic pain	*Nausea; avoid in liver disease*
Amitriptyline (TCA)	10–25 mg PO at night	Low dose at night	*Anticholinergic; avoid in elderly, IHD*
Gabapentin (gabapentinoid)	300 mg at night, titrate to 600 mg 8-hourly	Alternative	*Sedation; renal dosing*
Vitamin B12 (cyanocobalamin/methylcobalamin)	1000 µg IM alternate days ×5, then monthly	Metformin-related deficiency	*Hypokalaemia early in treatment*
Tramadol (weak opioid)	50–100 mg PO 6–8-hourly; max 400 mg/day	Short-term severe pain	*Seizures, serotonin syndrome; dependence*

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DISEASE 63 OF 300 | ENDOCRINE & METABOLIC

Hypothyroidism

TSH high, T4 low — replace with levothyroxine on an empty stomach.

DEFINITION

Deficient thyroid hormone, most commonly from autoimmune (Hashimoto's) thyroiditis; also post-radioiodine or thyroidectomy, iodine deficiency and drugs (amiodarone, lithium). Overt: high TSH, low free T4. Subclinical: high TSH (usually 5–10 mIU/l) with normal free T4.

SYMPTOMS

- Fatigue, lethargy, cold intolerance
- Weight gain, constipation
- Dry skin, hair loss
- Menorrhagia, infertility
- Depression, poor memory

SIGNS

- Bradycardia
- Dry, coarse skin, puffy face, loss of outer third of eyebrows
- Goitre (or none)
- Delayed relaxation of ankle jerks
- Non-pitting oedema, hoarse voice

DIAGNOSTIC TESTS

Test	Finding / purpose
TSH	Best screening test
Free T4	Low in overt hypothyroidism
Anti-TPO antibodies	Autoimmune; predicts progression in subclinical
Lipids, CBC, CPK	Hyperlipidaemia, anaemia, raised CK
USG thyroid	If nodular goitre

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Overt — adult <60, no heart disease	Levothyroxine 1.6 µg/kg/day (e.g. 50–100 µg OD) on empty stomach, 30–60 min before breakfast	Lifelong
Elderly or heart disease	Start 12.5–25 µg OD, increase by 12.5–25 µg every 4–6 weeks	Lifelong
Subclinical	Treat if TSH >10, symptomatic, anti-TPO positive, planning pregnancy or pregnant; otherwise recheck in 6–12 months	As indicated
Pregnancy	Increase dose by 25–30% as soon as pregnancy is confirmed; target TSH <2.5 (first trimester)	Pregnancy
Monitoring	TSH 6–8 weeks after each dose change; yearly once stable	—
Interactions	Separate from iron, calcium, PPIs, antacids by 4 h	—

REFER / RED FLAGS

- Myxoedema coma (hypothermia, drowsiness) — emergency
- Angina when starting therapy
- Pregnancy with uncontrolled TSH
- Low TSH with low T4 (pituitary cause)

GP PEARLS

★ *Do not chase TSH within 6 weeks of a dose change — T4 takes that long to reach steady state.*

★ *Morning dose with tea or coffee reduces absorption — water only.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Levothyroxine (thyroid hormone)	25–100 µg PO empty stomach (1.6 µg/kg/day)	1.6 µg/kg	*Start low in elderly/IHD; separate from iron/calcium*
Calcium carbonate (supplement)	500–1000 mg elemental calcium daily in divided doses	Separate by 4 h	*Constipation; separate from iron/thyroxine*
Ferrous sulphate/ascorbate (oral iron)	60–100 mg elemental iron daily or alternate days	Separate by 4 h	*Black stools, constipation*
Atorvastatin (statin)	10–80 mg PO daily (80 mg in ACS)	Persistent dyslipidaemia	*Myalgia; check LFT; CYP3A4 interactions*
Pantoprazole (PPI)	40 mg PO before breakfast; 40–80 mg IV	Reduces absorption — review	*Long-term: B12, Mg deficiency, fractures*

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DISEASE 64 OF 300 | ENDOCRINE & METABOLIC

Hyperthyroidism

Low TSH, high T4 — beta-blocker for symptoms, antithyroid drugs for Graves'.

DEFINITION

Excess thyroid hormone. Causes: Graves' disease (commonest; diffuse goitre, eye signs, TSH receptor antibodies), toxic multinodular goitre, toxic adenoma, subacute or postpartum thyroiditis (transient), excess levothyroxine. Thyroid storm is a life-threatening emergency.

SYMPTOMS

- Weight loss despite good appetite
- Palpitations, heat intolerance, sweating
- Tremor, anxiety, insomnia
- Frequent stools, oligomenorrhoea
- Eye grittiness, protrusion (Graves')

SIGNS

- Tachycardia, AF
- Fine tremor, warm moist skin
- Diffuse goitre with bruit (Graves') or nodules
- Exophthalmos, lid lag, lid retraction
- Proximal myopathy, brisk reflexes

DIAGNOSTIC TESTS

Test	Finding / purpose
TSH (suppressed), free T4, T3	T3 toxicosis — high T3 only
TSH receptor antibodies (TRAb)	Graves' disease
Radionuclide (Tc-99m) scan	Diffuse uptake (Graves'), hot nodule, low uptake (thyroiditis)
CBC, LFT	Baseline before antithyroid drugs
ECG	AF

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Symptom control	Propranolol 20–40 mg TDS (or atenolol 25–50 mg OD); avoid in asthma — use diltiazem	Until euthyroid
Graves' — first line	Carbimazole 20–40 mg/day (or methimazole 15–30 mg) in divided doses, taper to 5–10 mg/day as T4 normalises	12–18 months
First trimester pregnancy, storm	Propylthiouracil 100–150 mg TDS	As advised
Subacute thyroiditis (painful)	Ibuprofen 400 mg TDS or prednisolone 30–40 mg OD tapering; beta-blocker; no antithyroid drugs	4–6 weeks
Definitive	Radioiodine or thyroidectomy for relapse, toxic nodules, large goitre (refer)	—
Monitoring	Free T4 every 4–6 weeks initially; CBC if sore throat or fever	—

REFER / RED FLAGS

- Thyroid storm: fever, delirium, tachyarrhythmia, heart failure
- Fever or sore throat on carbimazole (agranulocytosis — stop drug, CBC)
- Pregnancy, Graves' eye disease
- AF or heart failure

GP PEARLS

★ *Warn every patient on carbimazole: sore throat, fever or mouth ulcers → stop and get a CBC the same day.*

★ *Painful tender thyroid with high ESR and low uptake is thyroiditis — antithyroid drugs are useless.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Carbimazole (antithyroid)	10–40 mg PO daily, then taper	First-line antithyroid	*Agranulocytosis — sore throat/fever = stop & check*
Propranolol (non-selective β-blocker)	10–40 mg PO 8–12-hourly	Tremor, palpitations	*Avoid in asthma; masks hypoglycaemia*
Propylthiouracil (antithyroid)	50–150 mg PO 8-hourly	1st trimester/thyroid storm	*Hepatotoxicity; preferred in 1st trimester*
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	Thyroiditis pain (selected)	*Hyperglycaemia; taper if >3 weeks*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever (check WBC on carbimazole)	*Hepatotoxic in overdose; check combination products*

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DISEASE 65 OF 300 | ENDOCRINE & METABOLIC

Goitre & Thyroid Nodule

Check TSH first, then ultrasound — most nodules are benign.

DEFINITION

Goitre is enlargement of the thyroid gland, diffuse or nodular. Causes: iodine deficiency (endemic in sub-Himalayan India), autoimmune thyroiditis, Graves' disease, multinodular goitre, puberty and pregnancy. Thyroid nodules are common; 5–10% are malignant (papillary carcinoma most often).

SYMPTOMS

- Neck swelling moving with swallowing
- Pressure symptoms: dysphagia, breathlessness, choking
- Hoarse voice (recurrent laryngeal nerve)
- Hyper- or hypothyroid symptoms
- Rapid growth, neck irradiation, family history

SIGNS

- Swelling moves up on swallowing
- Diffuse vs nodular, consistency
- Hard, fixed nodule, cervical nodes (malignancy)
- Retrosternal extension (Pemberton's sign)
- Tracheal deviation

DIAGNOSTIC TESTS

Test	Finding / purpose
TSH, free T4	Functional status — first test
USG thyroid (TI-RADS)	Nodule size, features, nodes
FNAC (Bethesda)	Suspicious nodules ≥1 cm or per TI-RADS
Anti-TPO	Hashimoto's thyroiditis
Radionuclide scan	If TSH low (hot nodule)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Iodine deficiency (diffuse, euthyroid)	Use iodised salt; small goitres often regress	Ongoing
Hypothyroid goitre	Levothyroxine as for hypothyroidism	Lifelong
Benign nodule (Bethesda II)	Observation with USG at 12–24 months	—
Hot nodule / toxic MNG	Radioiodine or surgery (refer); beta-blocker for symptoms	—
Suspicious or malignant FNAC	Thyroidectomy (refer)	—
Compressive goitre	Surgery (refer)	—

REFER / RED FLAGS

- Hard, fixed or rapidly enlarging nodule
- Hoarseness, stridor, dysphagia
- Suspicious USG or FNAC
- Nodule in child or with neck irradiation history

GP PEARLS

★ *A suspicious nodule is still worked up even when TSH is normal.*

★ *Levothyroxine suppression of benign nodules is no longer recommended.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Levothyroxine (thyroid hormone)	25–100 µg PO empty stomach (1.6 µg/kg/day)	Hypothyroid goitre	*Start low in elderly/IHD; separate from iron/calcium*
Carbimazole (antithyroid)	10–40 mg PO daily, then taper	Toxic nodule (specialist)	*Agranulocytosis — sore throat/fever = stop & check*
Propranolol (non-selective β-blocker)	10–40 mg PO 8–12-hourly	Thyrotoxic symptoms	*Avoid in asthma; masks hypoglycaemia*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Thyroiditis pain	*Hepatotoxic in overdose; check combination products*
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	Subacute thyroiditis	*Hyperglycaemia; taper if >3 weeks*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Painful thyroiditis	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*

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DISEASE 66 OF 300 | ENDOCRINE & METABOLIC

Obesity

Asian cut-offs are lower — BMI ≥23 overweight, ≥25 obese.

DEFINITION

Excess body fat that impairs health. Indian (Asian) criteria: BMI 23–24.9 kg/m² overweight, ≥25 obese; abdominal obesity with waist ≥90 cm in men, ≥80 cm in women. Associated with diabetes, hypertension, dyslipidaemia, fatty liver, sleep apnoea, osteoarthritis, PCOS and some cancers.

SYMPTOMS

- Weight gain, eating pattern, sugary drinks
- Physical activity, screen time, sleep
- Snoring, daytime sleepiness
- Joint pain, breathlessness
- Drugs: steroids, antipsychotics, insulin, sulfonylureas

SIGNS

- Weight, height, BMI, waist circumference
- BP
- Acanthosis nigricans, striae, hirsutism
- Cushingoid features, goitre
- Knee and back examination

DIAGNOSTIC TESTS

Test	Finding / purpose
Fasting glucose / HbA1c, lipids	Metabolic complications
LFT, USG abdomen	Fatty liver
TSH	Hypothyroidism
Cortisol screening	Only if Cushingoid features
Sleep study	Suspected sleep apnoea

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Diet	Deficit of 500–750 kcal/day; reduce refined carbs, sugar, fried foods; increase protein, vegetables	Long term
Activity	150–300 min/week moderate activity + resistance training 2 days/week	Long term
Behaviour	Food diary, regular meals, sleep 7–8 h, limit screen time	Long term
Drugs (BMI ≥27 with comorbidity or ≥30)	Semaglutide SC weekly 0.25 → 2.4 mg or tirzepatide 2.5 → 15 mg weekly; orlistat 120 mg TDS with meals	≥3 months, continue if ≥5% loss
Bariatric surgery (refer)	BMI ≥35 or ≥32.5 with comorbidity (Asian criteria)	—
Target	5–10% weight loss in 6 months improves BP, sugar and liver fat	—

REFER / RED FLAGS

- BMI ≥35 or ≥32.5 with comorbidity
- Suspected endocrine cause
- Sleep apnoea
- Childhood obesity with complications

GP PEARLS

★ *Waist circumference predicts metabolic risk better than BMI in South Asians.*

★ *Celebrate 5% weight loss — it is clinically meaningful.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Orlistat (lipase inhibitor)	120 mg PO with each fatty meal	Adjunct to lifestyle	*Oily stools; fat-soluble vitamins*
Semaglutide (GLP-1 RA)	0.25–1 mg SC weekly; oral 3–14 mg daily	Semaglutide (specialist)	*Nausea; avoid in pancreatitis, MTC*
Metformin (biguanide)	500 mg daily–1 g 12-hourly with meals	Prediabetes/PCOS	*GI upset; stop if eGFR <30, contrast, sepsis*
Telmisartan (ARB)	20–80 mg PO daily	Associated hypertension	*Hyperkalaemia; avoid in pregnancy*
Atorvastatin (statin)	10–80 mg PO daily (80 mg in ACS)	Dyslipidaemia	*Myalgia; check LFT; CYP3A4 interactions*
Cholecalciferol (vitamin D3)	60,000 IU weekly ×8 weeks, then monthly	Deficiency	*Hypercalcaemia if overused*

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DISEASE 67 OF 300 | ENDOCRINE & METABOLIC

Acute Gout

A red, hot, exquisitely painful big toe — treat the attack, then think urate.

DEFINITION

Acute inflammatory arthritis caused by monosodium urate crystal deposition, classically affecting the first metatarsophalangeal joint (podagra). Triggers: alcohol (beer), red meat, seafood, dehydration, diuretics, low-dose aspirin, surgery and starting urate-lowering therapy.

SYMPTOMS

- Sudden severe joint pain, often at night
- First MTP, ankle, knee, wrist
- Cannot bear the bedsheet touching
- Previous similar attacks
- Alcohol or dietary trigger

SIGNS

- Red, hot, swollen, very tender joint
- Shiny skin, later desquamation
- Low-grade fever
- Tophi (ears, elbows, fingers) in chronic gout
- Signs of hypertension, obesity, CKD

DIAGNOSTIC TESTS

Test	Finding / purpose
Joint aspiration (if available)	Needle-shaped negatively birefringent crystals; exclude septic arthritis
Serum uric acid	May be normal during an attack — repeat after 2–4 weeks
CBC, ESR/CRP	Inflammation; high WBC → think sepsis
Creatinine, glucose, lipids	Comorbidities
X-ray	Punched-out erosions in chronic gout

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Rest, ice	Rest and elevate joint; ice packs 20 min several times daily	Attack
NSAID (first line)	Naproxen 500 mg BD or etoricoxib 120 mg OD or indomethacin 50 mg TDS + PPI	5–7 days
Colchicine	1 mg stat then 0.5 mg after 1 h (day 1), then 0.5 mg BD–TDS (reduce in CKD; avoid with clarithromycin)	Until attack settles
NSAID/colchicine unsuitable	Prednisolone 30–35 mg OD	5 days
Single large joint	Intra-articular triamcinolone 40 mg (after excluding infection)	Single
Urate-lowering therapy already on	Continue allopurinol during attack — do not stop	—

REFER / RED FLAGS

- Fever with very high WBC — exclude septic arthritis
- Polyarticular attack
- Diagnostic doubt
- CKD limiting treatment choice

GP PEARLS

★ *Do not start allopurinol in the middle of an acute attack; start 2 weeks later with colchicine cover.*

★ *Uric acid is often normal during a flare — a normal value does not rule out gout.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Colchicine (anti-gout)	1 mg then 0.5 mg after 1 h; then 0.5 mg 12-hourly	Within 24 h of onset	*Diarrhoea; interactions; reduce in CKD*
Naproxen (NSAID)	250–500 mg PO 12-hourly after food	NSAID 500 mg BD	*GI bleed risk; lower CV risk than other NSAIDs*
Etoricoxib (COX-2 inhibitor)	60–90 mg PO once daily (120 mg for acute gout ≤8 days)	120 mg daily ≤8 days	*Avoid in IHD, stroke, uncontrolled BP*
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	NSAID contraindicated	*Hyperglycaemia; taper if >3 weeks*
Methylprednisolone	40–125 mg IV; 4–16 mg PO daily	Intra-articular (specialist)	*Hyperglycaemia; infection risk*
Allopurinol (xanthine oxidase inhibitor)	100 mg daily, increase to target urate	Do not start in acute attack	*HLA-B*5801 SJS risk; renal dosing*

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DISEASE 68 OF 300 | ENDOCRINE & METABOLIC

Chronic Gout & Hyperuricaemia

Treat to target uric acid <6 mg/dl — start low, go slow.

DEFINITION

Recurrent gout (≥2 attacks/year), tophi, gouty arthropathy or urate stones require lifelong urate-lowering therapy (ULT). Asymptomatic hyperuricaemia without gout, stones or tophi generally does not need drug therapy — lifestyle advice only.

SYMPTOMS

- Recurrent joint attacks
- Chronic joint pain and stiffness
- Lumps over joints, ear (tophi)
- Renal colic (urate stones)
- Alcohol, high-purine diet, diuretics

SIGNS

- Tophi
- Joint deformity
- BMI, BP
- Signs of CKD

DIAGNOSTIC TESTS

Test	Finding / purpose
Serum uric acid	Target <6 mg/dl (<5 if tophi)
Creatinine / eGFR	Dose adjustment
LFT, CBC	Before and during ULT
Glucose, lipids	Metabolic syndrome
USG KUB	Urate stones

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Lifestyle	Weight loss; avoid beer, spirits, sugary drinks, organ meats, shellfish; plenty of water	Lifelong
Allopurinol (first line)	Start 100 mg OD (50 mg if eGFR <30), increase by 100 mg every 2–4 weeks to target (usual 300–600 mg, max 900 mg)	Lifelong
Flare prophylaxis	Colchicine 0.5 mg OD–BD (or low-dose NSAID) when starting ULT	3–6 months
Allopurinol intolerance	Febuxostat 40 mg OD → 80 mg (caution in CV disease)	Lifelong
Drug review	Replace thiazide with losartan if hypertensive (uricosuric); statin, fenofibrate mildly lower urate	—
Asymptomatic hyperuricaemia	Lifestyle; no drug unless uric acid >13 (men) / >10 (women) or stones	—

REFER / RED FLAGS

- Allopurinol rash (stop — risk of SJS/DRESS)
- Tophaceous gout not at target
- CKD stage 4–5
- Recurrent urate stones

GP PEARLS

★ *Any rash on allopurinol: stop immediately — DRESS and SJS are fatal; risk is highest in the first 2 months.*

★ *Explain that flares may increase early in ULT — this is a sign the drug is working, not failing.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Allopurinol (xanthine oxidase inhibitor)	100 mg daily, increase to target urate	Start low, target urate <6	*HLA-B*5801 SJS risk; renal dosing*
Febuxostat (xanthine oxidase inhibitor)	40–80 mg PO daily	Allopurinol intolerance	*CV caution; LFT*
Colchicine (anti-gout)	1 mg then 0.5 mg after 1 h; then 0.5 mg 12-hourly	Prophylaxis when starting ULT	*Diarrhoea; interactions; reduce in CKD*
Losartan (ARB)	25–100 mg PO daily	Hypertension (uricosuric)	*Hyperkalaemia; uric acid lowering*
Fenofibrate (fibrate)	145–160 mg PO daily	Hypertriglyceridaemia	*Myopathy with statins; renal dosing*
Potassium citrate (urinary alkaliniser)	10–20 mEq PO 8-hourly	Uric acid stones	*Hyperkalaemia in CKD*

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DISEASE 69 OF 300 | ENDOCRINE & METABOLIC

Osteoporosis

A fracture from standing height is osteoporosis until proven otherwise.

DEFINITION

Systemic skeletal disease with low bone mass and micro-architectural deterioration, increasing fracture risk. Diagnosed by DXA T-score ≤−2.5 at hip or spine, or a fragility fracture (hip, vertebra, wrist). Risk factors: postmenopausal women, age, low BMI, steroids, smoking, alcohol, early menopause, hyperthyroidism, vitamin D deficiency, rheumatoid arthritis.

SYMPTOMS

- Silent until fracture
- Back pain after minor strain (vertebral fracture)
- Loss of height, stooped posture
- Wrist or hip fracture after fall from standing
- Long-term steroid use

SIGNS

- Height loss >3 cm
- Thoracic kyphosis
- Vertebral tenderness
- Low BMI
- Fall risk: gait, vision, postural BP

DIAGNOSTIC TESTS

Test	Finding / purpose
DXA scan (hip and spine)	T-score ≤−2.5 = osteoporosis; −1 to −2.5 = osteopenia
FRAX score	10-year fracture probability
Calcium, phosphate, ALP, 25-OH vitamin D, creatinine	Secondary causes, before bisphosphonate
TSH, CBC, LFT; testosterone in men	Secondary causes
X-ray spine	Vertebral fractures

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Calcium + vitamin D	Calcium 500–1000 mg/day (diet + supplement) + cholecalciferol 1000–2000 IU/day (or 60,000 IU monthly)	Long term
Bisphosphonate (first line)	Alendronate 70 mg once weekly or risedronate 35 mg weekly — empty stomach, full glass of water, stay upright 30 min	5 years, then review
Intolerant / poor adherence	Zoledronic acid 5 mg IV once yearly (eGFR >35, vitamin D replete)	3 years
High risk / recurrent fracture (refer)	Denosumab 60 mg SC 6-monthly; teriparatide 20 µg SC daily	As advised
Lifestyle	Weight-bearing exercise, fall prevention, stop smoking, limit alcohol	Lifelong
Acute vertebral fracture pain	Paracetamol, short course tramadol; calcitonin nasal spray 200 IU OD	2–4 weeks

REFER / RED FLAGS

- Hip fracture
- Osteoporosis in men or premenopausal women
- Fracture despite treatment
- Hypercalcaemia or abnormal ALP

GP PEARLS

★ *Correct vitamin D deficiency before giving zoledronic acid — otherwise hypocalcaemia follows.*

★ *Never stop denosumab abruptly — rebound vertebral fractures occur.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Alendronate (bisphosphonate)	70 mg PO weekly, empty stomach, upright 30 min	70 mg weekly	*Oesophagitis; osteonecrosis rare*
Calcium carbonate (supplement)	500–1000 mg elemental calcium daily in divided doses	500–1000 mg/day	*Constipation; separate from iron/thyroxine*
Cholecalciferol (vitamin D3)	60,000 IU weekly ×8 weeks, then monthly	Replete vitamin D	*Hypercalcaemia if overused*
Teriparatide (anabolic)	20 µg SC daily ≤2 years	Severe/vertebral fractures (specialist)	*Specialist use; hypercalcaemia*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fracture pain	*Hepatotoxic in overdose; check combination products*

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DISEASE 70 OF 300 | ENDOCRINE & METABOLIC

Vitamin D Deficiency

Very common in sunny India — replace when symptomatic or at risk.

DEFINITION

Serum 25-hydroxyvitamin D <20 ng/ml (deficiency) or 20–30 ng/ml (insufficiency). Despite abundant sunshine, deficiency is widespread due to indoor living, covered clothing, darker skin, pollution and low dietary intake. Severe deficiency causes rickets in children and osteomalacia in adults.

SYMPTOMS

- Diffuse bone pain, aching muscles
- Proximal weakness, difficulty climbing stairs
- Fatigue
- Bowed legs, delayed walking in children (rickets)
- Often asymptomatic

SIGNS

- Bone tenderness (tibia, sternum)
- Proximal myopathy, waddling gait
- Rickets: wrist widening, rosary, bow legs, delayed fontanelle closure
- Chvostek or Trousseau sign (hypocalcaemia)

DIAGNOSTIC TESTS

Test	Finding / purpose
25-OH vitamin D	Diagnostic (not needed for routine screening of healthy people)
Calcium, phosphate, ALP	Low/normal Ca, low PO_4, high ALP in osteomalacia/rickets
PTH	Secondary hyperparathyroidism
Creatinine, LFT	Renal and hepatic causes
X-ray wrist (child)	Cupping, fraying of metaphyses (rickets)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Adult — repletion	Cholecalciferol 60,000 IU orally once weekly with milk/fatty meal	8 weeks
Adult — maintenance	Cholecalciferol 60,000 IU monthly or 1000–2000 IU daily	Long term
Rickets (child)	Cholecalciferol 2000–6000 IU daily for 12 weeks (or 60,000 IU weekly × 6 weeks >1 y) + calcium 500 mg/day	12 weeks
Calcium	Calcium carbonate 500 mg BD with meals if dietary intake low	With vitamin D
Lifestyle	Sun exposure to arms and face 15–30 min, 10 am–3 pm, several days a week	Ongoing
Recheck	25-OH D and calcium after 3 months of repletion	—

REFER / RED FLAGS

- Hypercalcaemia on treatment
- Rickets not responding (vitamin D-resistant/ hypophosphataemic)
- Malabsorption, CKD
- Tetany or seizures (hypocalcaemia)

GP PEARLS

★ *Avoid stoss therapy of 6 lakh IU — it is no better and risks hypercalcaemia.*

★ *Vitamin D toxicity is a real and increasing problem from unsupervised injections.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Cholecalciferol (vitamin D3)	60,000 IU weekly ×8 weeks, then monthly	60,000 IU weekly ×8	*Hypercalcaemia if overused*
Calcium carbonate (supplement)	500–1000 mg elemental calcium daily in divided doses	Ensure calcium intake	*Constipation; separate from iron/thyroxine*
Multivitamin–mineral supplement	1 tablet PO daily	Malabsorption	*Not a substitute for diet*
Ferrous sulphate/ascorbate (oral iron)	60–100 mg elemental iron daily or alternate days	Coexisting anaemia	*Black stools, constipation*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Bone pain	*Hepatotoxic in overdose; check combination products*

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DISEASE 71 OF 300 | ENDOCRINE & METABOLIC

Corticosteroid Therapy & Tapering

More than 3 weeks of steroids? Taper — the adrenals are asleep.

DEFINITION

Systemic glucocorticoids (prednisolone, methylprednisolone, dexamethasone) suppress the HPA axis when used above physiological doses (>5 mg prednisolone) for more than 3 weeks. Abrupt withdrawal may cause adrenal crisis. Equivalent doses: prednisolone 5 mg = methylprednisolone 4 mg = dexamethasone 0.75 mg = hydrocortisone 20 mg.

SYMPTOMS

- On steroids: weight gain, mood change, insomnia, dyspepsia
- Withdrawal: fatigue, joint pain, nausea, low mood
- Adrenal crisis: vomiting, abdominal pain, collapse
- Hyperglycaemia, infections
- Unsupervised use ("tonics", local injections)

SIGNS

- Cushingoid features: moon face, buffalo hump, striae
- Hypertension, oedema
- Proximal myopathy
- Hypotension, dehydration (crisis)
- Cataract, skin thinning

DIAGNOSTIC TESTS

Test	Finding / purpose
Glucose, BP	Monitor during therapy
Electrolytes	Hyponatraemia, hyperkalaemia in adrenal insufficiency
8 am cortisol	Before stopping after long-term use (<3 µg/dl suggests suppression)
DXA	If >3 months of therapy

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Short course <3 weeks	Stop without taper (e.g. prednisolone 40 mg × 5 days for asthma)	—
Taper from high dose	Reduce prednisolone by 5–10 mg every 1–2 weeks down to 20 mg	Weeks
20 mg → 5 mg	Reduce by 2.5 mg every 1–2 weeks	Weeks
Below 5 mg (physiological)	Reduce by 1 mg every 2–4 weeks; check 8 am cortisol	Weeks–months
Protection	PPI if with NSAID or ulcer history; calcium + vitamin D; bisphosphonate if >3 months at ≥7.5 mg	During therapy
Sick-day rules	Double the dose during fever or illness; IM hydrocortisone if vomiting	During illness
Adrenal crisis	Hydrocortisone 100 mg IV/IM stat, then 50 mg 6-hourly + NS 1 l over 1 h	Refer

REFER / RED FLAGS

- Adrenal crisis: hypotension, vomiting, hyponatraemia
- Uncontrolled diabetes or hypertension on steroids
- Steroid psychosis
- Suspected steroid abuse with Cushing's

GP PEARLS

★ *Ask every patient with unexplained Cushingoid features about "pain tablets" or ayurvedic powders — many contain steroids.*

★ *Give steroids in the morning to mimic the natural rhythm and reduce insomnia.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	Common oral steroid	*Hyperglycaemia; taper if >3 weeks*
Deflazacort (corticosteroid)	6–30 mg PO daily (6 mg ≈ 5 mg prednisolone)	Equivalent alternative	*Steroid side effects; taper after long use*
Pantoprazole (PPI)	40 mg PO before breakfast; 40–80 mg IV	GI protection when indicated	*Long-term: B12, Mg deficiency, fractures*
Calcium carbonate (supplement)	500–1000 mg elemental calcium daily in divided doses	Bone protection	*Constipation; separate from iron/thyroxine*
Cholecalciferol (vitamin D3)	60,000 IU weekly ×8 weeks, then monthly	Bone protection	*Hypercalcaemia if overused*
Hydrocortisone (corticosteroid)	100–200 mg IV stat, then as needed	Stress dosing in illness	*Hyperglycaemia; fluid retention*

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DISEASE 72 OF 300 | ENDOCRINE & METABOLIC

Hyponatraemia

Slow to develop, slow to correct — no more than 8–10 mmol/l in 24 h.

DEFINITION

Serum sodium <135 mmol/l (severe <125). Common in the elderly. Causes: thiazides, SSRIs, carbamazepine, SIADH (pneumonia, CNS disease, malignancy), vomiting/diarrhoea, heart failure, cirrhosis, hypothyroidism, adrenal insufficiency and excess water intake. Rapid correction of chronic hyponatraemia causes osmotic demyelination.

SYMPTOMS

- Mild: nausea, malaise, headache
- Confusion, falls, gait unsteadiness
- Lethargy, drowsiness
- Seizures, coma (severe/acute)
- Drug history: thiazide, SSRI, carbamazepine

SIGNS

- Volume status: dehydrated, euvolaemic or oedematous
- Altered sensorium
- Signs of heart failure, cirrhosis
- Hypothyroid features
- Postural hypotension

DIAGNOSTIC TESTS

Test	Finding / purpose
Serum sodium, potassium, glucose, urea, creatinine	Confirm and assess
Serum osmolality	<275 = true hypotonic hyponatraemia
Urine osmolality and sodium	Urine Na >30 with euvolaemia — SIADH or diuretic
TSH, 8 am cortisol	Exclude before diagnosing SIADH
Chest X-ray, CT head	Causes of SIADH

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Mild, asymptomatic	Stop offending drug (thiazide, SSRI); treat cause	—
Hypovolaemic	0.9% saline IV (hospital) or ORS orally	Until euvolaemic
SIADH	Fluid restriction 800–1000 ml/day; salt tablets 1–2 g TDS; tolvaptan (specialist)	Until Na >130
Hypervolaemic (HF, cirrhosis)	Fluid restriction, loop diuretic, treat cause	Ongoing
Severe symptoms (seizures, coma)	3% saline 150 ml IV over 20 min, repeat up to 3 times (target rise 5 mmol/l) — hospital	Immediate
Correction limit	Do not exceed 8–10 mmol/l rise in 24 h (8 in high-risk: alcohol, malnutrition, hypokalaemia)	—

REFER / RED FLAGS

- Na <125 or any neurological symptoms
- Acute onset (<48 h)
- Unknown cause
- Hypotension

GP PEARLS

★ *An elderly woman newly started on a thiazide who becomes confused — check sodium first.*

★ *Over-rapid correction can cause irreversible paralysis days later (osmotic demyelination).*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Sodium chloride tablets / fluid restriction	NaCl 1 g PO 8-hourly (SIADH: restrict fluid)	Salt tablets/fluid restriction	*Correct Na ≤8–10 mmol/L/day*
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Hypovolaemic hyponatraemia	*Fluid overload in HF/CKD*
Furosemide (loop diuretic)	20–40 mg PO daily; 40–80 mg IV in LVF	Hypervolaemic states (specialist)	*Hypokalaemia, dehydration, gout*
Sertraline (SSRI)	25–50 mg PO daily (max 200 mg)	SSRI-induced — review	*GI upset; safer in IHD*

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DISEASE 73 OF 300 | ENDOCRINE & METABOLIC

Potassium Disorders (Hypo- & Hyperkalaemia)

Both kill through the heart — get an ECG.

DEFINITION

Hypokalaemia (K^+ <3.5 mmol/l): diuretics, vomiting, diarrhoea, poor intake, hyperaldosteronism, insulin/salbutamol therapy. Hyperkalaemia (K^+ >5.5; severe ≥6.5): CKD, AKI, ACEi/ARB, spironolactone, NSAIDs, trimethoprim, DKA, haemolysed sample (pseudohyperkalaemia).

SYMPTOMS

- Hypo: muscle weakness, cramps, constipation, palpitations
- Hypo: polyuria
- Hyper: often none; weakness, paraesthesia
- Palpitations, syncope
- Drug and renal history

SIGNS

- Hypo: hypotonia, reduced reflexes, ileus
- Hyper: flaccid weakness
- Arrhythmias
- Signs of dehydration or CKD

DIAGNOSTIC TESTS

Test	Finding / purpose
Repeat K^+ (non-haemolysed)	Exclude spurious result
ECG	Hypo: flat T, U waves, ST depression. Hyper: tall peaked T, wide QRS, loss of P, sine wave
Creatinine, glucose, Mg^{2+}, ABG	Cause; correct magnesium in hypokalaemia
Urine K^+	>20 mmol/l with hypokalaemia — renal loss

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Hypokalaemia mild (3.0–3.4)	Oral potassium chloride 20–40 mmol/day in divided doses (KCl syrup 15 ml = 20 mmol, diluted, after food); bananas, coconut water	3–5 days, recheck
Hypokalaemia <3.0 or ECG changes	IV KCl 10 mmol/h in NS (max 40 mmol/l peripherally) — hospital, cardiac monitoring	Until >3.5
Diuretic-induced	Add spironolactone 25 mg or amiloride 5 mg; correct Mg^{2+}	Ongoing
Hyperkalaemia 5.5–5.9	Stop K^+ supplements, ACEi/ARB, spironolactone, NSAIDs; low-K diet; recheck	24–72 h
Hyperkalaemia ≥6.5 or ECG changes	Calcium gluconate 10% 10–30 ml IV over 5–10 min; insulin 10 U regular + 25 g dextrose IV; salbutamol nebulised 10–20 mg — refer	Immediate
Remove K^+	Sodium zirconium cyclosilicate 10 g TDS or calcium polystyrene sulphonate 15 g TDS; dialysis if refractory	As advised

REFER / RED FLAGS

- K^+ <2.5 or >6.0
- Any ECG change
- AKI or oliguria
- Muscle paralysis

GP PEARLS

★ *Hypokalaemia will not correct until magnesium is corrected.*

★ *A high potassium from a sample left overnight is often haemolysis — repeat before panicking, but do an ECG.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

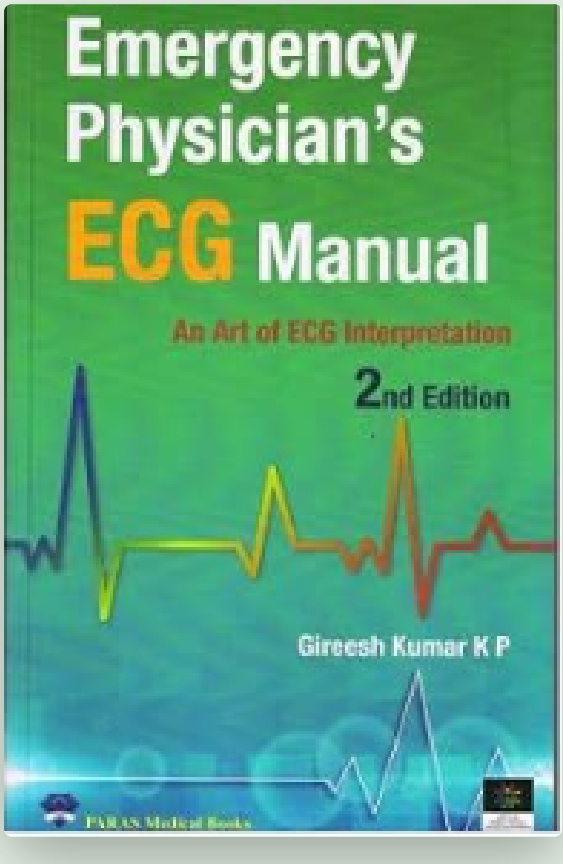
Drug (class)	Adult dose (usual)	Indication here	Key caution
Potassium chloride (supplement)	Syrup 15–30 ml (20–40 mEq) PO 8–12-hourly	Oral potassium replacement	*Never IV bolus; GI irritation*
Spironolactone (aldosterone antagonist)	25–100 mg PO daily (up to 400 mg in ascites)	K-sparing in hypokalaemia	*Hyperkalaemia, gynaecomastia*
Calcium gluconate 10%	10 ml IV over 10 min (hyperkalaemia, cardiac protection)	Hyperkalaemia with ECG changes	*Not with ceftriaxone in neonates; extravasation*
Insulin–dextrose (hyperkalaemia)	10 U regular insulin + 25 g dextrose IV	Shift K into cells	*Check glucose hourly*
Salbutamol (SABA)	MDI 100 µg 2–4 puffs; neb 2.5–5 mg	Neb 10–20 mg shifts K	*Tremor, hypokalaemia, tachycardia*
Potassium binder (calcium polystyrene sulfonate)	15 g PO 6–8-hourly	Remove potassium	*Constipation; slow onset*

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DISEASE 74 OF 300 | GASTROINTESTINAL & LIVER

Dyspepsia

Epigastric discomfort — test for H. pylori, treat with a PPI, look for alarm features.

DEFINITION

Persistent or recurrent upper abdominal pain, burning, early satiety or post-prandial fullness. Most cases are functional dyspepsia; others are due to peptic ulcer, GERD, NSAID gastropathy, H. pylori gastritis, gallstones or (rarely) gastric cancer. Alarm features mandate endoscopy.

SYMPTOMS

- Epigastric pain or burning
- Bloating, early satiety, fullness after meals
- Nausea, belching
- Relation to food, NSAIDs, alcohol, smoking, stress
- Alarm: weight loss, dysphagia, vomiting, bleeding, age >50 new onset

SIGNS

- Mild epigastric tenderness
- Pallor (anaemia)
- Epigastric mass, lymph node (Virchow's)
- Jaundice
- Usually normal

DIAGNOSTIC TESTS

Test	Finding / purpose
H. pylori test	Stool antigen or urea breath test (off PPI 2 weeks, antibiotics 4 weeks)
CBC	Anaemia — alarm feature
Upper GI endoscopy	Alarm features, age >50 with new symptoms, failure of therapy
USG abdomen	Gallstones if pain is biliary in type
LFT, amylase	If biliary or pancreatic pain suspected

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Lifestyle	Small regular meals, avoid spicy/fatty food late at night, stop smoking and alcohol, reduce tea/coffee	Ongoing
PPI	Pantoprazole 40 mg OD or omeprazole 20 mg OD, 30–60 min before breakfast	4–8 weeks
H. pylori positive	Eradication therapy (see Peptic ulcer)	14 days
Fullness, bloating	Domperidone 10 mg TDS before meals (max 7 days) or itopride 50 mg TDS	1–2 weeks
Symptomatic relief	Antacid gel (Mg/Al hydroxide + simethicone) 10 ml TDS after meals and HS	SOS
Functional dyspepsia not responding	Amitriptyline 10–25 mg HS	8–12 weeks

REFER / RED FLAGS

- Dysphagia, persistent vomiting, GI bleeding
- Weight loss, anaemia, epigastric mass
- Age >50 with new symptoms
- No response to 8 weeks of PPI

GP PEARLS

★ *Take PPIs before food — taken after meals they lose much of their effect.*

★ *Separate antacids from other drugs by 2 hours.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Pantoprazole (PPI)	40 mg PO before breakfast; 40–80 mg IV	4–8 week trial	*Long-term: B12, Mg deficiency, fractures*
Antacid (Al/Mg hydroxide ± simethicone)	10–20 ml PO after meals and at bedtime	Symptomatic relief	*Separate from other drugs by 2 h*
Domperidone (antiemetic/prokinetic)	10 mg PO 8-hourly, ≤7 days	Dysmotility-type dyspepsia	*QT prolongation; avoid with macrolides*
Famotidine (H2 blocker)	20–40 mg PO 12-hourly	Alternative to PPI	*Reduce dose in CKD*
Sucralfate (mucosal protectant)	1 g PO 6-hourly before food	Mucosal protection	*Constipation; binds other drugs*

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DISEASE 75 OF 300 | GASTROINTESTINAL & LIVER

Gastro-oesophageal Reflux Disease

Heartburn and regurgitation — PPI plus lifestyle; endoscopy for alarm features.

DEFINITION

Reflux of gastric contents into the oesophagus causing troublesome symptoms or complications (erosive oesophagitis, stricture, Barrett's oesophagus). Risk factors: obesity, hiatus hernia, pregnancy, smoking, alcohol, late heavy meals, drugs (calcium channel blockers, nitrates, theophylline).

SYMPTOMS

- Retrosternal burning (heartburn) after meals or lying down
- Sour regurgitation, water brash
- Chronic cough, hoarseness, throat clearing
- Nocturnal choking, asthma worsening
- Alarm: dysphagia, odynophagia, weight loss, bleeding

SIGNS

- Usually normal
- Obesity
- Dental erosions
- Pharyngeal redness
- Pallor (alarm)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis + PPI trial	Typical symptoms without alarm features
Upper GI endoscopy	Alarm features, age >50, refractory symptoms, long-standing (Barrett's screening)
24-h pH-impedance monitoring	Refractory symptoms, before surgery
ECG	If chest pain atypical — exclude cardiac cause

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Lifestyle	Weight loss, raise head end of bed 15–20 cm, no meals 3 h before bed, stop smoking, avoid triggers	Ongoing
PPI	Pantoprazole 40 mg or rabeprazole 20 mg or esomeprazole 40 mg OD before breakfast	8 weeks
Persistent / nocturnal symptoms	PPI BD (before breakfast and dinner) or add famotidine 20–40 mg HS	8 weeks
Rapid relief	Alginate-antacid suspension (sodium alginate) 10–20 ml after meals and HS	SOS
Step down	Lowest effective dose or on-demand PPI once symptoms controlled	Long term
Pregnancy	Antacids/alginate first; ranitidine is withdrawn — famotidine 20 mg BD; PPIs if needed	As needed

REFER / RED FLAGS

- Dysphagia, odynophagia, weight loss, anaemia, GI bleed
- Refractory symptoms despite BD PPI
- Barrett's oesophagus on endoscopy
- Atypical chest pain not excluded as cardiac

GP PEARLS

★ *Long-term PPI users need review: lowest dose, periodic attempts to stop; watch B12, magnesium and fracture risk.*

★ *Heartburn with exertion is angina until proven otherwise.*

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DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Pantoprazole (PPI)	40 mg PO before breakfast; 40–80 mg IV	Daily before breakfast	*Long-term: B12, Mg deficiency, fractures*
Rabeprazole (PPI)	20 mg PO before breakfast	Alternative PPI	*Long-term use risks as for PPIs*
Sodium alginate suspension	10–20 ml PO after meals and at bedtime	Post-meal and bedtime	*Sodium content in heart failure*
Domperidone (antiemetic/prokinetic)	10 mg PO 8-hourly, ≤7 days	Regurgitation (short)	*QT prolongation; avoid with macrolides*
Famotidine (H2 blocker)	20–40 mg PO 12-hourly	Night symptoms	*Reduce dose in CKD*
Antacid (Al/Mg hydroxide ± simethicone)	10–20 ml PO after meals and at bedtime	On-demand relief	*Separate from other drugs by 2 h*

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DISEASE 76 OF 300 | GASTROINTESTINAL & LIVER

Peptic Ulcer & H. pylori

Eradicate H. pylori and stop NSAIDs — most ulcers then heal for good.

DEFINITION

Breach in the gastric or duodenal mucosa extending through the muscularis mucosae. The two main causes are Helicobacter pylori infection (very prevalent in India) and NSAIDs/aspirin. Complications: bleeding, perforation and gastric outlet obstruction. Gastric ulcers need biopsy to exclude malignancy.

SYMPTOMS

- Epigastric burning or gnawing pain
- Duodenal: relieved by food, wakes at night
- Gastric: worse with food, weight loss
- Nausea, bloating
- Melaena, haematemesis (bleeding)

SIGNS

- Epigastric tenderness
- Pallor
- Board-like rigidity (perforation)
- Succussion splash (outlet obstruction)
- Tachycardia, hypotension (bleeding)

DIAGNOSTIC TESTS

Test	Finding / purpose
Upper GI endoscopy	Confirms ulcer; biopsy gastric ulcers; rapid urease test
H. pylori stool antigen / urea breath test	Non-invasive diagnosis and test of cure (4 weeks after therapy)
CBC, iron studies	Anaemia
Erect CXR	Free gas under diaphragm in perforation

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
H. pylori triple therapy	PPI (pantoprazole 40 mg BD) + amoxicillin 1 g BD + clarithromycin 500 mg BD	14 days
Bismuth quadruple (preferred where clarithromycin resistance high)	PPI BD + colloidal bismuth 120 mg QID (or 240 mg BD) + tetracycline 500 mg QID + metronidazole 400 mg TDS	14 days
Penicillin allergy	PPI + clarithromycin 500 mg BD + metronidazole 400 mg BD (or bismuth quadruple)	14 days
Ulcer healing	Continue PPI OD after eradication: duodenal 4 weeks, gastric 8 weeks	4–8 weeks
NSAID-related	Stop NSAID; if essential, use with PPI; prefer paracetamol	—
Test of cure	Urea breath test or stool antigen ≥4 weeks after therapy (off PPI 2 weeks)	—

REFER / RED FLAGS

- Haematemesis, melaena
- Sudden severe abdominal pain (perforation)
- Persistent vomiting
- Gastric ulcer for repeat endoscopy at 8 weeks

GP PEARLS

★ *A gastric ulcer is cancer until biopsies prove otherwise.*

★ *Eradication failures are common — use bismuth quadruple as second line, not the same regimen again.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Pantoprazole (PPI)	40 mg PO before breakfast; 40–80 mg IV	Healing and triple therapy	*Long-term: B12, Mg deficiency, fractures*
Clarithromycin (macrolide)	500 mg PO 12-hourly	H. pylori regimen	*CYP3A4 interactions (statins); QT*
Amoxicillin (penicillin)	500 mg PO 8-hourly (child 15–25 mg/kg 8-hourly)	H. pylori regimen	*Penicillin allergy; rash in EBV*
Metronidazole (nitroimidazole)	400 mg PO 8-hourly (child 7.5 mg/kg)	Clarithromycin alternative	*No alcohol; metallic taste*
Sucralfate (mucosal protectant)	1 g PO 6-hourly before food	Adjunct healing	*Constipation; binds other drugs*
Antacid (Al/Mg hydroxide ± simethicone)	10–20 ml PO after meals and at bedtime	Symptom relief	*Separate from other drugs by 2 h*

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DISEASE 77 OF 300 | GASTROINTESTINAL & LIVER

Nausea & Vomiting (Adult)

Find the cause, rehydrate, choose the right antiemetic.

DEFINITION

Vomiting is a symptom with causes ranging from gastroenteritis and drugs to surgical emergencies, raised intracranial pressure, DKA, myocardial infarction, pregnancy, vestibular disorders, uraemia and hypercalcaemia. Assess hydration and look for red flags before prescribing an antiemetic.

SYMPTOMS

- Duration, frequency, content (bile, blood, faeculent)
- Abdominal pain, distension, constipation (obstruction)
- Headache, visual change (raised ICP)
- Vertigo, tinnitus (vestibular)
- Missed periods, diabetes, medications

SIGNS

- Dehydration: dry tongue, tachycardia, postural drop
- Abdominal tenderness, distension, bowel sounds
- Hernial orifices
- Neck stiffness, papilloedema
- Jaundice, ketotic breath

DIAGNOSTIC TESTS

Test	Finding / purpose
Capillary glucose, urine ketones	DKA, starvation
Urine pregnancy test	Women of reproductive age
Electrolytes, creatinine	Dehydration, hypokalaemia, uraemia
ECG	Epigastric pain with vomiting in older adults
X-ray abdomen erect, USG	Obstruction, gallstones

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Hydration	ORS small frequent sips 200 ml after each vomit; IV RL/NS if unable to keep fluids down	Until settled
First-line antiemetic	Ondansetron 4–8 mg PO/IV TDS (child 0.15 mg/kg)	1–3 days
Gastric stasis, dyspepsia	Domperidone 10 mg TDS before meals (max 30 mg/day, 7 days) or metoclopramide 10 mg TDS (max 5 days; avoid <20 y)	1–5 days
Vertigo / motion sickness	Promethazine 25 mg TDS or prochlorperazine 5–10 mg TDS	1–3 days
Pregnancy	Doxylamine 10 mg + pyridoxine 10 mg 1–2 tabs HS	As needed
With acid symptoms	Pantoprazole 40 mg IV/PO OD	3–5 days

REFER / RED FLAGS

- Bilious or faeculent vomiting, abdominal distension (obstruction)
- Haematemesis, severe abdominal pain
- Severe dehydration, altered sensorium
- Headache with vomiting (raised ICP)

GP PEARLS

★ *Metoclopramide can cause acute dystonia in young people — treat with promethazine or benztropine.*

★ *Ondansetron causes constipation and prolongs QT — avoid with other QT drugs.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Gastroenteritis/chemo	*QT; constipation*
Domperidone (antiemetic/prokinetic)	10 mg PO 8-hourly, ≤7 days	Short course	*QT prolongation; avoid with macrolides*
Metoclopramide (antiemetic)	10 mg PO/IV 8-hourly, ≤5 days	Adults only, ≤5 days	*Extrapyramidal effects; avoid in children*
Prochlorperazine (antiemetic)	5 mg PO 8-hourly; 12.5 mg IM	Vertigo-related vomiting	*Dystonia; sedation*
Oral rehydration salts (low osmolarity)	200–400 ml after each loose stool; 75 ml/kg over 4 h for some dehydration	Rehydration	*Use clean water; correct mixing*
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	IV fluids if dehydrated	*Fluid overload in HF/CKD*

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DISEASE 78 OF 300 | GASTROINTESTINAL & LIVER

Acute Gastroenteritis (Adult)

Oral rehydration solves most; antibiotics only for dysentery, cholera or sepsis.

DEFINITION

Acute onset of diarrhoea (≥3 loose stools/day for <14 days), often with vomiting, caused by viruses (norovirus, rotavirus), bacteria (E. coli, Shigella, Salmonella, Campylobacter, Vibrio cholerae) or protozoa. Dehydration is the main danger, especially in the elderly.

SYMPTOMS

- Loose watery stools
- Vomiting, nausea
- Abdominal cramps
- Fever, blood or mucus in stools (dysentery)
- Thirst, dizziness, reduced urine

SIGNS

- Dehydration: sunken eyes, dry tongue, reduced skin turgor
- Tachycardia, postural hypotension
- Mild diffuse tenderness, hyperactive bowel sounds
- Fever
- Altered sensorium (severe)

DIAGNOSTIC TESTS

Test	Finding / purpose
None for mild, short illness	Clinical diagnosis
Electrolytes, creatinine	Moderate–severe dehydration, elderly
Stool routine (pus cells, RBC, ova/cysts)	Bloody diarrhoea, >7 days
Stool culture, hanging drop	Dysentery, suspected cholera, outbreak
CBC	Sepsis

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Rehydration (cornerstone)	Low-osmolarity ORS 200–400 ml after each loose stool; IV RL if severe dehydration or persistent vomiting	Until diarrhoea stops
Diet	Continue normal light diet: rice, curd, banana, khichdi; avoid fatty food and milk if worsens	Throughout
Antiemetic	Ondansetron 4 mg TDS SOS	1–2 days
Watery diarrhoea (no fever/blood)	Racecadotril 100 mg TDS or loperamide 4 mg then 2 mg after each stool (max 16 mg/day); not in dysentery	1–3 days
Dysentery / severe with fever	Azithromycin 500 mg OD × 3 days or ciprofloxacin 500 mg BD × 3 days (resistance common)	3 days
Cholera	Doxycycline 300 mg single dose or azithromycin 1 g single dose	Single
Probiotic	Saccharomyces boulardii 250 mg BD	5 days

REFER / RED FLAGS

- Severe dehydration, shock, oliguria
- Persistent vomiting, unable to take ORS
- Bloody diarrhoea with high fever or elderly
- Diarrhoea >14 days

GP PEARLS

★ *ORS works because glucose drives sodium and water absorption — homemade sugar-salt solution is a fallback, not a substitute.*

★ *Never give loperamide in bloody diarrhoea or to children.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Oral rehydration salts (low osmolarity)	200–400 ml after each loose stool; 75 ml/kg over 4 h for some dehydration	Mainstay of treatment	*Use clean water; correct mixing*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Vomiting	*QT; constipation*
Racecadotril (antisecretory)	100 mg PO 8-hourly (child 1.5 mg/kg)	Adjunct antisecretory	*Adjunct only; not in bloody diarrhoea*
Loperamide (antimotility)	4 mg then 2 mg after each loose stool; max 16 mg/day	Non-bloody diarrhoea (adults)	*Avoid in bloody diarrhoea, children*
Ciprofloxacin (fluoroquinolone)	500 mg PO 12-hourly	Dysentery/cholera	*Tendinopathy, QT, avoid in pregnancy/children*

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DISEASE 79 OF 300 | GASTROINTESTINAL & LIVER

Food Poisoning

Several people ill after the same meal — vomiting within hours means a toxin.

DEFINITION

Illness from ingestion of food contaminated with pre-formed toxins (Staphylococcus aureus, Bacillus cereus — fried rice; onset 1–6 h, vomiting predominant), bacteria (Salmonella, Campylobacter, E. coli; onset 12–72 h, diarrhoea and fever), or chemicals. Usually self-limiting in 24–48 h.

SYMPTOMS

- Abrupt vomiting and cramps 1–6 h after a meal (toxin)
- Diarrhoea and fever after 12–72 h (infection)
- Others who shared the meal ill
- Weakness, dizziness
- Neurological symptoms: diplopia, dysphagia (botulism — rare)

SIGNS

- Dehydration
- Mild abdominal tenderness
- Fever (invasive bacteria)
- Hypotension (severe)
- Cranial nerve palsies (botulism)

DIAGNOSTIC TESTS

Test	Finding / purpose
Usually none	Clinical
Electrolytes, creatinine	Significant dehydration
Stool culture	Bloody stools, outbreak investigation
Notify	Outbreaks to the district surveillance unit (IDSP)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Rehydration	ORS frequently in small sips; IV RL if unable to drink or severe	Until settled
Vomiting	Ondansetron 4–8 mg PO/IV (child 0.15 mg/kg)	SOS, 1–2 days
Cramps	Drotaverine 80 mg TDS or hyoscine butylbromide 10–20 mg TDS	1–2 days
Antibiotics	Usually not needed; azithromycin 500 mg OD × 3 days if high fever, bloody stools or immunocompromised	3 days
Diet	Bland diet once vomiting settles	—

REFER / RED FLAGS

- Shock, severe dehydration
- Bloody diarrhoea with high fever
- Neurological symptoms (botulism, organophosphate contamination)
- Elderly, pregnant, immunocompromised

GP PEARLS

★ *Vomiting within a few hours of a wedding meal is toxin-mediated — antibiotics are useless.*

★ *Ask about mushrooms and pesticide contamination when symptoms are atypical.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Oral rehydration salts (low osmolarity)	200–400 ml after each loose stool; 75 ml/kg over 4 h for some dehydration	Rehydration	*Use clean water; correct mixing*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Vomiting	*QT; constipation*
Hyoscine butylbromide (antispasmodic)	10–20 mg PO/IV 8-hourly	Abdominal cramps	*Tachycardia; glaucoma, urinary retention*
Ciprofloxacin (fluoroquinolone)	500 mg PO 12-hourly	Invasive bacterial diarrhoea	*Tendinopathy, QT, avoid in pregnancy/children*
Probiotic (Saccharomyces boulardii)	250 mg PO 12-hourly	Adjunct	*Avoid in severely immunocompromised*
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Severe dehydration	*Fluid overload in HF/CKD*

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DISEASE 80 OF 300 | GASTROINTESTINAL & LIVER

Amoebiasis & Giardiasis

Treat the tissue phase and then clear the cysts.

DEFINITION

Intestinal protozoal infections acquired through faecally contaminated food and water. Entamoeba histolytica causes amoebic colitis (bloody mucoid stools) and liver abscess. Giardia lamblia causes watery, foul-smelling diarrhoea, bloating and malabsorption, especially in children and travellers.

SYMPTOMS

- Amoebiasis: mucoid stools with blood, tenesmus, lower abdominal pain
- Giardiasis: foul, greasy, frothy stools
- Bloating, flatulence, sulphurous belching
- Weight loss, fatigue (chronic)
- Right upper quadrant pain (liver abscess)

SIGNS

- Tender colon, especially caecum/sigmoid
- Mild dehydration
- Weight loss in chronic giardiasis
- Tender hepatomegaly (liver abscess)
- Usually afebrile in colitis

DIAGNOSTIC TESTS

Test	Finding / purpose
Stool microscopy (3 samples)	Trophozoites with ingested RBCs (E. histolytica); Giardia cysts/trophozoites
Stool antigen tests	More sensitive for both
CBC	Anaemia, leucocytosis in invasive disease
USG abdomen	Liver abscess if RUQ pain or fever

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Amoebic colitis	Metronidazole 400–800 mg TDS (child 30–35 mg/kg/day in 3 doses) or tinidazole 2 g OD × 3 days	7–10 days
Then luminal agent	Diloxanide furoate 500 mg TDS (child 20 mg/kg/day) or paromomycin 500 mg TDS	10 days (paromomycin 7)
Giardiasis	Tinidazole 2 g single dose (child 50 mg/kg) or metronidazole 400 mg TDS × 5–7 days; or nitazoxanide 500 mg BD × 3 days	As stated
Hydration	ORS; light diet; temporary lactose avoidance in giardiasis	Until settled
Advice	No alcohol with metronidazole/tinidazole (and 72 h after); safe water, hand-washing	—

REFER / RED FLAGS

- Liver abscess
- Severe colitis, bleeding, toxic megacolon
- Persistent diarrhoea in children with weight loss
- Pregnancy (first trimester — avoid metronidazole if possible)

GP PEARLS

★ *Metronidazole alone leaves cysts behind — always follow with a luminal agent in amoebiasis.*

★ *Metallic taste and dark urine on metronidazole are expected; warn patients.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Metronidazole (nitroimidazole)	400 mg PO 8-hourly (child 7.5 mg/kg)	Amoebic colitis/giardiasis	*No alcohol; metallic taste*
Tinidazole (nitroimidazole)	2 g PO single dose (or daily ×3–5 days)	Single-dose giardiasis	*No alcohol; avoid in 1st trimester*
Ornidazole (nitroimidazole)	500 mg PO 12-hourly	Alternative nitroimidazole	*Dizziness; avoid alcohol*
Nitazoxanide (antiprotozoal)	500 mg PO 12-hourly ×3 days	Giardia/cryptosporidium	*Yellow urine; take with food*
Oral rehydration salts (low osmolarity)	200–400 ml after each loose stool; 75 ml/kg over 4 h for some dehydration	Hydration	*Use clean water; correct mixing*
Dicyclomine (antispasmodic)	10–20 mg PO 8-hourly	Cramps	*Anticholinergic; avoid in infants <6 months*

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DISEASE 81 OF 300 | GASTROINTESTINAL & LIVER

Chronic Diarrhoea

More than 4 weeks — small bowel, large bowel, or functional?

DEFINITION

Diarrhoea lasting more than 4 weeks. Causes in India: infections (giardiasis, amoebiasis, intestinal TB, HIV-associated), irritable bowel syndrome, lactose intolerance, coeliac disease, inflammatory bowel disease, tropical sprue, thyrotoxicosis, drugs (metformin, PPIs, laxatives) and colorectal cancer.

SYMPTOMS

- Large-volume pale greasy stools, weight loss (small bowel)
- Small frequent stools with blood, mucus, urgency (colon)
- Nocturnal diarrhoea (organic cause)
- Abdominal pain, fever, night sweats (TB, IBD)
- Relation to milk, wheat; drug history

SIGNS

- Weight, BMI, pallor
- Clubbing, oral ulcers, glossitis
- Abdominal mass (TB, Crohn's, cancer)
- Perianal disease
- Thyroid signs, oedema (hypoproteinaemia)

DIAGNOSTIC TESTS

Test	Finding / purpose
Stool routine, ova/cysts, occult blood; faecal calprotectin	Infection; calprotectin >200 µg/g suggests IBD
CBC, ESR/CRP, albumin, electrolytes	Anaemia, inflammation, malnutrition
TSH, HIV, tissue transglutaminase IgA	Thyroid, HIV, coeliac disease
Colonoscopy with biopsies	Bloody diarrhoea, age >45, weight loss, high calprotectin
Upper GI endoscopy with D2 biopsy	Coeliac disease, tropical sprue

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Treat cause	Giardiasis/amoebiasis — see relevant page; intestinal TB — ATT	As per cause
Lactose intolerance	Reduce milk; curd and paneer usually tolerated	Ongoing
Coeliac disease	Strict lifelong gluten-free diet (no wheat, barley, rye)	Lifelong
Tropical sprue	Folic acid 5 mg OD + tetracycline 250 mg QID (or doxycycline 100 mg BD) + B12	3–6 months
IBD (refer)	Ulcerative colitis: mesalamine 2.4–4.8 g/day; steroids for flares (specialist)	Long term
Supportive	ORS, correct deficiencies (iron, B12, folate, vitamin D, zinc)	As needed

REFER / RED FLAGS

- Blood in stools, weight loss, anaemia
- Age >45 with change in bowel habit
- Nocturnal diarrhoea, fever
- Positive calprotectin, abdominal mass

GP PEARLS

★ *Diarrhoea that wakes the patient at night is not IBS.*

★ *Ask about metformin — it is a common, overlooked cause.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Oral rehydration salts (low osmolarity)	200–400 ml after each loose stool; 75 ml/kg over 4 h for some dehydration	Hydration	*Use clean water; correct mixing*
Metronidazole (nitroimidazole)	400 mg PO 8-hourly (child 7.5 mg/kg)	Giardia (empirical trial)	*No alcohol; metallic taste*
Loperamide (antimotility)	4 mg then 2 mg after each loose stool; max 16 mg/day	Functional diarrhoea	*Avoid in bloody diarrhoea, children*
Ispaghula husk (bulk laxative)	1–2 teaspoons in water at night	Bulk former	*Drink adequate fluid*
Mesalamine (5-ASA)	2.4–4.8 g/day PO in divided doses	IBD (after diagnosis)	*Nephrotoxicity rarely; specialist follow-up*
Probiotic (Saccharomyces boulardii)	250 mg PO 12-hourly	Adjunct	*Avoid in severely immunocompromised*

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DISEASE 82 OF 300 | GASTROINTESTINAL & LIVER

Irritable Bowel Syndrome

Pain linked to bowel habit, no alarm features — positive diagnosis, not exclusion.

DEFINITION

Functional bowel disorder with recurrent abdominal pain (at least 1 day/week for 3 months) associated with defecation or a change in stool frequency or form (Rome IV). Subtypes: IBS-D, IBS-C, IBS-M. Associated with stress, anxiety, post-infectious onset and food triggers.

SYMPTOMS

- Abdominal pain relieved or changed by defecation
- Bloating, distension
- Alternating constipation and diarrhoea
- Mucus in stool, incomplete evacuation
- Worse with stress and certain foods

SIGNS

- Normal examination
- Mild tenderness over colon
- Normal weight
- No pallor, mass or nodes

DIAGNOSTIC TESTS

Test	Finding / purpose
CBC, ESR/CRP	Normal
Stool routine, ova/cysts	Exclude infection
tTG-IgA	Exclude coeliac disease (IBS-D, IBS-M)
TSH	Thyroid disease
Colonoscopy	Only with alarm features or age >45

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Explanation & lifestyle	Positive diagnosis, reassurance; regular meals, adequate water, exercise, stress management	Ongoing
Diet	Reduce caffeine, alcohol, spicy/fatty food; trial of low-FODMAP diet; soluble fibre (ispaghula 1–2 tsp BD)	4–6 weeks
Pain / cramps	Mebeverine 135 mg TDS before meals or drotaverine 40–80 mg TDS; peppermint oil capsules 0.2 ml TDS	2–4 weeks, then SOS
IBS-D	Loperamide 2 mg SOS (max 8 mg/day); rifaximin 550 mg TDS × 14 days for bloating	As needed
IBS-C	Ispaghula husk; PEG 17 g OD; lactulose (may bloat)	As needed
Refractory	Amitriptyline 10–25 mg HS (IBS-D) or SSRI — escitalopram 10 mg (IBS-C); CBT	3–6 months

REFER / RED FLAGS

- Age >45 with new symptoms
- Rectal bleeding, weight loss, anaemia, nocturnal symptoms
- Family history of colorectal cancer or IBD
- Abnormal tests

GP PEARLS

★ *Low-dose amitriptyline works on gut pain, not mood — explain this to avoid stigma.*

★ *Avoid repeated investigations once the diagnosis is secure; they reinforce anxiety.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Mebeverine (antispasmodic)	135 mg PO 8-hourly before meals	Pain/cramps	*Generally well tolerated*
Dicyclomine (antispasmodic)	10–20 mg PO 8-hourly	Antispasmodic	*Anticholinergic; avoid in infants <6 months*
Ispaghula husk (bulk laxative)	1–2 teaspoons in water at night	IBS-C	*Drink adequate fluid*
Loperamide (antimotility)	4 mg then 2 mg after each loose stool; max 16 mg/day	IBS-D	*Avoid in bloody diarrhoea, children*
Amitriptyline (TCA)	10–25 mg PO at night	Low-dose for pain	*Anticholinergic; avoid in elderly, IHD*
Rifaximin (non-absorbed antibiotic)	550 mg PO 12-hourly	IBS-D (specialist)	*Expensive; for HE prophylaxis/IBS-D*

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DISEASE 83 OF 300 | GASTROINTESTINAL & LIVER

Constipation

Fibre, fluid, footstool — and the right laxative.

DEFINITION

Infrequent (<3 per week), hard or difficult-to-pass stools, straining or a sense of incomplete evacuation for ≥3 months. Mostly functional; secondary causes include drugs (opioids, iron, calcium, CCBs, anticholinergics), hypothyroidism, hypercalcaemia, diabetes, Parkinson's, colorectal cancer and anal fissure.

SYMPTOMS

- Hard stools, straining
- Infrequent bowel movements
- Bloating, abdominal discomfort
- Need for manual manoeuvres
- Alarm: blood in stool, weight loss, new onset after 50

SIGNS

- Abdominal distension, palpable faecal masses
- Perianal exam: fissure, piles, prolapse
- Digital rectal exam: impaction, mass, tone
- Thyroid signs

DIAGNOSTIC TESTS

Test	Finding / purpose
None in young without alarm features	Clinical
CBC, TSH, calcium, glucose	Secondary causes
Colonoscopy	Age >45 new onset, alarm features
X-ray abdomen	Suspected impaction or obstruction

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Lifestyle	Fibre 25–30 g/day (vegetables, fruit, whole grains), water 2–3 l, exercise, regular toilet time after breakfast, footstool to squat	Ongoing
Bulk laxative	Ispaghula husk 1–2 tsp in water BD	Long term
Osmotic	Polyethylene glycol 17 g in 200 ml water OD (child 0.4–0.8 g/kg/day) or lactulose 15–30 ml HS	Weeks, taper
Stimulant (short-term)	Bisacodyl 5–10 mg HS or senna 15 mg HS	SOS, short courses
Faecal impaction	Glycerine or bisacodyl suppository; phosphate enema; PEG high dose	1–3 days
Opioid-induced	PEG + senna from the start of opioid therapy	With opioid

REFER / RED FLAGS

- Rectal bleeding, weight loss, anaemia
- New constipation after 45–50 years
- Abdominal distension with vomiting (obstruction)
- Refractory constipation

GP PEARLS

★ *Lactulose causes bloating; PEG is better tolerated and more effective.*

★ *In the elderly, overflow diarrhoea may be faecal impaction — always do a rectal exam.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ispaghula husk (bulk laxative)	1–2 teaspoons in water at night	First-line fibre	*Drink adequate fluid*
Lactulose (osmotic laxative)	15–30 ml PO at night (titrate to 2–3 stools in HE)	Osmotic laxative	*Bloating; dehydration if excessive*
Polyethylene glycol (osmotic laxative)	17 g in water once daily	Osmotic alternative	*Electrolytes in elderly*
Bisacodyl (stimulant laxative)	5–10 mg PO at night	Short-term stimulant	*Cramps; short-term use*
Senna (stimulant laxative)	7.5–15 mg PO at night	Opioid-induced constipation	*Cramps; long-term dependence*

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DISEASE 84 OF 300 | GASTROINTESTINAL & LIVER

Haemorrhoids

Painless bright-red bleeding after defecation — soften the stool.

DEFINITION

Symptomatic enlargement and displacement of anal vascular cushions. Internal haemorrhoids (above the dentate line) are graded I (bleed, no prolapse), II (prolapse, reduce spontaneously), III (manual reduction) and IV (irreducible). External haemorrhoids may thrombose and become acutely painful.

SYMPTOMS

- Painless fresh bleeding on the stool or paper, after defecation
- Prolapse, mucous discharge, itching
- Feeling of a lump
- Severe pain with a bluish lump (thrombosed external pile)
- Constipation, straining

SIGNS

- Inspection: prolapsed piles, skin tags
- Thrombosed external pile — tender, bluish swelling
- DRE: exclude mass
- Proctoscopy: grade of internal piles
- Pallor if chronic bleeding

DIAGNOSTIC TESTS

Test	Finding / purpose
Proctoscopy	Diagnosis and grading
CBC	Anaemia
Colonoscopy / sigmoidoscopy	Age >45, change in bowel habit, dark blood, weight loss, family history

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Stool softening (all)	High-fibre diet, water 2–3 l, ispaghula 2 tsp HS; avoid straining and long toilet sitting	Long term
Laxative if needed	Lactulose 15 ml HS or PEG 17 g OD	2–4 weeks
Topical	Lignocaine + hydrocortisone ointment or cream, apply BD and after defecation	≤7 days (steroid)
Sitz bath	Warm water (± potassium permanganate pinch) 10–15 min, 2–3 times daily	1–2 weeks
Phlebotonic	Micronised flavonoid (diosmin-hesperidin) 1000 mg: acute — 3 g/day × 4 days, then 2 g/day × 3 days; then 1 g/day	2–3 months
Thrombosed external (<72 h)	Excision under local anaesthesia (refer); after 72 h — conservative, analgesics	—
Grade II–III persistent	Rubber band ligation, sclerotherapy; grade III–IV — haemorrhoidectomy (refer)	—

REFER / RED FLAGS

- Age >45 or change in bowel habit (exclude cancer)
- Anaemia, heavy bleeding
- Irreducible strangulated piles
- Failure of conservative treatment

GP PEARLS

★ *Never attribute rectal bleeding to piles without a rectal examination.*

★ *Mobile phone use on the toilet increases straining time — tell patients to leave it outside.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ispaghula husk (bulk laxative)	1–2 teaspoons in water at night	Soften stools	*Drink adequate fluid*
Lidocaine 2% jelly/5% ointment (local anaesthetic)	Apply locally before defecation/3–4 times daily	Pain relief	*Allergy rare; avoid excess on mucosa*
Flavonoids (diosmin–hesperidin)	1000 mg PO 12-hourly ×4 days then daily	Acute haemorrhoids	*GI upset; adjunct only*
Lactulose (osmotic laxative)	15–30 ml PO at night (titrate to 2–3 stools in HE)	Constipation	*Bloating; dehydration if excessive*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Hydrocortisone 1% cream (mild steroid)	Apply thinly 12-hourly ≤7 days (face/flexures)	Short-term itching	*Atrophy with prolonged use*

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DISEASE 85 OF 300 | GASTROINTESTINAL & LIVER

Anal Fissure

Tearing pain on defecation lasting an hour, with a streak of blood.

DEFINITION

A longitudinal tear in the anoderm distal to the dentate line, usually in the posterior midline, caused by passage of hard stool and maintained by internal sphincter spasm. Acute (<6 weeks) fissures usually heal with conservative care; chronic fissures show a sentinel tag and exposed sphincter fibres.

SYMPTOMS

- Severe sharp/burning pain during and after defecation, lasting minutes to hours
- Bright red streak on stool or paper
- Fear of defecation, constipation
- Itching
- Lateral or multiple fissures: think Crohn's, TB, HIV, syphilis

SIGNS

- Gentle separation of buttocks shows posterior midline tear
- Sentinel skin tag (chronic)
- Sphincter spasm
- Avoid DRE/proctoscopy when very painful

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	Inspection
Further tests	Only for atypical (lateral, multiple, painless) fissures — Crohn's, TB, HIV, STI

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Stool softening	High-fibre diet, fluids, ispaghula 2 tsp HS + lactulose 15–20 ml HS	6–8 weeks
Sitz bath	Warm water 10–15 min after defecation and 2–3 times daily	4–6 weeks
Topical sphincter relaxant	Diltiazem 2% ointment BD (fewer headaches) or glyceryl trinitrate 0.2% ointment BD, applied to anal margin	6–8 weeks
Topical analgesia	Lignocaine 2–5% jelly before defecation	1–2 weeks
Oral analgesia	Paracetamol 650 mg TDS SOS (avoid codeine — constipating)	As needed
Chronic non-healing	Botulinum toxin injection or lateral internal sphincterotomy (refer)	—

REFER / RED FLAGS

- Non-healing after 8 weeks of treatment
- Atypical fissure (lateral, multiple, painless)
- Associated abscess or fistula
- Suspected IBD

GP PEARLS

★ *GTN causes headache — start at night and reassure that it settles.*

★ *Fissures in children are almost always from constipation; treat the constipation.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Diltiazem 2% ointment (topical)	Apply to anal verge 12-hourly ×6–8 weeks	Chemical sphincterotomy	*Headache; local irritation*
Glyceryl trinitrate 0.2% ointment	Apply perianally 12-hourly ×6–8 weeks	Alternative	*Headache; avoid with sildenafil*
Lidocaine 2% jelly/5% ointment (local anaesthetic)	Apply locally before defecation/3–4 times daily	Pain before defecation	*Allergy rare; avoid excess on mucosa*
Ispaghula husk (bulk laxative)	1–2 teaspoons in water at night	Soft stools	*Drink adequate fluid*
Lactulose (osmotic laxative)	15–30 ml PO at night (titrate to 2–3 stools in HE)	Constipation	*Bloating; dehydration if excessive*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*

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DISEASE 86 OF 300 | GASTROINTESTINAL & LIVER

Perianal Abscess & Fistula

A painful perianal swelling needs drainage, not just antibiotics.

DEFINITION

Perianal abscess arises from infection of anal glands, presenting as an acutely painful swelling; up to half later form a fistula-in-ano — a chronic tract between the anal canal and perianal skin with persistent discharge. Associations: diabetes, Crohn's disease, TB, HIV.

SYMPTOMS

- Constant throbbing perianal pain, worse sitting
- Swelling, fever
- Painful defecation
- Fistula: recurrent discharge of pus or blood, itching
- Previous abscess drained

SIGNS

- Tender, red, fluctuant perianal swelling
- Deep abscess — tenderness on DRE with minimal external signs
- External opening of fistula with granulation
- Palpable cord-like tract
- Fever

DIAGNOSTIC TESTS

Test	Finding / purpose
Capillary glucose / HbA1c	Diabetes
CBC	Leucocytosis
MRI fistulogram / endoanal USG	Complex or recurrent fistula (before surgery)
Pus culture, TB tests	Recurrent or atypical

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Abscess — definitive	Incision and drainage (refer to surgeon); do not wait for fluctuation in deep abscess	Urgent
Antibiotic (cellulitis, diabetes, immunosuppressed)	Amoxicillin-clavulanate 625 mg TDS or ciprofloxacin 500 mg BD + metronidazole 400 mg TDS	5–7 days
Pain	Paracetamol 650 mg TDS ± ibuprofen 400 mg TDS	5 days
Wound care	Sitz baths 2–3 times daily and after defecation; stool softeners	Until healed
Fistula	Surgical: fistulotomy, seton, LIFT (refer)	—

REFER / RED FLAGS

- All abscesses for drainage
- Systemic sepsis, diabetes, immunosuppression
- Recurrent or complex fistula
- Suspected Crohn's or TB

GP PEARLS

★ *Antibiotics alone do not cure an abscess — they delay drainage and increase fistula risk.*

★ *Rapidly spreading perineal pain with skin necrosis is Fournier's gangrene — emergency.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Amoxicillin–clavulanate (penicillin + β-lactamase inhibitor)	625 mg PO 8-hourly (child 25–45 mg/kg/day amox)	Cellulitis with abscess	*Diarrhoea, cholestatic jaundice*
Metronidazole (nitroimidazole)	400 mg PO 8-hourly (child 7.5 mg/kg)	Anaerobic cover	*No alcohol; metallic taste*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Ispaghula husk (bulk laxative)	1–2 teaspoons in water at night	Soft stools	*Drink adequate fluid*
Povidone-iodine (antiseptic)	5–10% solution/ointment for wound cleaning	Sitz bath/wound care	*Avoid large areas in thyroid disease*

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DISEASE 87 OF 300 | GASTROINTESTINAL & LIVER

Intestinal Worms & Deworming

Albendazole 400 mg single dose — the cheapest, most effective drug in the clinic.

DEFINITION

Soil-transmitted helminths (roundworm — Ascaris, hookworm, whipworm) and pinworm (Enterobius) are common in India, causing anaemia, malnutrition and impaired learning in children. Tapeworm (Taenia) causes neurocysticercosis. The National Deworming Day provides biannual albendazole to children 1–19 years.

SYMPTOMS

- Often none
- Abdominal discomfort, poor appetite
- Passing worms in stool or vomit (Ascaris)
- Perianal itching at night (pinworm)
- Fatigue, pica (hookworm anaemia)

SIGNS

- Pallor (hookworm)
- Poor growth, malnutrition
- Abdominal distension
- Perianal excoriation
- Seizures (neurocysticercosis)

DIAGNOSTIC TESTS

Test	Finding / purpose
Stool microscopy for ova	Species identification
Cellophane tape test (morning)	Pinworm eggs
CBC	Iron-deficiency anaemia, eosinophilia
CT/MRI brain	Seizures — neurocysticercosis

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Roundworm, hookworm, whipworm (>2 y)	Albendazole 400 mg single dose (1–2 y: 200 mg); whipworm — 400 mg OD × 3 days	Single / 3 days
Pinworm	Albendazole 400 mg single dose, repeat after 2 weeks; treat whole family	2 doses
Alternative	Mebendazole 100 mg BD × 3 days (or 500 mg single); pyrantel pamoate 11 mg/kg single dose (pregnancy)	As stated
Tapeworm (intestinal)	Praziquantel 5–10 mg/kg single dose (or albendazole 400 mg OD × 3 days)	Single
Anaemia	Iron: ferrous sulphate 3 mg/kg/day elemental iron (adult 100–200 mg) + folic acid	3 months
Hygiene	Hand-washing, nail trimming, footwear, sanitary latrines, washing vegetables	—

REFER / RED FLAGS

- Intestinal obstruction or biliary colic from Ascaris
- Seizures (neurocysticercosis)
- Severe anaemia
- Persistent symptoms after treatment

GP PEARLS

★ *Albendazole is safe in the second and third trimesters; avoid in the first.*

★ *Pinworm reinfection is the rule — treat all household members and repeat the dose in 2 weeks.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Albendazole (anthelmintic)	400 mg PO single dose (200 mg if 1–2 years)	400 mg single dose	*Avoid in 1st trimester*
Mebendazole (anthelmintic)	100 mg PO 12-hourly ×3 days or 500 mg once	Alternative	*Avoid in 1st trimester*
Ivermectin (anthelmintic/scabicide)	200 µg/kg PO single dose, repeat in 1–2 weeks	Strongyloides	*Avoid <15 kg, pregnancy*
Pyrantel pamoate (anthelmintic)	11 mg/kg PO single dose (max 1 g)	Pregnancy (2nd/3rd trimester)	*Safe in pregnancy (2nd/3rd trimester)*
Ferrous sulphate/ascorbate (oral iron)	60–100 mg elemental iron daily or alternate days	Hookworm anaemia	*Black stools, constipation*
Iron–folic acid (IFA) tablet	1 tablet (60 mg Fe + 500 µg FA) daily	Anaemia in pregnancy	*Constipation; take with vitamin C*

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DISEASE 88 OF 300 | GASTROINTESTINAL & LIVER

Upper GI Bleeding

Haematemesis or melaena — resuscitate first, then find the source.

DEFINITION

Bleeding proximal to the ligament of Treitz, presenting with haematemesis (fresh blood or coffee-ground vomit) or melaena (black tarry stools). Commonest causes: peptic ulcer (NSAIDs, H. pylori), oesophageal/gastric varices (cirrhosis), erosive gastritis, Mallory–Weiss tear and malignancy. Glasgow–Blatchford score identifies low-risk patients.

SYMPTOMS

- Vomiting blood or coffee-ground material
- Black, sticky, foul stools
- Dizziness, syncope, breathlessness
- NSAID, aspirin, anticoagulant use
- Alcohol, known liver disease

SIGNS

- Tachycardia, hypotension, postural drop
- Pallor, cold peripheries
- Signs of chronic liver disease: jaundice, ascites, spider naevi
- Epigastric tenderness
- Melaena on DRE

DIAGNOSTIC TESTS

Test	Finding / purpose
CBC (repeat), blood group & cross-match	Hb may be normal initially
Urea, creatinine, LFT, PT/INR	High urea:creatinine ratio supports upper GI source
Glasgow–Blatchford score	Score 0–1 may be managed as outpatient
Upper GI endoscopy	Within 24 h (within 12 h if varices suspected)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Resuscitation	Two large-bore IV cannulae, RL/NS bolus 500 ml; transfuse if Hb <7 g/dl (<8 in cardiac disease); nil by mouth	Immediate
PPI (non-variceal)	Pantoprazole 80 mg IV bolus then 40 mg IV BD (or 8 mg/h infusion after endoscopic therapy)	72 h then oral
Suspected variceal	Terlipressin 2 mg IV 4-hourly (or octreotide 50 µg bolus + 50 µg/h) + ceftriaxone 1 g IV OD	2–5 days; antibiotic 7 days
Stop	NSAIDs, antiplatelets (discuss if cardiac stent), anticoagulants	—
After bleed	H. pylori test and eradicate; varices — propranolol 20–40 mg BD or carvedilol 6.25 mg BD + banding programme	Long term

REFER / RED FLAGS

- All haematemesis and melaena — urgent referral
- Shock, Hb <8, ongoing bleeding
- Cirrhosis (suspected varices)
- Age >60, comorbidities, on anticoagulants

GP PEARLS

★ *Iron tablets and bismuth also turn stools black but not sticky or foul — and test negative for occult blood.*

★ *Give terlipressin and ceftriaxone before transfer in a cirrhotic who vomits blood.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Pantoprazole (PPI)	40 mg PO before breakfast; 40–80 mg IV	80 mg IV before endoscopy	*Long-term: B12, Mg deficiency, fractures*
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Resuscitation	*Fluid overload in HF/CKD*
Terlipressin / octreotide (variceal bleed)	Terlipressin 2 mg IV 4-hourly; octreotide 50 µg bolus + 50 µg/h	Suspected variceal bleed	*Ischaemia with terlipressin; hospital use*
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	Cirrhosis with GI bleed	*Biliary sludge; not with calcium IV in neonates*
Vitamin K (phytomenadione)	10 mg slow IV (warfarin reversal per INR)	Warfarin-related bleed	*Anaphylactoid reactions with fast IV*

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DISEASE 89 OF 300 | GASTROINTESTINAL & LIVER

Lower GI Bleeding

Fresh blood per rectum — most is anorectal, but colon cancer must be excluded.

DEFINITION

Bleeding from the colon, rectum or anus, presenting as bright red blood or maroon stools (haematochezia). Common causes: haemorrhoids, anal fissure, diverticular disease, colitis (infective, ulcerative, ischaemic), polyps and colorectal cancer, angiodysplasia. Massive bleeding may originate from an upper GI source.

SYMPTOMS

- Blood on paper or dripping (anorectal)
- Blood mixed with stool (colonic)
- Painful defecation (fissure)
- Change in bowel habit, weight loss (cancer)
- Diarrhoea with mucus and urgency (colitis)

SIGNS

- Vital signs, postural drop
- Pallor
- Abdominal mass, tenderness
- Perianal inspection: piles, fissure
- DRE: rectal mass

DIAGNOSTIC TESTS

Test	Finding / purpose
CBC, coagulation, cross-match	Anaemia, bleeding disorder
Proctoscopy	Haemorrhoids, fissure
Colonoscopy	Age >45, change in bowel habit, anaemia, family history, persistent bleeding
Stool culture, calprotectin	Bloody diarrhoea
CT angiography	Massive active bleeding (hospital)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Anorectal cause	See Haemorrhoids and Anal fissure: fibre, softeners, sitz baths	As per cause
Infective bloody diarrhoea	Azithromycin 500 mg OD × 3 days; ORS	3 days
Anaemia	Ferrous sulphate 200 mg OD–BD (or IV iron if severe)	3 months
Massive bleeding	IV access, fluids, transfusion; urgent referral	Immediate
Hold	NSAIDs, anticoagulants pending evaluation	—

REFER / RED FLAGS

- Haemodynamic instability
- Age >45 with new rectal bleeding
- Weight loss, iron-deficiency anaemia, mass
- Bloody diarrhoea >7 days

GP PEARLS

★ *Colorectal cancer is rising in young Indians — investigate persistent bleeding regardless of age.*

★ *Maroon stools with shock may be a brisk upper GI bleed — check urea.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Resuscitation	*Fluid overload in HF/CKD*
Ferrous sulphate/ascorbate (oral iron)	60–100 mg elemental iron daily or alternate days	Post-bleed anaemia	*Black stools, constipation*
Ispaghula husk (bulk laxative)	1–2 teaspoons in water at night	Haemorrhoidal bleeding	*Drink adequate fluid*
Lactulose (osmotic laxative)	15–30 ml PO at night (titrate to 2–3 stools in HE)	Avoid straining	*Bloating; dehydration if excessive*
Vitamin K (phytomenadione)	10 mg slow IV (warfarin reversal per INR)	Anticoagulant reversal	*Anaphylactoid reactions with fast IV*

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DISEASE 90 OF 300 | GASTROINTESTINAL & LIVER

Acute Viral Hepatitis (A & E)

Faeco-oral jaundice — rest, fluids, avoid hepatotoxic drugs; watch pregnant women.

DEFINITION

Acute liver inflammation from hepatitis A (children, mild) or E (young adults; severe in pregnancy with up to 20% mortality in the third trimester) transmitted via contaminated water. Usually self-limiting over 4–8 weeks. Acute liver failure is signalled by encephalopathy and INR >1.5.

SYMPTOMS

- Prodrome: fever, anorexia, nausea, vomiting, aversion to smoking
- Right upper abdominal discomfort
- Dark urine, yellow eyes
- Pale stools, itching
- Drowsiness, confusion (liver failure)

SIGNS

- Icterus
- Tender hepatomegaly
- No signs of chronic liver disease
- Flapping tremor, altered sensorium (failure)
- Bleeding manifestations

DIAGNOSTIC TESTS

Test	Finding / purpose
LFT	ALT/AST often >1000 IU/l; bilirubin raised
IgM anti-HAV, IgM anti-HEV	Confirm aetiology
HBsAg, IgM anti-HBc, anti-HCV	Exclude other viruses
PT/INR	INR >1.5 = severe; refer
CBC, glucose, USG abdomen	Hypoglycaemia; exclude obstruction

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Supportive	Rest as tolerated, adequate calories (carbohydrate-rich, normal protein), fluids; no need for "jaundice diet" restriction	4–6 weeks
Nausea	Ondansetron 4 mg TDS SOS	As needed
Itching	Cholestyramine 4 g BD or ursodeoxycholic acid 300 mg BD (cholestatic phase)	As needed
Avoid	Alcohol, paracetamol >2 g/day, NSAIDs, sedatives, herbal remedies	Until LFT normal
Prevention	Safe water, hand hygiene; hepatitis A vaccine (2 doses / live single dose) for children	—
Follow-up	LFT every 1–2 weeks until normal	—

REFER / RED FLAGS

- Pregnancy with hepatitis E
- INR >1.5, encephalopathy, hypoglycaemia
- Persistent vomiting, unable to eat
- Bilirubin rising after 4 weeks or cholestasis >3 months

GP PEARLS

★ *Transaminases do not predict severity — INR and sensorium do.*

★ *Native herbal treatments for jaundice cause many cases of acute liver failure in India.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain/fever ≤2 g/day	*Hepatotoxic in overdose; check combination products*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Vomiting	*QT; constipation*
Oral rehydration salts (low osmolarity)	200–400 ml after each loose stool; 75 ml/kg over 4 h for some dehydration	Hydration	*Use clean water; correct mixing*
Cholestyramine (bile-acid sequestrant)	4 g PO 1–3 times daily (pruritus)	Cholestatic itch	*Separate other drugs by 4 h*
Multivitamin–mineral supplement	1 tablet PO daily	Recovery nutrition	*Not a substitute for diet*
Hepatitis B vaccine	20 µg IM at 0, 1, 6 months (adult)	Prevent HBV (HAV vaccine optional)	*Check anti-HBs in healthcare workers*

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DISEASE 91 OF 300 | GASTROINTESTINAL & LIVER

Chronic Hepatitis B

HBsAg positive for 6 months — assess phase, screen family, decide on tenofovir.

DEFINITION

Persistent hepatitis B infection (HBsAg positive >6 months), acquired perinatally, sexually, through blood or unsafe injections. May progress to cirrhosis and hepatocellular carcinoma. Treatment decisions depend on HBV DNA, ALT, HBeAg status and fibrosis. National Viral Hepatitis Control Programme provides free testing and treatment.

SYMPTOMS

- Usually asymptomatic
- Fatigue, right upper quadrant discomfort
- Jaundice in flares
- Symptoms of cirrhosis (late)
- Family member with hepatitis B

SIGNS

- Often normal
- Hepatomegaly
- Signs of chronic liver disease
- Splenomegaly
- Ascites, encephalopathy (decompensated)

DIAGNOSTIC TESTS

Test	Finding / purpose
HBsAg, HBeAg, anti-HBe	Phase of infection
HBV DNA (quantitative)	Viral load
LFT, CBC (platelets), PT/INR, albumin	Liver injury, fibrosis
Fibroscan / APRI	Fibrosis staging
USG + AFP every 6 months	HCC surveillance (cirrhosis, family history, older age)
Anti-HCV, HIV, anti-HDV	Co-infections

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Antiviral (cirrhosis; or HBV DNA >2000 IU/ml with raised ALT or significant fibrosis)	Tenofovir disoproxil fumarate 300 mg OD (or tenofovir alafenamide 25 mg OD, entecavir 0.5 mg OD)	Long term, often lifelong
Pregnancy with HBV DNA >2 × 10^5 IU/ml	Tenofovir 300 mg OD from 24–28 weeks to 12 weeks postpartum	As stated
Newborn of HBsAg-positive mother	Hepatitis B vaccine + HBIG 0.5 ml IM within 12 h of birth, then complete schedule	At birth
Contacts	Screen household and sexual partners; vaccinate if non-immune	—
Lifestyle	No alcohol; avoid hepatotoxic herbs; safe sex; do not share razors	Lifelong
Before chemotherapy / rituximab / steroids	Prophylactic tenofovir or entecavir (reactivation risk)	During and 12–18 months after

REFER / RED FLAGS

- All HBsAg-positive patients for initial assessment
- Cirrhosis, decompensation
- Pregnancy
- Raised AFP or liver lesion

GP PEARLS

★ *Never stop tenofovir abruptly — severe flares can occur.*

★ *Every pregnant woman should be screened for HBsAg; the newborn's birth dose is the key to prevention.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Tenofovir (TDF/TAF)	TDF 300 mg or TAF 25 mg PO daily	First-line antiviral	*Renal and bone effects with TDF*
Entecavir (antiviral)	0.5 mg PO daily on empty stomach	Alternative	*Lactic acidosis rare; adjust in CKD*
Hepatitis B vaccine	20 µg IM at 0, 1, 6 months (adult)	Vaccinate contacts	*Check anti-HBs in healthcare workers*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Safer analgesic	*Hepatotoxic in overdose; check combination products*

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DISEASE 92 OF 300 | GASTROINTESTINAL & LIVER

Hepatitis C

Now curable in 12 weeks with oral pills.

DEFINITION

Chronic infection with hepatitis C virus, transmitted through blood (unsafe injections, transfusion before screening, IV drug use, dialysis, tattoos). Usually asymptomatic for decades before cirrhosis or HCC. Direct-acting antivirals (DAAs) cure more than 95%; free under the National Viral Hepatitis Control Programme.

SYMPTOMS

- Usually asymptomatic
- Fatigue
- Risk factors: past injections, transfusion, dialysis, IV drugs
- Symptoms of cirrhosis (late)
- Extrahepatic: purpura, arthralgia (cryoglobulinaemia)

SIGNS

- Often normal
- Hepatomegaly
- Signs of chronic liver disease
- Palpable purpura

DIAGNOSTIC TESTS

Test	Finding / purpose
Anti-HCV antibody	Screening
HCV RNA (viral load)	Confirms active infection
LFT, CBC, PT/INR, creatinine	Baseline
Fibroscan / APRI	Cirrhosis assessment
HBsAg, HIV	Co-infection (HBV reactivation risk with DAA)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Pan-genotypic (no cirrhosis or compensated)	Sofosbuvir 400 mg + velpatasvir 100 mg OD	12 weeks
Alternative	Sofosbuvir 400 mg + daclatasvir 60 mg OD	12 weeks (24 in cirrhosis)
Decompensated cirrhosis (specialist)	Sofosbuvir-velpatasvir + ribavirin	12 weeks
Cure	Undetectable HCV RNA 12 weeks after treatment (SVR12)	—
Lifestyle	No alcohol; no sharing of needles, razors; safe sex	Lifelong
Interactions	Avoid amiodarone with sofosbuvir (bradycardia); check PPIs, statins, anticonvulsants	—

REFER / RED FLAGS

- All anti-HCV positive patients for RNA and treatment
- Cirrhosis (HCC surveillance continues after cure)
- HBV co-infection
- Pregnancy (treat after delivery)

GP PEARLS

★ *Cure does not prevent reinfection — counsel on risk behaviour.*

★ *Patients with cirrhosis still need 6-monthly ultrasound for HCC after cure.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Sofosbuvir–velpatasvir (DAA)	400/100 mg PO daily ×12 weeks	Pan-genotypic DAA 12 weeks	*Amiodarone interaction (bradycardia)*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Analgesic	*Hepatotoxic in overdose; check combination products*
Hepatitis B vaccine	20 µg IM at 0, 1, 6 months (adult)	Vaccinate if non-immune	*Check anti-HBs in healthcare workers*
Pantoprazole (PPI)	40 mg PO before breakfast; 40–80 mg IV	Interaction — review	*Long-term: B12, Mg deficiency, fractures*
Tenofovir (TDF/TAF)	TDF 300 mg or TAF 25 mg PO daily	HBV coinfection	*Renal and bone effects with TDF*
Multivitamin–mineral supplement	1 tablet PO daily	Nutrition	*Not a substitute for diet*

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DISEASE 93 OF 300 | GASTROINTESTINAL & LIVER

Alcohol-Related Liver Disease

Abstinence is the treatment — at every stage.

DEFINITION

Spectrum of liver injury from chronic alcohol use: fatty liver (reversible), alcoholic hepatitis (jaundice, fever, tender liver; high mortality if severe) and cirrhosis. Risk increases with >20 g/day in women and >30 g/day in men (one standard drink ≈ 10 g; 60 ml whisky ≈ 20 g).

SYMPTOMS

- Often asymptomatic (fatty liver)
- Anorexia, nausea, right upper quadrant pain
- Jaundice, fever (alcoholic hepatitis)
- Abdominal swelling, leg swelling
- Confusion, haematemesis (decompensation)

SIGNS

- Tender hepatomegaly
- Icterus
- Spider naevi, palmar erythema, gynaecomastia, parotid enlargement
- Ascites, splenomegaly
- Flapping tremor

DIAGNOSTIC TESTS

Test	Finding / purpose
LFT	AST:ALT >2:1, raised GGT
CBC	Macrocytosis, thrombocytopenia
PT/INR, albumin, bilirubin	Severity (Maddrey score >32 = severe alcoholic hepatitis)
USG abdomen / Fibroscan	Fatty liver, cirrhosis, ascites
HBsAg, anti-HCV	Co-existing viral hepatitis

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Abstinence	Brief intervention, family support, de-addiction services	Lifelong
Withdrawal	Lorazepam 2 mg TDS–QID tapering (preferred in liver disease) + thiamine 100 mg TDS	5–7 days
Relapse prevention	Baclofen 10 mg TDS → 20 mg TDS (safe in cirrhosis); acamprosate 666 mg TDS (normal renal function)	3–12 months
Nutrition	High-protein (1.2–1.5 g/kg), 35 kcal/kg/day, bedtime snack; thiamine, folate, B-complex	Ongoing
Severe alcoholic hepatitis (refer)	Prednisolone 40 mg OD (if Maddrey >32, no infection/GI bleed)	28 days
Avoid	Disulfiram and naltrexone in liver disease; NSAIDs	—

REFER / RED FLAGS

- Jaundice with fever (alcoholic hepatitis)
- Ascites, GI bleeding, encephalopathy
- INR >1.5
- Severe withdrawal, seizures, delirium

GP PEARLS

★ *Liver fat improves within weeks of stopping drinking — use this to motivate.*

★ *Give thiamine before glucose in any malnourished alcoholic.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Thiamine (vitamin B1)	100 mg PO/IV daily (200–500 mg IV 8-hourly if Wernicke)	100 mg daily (more if Wernicke)	*Give before glucose in alcohol users*
Chlordiazepoxide (benzodiazepine)	10–25 mg PO 6-hourly, taper (withdrawal)	Withdrawal (not in cirrhosis)	*Accumulates in liver disease*
Lorazepam (benzodiazepine)	2–4 mg IV (0.1 mg/kg); 1–2 mg PO	Withdrawal in liver disease	*Respiratory depression*
Baclofen (GABA-B agonist)	5–10 mg PO 8-hourly	Craving in cirrhosis	*Sedation; withdrawal seizures if stopped*
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	Severe alcoholic hepatitis (specialist)	*Hyperglycaemia; taper if >3 weeks*
Multivitamin–mineral supplement	1 tablet PO daily	Nutrition	*Not a substitute for diet*

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DISEASE 94 OF 300 | GASTROINTESTINAL & LIVER

Fatty Liver (MASLD / NAFLD)

The liver face of metabolic syndrome — weight loss of 7–10% reverses it.

DEFINITION

Metabolic dysfunction-associated steatotic liver disease: hepatic steatosis with at least one cardiometabolic risk factor (obesity, diabetes, hypertension, dyslipidaemia) and minimal alcohol intake. Affects about a third of urban Indian adults; a minority progress to steatohepatitis (MASH), fibrosis and cirrhosis. Cardiovascular disease is the main cause of death.

SYMPTOMS

- Usually asymptomatic
- Incidental "fatty liver" on ultrasound
- Fatigue, vague right upper quadrant discomfort
- Features of metabolic syndrome

SIGNS

- Central obesity
- Acanthosis nigricans
- Mild hepatomegaly
- Signs of chronic liver disease (advanced)
- BP elevated

DIAGNOSTIC TESTS

Test	Finding / purpose
LFT	Normal or mildly raised ALT
FIB-4 score (age, AST, ALT, platelets)	<1.3 low risk; >2.67 high — refer for Fibroscan
Fibroscan (elastography)	Fibrosis staging
HbA1c, lipids, BP	Metabolic risk
HBsAg, anti-HCV	Exclude other causes

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Weight loss	7–10% loss: calorie deficit 500–1000 kcal/day; reduce sugar, refined carbs, fructose drinks	6–12 months
Exercise	150–300 min/week aerobic + resistance	Lifelong
Alcohol	Avoid or minimise	Lifelong
With diabetes	Prefer pioglitazone 15–30 mg OD or GLP-1 RA (semaglutide); SGLT2 inhibitors	Long term
Non-diabetic MASH (specialist)	Vitamin E 800 IU/day (selected); resmetirom where available	Specialist
Statins	Safe and indicated for dyslipidaemia	Long term

REFER / RED FLAGS

- FIB-4 >2.67 or Fibroscan suggesting advanced fibrosis
- Signs of cirrhosis
- ALT persistently >3 × ULN
- Diagnostic uncertainty

GP PEARLS

★ *Do not withhold statins in fatty liver — they are safe and reduce cardiovascular risk.*

★ *Reporting "fatty liver grade 1" is not a diagnosis to ignore: calculate FIB-4.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Metformin (biguanide)	500 mg daily–1 g 12-hourly with meals	Diabetes/insulin resistance	*GI upset; stop if eGFR <30, contrast, sepsis*
Pioglitazone (glitazone)	15–30 mg PO daily	NASH with diabetes (specialist)	*Oedema, heart failure, fractures*
Atorvastatin (statin)	10–80 mg PO daily (80 mg in ACS)	Dyslipidaemia (safe)	*Myalgia; check LFT; CYP3A4 interactions*
Dapagliflozin (SGLT2 inhibitor)	10 mg PO daily	Diabetes with weight	*Genital infections; euglycaemic DKA*
Semaglutide (GLP-1 RA)	0.25–1 mg SC weekly; oral 3–14 mg daily	Obesity/diabetes	*Nausea; avoid in pancreatitis, MTC*
Cholecalciferol (vitamin D3)	60,000 IU weekly ×8 weeks, then monthly	Deficiency	*Hypercalcaemia if overused*

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DISEASE 95 OF 300 | GASTROINTESTINAL & LIVER

Cirrhosis & Ascites

Salt restriction, spironolactone, and watch for the complications.

DEFINITION

End-stage chronic liver disease with fibrosis and regenerative nodules, from alcohol, hepatitis B/C, MASLD, autoimmune or other causes. Compensated cirrhosis may be silent; decompensation presents with ascites, variceal bleeding, encephalopathy or jaundice. Child–Pugh and MELD scores grade severity.

SYMPTOMS

- Fatigue, weight loss, loss of muscle
- Abdominal distension, leg swelling
- Jaundice, itching
- Bleeding gums, easy bruising
- Confusion, day-night reversal

SIGNS

- Jaundice, palmar erythema, spider naevi
- Gynaecomastia, testicular atrophy
- Ascites: shifting dullness, fluid thrill
- Splenomegaly, caput medusae
- Flapping tremor

DIAGNOSTIC TESTS

Test	Finding / purpose
LFT, albumin, PT/INR	Synthetic function
CBC	Thrombocytopenia (hypersplenism)
USG abdomen with Doppler	Nodular liver, ascites, portal hypertension, HCC
Diagnostic paracentesis	SAAG ≥1.1 (portal hypertension); neutrophils ≥250/µl = SBP
Upper GI endoscopy	Varices screening
USG + AFP 6-monthly	HCC surveillance

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Salt	Sodium <5 g salt/day (2 g Na); no fluid restriction unless Na <125	Lifelong
Diuretics	Spironolactone 100 mg OD ± furosemide 40 mg OD (ratio 100:40), up to 400:160; target weight loss 0.5 kg/day (1 kg with oedema)	Long term
Tense ascites	Large-volume paracentesis + albumin 8 g per litre removed (if >5 l)	As needed
Varices (primary prophylaxis)	Carvedilol 6.25 mg OD → 12.5 mg OD or propranolol 20–40 mg BD (HR 55–60)	Long term
SBP prophylaxis (after an episode)	Norfloxacin 400 mg OD or ciprofloxacin 500 mg OD	Long term
Nutrition	35 kcal/kg/day, protein 1.2–1.5 g/kg, late-evening snack; abstain from alcohol	Lifelong

REFER / RED FLAGS

- First decompensation (ascites, bleed, encephalopathy, jaundice)
- Fever or abdominal pain with ascites (SBP)
- Rising creatinine (hepatorenal), Na <125
- Liver transplant evaluation (MELD ≥15)

GP PEARLS

★ *Avoid NSAIDs, aminoglycosides and ACE inhibitors in ascites — they precipitate renal failure.*

★ *Every cirrhotic with fever or new confusion needs a diagnostic tap to exclude SBP.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Spironolactone (aldosterone antagonist)	25–100 mg PO daily (up to 400 mg in ascites)	Ascites (100 mg start)	*Hyperkalaemia, gynaecomastia*
Furosemide (loop diuretic)	20–40 mg PO daily; 40–80 mg IV in LVF	Add 40 mg (ratio 100:40)	*Hypokalaemia, dehydration, gout*
Propranolol (portal hypertension)	20–40 mg PO 12-hourly (target HR 55–60)	Varices prophylaxis	*Avoid in refractory ascites, asthma*
Lactulose (osmotic laxative)	15–30 ml PO at night (titrate to 2–3 stools in HE)	HE prevention	*Bloating; dehydration if excessive*
Human albumin 20%	6–8 g per litre of ascites removed (>5 L)	Large-volume paracentesis	*Expensive; fluid overload*

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DISEASE 96 OF 300 | GASTROINTESTINAL & LIVER

Hepatic Encephalopathy

Confusion in a cirrhotic — find the precipitant, give lactulose.

DEFINITION

Reversible neuropsychiatric dysfunction in liver failure or portosystemic shunting, caused by ammonia and other gut-derived toxins. Graded West Haven 1–4 (from altered sleep and attention to coma). Precipitants: GI bleeding, infection, constipation, dehydration, hypokalaemia, diuretics, sedatives, high protein load.

SYMPTOMS

- Day-night sleep reversal
- Forgetfulness, personality change
- Confusion, drowsiness
- Slurred speech
- Coma (grade 4)

SIGNS

- Flapping tremor (asterixis)
- Foetor hepaticus
- Disorientation
- Signs of cirrhosis
- Signs of the precipitant: melaena, fever, dehydration

DIAGNOSTIC TESTS

Test	Finding / purpose
Glucose	Exclude hypoglycaemia
Electrolytes, creatinine	Hypokalaemia, hyponatraemia, AKI
CBC, cultures, ascitic tap, urine	Infection, SBP
Stool occult blood / DRE	GI bleeding
Ammonia	Not needed for diagnosis; normal value makes HE unlikely
CT head	Focal signs, head injury

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Treat precipitant	Stop sedatives and diuretics; correct K^+, fluids; treat infection and bleeding	Immediate
Lactulose	20–30 ml BD–QID titrated to 2–3 soft stools/day (or enema 300 ml in 700 ml water if unable to swallow)	Long term
Rifaximin	550 mg BD added for recurrence	Long term
L-ornithine L-aspartate	5–10 g IV/oral (adjunct, overt HE)	5–7 days
Nutrition	Do not restrict protein: 1.2–1.5 g/kg/day; small frequent meals, bedtime snack; vegetable/dairy protein	Ongoing
Thiamine	Thiamine 100 mg TDS in alcoholics	1–2 weeks

REFER / RED FLAGS

- Grade ≥2 (confusion, drowsiness)
- Unclear precipitant, GI bleed, sepsis
- Recurrent HE (transplant assessment)
- First episode

GP PEARLS

★ *Protein restriction worsens outcomes — it is outdated advice.*

★ *Constipation is the most avoidable trigger; make sure the patient has 2–3 stools daily.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Lactulose (osmotic laxative)	15–30 ml PO at night (titrate to 2–3 stools in HE)	Titrate to 2–3 soft stools	*Bloating; dehydration if excessive*
Rifaximin (non-absorbed antibiotic)	550 mg PO 12-hourly	Recurrence prevention	*Expensive; for HE prophylaxis/IBS-D*
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	Infection precipitant	*Biliary sludge; not with calcium IV in neonates*
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Dehydration correction	*Fluid overload in HF/CKD*
Potassium chloride (supplement)	Syrup 15–30 ml (20–40 mEq) PO 8–12-hourly	Correct hypokalaemia	*Never IV bolus; GI irritation*
Dextrose 25%/50% IV	25% dextrose 100 ml IV (child 2–5 ml/kg 10%)	Hypoglycaemia	*Thrombophlebitis; recheck glucose 15 min*

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DISEASE 97 OF 300 | GASTROINTESTINAL & LIVER

Jaundice — Approach

Pre-hepatic, hepatic or post-hepatic? LFT pattern and ultrasound decide.

DEFINITION

Yellow discoloration of skin and sclera from serum bilirubin >2.5–3 mg/dl. Pre-hepatic (haemolysis, Gilbert's — unconjugated), hepatic (viral, alcohol, drug, autoimmune hepatitis, cirrhosis, leptospirosis, malaria) and post-hepatic/obstructive (gallstones, cholangiocarcinoma, carcinoma head of pancreas, strictures).

SYMPTOMS

- Yellow eyes, dark urine
- Pale stools, itching (obstruction)
- Fever, myalgia (infective)
- Painless progressive jaundice with weight loss (malignancy)
- Biliary colic, fever with rigors (cholangitis)

SIGNS

- Icterus, scratch marks
- Hepatomegaly, palpable gall bladder (Courvoisier's)
- Pallor, splenomegaly (haemolysis)
- Signs of chronic liver disease
- Fever, tender liver

DIAGNOSTIC TESTS

Test	Finding / purpose
LFT	Unconjugated (haemolysis/Gilbert's); ALT ≫ ALP (hepatitis); ALP, GGT ≫ ALT (obstruction)
CBC, reticulocytes, LDH	Haemolysis
USG abdomen	Dilated bile ducts — obstruction; gallstones; liver texture
Viral markers (HAV, HEV, HBsAg, HCV)	Hepatitis
PT/INR	Synthetic function, vitamin K deficiency
MRCP / CT	Cause of obstruction

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Hepatitis	Supportive care (see Acute viral hepatitis)	As per cause
Gilbert's	Reassurance — benign, no treatment	—
Obstruction	Refer for ERCP/surgery; vitamin K 10 mg IV/SC if INR prolonged	As advised
Pruritus (cholestasis)	Cholestyramine 4 g BD (separate from other drugs) or ursodeoxycholic acid 10–15 mg/kg/day	As needed
Cholangitis	Ceftriaxone 2 g IV + metronidazole 500 mg IV TDS; urgent drainage	Refer
Drug-induced	Stop the suspected drug (ATT, antiepileptics, herbal)	—

REFER / RED FLAGS

- Obstructive jaundice
- Fever with rigors and jaundice (cholangitis)
- INR >1.5, encephalopathy
- Jaundice in pregnancy

GP PEARLS

★ *Mild unconjugated jaundice after fasting or illness in a young man is Gilbert's syndrome.*

★ *Painless jaundice with a palpable gall bladder is unlikely to be stones — suspect cancer.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain ≤2 g/day	*Hepatotoxic in overdose; check combination products*
Cholestyramine (bile-acid sequestrant)	4 g PO 1–3 times daily (pruritus)	Cholestatic pruritus	*Separate other drugs by 4 h*
Ursodeoxycholic acid (bile acid)	10–15 mg/kg/day PO in divided doses	Cholestasis (specialist)	*Diarrhoea; not for acute colic*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Vomiting	*QT; constipation*
Vitamin K (phytomenadione)	10 mg slow IV (warfarin reversal per INR)	Prolonged INR in cholestasis	*Anaphylactoid reactions with fast IV*
Multivitamin–mineral supplement	1 tablet PO daily	Nutrition	*Not a substitute for diet*

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DISEASE 98 OF 300 | GASTROINTESTINAL & LIVER

Gallstones & Biliary Colic

Right upper quadrant pain after a fatty meal — symptomatic stones need surgery.

DEFINITION

Cholesterol or pigment stones in the gall bladder. Most are asymptomatic. Biliary colic is episodic pain from transient cystic duct obstruction. Complications: acute cholecystitis, choledocholithiasis, cholangitis and pancreatitis. Risk factors: female, fertile, fat, forty, family history; rapid weight loss; haemolysis.

SYMPTOMS

- Severe steady RUQ or epigastric pain, 30 min to several hours
- Radiation to right shoulder or back
- After fatty meals, often at night
- Nausea, vomiting
- Fever and persistent pain suggest cholecystitis

SIGNS

- Mild RUQ tenderness during an attack
- Murphy's sign negative in simple colic
- No fever
- Jaundice (CBD stone)
- Normal between attacks

DIAGNOSTIC TESTS

Test	Finding / purpose
USG abdomen	Stones, gall bladder wall, CBD diameter
LFT	Raised bilirubin/ALP suggests CBD stone
Amylase/lipase	Gallstone pancreatitis
CBC	Leucocytosis — cholecystitis
MRCP	Suspected CBD stones

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Acute colic — analgesia	Diclofenac 75 mg IM or ketorolac 30 mg IM; or tramadol 50–100 mg	Stat
Antispasmodic	Drotaverine 40–80 mg IM/PO or hyoscine butylbromide 20 mg IV/IM	Stat, then TDS
Antiemetic	Ondansetron 4 mg IV/PO	SOS
Diet	Low-fat meals until surgery	—
Definitive	Elective laparoscopic cholecystectomy for symptomatic stones (refer)	—
Asymptomatic stones	No surgery (except porcelain gallbladder, stones >3 cm, polyp >1 cm)	—

REFER / RED FLAGS

- Pain >6 h, fever, Murphy's positive (cholecystitis)
- Jaundice, fever with rigors (cholangitis)
- Severe epigastric pain radiating to back (pancreatitis)
- All symptomatic gallstones for cholecystectomy

GP PEARLS

★ *Ursodeoxycholic acid rarely dissolves stones and is not an alternative to surgery for symptomatic patients.*

★ *Always do an ECG in older patients with "epigastric colic" — inferior MI mimics it.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Diclofenac (NSAID — acetic acid)	50 mg PO 8–12-hourly; 75 mg IM stat	Biliary colic 75 mg IM	*Higher CV risk; avoid in CKD, IHD, ulcer*
Hyoscine butylbromide (antispasmodic)	10–20 mg PO/IV 8-hourly	Spasm	*Tachycardia; glaucoma, urinary retention*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Mild pain	*Hepatotoxic in overdose; check combination products*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Vomiting	*QT; constipation*
Ursodeoxycholic acid (bile acid)	10–15 mg/kg/day PO in divided doses	Selected small stones	*Diarrhoea; not for acute colic*
Tramadol (weak opioid)	50–100 mg PO 6–8-hourly; max 400 mg/day	Severe pain	*Seizures, serotonin syndrome; dependence*

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DISEASE 99 OF 300 | GASTROINTESTINAL & LIVER

Acute Pancreatitis

Severe epigastric pain to the back with lipase >3 × normal — refer for admission.

DEFINITION

Acute inflammation of the pancreas, most often from gallstones or alcohol; others include hypertriglyceridaemia (>1000 mg/dl), hypercalcaemia, drugs, post-ERCP and trauma. Diagnosis needs 2 of 3: typical pain, lipase/amylase >3 × ULN, imaging findings. Most are mild; 20% develop severe disease with organ failure.

SYMPTOMS

- Sudden severe epigastric pain radiating to the back
- Pain relieved by leaning forward
- Nausea, repeated vomiting
- Recent alcohol binge or gallstone history
- Breathlessness (severe)

SIGNS

- Epigastric tenderness, guarding
- Tachycardia, fever, hypotension
- Reduced bowel sounds (ileus)
- Jaundice (gallstone)
- Grey Turner's / Cullen's sign (haemorrhagic — late)

DIAGNOSTIC TESTS

Test	Finding / purpose
Serum lipase (or amylase)	>3 × ULN
USG abdomen	Gallstones, CBD
CBC, RFT, LFT, calcium, triglycerides, glucose	Cause and severity (BISAP, Ranson)
ABG, chest X-ray	Hypoxia, effusion
CECT abdomen (after 72 h)	Necrosis, complications or diagnostic doubt

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Fluids	Ringer lactate 1.5 ml/kg/h with 10 ml/kg bolus if hypovolaemic; avoid aggressive overload	First 24–48 h
Analgesia	Paracetamol 1 g IV QID + tramadol 50–100 mg IV or morphine 2–4 mg IV	As needed
Antiemetic	Ondansetron 4–8 mg IV TDS	As needed
Feeding	Early oral feeding within 24–48 h as tolerated (low-fat); nasogastric/nasojejunal if not	Early
Antibiotics	Not routinely — only for infected necrosis or cholangitis	—
Gallstone pancreatitis	Cholecystectomy during the same admission (mild)	—

REFER / RED FLAGS

- All suspected acute pancreatitis — admission
- Hypotension, SpO_2 <94%, rising creatinine
- Cholangitis (urgent ERCP)
- Recurrent pancreatitis

GP PEARLS

★ *Amylase may be normal in alcoholic and hypertriglyceridaemic pancreatitis — lipase is better.*

★ *Stop alcohol completely after alcoholic pancreatitis — recurrence leads to chronic pancreatitis.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Aggressive early fluids (refer)	*Fluid overload in HF/CKD*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Tramadol (weak opioid)	50–100 mg PO 6–8-hourly; max 400 mg/day	Moderate pain	*Seizures, serotonin syndrome; dependence*
Morphine (strong opioid)	IR 5–10 mg PO 4-hourly; 2–5 mg IV titrated	Severe pain	*Respiratory depression; give laxative; NDPS record*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Vomiting	*QT; constipation*
Pantoprazole (PPI)	40 mg PO before breakfast; 40–80 mg IV	Stress ulcer (hospital)	*Long-term: B12, Mg deficiency, fractures*

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DISEASE 100 OF 300 | GASTROINTESTINAL & LIVER

Amoebic Liver Abscess

Fever with a tender liver in a young man who drinks — metronidazole cures most.

DEFINITION

Collection of necrotic liver tissue caused by Entamoeba histolytica, usually a single abscess in the right lobe, more common in adult males and with alcohol use. Pyogenic abscess (biliary sepsis, diabetes) is the main differential. Complications: rupture into pleura, peritoneum or pericardium.

SYMPTOMS

- Fever with chills
- Right upper quadrant pain, may radiate to right shoulder
- Pain worse on breathing or walking
- Anorexia, weight loss
- Past dysentery (only in a minority)

SIGNS

- Tender hepatomegaly
- Intercostal tenderness over the liver
- Reduced breath sounds at right base
- Mild jaundice (uncommon)
- Toxic appearance

DIAGNOSTIC TESTS

Test	Finding / purpose
USG abdomen	Hypoechoic lesion, usually single, right lobe
CBC, ESR, CRP	Leucocytosis
LFT	Raised ALP
Amoebic serology (IgG)	Positive in >90%
Chest X-ray	Raised right hemidiaphragm, effusion
Aspirate (if done)	"Anchovy sauce" pus; culture to exclude pyogenic

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Tissue amoebicide	Metronidazole 800 mg TDS (child 35–50 mg/kg/day in 3 doses); IV 500 mg 8-hourly if vomiting	10 days
Then luminal agent	Diloxanide furoate 500 mg TDS (or paromomycin 500 mg TDS × 7 days)	10 days
Analgesia	Paracetamol 650 mg TDS	As needed
Pyogenic suspicion	Ceftriaxone 2 g OD + metronidazole; drainage (refer)	4–6 weeks
Aspiration / drainage (refer)	Large (>5–10 cm), left lobe, impending rupture, no response in 72 h	—
Alcohol	Abstain	—

REFER / RED FLAGS

- Abscess >5–10 cm or left lobe
- No response to metronidazole in 72 h
- Jaundice, sepsis
- Signs of rupture: sudden pain, breathlessness, peritonitis

GP PEARLS

★ *Most amoebic abscesses resolve with drugs alone — ultrasound changes lag weeks behind clinical recovery.*

★ *Diabetics with liver abscess more often have Klebsiella pyogenic abscess.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Metronidazole (nitroimidazole)	400 mg PO 8-hourly (child 7.5 mg/kg)	800 mg TDS ×10 days	*No alcohol; metallic taste*
Tinidazole (nitroimidazole)	2 g PO single dose (or daily ×3–5 days)	Alternative	*No alcohol; avoid in 1st trimester*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain/fever	*Hepatotoxic in overdose; check combination products*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Vomiting	*QT; constipation*
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	If pyogenic abscess suspected	*Biliary sludge; not with calcium IV in neonates*

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DISEASE 101 OF 300 | GASTROINTESTINAL & LIVER

Hiccups (Singultus)

Usually trivial; beyond 48 hours look for a cause.

DEFINITION

Involuntary spasmodic contractions of the diaphragm followed by abrupt glottic closure. Acute hiccups (<48 h) follow gastric distension, alcohol, spicy food or excitement. Persistent (>48 h) or intractable (>1 month) hiccups may reflect GERD, uraemia, hyponatraemia, CNS lesions, diaphragmatic irritation, MI or drugs (steroids, benzodiazepines).

SYMPTOMS

- Repetitive "hic" sound
- Duration and frequency
- Heartburn, abdominal pain
- Neurological symptoms
- Drug history

SIGNS

- Usually normal
- Abdominal distension
- Neurological signs
- Signs of uraemia

DIAGNOSTIC TESTS

Test	Finding / purpose
None for acute hiccups	Clinical
Electrolytes, creatinine, glucose, calcium	Persistent hiccups
Chest X-ray, ECG	Diaphragmatic or mediastinal irritation, MI
Upper GI endoscopy, CT/MRI brain	If no cause found

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Physical manoeuvres	Breath holding, sipping ice-cold water, swallowing granulated sugar, pulling knees to chest, gentle Valsalva	SOS
Gastric distension / GERD	Pantoprazole 40 mg OD + domperidone 10 mg TDS or simethicone	1–2 weeks
Persistent — first line	Baclofen 5–10 mg TDS	1–2 weeks
Alternative	Metoclopramide 10 mg TDS or gabapentin 300 mg TDS	1–2 weeks
Intractable (specialist)	Chlorpromazine 25–50 mg TDS (orally or IM)	Short course

REFER / RED FLAGS

- Hiccups >48 h without obvious cause
- Neurological signs
- Weight loss, dysphagia
- Interfering with eating or sleep

GP PEARLS

★ *Persistent hiccups in a renal patient: check urea.*

★ *Steroids and benzodiazepines are under-recognised causes.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Pantoprazole (PPI)	40 mg PO before breakfast; 40–80 mg IV	Reflux-triggered hiccups	*Long-term: B12, Mg deficiency, fractures*
Metoclopramide (antiemetic)	10 mg PO/IV 8-hourly, ≤5 days	Persistent hiccups (short)	*Extrapyramidal effects; avoid in children*
Baclofen (GABA-B agonist)	5–10 mg PO 8-hourly	Intractable hiccups	*Sedation; withdrawal seizures if stopped*
Haloperidol (palliative antiemetic)	0.5–1.5 mg PO/SC at night	Refractory cases	*EPS; QT*
Domperidone (antiemetic/prokinetic)	10 mg PO 8-hourly, ≤7 days	Gastric distension	*QT prolongation; avoid with macrolides*

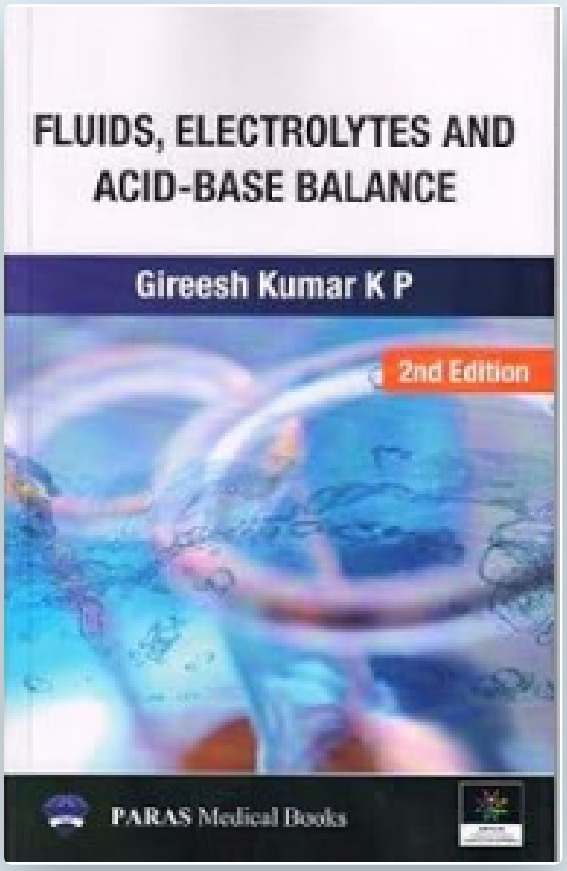
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DISEASE 102 OF 300 | RENAL & UROLOGY

Uncomplicated Cystitis in Women

Dysuria and frequency in a non-pregnant woman — nitrofurantoin for 5 days.

DEFINITION

Bladder infection in a healthy, non-pregnant woman with a normal urinary tract, usually caused by E. coli (>80%). Complicated UTI includes men, pregnancy, diabetes, catheters, stones, structural abnormality and pyelonephritis. Recurrent UTI = ≥2 in 6 months or ≥3 in a year.

SYMPTOMS

- Burning micturition (dysuria)
- Frequency, urgency
- Suprapubic pain
- Cloudy, smelly urine; haematuria
- No fever, loin pain or vaginal discharge

SIGNS

- Suprapubic tenderness
- Afebrile
- No renal angle tenderness

DIAGNOSTIC TESTS

Test	Finding / purpose
Urine dipstick	Leucocyte esterase and nitrite positive
Urine routine	Pus cells >5/hpf
Urine culture	Recurrent, failed therapy, pregnancy, men, complicated
Pregnancy test	Before prescribing if possible pregnancy

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
First line	Nitrofurantoin 100 mg BD (macrocrystals/SR) (avoid if eGFR <45)	5 days
Alternative	Fosfomycin 3 g sachet in water at bedtime	Single dose
Alternative (if susceptible)	Co-trimoxazole 960 mg BD or cephalexin 500 mg BD	3 days / 5–7 days
Avoid as first line	Fluoroquinolones (resistance, adverse effects)	—
Symptom relief	Fluids 2–3 l/day; urinary alkaliniser (potassium citrate 10 ml in water TDS) — not with nitrofurantoin; paracetamol	2–3 days
Recurrent UTI prevention	Hydration, post-coital voiding; vaginal oestrogen in postmenopausal women; nitrofurantoin 50–100 mg HS or post-coital	6–12 months

REFER / RED FLAGS

- Fever, loin pain, vomiting (pyelonephritis)
- Pregnancy, men, children
- Haematuria persisting after treatment
- Recurrent UTI — imaging

GP PEARLS

★ *A woman with typical symptoms and no vaginal discharge has >90% probability of cystitis — treat without culture.*

★ *Asymptomatic bacteriuria is treated only in pregnancy and before urological procedures.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Nitrofurantoin (urinary antiseptic)	100 mg MR PO 12-hourly ×5 days	First-line 5 days	*Avoid if eGFR <45; not at term*
Fosfomycin (urinary antibiotic)	3 g sachet PO single dose	Single-dose alternative	*Diarrhoea; for uncomplicated cystitis only*
Cephalexin (1st-gen cephalosporin)	500 mg PO 6–8-hourly	Pregnancy alternative	*Penicillin cross-allergy (low)*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Dysuria/pain	*Hepatotoxic in overdose; check combination products*
Potassium citrate (urinary alkaliniser)	10–20 mEq PO 8-hourly	Symptomatic alkalinisation	*Hyperkalaemia in CKD*
Cotrimoxazole (sulfonamide combination)	960 mg PO 12-hourly; prophylaxis 960 mg daily	If local sensitivity good	*Rash, SJS, hyperkalaemia, marrow suppression*

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DISEASE 103 OF 300 | RENAL & UROLOGY

Acute Pyelonephritis

UTI with fever and loin pain — culture first, then a proper antibiotic course.

DEFINITION

Bacterial infection of the renal pelvis and parenchyma, usually ascending from the bladder (E. coli, Klebsiella, Proteus). Complicated by renal abscess, emphysematous pyelonephritis (diabetics), papillary necrosis and urosepsis. Obstruction (stone) with infection is a urological emergency.

SYMPTOMS

- Fever with chills and rigors
- Loin (flank) pain
- Nausea, vomiting
- Dysuria, frequency (may be absent)
- Confusion in the elderly

SIGNS

- Fever, tachycardia
- Renal angle tenderness
- Hypotension (urosepsis)
- Dehydration
- Palpable kidney (obstruction/abscess)

DIAGNOSTIC TESTS

Test	Finding / purpose
Urine routine and culture (before antibiotics)	Pyuria, bacteriuria, WBC casts
CBC, CRP, creatinine, glucose	Severity, diabetes
Blood culture	If febrile and admitted
USG KUB	Obstruction, stones, abscess
CT KUB	Non-response at 72 h, emphysematous pyelonephritis

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Outpatient (mild, tolerating orally)	Cefixime 200 mg BD or amoxicillin-clavulanate 625 mg TDS (ciprofloxacin 500 mg BD × 7 days if local resistance <10%)	10–14 days
First dose (optional)	Ceftriaxone 1 g IV/IM stat, then oral	Stat
Admitted	Ceftriaxone 1–2 g IV OD; piperacillin-tazobactam 4.5 g 8-hourly or meropenem 1 g 8-hourly if ESBL risk	Switch to oral when afebrile 48 h; total 10–14 days
Supportive	Fluids, paracetamol 650 mg SOS, ondansetron 4 mg SOS	As needed
Pregnancy	Admit; ceftriaxone 1–2 g IV OD	14 days
Follow-up	Clinical review at 48–72 h; repeat culture if symptoms persist	—

REFER / RED FLAGS

- Sepsis, vomiting, unable to take orally
- Pregnancy, diabetes, single kidney, men
- Obstruction on USG (urgent drainage)
- No improvement in 72 h

GP PEARLS

★ *Fever not settling in 72 h means obstruction, abscess or resistance — image the kidneys.*

★ *Nitrofurantoin and fosfomycin do not reach the kidney — never use them for pyelonephritis.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Cefixime (oral 3rd-gen cephalosporin)	200 mg PO 12-hourly (child 8 mg/kg/day)	Oral (mild, tolerating PO)	*Diarrhoea; poor Gram-positive cover*
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	First dose/severe	*Biliary sludge; not with calcium IV in neonates*
Ciprofloxacin (fluoroquinolone)	500 mg PO 12-hourly	Oral alternative 7 days	*Tendinopathy, QT, avoid in pregnancy/children*
Amoxicillin–clavulanate (penicillin + β-lactamase inhibitor)	625 mg PO 8-hourly (child 25–45 mg/kg/day amox)	Pregnancy (per culture)	*Diarrhoea, cholestatic jaundice*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever, pain	*Hepatotoxic in overdose; check combination products*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Vomiting	*QT; constipation*

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DISEASE 104 OF 300 | RENAL & UROLOGY

Renal Colic & Urolithiasis

Writhing loin-to-groin pain — NSAID, alpha-blocker, and image.

DEFINITION

Acute pain from obstruction of the ureter by a calculus (calcium oxalate in ~80%; also uric acid, struvite, cystine). Common in hot regions of India ("stone belt") due to dehydration. Stones <5 mm usually pass spontaneously; >10 mm rarely do. Infected obstructed kidney is an emergency.

SYMPTOMS

- Sudden severe colicky loin pain radiating to groin, testis or labia
- Restless, cannot find a comfortable position
- Nausea, vomiting
- Haematuria, frequency, urgency (lower ureter)
- Fever with chills (infection)

SIGNS

- Restless, sweating
- Renal angle tenderness
- Soft abdomen (no peritonism)
- Fever (infected obstruction)
- Exclude AAA in elderly, ectopic pregnancy in women

DIAGNOSTIC TESTS

Test	Finding / purpose
Urine routine	Microscopic haematuria (absent in 10–15%)
Creatinine, CBC, uric acid, calcium	Renal function, infection, metabolic cause
NCCT KUB	Gold standard: size, site of stone
USG KUB + X-ray KUB	Hydronephrosis, radio-opaque stone (pregnancy, children: USG)
Urine pregnancy test	Women

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Analgesia (first line)	Diclofenac 75 mg IM or ketorolac 30 mg IM/IV; then diclofenac 50 mg TDS orally	Stat, then 3–5 days
NSAID contraindicated	Paracetamol 1 g IV; tramadol 50–100 mg; morphine 2–4 mg IV for severe pain	As needed
Antispasmodic / antiemetic	Drotaverine 40–80 mg IM; ondansetron 4 mg IV	SOS
Medical expulsive therapy (stone 5–10 mm, distal)	Tamsulosin 0.4 mg OD (silodosin 8 mg OD)	Up to 4 weeks
Hydration	Normal oral fluids (excess IV fluids do not help passage)	—
Prevention	Fluids >2.5–3 l/day (urine output >2 l), salt <5 g, normal calcium intake, limit animal protein, lemon water; potassium citrate 10–20 mEq BD for recurrent calcium/uric acid stones	Long term

REFER / RED FLAGS

- Fever with obstruction (urgent decompression)
- Single kidney, AKI, bilateral obstruction
- Uncontrolled pain or vomiting
- Stone >10 mm or not passing in 4 weeks

GP PEARLS

★ *Do not restrict calcium in stone formers — low calcium diets increase oxalate stones.*

★ *An elderly patient with "first renal colic" may have a leaking aortic aneurysm — palpate the abdomen.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Diclofenac (NSAID — acetic acid)	50 mg PO 8–12-hourly; 75 mg IM stat	75 mg IM for colic	*Higher CV risk; avoid in CKD, IHD, ulcer*
Tamsulosin (α1-blocker)	0.4 mg PO at night	Medical expulsive therapy	*Orthostatic hypotension; floppy iris*
Hyoscine butylbromide (antispasmodic)	10–20 mg PO/IV 8-hourly	Spasm adjunct	*Tachycardia; glaucoma, urinary retention*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Mild pain	*Hepatotoxic in overdose; check combination products*
Potassium citrate (urinary alkaliniser)	10–20 mEq PO 8-hourly	Uric acid/citrate stones	*Hyperkalaemia in CKD*

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DISEASE 105 OF 300 | RENAL & UROLOGY

Benign Prostatic Hyperplasia & LUTS

Weak stream and nocturia in older men — alpha-blocker, then 5-ARI if large.

DEFINITION

Non-malignant enlargement of the prostate transition zone in men over 50, causing lower urinary tract symptoms (LUTS): voiding (hesitancy, poor stream, dribbling) and storage (frequency, urgency, nocturia). Complications: acute retention, UTI, stones, hydronephrosis and CKD. Severity scored by IPSS.

SYMPTOMS

- Weak stream, hesitancy, straining
- Terminal dribbling, incomplete emptying
- Frequency, urgency, nocturia
- Episodes of retention
- Haematuria, UTI

SIGNS

- DRE: smooth, firm, symmetrically enlarged prostate (hard/nodular — cancer)
- Palpable bladder (chronic retention)
- Signs of uraemia
- Neurological exam (diabetes, spinal cause)

DIAGNOSTIC TESTS

Test	Finding / purpose
IPSS score, frequency-volume chart	Severity, nocturnal polyuria
Urine routine, creatinine	Infection, renal impairment
PSA (after counselling)	Prostate cancer risk, prostate volume
USG KUB with post-void residual	Prostate size, PVR >100 ml significant, hydronephrosis
Uroflowmetry	Qmax <10 ml/s suggests obstruction

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Lifestyle	Reduce evening fluids, caffeine and alcohol; double voiding; review diuretics/anticholinergics	Ongoing
Alpha-blocker (first line)	Tamsulosin 0.4 mg HS or silodosin 8 mg OD or alfuzosin 10 mg OD	Long term
Large prostate (>30–40 ml) or PSA >1.5	Add dutasteride 0.5 mg OD or finasteride 5 mg OD (takes 6 months; halves PSA)	Long term
Storage symptoms persisting	Add mirabegron 25–50 mg OD or solifenacin 5 mg OD (if PVR <150 ml)	Long term
Erectile dysfunction with LUTS	Tadalafil 5 mg OD	Long term
Surgery (refer)	TURP, HoLEP for refractory symptoms, retention, stones, hydronephrosis	—

REFER / RED FLAGS

- Hard/nodular prostate or raised PSA
- Acute or chronic retention, raised creatinine
- Haematuria, recurrent UTI, bladder stones
- Failure of medical therapy

GP PEARLS

★ *Warn about postural hypotension and "dry ejaculation" with alpha-blockers; also floppy-iris during cataract surgery.*

★ *Double the PSA value to interpret it after 6 months of 5-ARI therapy.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Tamsulosin (α1-blocker)	0.4 mg PO at night	First-line α-blocker	*Orthostatic hypotension; floppy iris*
Silodosin (α1-blocker)	8 mg PO daily	Alternative α-blocker	*Retrograde ejaculation*
Finasteride (5-α reductase inhibitor)	5 mg PO daily	Large prostate (>30 g)	*Halves PSA; sexual side effects*
Dutasteride (5-α reductase inhibitor)	0.5 mg PO daily	Alternative 5-ARI	*Halves PSA; women should not handle*
Tadalafil (PDE5 inhibitor)	10–20 mg on demand or 5 mg daily	BPH with ED	*Never with nitrates*

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DISEASE 106 OF 300 | RENAL & UROLOGY

Acute Urinary Retention

Painful inability to pass urine — catheterise, then find the cause.

DEFINITION

Sudden inability to void with a painful, distended bladder. Commonest in older men with BPH; precipitated by constipation, alcohol, cold, anticholinergics, antihistamines, opioids, surgery/anaesthesia, UTI. Other causes: urethral stricture, clot retention, spinal cord compression, cauda equina, pelvic mass, faecal impaction.

SYMPTOMS

- Inability to pass urine for hours
- Severe suprapubic pain
- Previous LUTS
- Recent cold remedies, alcohol, surgery
- Back pain, leg weakness, saddle numbness (neurological)

SIGNS

- Tender, dull, palpable bladder
- DRE: prostate size, faecal impaction, anal tone
- Perineal sensation, lower limb neurology
- Meatal stenosis, phimosis
- Painless retention with overflow (chronic)

DIAGNOSTIC TESTS

Test	Finding / purpose
Bladder scan / USG	Volume
Urine routine, culture (from catheter)	Infection
Creatinine, electrolytes	Obstructive renal failure
PSA	Delay 2–4 weeks after retention/catheterisation (falsely raised)
MRI spine	If neurological signs (emergency)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Catheterise	Aseptic urethral catheter (Foley 14–16 Fr) with lignocaine jelly; suprapubic if urethral fails or stricture (refer)	Immediate
Measure residual	Record drained volume (>1 l suggests chronic retention — watch for post-obstructive diuresis)	—
Alpha-blocker	Tamsulosin 0.4 mg OD started at catheterisation	Continue
Trial without catheter	Remove after 2–3 days on tamsulosin	—
Treat precipitant	Stop anticholinergics/antihistamines; laxatives; antibiotic for UTI	—
Clot retention	Three-way catheter and bladder irrigation (hospital)	—

REFER / RED FLAGS

- Failed catheterisation
- Neurological signs (cord compression, cauda equina)
- Raised creatinine, chronic retention, haematuria
- Failed trial without catheter

GP PEARLS

★ *Never force a catheter — a stricture needs a urologist, not more pressure.*

★ *Ask about recent "cold and cough" tablets — antihistamines and decongestants commonly precipitate retention.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Tamsulosin (α1-blocker)	0.4 mg PO at night	Trial without catheter	*Orthostatic hypotension; floppy iris*
Lidocaine 2% (local anaesthetic) for procedures	Max 3 mg/kg (7 mg/kg with adrenaline)	Lidocaine gel for catheterisation	*No adrenaline on digits as per local practice*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Cephalexin (1st-gen cephalosporin)	500 mg PO 6–8-hourly	Catheter-associated UTI (if infected)	*Penicillin cross-allergy (low)*
Lactulose (osmotic laxative)	15–30 ml PO at night (titrate to 2–3 stools in HE)	Constipation contributor	*Bloating; dehydration if excessive*
Finasteride (5-α reductase inhibitor)	5 mg PO daily	Long-term BPH	*Halves PSA; sexual side effects*

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DISEASE 107 OF 300 | RENAL & UROLOGY

Prostatitis

Acute: febrile UTI with a tender prostate. Chronic: pelvic pain without infection.

DEFINITION

Acute bacterial prostatitis is infection of the prostate (E. coli, other Gram-negatives; STI organisms in young men), presenting with fever and LUTS. Chronic bacterial prostatitis causes recurrent UTIs. Chronic prostatitis/chronic pelvic pain syndrome (CP/CPPS) is pelvic pain for ≥3 months without demonstrable infection.

SYMPTOMS

- Fever, chills, malaise (acute)
- Dysuria, frequency, urgency, poor stream
- Perineal, rectal, low back or suprapubic pain
- Pain on ejaculation
- Retention (acute)

SIGNS

- Fever, tachycardia
- Very tender, boggy, warm prostate on gentle DRE (no massage)
- Palpable bladder
- Normal prostate in CPPS
- Epididymal tenderness

DIAGNOSTIC TESTS

Test	Finding / purpose
Urine routine, culture	Pyuria, bacteriuria
Blood culture, CBC, CRP	Febrile patients
STI testing (NAAT)	Men <35 or at risk
USG / TRUS	Prostatic abscess, PVR
PSA	Not during acute infection (raised)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Acute — outpatient	Ciprofloxacin 500 mg BD or levofloxacin 500 mg OD; alternative co-trimoxazole 960 mg BD	2–4 weeks
Acute — severe (admit)	Ceftriaxone 1–2 g IV OD ± gentamicin, then oral	Total 4 weeks
Retention	Suprapubic catheter preferred (refer)	—
Symptoms	Paracetamol/ibuprofen 400 mg TDS; stool softeners; tamsulosin 0.4 mg OD	2–4 weeks
Chronic bacterial	Fluoroquinolone per culture	4–6 weeks
CP/CPPS	Tamsulosin 0.4 mg OD + NSAID; pelvic floor physiotherapy; amitriptyline 10–25 mg HS	6–12 weeks

REFER / RED FLAGS

- Sepsis, retention
- Prostatic abscess
- Recurrent infections
- Older man with abnormal prostate after treatment

GP PEARLS

★ *Never perform prostatic massage in acute prostatitis — it can cause bacteraemia.*

★ *Short courses fail: acute prostatitis needs at least 2–4 weeks.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ciprofloxacin (fluoroquinolone)	500 mg PO 12-hourly	Acute bacterial prostatitis 2–4 weeks	*Tendinopathy, QT, avoid in pregnancy/children*
Levofloxacin (fluoroquinolone)	500–750 mg PO once daily	Alternative fluoroquinolone	*Tendon rupture, QT, dysglycaemia; masks TB*
Cotrimoxazole (sulfonamide combination)	960 mg PO 12-hourly; prophylaxis 960 mg daily	If susceptible	*Rash, SJS, hyperkalaemia, marrow suppression*
Tamsulosin (α1-blocker)	0.4 mg PO at night	Voiding symptoms	*Orthostatic hypotension; floppy iris*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain/fever	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*

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DISEASE 108 OF 300 | RENAL & UROLOGY

Haematuria — Approach

Visible haematuria in an adult is cancer until proven otherwise.

DEFINITION

Blood in urine, visible (macroscopic) or non-visible (≥3 RBC/hpf). Causes: UTI, stones, BPH, glomerulonephritis (with proteinuria, dysmorphic RBCs, casts), bladder/kidney/prostate cancer, trauma, exercise, anticoagulants, schistosomiasis (rare in India). Red urine may also be from beetroot, rifampicin, haemoglobinuria or myoglobinuria.

SYMPTOMS

- Painless visible haematuria (malignancy)
- Painful with colic (stones)
- With dysuria, frequency (infection)
- Recent sore throat, oedema, hypertension (GN)
- Smoking, occupational dye exposure, anticoagulants

SIGNS

- BP, oedema
- Abdominal or loin mass
- Palpable bladder
- DRE — prostate
- Signs of bleeding disorder

DIAGNOSTIC TESTS

Test	Finding / purpose
Urine routine and microscopy	Confirm RBCs; dysmorphic RBCs and casts — glomerular
Urine culture	Infection — repeat urine after treatment
Creatinine, urine protein-creatinine ratio	Renal disease
USG KUB	Stones, masses, hydronephrosis
CT urography + cystoscopy	Visible haematuria or age >40 with non-visible haematuria (refer)
Coagulation profile, PSA	If on anticoagulants or prostate concern

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Infection	Treat as UTI; repeat urine 6 weeks later	As per UTI
Stones	See Renal colic	—
On anticoagulants	Check INR; investigate anyway (anticoagulants unmask lesions)	—
Clot retention	Three-way catheter and irrigation (refer)	Urgent
Glomerular	ACE inhibitor if proteinuria/hypertension; nephrology referral	—
Exercise-induced	Repeat after 48 h rest	—

REFER / RED FLAGS

- Visible haematuria (urology)
- Non-visible haematuria age >40
- Haematuria with proteinuria, hypertension, rising creatinine (nephrology)
- Clot retention

GP PEARLS

★ *Never attribute haematuria to warfarin alone.*

★ *Smokers with painless haematuria need cystoscopy — bladder cancer is strongly smoking-related.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Cefixime (oral 3rd-gen cephalosporin)	200 mg PO 12-hourly (child 8 mg/kg/day)	If UTI-related haematuria	*Diarrhoea; poor Gram-positive cover*
Tamsulosin (α1-blocker)	0.4 mg PO at night	Ureteric stone	*Orthostatic hypotension; floppy iris*
Diclofenac (NSAID — acetic acid)	50 mg PO 8–12-hourly; 75 mg IM stat	Colic pain	*Higher CV risk; avoid in CKD, IHD, ulcer*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Finasteride (5-α reductase inhibitor)	5 mg PO daily	Prostatic bleeding (specialist)	*Halves PSA; sexual side effects*
Warfarin (vitamin K antagonist)	Start 2–5 mg daily; INR 2–3	Review anticoagulation	*Many interactions; bleeding*

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DISEASE 109 OF 300 | RENAL & UROLOGY

Chronic Kidney Disease in General Practice

Find it early, slow it down, stop the drugs that hurt it.

DEFINITION

Abnormal kidney structure or function for >3 months: eGFR <60 ml/min/1.73 m² or albuminuria (ACR ≥30 mg/g). Staged G1–G5 by eGFR and A1–A3 by albuminuria. Leading causes in India: diabetes, hypertension, chronic glomerulonephritis and CKD of unknown aetiology (agricultural belts).

SYMPTOMS

- Usually silent until advanced
- Fatigue, anorexia, nausea
- Nocturia, frothy urine
- Swelling of feet, face
- Itching, breathlessness, cramps (advanced)

SIGNS

- Hypertension
- Pallor
- Oedema
- Uraemic fetor, pericardial rub (late)
- Fundus: hypertensive/diabetic retinopathy

DIAGNOSTIC TESTS

Test	Finding / purpose
Creatinine, eGFR (CKD-EPI)	Stage; repeat after 3 months to confirm
Urine ACR	Albuminuria category
Urine routine	Haematuria, casts
USG KUB	Small kidneys (chronic), obstruction, cysts
Hb, electrolytes, calcium, phosphate, PTH, HCO_3	Complications (stage 3b and beyond)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
BP	Target <130/80; ACEi (ramipril 2.5–10 mg) or ARB (telmisartan 40–80 mg) if albuminuria; check K^+ and creatinine at 2 weeks	Lifelong
SGLT2 inhibitor	Dapagliflozin 10 mg OD (eGFR ≥25) — diabetic and non-diabetic CKD	Lifelong
Diabetes	Finerenone 10–20 mg OD (diabetic CKD with albuminuria, specialist); adjust oral drugs to eGFR	Long term
Statin	Atorvastatin 10–20 mg OD (age >50 or diabetic)	Lifelong
Complications	Anaemia: iron + ESA if Hb <10; acidosis: sodium bicarbonate 500 mg TDS if HCO_3 <22; phosphate binders	As needed
Avoid	NSAIDs, nephrotoxic herbs, contrast without prophylaxis; adjust doses (metformin, antibiotics)	Lifelong

REFER / RED FLAGS

- eGFR <30 (stage 4–5)
- ACR >300 mg/g or haematuria with proteinuria
- eGFR fall >25% or >5 ml/min/year
- K^+ >6, resistant hypertension

GP PEARLS

★ *A rise in creatinine up to 30% after starting ACEi/ARB is acceptable — do not stop.*

★ *Vaccinate all CKD patients against hepatitis B before dialysis is needed.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Telmisartan (ARB)	20–80 mg PO daily	Albuminuria/BP	*Hyperkalaemia; avoid in pregnancy*
Dapagliflozin (SGLT2 inhibitor)	10 mg PO daily	CKD progression	*Genital infections; euglycaemic DKA*
Atorvastatin (statin)	10–80 mg PO daily (80 mg in ACS)	CV risk	*Myalgia; check LFT; CYP3A4 interactions*
Calcium carbonate (supplement)	500–1000 mg elemental calcium daily in divided doses	Phosphate binder (specialist)	*Constipation; separate from iron/thyroxine*
Ferrous sulphate/ascorbate (oral iron)	60–100 mg elemental iron daily or alternate days	Renal anaemia	*Black stools, constipation*
Cholecalciferol (vitamin D3)	60,000 IU weekly ×8 weeks, then monthly	Deficiency (cautious)	*Hypercalcaemia if overused*

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DISEASE 110 OF 300 | RENAL & UROLOGY

Acute Kidney Injury — Recognition

Rising creatinine or falling urine output — think pre-renal, renal, post-renal.

DEFINITION

Abrupt decline in kidney function: creatinine rise ≥0.3 mg/dl in 48 h, ≥1.5 × baseline in 7 days, or urine output <0.5 ml/kg/h for 6 h. Causes in India: dehydration (gastroenteritis), sepsis, tropical infections (leptospirosis, malaria, scrub typhus), snake bite, drugs (NSAIDs, aminoglycosides), contrast, obstruction.

SYMPTOMS

- Reduced urine output
- Swelling, breathlessness
- Nausea, vomiting, confusion
- History of diarrhoea, fever, snake bite, drugs
- Prostatic symptoms (obstruction)

SIGNS

- Volume status: dehydration or overload
- BP, pulse
- Palpable bladder
- Rash, eschar, jaundice (infection)
- Pericardial rub, flap (uraemia)

DIAGNOSTIC TESTS

Test	Finding / purpose
Creatinine, urea, electrolytes (K^+)	Severity; hyperkalaemia
Urine routine	Casts, protein, blood
USG KUB	Obstruction, kidney size
ABG/VBG	Acidosis
CBC, CPK, infection tests	Cause
ECG	Hyperkalaemia changes

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Pre-renal (dehydration)	IV crystalloid (RL/NS) 500 ml boluses with reassessment; ORS if mild	Until euvolaemic
Stop nephrotoxins	NSAIDs, ACEi/ARB, diuretics, metformin, aminoglycosides	Until recovery
Obstruction	Urinary catheter; urology referral	Immediate
Hyperkalaemia	See Potassium disorders	—
Treat cause	Antibiotics for sepsis/leptospirosis; anti-snake venom	—
Monitoring	Daily creatinine, input-output chart, weight	Daily

REFER / RED FLAGS

- All but mild pre-renal AKI with quick response
- K^+ >6, pH <7.2, fluid overload, uraemic symptoms (dialysis)
- Oliguria despite fluids
- Unknown cause, active urine sediment

GP PEARLS

★ *Hold "sick-day" drugs (SADMANS: sulfonylureas, ACEi, diuretics, metformin, ARBs, NSAIDs, SGLT2i) when patients are vomiting or have diarrhoea.*

★ *Furosemide does not treat AKI — it only helps fluid overload.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Pre-renal AKI (cautious bolus)	*Fluid overload in HF/CKD*
Furosemide (loop diuretic)	20–40 mg PO daily; 40–80 mg IV in LVF	Fluid overload only	*Hypokalaemia, dehydration, gout*
Calcium gluconate 10%	10 ml IV over 10 min (hyperkalaemia, cardiac protection)	Hyperkalaemia with ECG change	*Not with ceftriaxone in neonates; extravasation*
Insulin–dextrose (hyperkalaemia)	10 U regular insulin + 25 g dextrose IV	Shift potassium	*Check glucose hourly*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Safer analgesic	*Hepatotoxic in overdose; check combination products*

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DISEASE 111 OF 300 | RENAL & UROLOGY

Nephrotic Syndrome

Oedema, frothy urine, albumin low, cholesterol high.

DEFINITION

Proteinuria >3.5 g/day (>40 mg/m²/h in children), hypoalbuminaemia (<3 g/dl), oedema and hyperlipidaemia. In children, minimal change disease (steroid-responsive) is commonest; in adults — membranous nephropathy, FSGS, diabetic nephropathy, amyloidosis, lupus. Complications: infections, thrombosis, AKI.

SYMPTOMS

- Puffy face (morning), leg swelling
- Frothy urine
- Weight gain, abdominal distension
- Fatigue
- Breathlessness (effusions)

SIGNS

- Periorbital and pitting pedal oedema
- Ascites, pleural effusion
- BP usually normal (children)
- Xanthelasma
- Signs of infection or DVT

DIAGNOSTIC TESTS

Test	Finding / purpose
Urine dipstick, spot protein-creatinine ratio	UPCR >3 g/g (>2 mg/mg in children)
Serum albumin, lipids, creatinine	Hypoalbuminaemia, hyperlipidaemia
Urine microscopy	Bland (minimal change) or active (nephritic overlap)
HbA1c, ANA, C3/C4, HBsAg, HCV, HIV, anti-PLA2R	Secondary causes (adults)
Renal biopsy	Adults; children with atypical features or steroid resistance

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Child — initial episode (refer)	Prednisolone 60 mg/m²/day (2 mg/kg, max 60 mg) for 6 weeks, then 40 mg/m² alternate days for 6 weeks	12 weeks
Adults	Treatment based on biopsy (nephrology)	—
Oedema	Salt restriction; furosemide 20–40 mg OD–BD ± spironolactone	As needed
Proteinuria	ACEi/ARB (ramipril 2.5–10 mg) in adults	Long term
Lipids	Atorvastatin 10–20 mg OD (adults, persistent)	Long term
Prevent complications	Pneumococcal vaccine; anticoagulation if albumin <2–2.5 g/dl (membranous) per specialist	—

REFER / RED FLAGS

- All new nephrotic syndrome
- Haematuria, hypertension, raised creatinine
- Steroid resistance or frequent relapses
- Fever, abdominal pain (peritonitis), DVT

GP PEARLS

★ *Teach parents of nephrotic children to dipstick urine at home — relapses are caught early.*

★ *Abdominal pain with fever in a nephrotic child is spontaneous peritonitis until proven otherwise.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	1 mg/kg (child 2 mg/kg) remission	*Hyperglycaemia; taper if >3 weeks*
Furosemide (loop diuretic)	20–40 mg PO daily; 40–80 mg IV in LVF	Oedema	*Hypokalaemia, dehydration, gout*
Enalapril (ACE inhibitor)	2.5–20 mg PO 12-hourly	Proteinuria	*Cough, angioedema, avoid in pregnancy*
Atorvastatin (statin)	10–80 mg PO daily (80 mg in ACS)	Hyperlipidaemia	*Myalgia; check LFT; CYP3A4 interactions*
Enoxaparin (LMWH)	1 mg/kg SC 12-hourly (treatment); 40 mg daily prophylaxis	Thrombosis risk (selected)	*Bleeding; adjust in CKD*
Calcium carbonate (supplement)	500–1000 mg elemental calcium daily in divided doses	Bone protection on steroids	*Constipation; separate from iron/thyroxine*

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DISEASE 112 OF 300 | RENAL & UROLOGY

Acute Glomerulonephritis

Cola-coloured urine, puffy face and high BP after a sore throat or skin infection.

DEFINITION

Acute nephritic syndrome: haematuria with RBC casts, oliguria, oedema, hypertension and variable AKI. In children, post-streptococcal GN (1–3 weeks after pharyngitis or 3–6 weeks after impetigo) is most common and usually resolves. Other causes: IgA nephropathy, lupus, vasculitis (rapidly progressive GN).

SYMPTOMS

- Smoky, cola-coloured urine
- Puffy face, especially mornings
- Reduced urine output
- Headache (hypertension)
- Recent sore throat or skin infection

SIGNS

- Hypertension
- Periorbital and mild pedal oedema
- Signs of fluid overload: crepitations, raised JVP
- Healing skin sores
- Encephalopathy (severe hypertension)

DIAGNOSTIC TESTS

Test	Finding / purpose
Urine microscopy	Dysmorphic RBCs, RBC casts, mild proteinuria
Creatinine, electrolytes	AKI, hyperkalaemia
ASO titre, anti-DNase B	Recent streptococcal infection
C3 complement	Low; normalises within 8 weeks in PSGN
ANA, ANCA, anti-GBM	Adults, atypical course
Chest X-ray	Pulmonary congestion

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Fluid and salt	Restrict salt; fluid = previous day's urine output + insensible losses (400 ml/m²)	Oliguric phase
Oedema / hypertension	Furosemide 1–2 mg/kg/dose (adult 40 mg) OD–BD; add amlodipine 0.1–0.2 mg/kg/day (adult 5–10 mg)	Until resolved
Eradicate streptococcus	Penicillin V 250 mg QID (child) / amoxicillin 500 mg TDS (adult); erythromycin if allergic	10 days
Avoid	NSAIDs, potassium supplements	—
Follow-up	BP, urine and creatinine weekly; C3 at 8 weeks	Until normal

REFER / RED FLAGS

- All cases — admission if oliguria, hypertension or AKI
- Hypertensive encephalopathy, pulmonary oedema
- Rapid creatinine rise (RPGN)
- Persistent low C3 or proteinuria >8 weeks

GP PEARLS

★ *Microscopic haematuria may persist for a year after PSGN — not a cause for alarm if BP and creatinine are normal.*

★ *Headache and vomiting in a child with nephritis means hypertensive encephalopathy.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Furosemide (loop diuretic)	20–40 mg PO daily; 40–80 mg IV in LVF	Oedema, hypertension	*Hypokalaemia, dehydration, gout*
Amlodipine (dihydropyridine CCB)	2.5–10 mg PO daily	Hypertension	*Ankle oedema; headache*
Phenoxymethylpenicillin (penicillin V)	250–500 mg PO 6-hourly ×10 days	Persistent streptococcal infection	*Compliance for full 10 days*
Benzathine penicillin G	1.2 MU IM every 3 weeks (RHD prophylaxis); 2.4 MU for syphilis	Single dose eradication	*Test dose per local policy; keep adrenaline*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever	*Hepatotoxic in overdose; check combination products*
Nifedipine retard (CCB)	10–20 mg PO 12-hourly (retard only)	BP control (retard)	*Never sublingual short-acting*

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DISEASE 113 OF 300 | RENAL & UROLOGY

Acute Scrotum (Torsion & Epididymo-orchitis)

A boy with sudden testicular pain has torsion until a surgeon says otherwise.

DEFINITION

Acute scrotal pain and swelling. Testicular torsion (peak in adolescence) is a surgical emergency — salvage is >90% within 6 hours. Epididymo-orchitis is infection: STI organisms (chlamydia, gonorrhoea) under 35, enteric organisms in older men; mumps orchitis. Others: torsion of appendix testis, trauma, strangulated hernia.

SYMPTOMS

- Torsion: sudden severe pain, nausea, vomiting, often at night
- Epididymitis: gradual pain and swelling over days
- Dysuria, urethral discharge (STI)
- Fever
- Previous episodes of brief pain (intermittent torsion)

SIGNS

- Torsion: high-riding, horizontal testis, absent cremasteric reflex
- Epididymitis: tender epididymis, relief on elevation (Prehn's)
- Scrotal erythema, oedema
- Blue dot sign (torsion of appendix)
- Hernia

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical — do not delay surgery for tests in suspected torsion	—
Colour Doppler USG	Absent flow (torsion); increased flow (epididymitis)
Urine routine, culture	Pyuria in epididymitis
STI NAAT (urine/urethral)	Men <35 or at risk

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Suspected torsion	Immediate surgical referral for exploration; analgesia (diclofenac 75 mg IM); nil by mouth	Emergency
Epididymo-orchitis, STI likely	Ceftriaxone 500 mg IM single dose + doxycycline 100 mg BD	Doxycycline 10–14 days
Epididymo-orchitis, enteric likely (older)	Ofloxacin 200 mg BD or levofloxacin 500 mg OD (or amoxicillin-clavulanate)	10–14 days
Supportive	Scrotal support, ice packs, bed rest, ibuprofen 400 mg TDS	1–2 weeks
Partners	Treat sexual partners; abstain until both treated	—

REFER / RED FLAGS

- Any suspicion of torsion — immediate
- Abscess, no response in 72 h
- Testicular mass (cancer)
- Fournier's gangrene: perineal necrosis, sepsis

GP PEARLS

★ *"Epididymitis" in a prepubertal boy is rare — think torsion.*

★ *Absent cremasteric reflex strongly favours torsion.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	Epididymo-orchitis <35 y (STI)	*Biliary sludge; not with calcium IV in neonates*
Doxycycline (tetracycline)	100 mg PO 12-hourly after food, upright	With ceftriaxone ×10–14 d	*Avoid in pregnancy and <8 years; photosensitivity*
Ofloxacin (fluoroquinolone)	200–400 mg PO 12-hourly	Older men (enteric organisms)	*Tendinopathy; CNS effects*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain and inflammation	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Morphine (strong opioid)	IR 5–10 mg PO 4-hourly; 2–5 mg IV titrated	Torsion pain before surgery	*Respiratory depression; give laxative; NDPS record*

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DISEASE 114 OF 300 | RENAL & UROLOGY

Erectile Dysfunction

Often the first sign of vascular disease — check sugar, BP and lipids.

DEFINITION

Persistent inability to attain or maintain an erection sufficient for satisfactory sexual performance. Causes: vascular (diabetes, hypertension, smoking, dyslipidaemia), neurological, hormonal (low testosterone, hyperprolactinaemia, thyroid), drugs (beta-blockers, thiazides, SSRIs, antipsychotics, finasteride), alcohol, and psychological (performance anxiety, depression).

SYMPTOMS

- Difficulty achieving or maintaining erections
- Loss of morning erections (organic)
- Sudden onset, situational (psychogenic)
- Low libido (hormonal)
- Chest pain on exertion, claudication

SIGNS

- BP, BMI, waist
- Peripheral pulses
- Genital exam: Peyronie's plaques, testicular size
- Gynaecomastia, secondary sexual characteristics
- Neurological exam

DIAGNOSTIC TESTS

Test	Finding / purpose
Fasting glucose / HbA1c, lipids	Vascular risk
Morning total testosterone	Low libido, hypogonadism
TSH, prolactin	If low testosterone or libido
ECG / stress test	If cardiovascular symptoms before PDE5 inhibitor
IIEF-5 score	Severity

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Lifestyle	Weight loss, exercise, stop smoking, reduce alcohol; review drugs	Ongoing
PDE5 inhibitor (on demand)	Sildenafil 50 mg (25–100 mg) 1 h before sex on empty stomach, or tadalafil 10–20 mg 30 min–36 h before	As needed (max once daily)
Daily option	Tadalafil 5 mg OD (also helps BPH symptoms)	Long term
Contraindications	Nitrates, nicorandil, riociguat; recent MI/stroke; severe hypotension	—
Hypogonadism	Testosterone replacement (specialist) after excluding prostate cancer	Long term
Psychogenic / relationship	Counselling, sex therapy; treat depression	—

REFER / RED FLAGS

- Failure of PDE5 inhibitors
- Low testosterone or high prolactin
- Peyronie's disease, penile deformity
- Significant cardiovascular disease

GP PEARLS

★ *ED precedes coronary disease by about 3 years — assess cardiovascular risk.*

★ *Tell patients that sildenafil needs sexual stimulation and works best on an empty stomach.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Sildenafil (PDE5 inhibitor)	50 mg PO 1 h before sex (25–100 mg)	On-demand PDE5	*Never with nitrates*
Tadalafil (PDE5 inhibitor)	10–20 mg on demand or 5 mg daily	Daily or on-demand	*Never with nitrates*
Atorvastatin (statin)	10–80 mg PO daily (80 mg in ACS)	Vascular risk factors	*Myalgia; check LFT; CYP3A4 interactions*
Metformin (biguanide)	500 mg daily–1 g 12-hourly with meals	Diabetes control	*GI upset; stop if eGFR <30, contrast, sepsis*
Telmisartan (ARB)	20–80 mg PO daily	Hypertension (ED-friendly)	*Hyperkalaemia; avoid in pregnancy*
Levothyroxine (thyroid hormone)	25–100 µg PO empty stomach (1.6 µg/kg/day)	Hypothyroid cause	*Start low in elderly/IHD; separate from iron/calcium*

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DISEASE 115 OF 300 | RENAL & UROLOGY

Urethral Discharge (Gonorrhoea & Chlamydia)

Syndromic treatment covers both — and treat the partner.

DEFINITION

Urethritis in men presenting with discharge and dysuria, caused by Neisseria gonorrhoeae (purulent, short incubation 2–5 days), Chlamydia trachomatis and Mycoplasma genitalium (non-gonococcal, scanty discharge). India's NACO syndromic management (kit 1, grey) treats both gonorrhoea and chlamydia together.

SYMPTOMS

- Urethral discharge (purulent or mucoid)
- Burning micturition
- Itching at meatus
- Unprotected sexual exposure
- Testicular pain (epididymitis)

SIGNS

- Meatal discharge (milk urethra if not visible)
- Meatal erythema
- Inguinal nodes
- Epididymal tenderness
- Look for genital ulcers, warts

DIAGNOSTIC TESTS

Test	Finding / purpose
Gram stain of discharge	Intracellular Gram-negative diplococci = gonorrhoea
NAAT (first-void urine)	Gonorrhoea and chlamydia
HIV, VDRL/RPR, HBsAg	Screen all STI patients (with consent)
Culture and sensitivity	Treatment failure (resistance)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Syndromic (NACO kit 1)	Ceftriaxone 500 mg IM single dose (or cefixime 400 mg orally single dose) + azithromycin 1 g orally single dose	Single dose
Alternative for chlamydia	Doxycycline 100 mg BD (preferred when not pregnant)	7 days
Persistent urethritis	Azithromycin 500 mg day 1, then 250 mg days 2–5 (M. genitalium) + metronidazole 400 mg BD × 7 days (Trichomonas)	As stated
Partner management	Treat all partners in last 60 days; abstain for 7 days after both treated	—
Counselling	Condoms, HIV testing, notify partners, follow-up in 1–2 weeks	—

REFER / RED FLAGS

- Persistent or recurrent discharge after treatment
- Epididymo-orchitis with abscess
- Disseminated gonorrhoea (arthritis, rash)
- HIV positive

GP PEARLS

★ *Treat the partner at the same visit if possible — reinfection is the commonest cause of "failure".*

★ *Women with gonorrhoea/chlamydia are often asymptomatic; ask men to bring partners.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ceftriaxone (gonorrhoea)	500 mg IM single dose (1 g if >150 kg)	Gonorrhoea 500 mg IM	*Treat partner; test for other STIs*
Azithromycin (STI dose)	1 g PO single dose	Chlamydia 1 g	*QT; GI upset*
Doxycycline (tetracycline)	100 mg PO 12-hourly after food, upright	Chlamydia 7 days alternative	*Avoid in pregnancy and <8 years; photosensitivity*
Metronidazole (nitroimidazole)	400 mg PO 8-hourly (child 7.5 mg/kg)	Trichomonas co-infection	*No alcohol; metallic taste*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Dysuria	*Hepatotoxic in overdose; check combination products*
Benzathine penicillin G	1.2 MU IM every 3 weeks (RHD prophylaxis); 2.4 MU for syphilis	If syphilis positive	*Test dose per local policy; keep adrenaline*

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DISEASE 116 OF 300 | RENAL & UROLOGY

Genital Ulcer Disease

Painful ulcer: herpes or chancroid; painless: syphilis — treat syndromically.

DEFINITION

Ulcers of the genitalia, mostly sexually transmitted: herpes simplex (painful, multiple vesicles), syphilis (painless indurated chancre), chancroid (painful, ragged, purulent with suppurative buboes), lymphogranuloma venereum and donovanosis. Genital ulcers increase HIV transmission. NACO kits: kit 3 (white, non-herpetic) and kit 4 (red, herpetic).

SYMPTOMS

- Genital sore — painful or painless
- Preceding vesicles, tingling, recurrent episodes (herpes)
- Painful inguinal swelling (chancroid, LGV)
- Rash on palms, soles (secondary syphilis)
- Sexual exposure history

SIGNS

- Ulcer: number, base, edge, induration, tenderness
- Inguinal lymphadenopathy, buboes
- Grouped vesicles on red base (herpes)
- Mucous patches, condylomata lata
- Look for other STIs

DIAGNOSTIC TESTS

Test	Finding / purpose
VDRL/RPR + TPHA	Syphilis
Tzanck smear / HSV PCR	Herpes
Dark-ground microscopy	Treponemes (where available)
HIV, HBsAg	Screen all
Gram stain / culture	Chancroid (H. ducreyi) — school-of-fish

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Herpetic (first episode)	Acyclovir 400 mg TDS or valacyclovir 1 g BD (NACO kit 4)	7–10 days
Herpes recurrence	Acyclovir 400 mg TDS × 5 days; suppression 400 mg BD if ≥6 episodes/year	As stated
Non-herpetic (syphilis + chancroid, NACO kit 3)	Benzathine penicillin 2.4 MU IM single dose (1.2 MU each buttock) + azithromycin 1 g orally single dose	Single
Penicillin allergy (non-pregnant)	Doxycycline 100 mg BD × 14 days + azithromycin 1 g	14 days
Bubo	Needle aspiration through healthy skin (do not incise)	As needed
Partners	Treat partners; abstain until healed	—

REFER / RED FLAGS

- Ulcer not healing in 2 weeks (consider donovanosis, cancer)
- Pregnancy with syphilis
- Neurological or eye symptoms (neurosyphilis)
- HIV co-infection

GP PEARLS

★ *Every pregnant woman should have a VDRL/RPR — congenital syphilis is preventable with a single injection.*

★ *Recheck VDRL titre at 6 and 12 months; a 4-fold fall means cure.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Benzathine penicillin G	1.2 MU IM every 3 weeks (RHD prophylaxis); 2.4 MU for syphilis	Syphilis 2.4 MU IM	*Test dose per local policy; keep adrenaline*
Acyclovir (antiviral)	800 mg PO 5 times daily ×7 days (zoster)	Genital herpes 400 mg TDS	*Hydrate; reduce dose in CKD*
Azithromycin (STI dose)	1 g PO single dose	Chancroid 1 g	*QT; GI upset*
Doxycycline (tetracycline)	100 mg PO 12-hourly after food, upright	LGV/donovanosis	*Avoid in pregnancy and <8 years; photosensitivity*
Ceftriaxone (gonorrhoea)	500 mg IM single dose (1 g if >150 kg)	Chancroid alternative	*Treat partner; test for other STIs*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*

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DISEASE 117 OF 300 | RENAL & UROLOGY

Urinary Incontinence in Women

Leak on cough — pelvic floor exercises; leak with urgency — bladder training.

DEFINITION

Involuntary leakage of urine. Stress incontinence (leak with cough, sneeze, lifting — sphincter weakness after childbirth, menopause); urge incontinence/overactive bladder (detrusor overactivity); mixed incontinence; overflow (retention). Contributors: UTI, diabetes, obesity, constipation, diuretics, caffeine.

SYMPTOMS

- Leak on coughing, laughing, exercise (stress)
- Sudden strong urge with leak, frequency, nocturia (urge)
- Constant dribbling (overflow, fistula)
- Dysuria (UTI)
- Effect on quality of life

SIGNS

- Abdominal exam — palpable bladder
- Pelvic exam: prolapse, atrophic vaginitis
- Cough stress test
- Neurological exam (perineal sensation)
- BMI

DIAGNOSTIC TESTS

Test	Finding / purpose
Urine routine and culture	Exclude UTI, haematuria, glycosuria
Bladder diary (3 days)	Frequency, volumes, fluid intake
Post-void residual (USG)	Overflow
Blood sugar	Diabetes
Urodynamics	Before surgery or if mixed/unclear

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
General	Weight loss, reduce caffeine, treat constipation, avoid excess fluid	Ongoing
Stress incontinence	Supervised pelvic floor muscle training: 8 contractions held 10 s, 3 times daily	≥3 months
Urge / OAB — first line	Bladder training: scheduled voiding with gradually increasing intervals	6 weeks
OAB drugs	Mirabegron 25–50 mg OD (preferred in elderly) or solifenacin 5–10 mg OD / tolterodine 2 mg BD	Review at 4–6 weeks
Postmenopausal	Vaginal oestrogen (estriol cream 0.5 g twice weekly)	Long term
Refractory stress incontinence	Mid-urethral sling, colposuspension (refer)	—

REFER / RED FLAGS

- Haematuria, recurrent UTI
- Voiding difficulty, palpable bladder
- Prolapse beyond introitus
- Continuous leakage (fistula)

GP PEARLS

★ *Avoid anticholinergics in the elderly — they worsen memory; prefer mirabegron.*

★ *Pelvic floor exercises fail mainly because they are taught poorly — check that the patient contracts the right muscle.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Solifenacin (antimuscarinic)	5–10 mg PO daily	Overactive bladder	*Dry mouth, constipation, cognition in elderly*
Mirabegron (β3-agonist)	25–50 mg PO daily	Elderly/cognitive concern	*Raised BP*
Oxybutynin (antimuscarinic)	2.5–5 mg PO 8–12-hourly	Cheap alternative	*Cognitive effects in elderly*
Emollient (white soft paraffin / urea cream)	Apply liberally twice daily and after bath	Skin care	*Fire risk with paraffin on dressings*
Cephalexin (1st-gen cephalosporin)	500 mg PO 6–8-hourly	UTI if present	*Penicillin cross-allergy (low)*

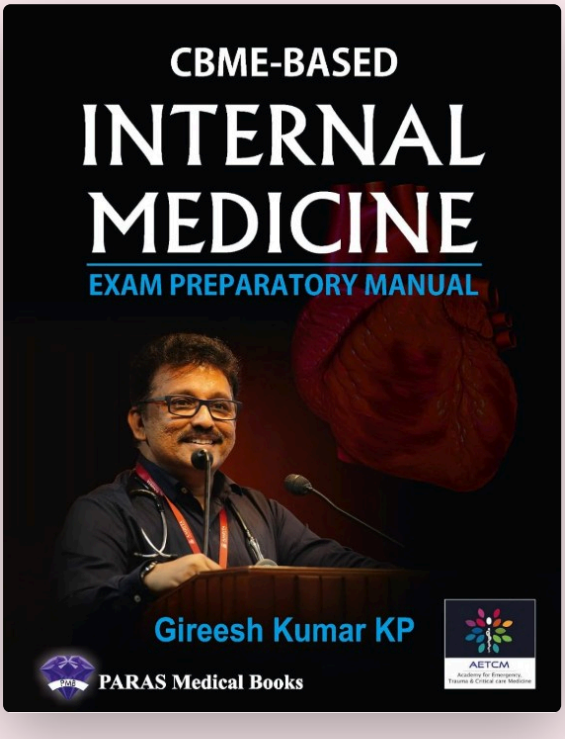
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DISEASE 118 OF 300 | NEUROLOGY

Headache — Approach & Red Flags

Most headaches are primary — the job is to catch the dangerous few.

DEFINITION

Primary headaches (tension-type, migraine, cluster) account for over 90%. Secondary headaches arise from subarachnoid haemorrhage, meningitis, raised intracranial pressure (tumour, IIH, cerebral venous thrombosis), temporal arteritis, acute glaucoma, hypertensive crisis, sinusitis, medication overuse and carbon monoxide.

SYMPTOMS

- Onset (sudden "worst ever" — SAH), pattern, duration
- Location, character, triggers
- Associated vomiting, visual symptoms, fever, neck stiffness
- Worse on lying down, coughing (raised ICP)
- Analgesic use >10–15 days/month

SIGNS

- BP, temperature
- Neck stiffness
- Fundus — papilloedema
- Focal neurological signs, GCS
- Temporal artery tenderness, red eye with fixed pupil

DIAGNOSTIC TESTS

Test	Finding / purpose
None for typical primary headache	Clinical diagnosis
CT head (urgent)	Thunderclap headache, focal signs, papilloedema, head injury, altered sensorium
MRI with MRV	Suspected cerebral venous thrombosis, tumour
ESR/CRP	Age >50 with new headache (temporal arteritis)
Lumbar puncture	Suspected meningitis or SAH with normal CT

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Primary headache	See Tension-type headache and Migraine	—
Simple analgesia	Paracetamol 1 g or ibuprofen 400 mg or naproxen 500 mg at onset	Max 2–3 days/week
Medication overuse	Withdraw overused analgesics; start preventive (amitriptyline 10–25 mg HS)	2–3 months
Suspected temporal arteritis	Prednisolone 40–60 mg OD immediately; refer (biopsy within 2 weeks)	Long course
Hypertensive	See Hypertensive urgency	—
Secondary cause	Refer as per red flags	—

REFER / RED FLAGS

- Sudden thunderclap headache (SAH)
- Fever with neck stiffness, rash
- Papilloedema, focal deficit, seizure, altered sensorium
- New headache >50 y, in pregnancy/postpartum, cancer or HIV

GP PEARLS

★ *A headache that wakes the patient from sleep with vomiting needs imaging.*

★ *Postpartum headache with seizures: think cerebral venous thrombosis or eclampsia.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Simple headache	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Tension-type/migraine	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Sumatriptan (triptan)	50–100 mg PO at onset; may repeat after 2 h	Migraine	*Avoid in IHD, uncontrolled HTN*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Nausea	*QT; constipation*
Dexamethasone (corticosteroid)	4–8 mg IV/IM/PO; 0.15–0.6 mg/kg child	Not for undifferentiated headache	*Hyperglycaemia; GI bleeding*
Amitriptyline (TCA)	10–25 mg PO at night	Chronic daily headache prophylaxis	*Anticholinergic; avoid in elderly, IHD*

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DISEASE 119 OF 300 | NEUROLOGY

Tension-Type Headache

Band-like, bilateral, pressing pain — no vomiting, no aura.

DEFINITION

The commonest primary headache: bilateral, pressing or tightening (non-pulsating), mild to moderate, not worsened by routine activity, without nausea, and with no more than one of photophobia or phonophobia. Episodic (<15 days/month) or chronic (≥15 days/month for >3 months). Linked to stress, poor posture, eye strain, sleep deprivation.

SYMPTOMS

- Band-like tightness around the head
- Bilateral, frontal or occipital
- Lasts 30 minutes to several days
- Associated neck and shoulder stiffness
- Stress, screen time, poor sleep

SIGNS

- Pericranial and neck muscle tenderness
- Normal neurological examination
- Normal fundus
- Check BP and vision

DIAGNOSTIC TESTS

Test	Finding / purpose
None	Clinical diagnosis
Refraction	If eye strain suspected
Imaging	Only if red flags

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Acute	Paracetamol 1 g or ibuprofen 400 mg or naproxen 500 mg (caffeine combination acceptable)	Max 2–3 days/week
Lifestyle	Regular sleep, meals, hydration; screen breaks; posture correction; exercise	Ongoing
Physical	Neck stretches, heat, massage, relaxation techniques	Ongoing
Chronic TTH — preventive	Amitriptyline 10 mg HS, increase by 10 mg weekly to 25–75 mg HS	6 months, then taper
Alternative preventive	Mirtazapine 15–30 mg HS or venlafaxine 75 mg OD	6 months
Psychological	CBT, stress management; screen for depression and anxiety	—

REFER / RED FLAGS

- Red flags present
- Change in pattern of a long-standing headache
- Failure of preventive therapy
- Significant depression

GP PEARLS

★ *Analgesics on more than 10 days a month convert episodic into chronic daily headache.*

★ *Amitriptyline works at lower doses for headache than for depression; warn about morning drowsiness.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Acute episode	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Acute episode	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Naproxen (NSAID)	250–500 mg PO 12-hourly after food	Alternative NSAID	*GI bleed risk; lower CV risk than other NSAIDs*
Amitriptyline (TCA)	10–25 mg PO at night	Prophylaxis (chronic)	*Anticholinergic; avoid in elderly, IHD*
Thiocolchicoside (muscle relaxant)	4–8 mg PO 12-hourly ≤7 days	Neck muscle spasm	*Avoid in pregnancy, epilepsy*
Escitalopram (SSRI)	5–10 mg PO daily (max 20 mg)	Comorbid anxiety	*Nausea, QT; activation early; hyponatraemia*

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DISEASE 120 OF 300 | NEUROLOGY

Migraine

Treat early in the attack; consider prevention if ≥4 days a month.

DEFINITION

Recurrent primary headache lasting 4–72 hours, typically unilateral, pulsating, moderate–severe, worsened by activity, with nausea and/or photophobia and phonophobia. About a third have aura (visual zigzags, scotoma, paraesthesia) lasting 5–60 minutes. Triggers: stress, sleep change, fasting, menses, bright light, certain foods.

SYMPTOMS

- Throbbing one-sided headache
- Nausea, vomiting
- Light and sound sensitivity
- Aura before headache
- Prefers dark quiet room; family history

SIGNS

- Normal neurological exam between attacks
- Pallor during attack
- Normal fundus
- BP

DIAGNOSTIC TESTS

Test	Finding / purpose
None for typical migraine	Clinical diagnosis (headache diary helps)
MRI brain	Atypical aura, focal signs, change in pattern, new after 50

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Acute — mild	Paracetamol 1 g or ibuprofen 400–600 mg or naproxen 500–750 mg + domperidone 10 mg / metoclopramide 10 mg	At onset; max 10 days/month
Acute — moderate–severe	Sumatriptan 50–100 mg (repeat after 2 h; max 200 mg/day) or rizatriptan 10 mg; combine with naproxen 500 mg	At onset
Emergency	Ketorolac 30 mg IM or metoclopramide 10 mg IV + IV fluids; dexamethasone 10 mg IV to prevent recurrence	Stat
Prevention (≥4 days/month or disabling)	Propranolol 20 → 40–80 mg BD or amitriptyline 10 → 25–50 mg HS or flunarizine 5–10 mg HS	6–12 months
Alternative prevention	Topiramate 25 → 50 mg BD (avoid in pregnancy); sodium valproate 500 mg BD (avoid in women of childbearing potential)	6–12 months
Lifestyle	Regular sleep and meals, hydration, headache diary, limit caffeine	Ongoing

REFER / RED FLAGS

- Aura >60 min, motor weakness, first aura after 40
- Status migrainosus (>72 h)
- Change in pattern, red flags
- Failure of 2–3 preventives (CGRP drugs)

GP PEARLS

★ *Triptans are contraindicated in coronary disease, uncontrolled hypertension and hemiplegic migraine.*

★ *Women with migraine with aura should avoid combined oral contraceptives (stroke risk).*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Early in attack	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Sumatriptan (triptan)	50–100 mg PO at onset; may repeat after 2 h	Moderate–severe attack	*Avoid in IHD, uncontrolled HTN*
Domperidone (antiemetic/prokinetic)	10 mg PO 8-hourly, ≤7 days	Nausea, gastric stasis	*QT prolongation; avoid with macrolides*
Propranolol (non-selective β-blocker)	10–40 mg PO 8–12-hourly	Prophylaxis	*Avoid in asthma; masks hypoglycaemia*
Flunarizine (migraine prophylaxis)	5–10 mg PO at night	Prophylaxis	*Weight gain, depression, parkinsonism*
Topiramate (prophylaxis)	25 mg at night, titrate to 50 mg 12-hourly	Prophylaxis	*Paraesthesia, weight loss, glaucoma*

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DISEASE 121 OF 300 | NEUROLOGY

Vertigo & BPPV

Brief spinning on turning in bed — Dix-Hallpike to diagnose, Epley to cure.

DEFINITION

Vertigo is an illusion of movement, usually spinning. Benign paroxysmal positional vertigo (BPPV), the commonest cause, results from displaced otoconia in the posterior semicircular canal, producing brief (<1 min) vertigo with head movements. Central causes (cerebellar stroke) must be excluded in acute continuous vertigo.

SYMPTOMS

- Spinning lasting seconds on lying down, turning in bed, looking up
- Nausea
- No hearing loss or tinnitus
- Recurrent episodes over weeks
- Red flags: headache, diplopia, slurred speech, unable to walk

SIGNS

- Dix-Hallpike positive: rotatory up-beating nystagmus after latency, fatigues
- Normal neurology
- Normal hearing
- BP lying and standing
- Gait: able to walk unaided

DIAGNOSTIC TESTS

Test	Finding / purpose
Dix-Hallpike test	Diagnostic for posterior canal BPPV
BP, glucose, ECG	Exclude presyncope causes in "giddiness"
HINTS exam	Acute continuous vertigo — normal head impulse + direction-changing nystagmus + skew = central
MRI brain	Suspected central cause

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
BPPV — definitive	Epley manoeuvre (canalith repositioning) in clinic; teach home Brandt-Daroff exercises	Repeat weekly if needed
Short-term symptom relief	Prochlorperazine 5 mg TDS or betahistine 16 mg TDS or cinnarizine 25 mg TDS	3–5 days only
Nausea	Promethazine 25 mg or ondansetron 4 mg	SOS
Avoid	Long-term vestibular sedatives (delay compensation)	—
Advice	Get up slowly; sleep with head slightly raised for a few nights	—

REFER / RED FLAGS

- Central signs: diplopia, dysarthria, ataxia, inability to stand
- New headache, neck pain (vertebral dissection)
- Persistent vertigo despite repositioning
- Hearing loss (see Ménière's/SSNHL)

GP PEARLS

★ *Vestibular suppressants do not cure BPPV — the Epley manoeuvre does, often in one session.*

★ *An elderly diabetic with acute vertigo who cannot walk unaided has a cerebellar stroke until proven otherwise.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Betahistine (anti-vertigo)	16 mg PO 8-hourly	Ménière's (not BPPV)	*Avoid in phaeochromocytoma*
Cinnarizine (antihistamine anti-vertigo)	25 mg PO 8-hourly ≤1 week	Short-term symptom relief	*Drowsiness; parkinsonism in elderly*
Prochlorperazine (vestibular sedative)	5–10 mg PO 8-hourly ≤3 days	Severe nausea/vertigo	*Dystonia; sedation*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Vomiting	*QT; constipation*
Dextrose 25%/50% IV	25% dextrose 100 ml IV (child 2–5 ml/kg 10%)	Exclude hypoglycaemia	*Thrombophlebitis; recheck glucose 15 min*
Aspirin (antiplatelet)	300 mg chewed stat; 75–150 mg daily	Stroke suspected — refer first	*GI bleed; avoid in children <16*

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DISEASE 122 OF 300 | NEUROLOGY

Vestibular Neuritis & Ménière's Disease

Continuous vertigo for days (neuritis) vs. episodic vertigo with deafness and tinnitus (Ménière's).

DEFINITION

Vestibular neuritis is viral inflammation of the vestibular nerve: sudden severe continuous vertigo for days without hearing loss (labyrinthitis if hearing affected). Ménière's disease is endolymphatic hydrops: recurrent attacks of vertigo (20 min–12 h) with fluctuating low-frequency hearing loss, tinnitus and aural fullness.

SYMPTOMS

- Neuritis: sudden severe vertigo, nausea, vomiting for days
- Recent viral illness
- Ménière's: attacks of vertigo with ear fullness, roaring tinnitus
- Fluctuating hearing loss
- Unsteadiness between attacks

SIGNS

- Horizontal nystagmus beating away from affected side (neuritis)
- Positive head impulse test (peripheral)
- Can walk with support
- Rinne/Weber: sensorineural loss (Ménière's)
- Normal cranial nerves and cerebellar signs

DIAGNOSTIC TESTS

Test	Finding / purpose
HINTS exam	Peripheral pattern reassures
Pure tone audiometry	Low-frequency sensorineural loss (Ménière's)
MRI brain/IAM	Central signs, asymmetric hearing loss (acoustic neuroma)
Blood sugar, BP	General causes

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Acute vertigo (both)	Prochlorperazine 12.5 mg IM then 5–10 mg TDS orally or promethazine 25 mg TDS	≤3 days
Vestibular neuritis	Prednisolone 1 mg/kg (60 mg) OD tapering (within 72 h)	10 days
Rehabilitation	Early mobilisation, vestibular rehabilitation exercises (Cawthorne-Cooksey)	4–8 weeks
Ménière's — prevention	Salt restriction <2 g sodium/day, reduce caffeine; betahistine 16–24 mg TDS	3–6 months, review
Ménière's — add	Acetazolamide 250 mg OD–BD or hydrochlorothiazide 25 mg OD	As advised
Refractory Ménière's	Intratympanic steroid or gentamicin (ENT)	—

REFER / RED FLAGS

- Any central sign or inability to walk
- Sudden hearing loss (urgent ENT within 72 h)
- Unilateral tinnitus/hearing loss (MRI)
- Frequent disabling attacks

GP PEARLS

★ *Mobilise early — bed rest delays vestibular compensation.*

★ *Sudden unilateral hearing loss is an ENT emergency, not "wax".*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Prochlorperazine (vestibular sedative)	5–10 mg PO 8-hourly ≤3 days	Acute vestibular neuritis	*Dystonia; sedation*
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	Early vestibular neuritis (selected)	*Hyperglycaemia; taper if >3 weeks*
Betahistine (anti-vertigo)	16 mg PO 8-hourly	Ménière's maintenance	*Avoid in phaeochromocytoma*
Hydrochlorothiazide (thiazide)	12.5–25 mg PO daily	Ménière's (diuretic)	*Hyponatraemia, hypokalaemia, gout*
Cinnarizine (antihistamine anti-vertigo)	25 mg PO 8-hourly ≤1 week	Short-term	*Drowsiness; parkinsonism in elderly*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Vomiting	*QT; constipation*

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DISEASE 123 OF 300 | NEUROLOGY

Epilepsy — GP Care

One drug, right dose, regular — and safety advice.

DEFINITION

Tendency to recurrent unprovoked seizures (two unprovoked seizures >24 h apart, or one with high recurrence risk). Generalised (tonic-clonic, absence, myoclonic) or focal (with or without impaired awareness). Causes in India include neurocysticercosis, perinatal injury, head trauma, stroke, CNS infections and genetic epilepsies.

SYMPTOMS

- Witness account: stiffening, jerking, tongue bite, incontinence
- Postictal confusion, drowsiness, headache
- Aura (focal onset)
- Triggers: missed drugs, sleep deprivation, alcohol, fever
- Staring spells (absence), morning jerks (myoclonic)

SIGNS

- Lateral tongue bite
- Injuries
- Focal neurological signs
- Neurocutaneous markers
- Usually normal between seizures

DIAGNOSTIC TESTS

Test	Finding / purpose
EEG	Supports diagnosis and classifies type
MRI brain (CT if MRI unavailable)	Structural cause; neurocysticercosis
Glucose, electrolytes, calcium, magnesium	Provoked seizures
ECG	Exclude cardiac syncope
Drug levels	Non-adherence or toxicity (phenytoin)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Focal seizures	Levetiracetam 250–500 mg BD → 1500 mg BD, or carbamazepine 100–200 mg BD → 400–600 mg BD, or oxcarbazepine 300 mg BD → 600–1200 mg BD	At least 2 years seizure-free
Generalised (men, older women)	Sodium valproate 200–500 mg BD → 20–30 mg/kg/day	As above
Generalised (women of childbearing age)	Levetiracetam 500 mg BD → 1500 mg BD or lamotrigine (slow titration 25 mg OD)	As above
Neurocysticercosis (refer)	Albendazole 15 mg/kg/day + prednisolone; antiepileptic	10–14 days; AED ≥1–2 years
Folic acid	Folic acid 5 mg OD for women of childbearing age on AEDs	Ongoing
Safety	No swimming alone, no driving until seizure-free (per law), avoid heights and cooking over open flames alone	—

REFER / RED FLAGS

- First seizure (neurology/EEG/MRI)
- Pregnancy or planning pregnancy
- Breakthrough seizures on 2 drugs
- Drug toxicity or rash (carbamazepine/lamotrigine — SJS)

GP PEARLS

★ *Avoid valproate in girls and women who could become pregnant — major teratogen.*

★ *Carbamazepine reduces the efficacy of oral contraceptives — advise IUCD or DMPA.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Levetiracetam (anticonvulsant)	500 mg PO 12-hourly (up to 1.5 g 12-hourly)	Broad-spectrum, safe	*Mood change, irritability*
Sodium valproate (anticonvulsant)	200–500 mg PO 12-hourly (20 mg/kg/day)	Generalised (not in women of child-bearing age)	*Teratogenic; hepatotoxic; weight gain*
Carbamazepine (anticonvulsant)	100–200 mg PO 12-hourly, titrate	Focal epilepsy	*HLA-B*1502 SJS (Asians); hyponatraemia*
Oxcarbazepine (anticonvulsant)	150–300 mg PO 12-hourly	Focal epilepsy	*Hyponatraemia*

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DISEASE 124 OF 300 | NEUROLOGY

Seizure & Status Epilepticus — First Aid

A seizure longer than 5 minutes needs a benzodiazepine.

DEFINITION

Status epilepticus is a seizure lasting ≥5 minutes or recurrent seizures without recovery between them. Convulsive status is a medical emergency; neuronal damage starts after 30 minutes. Causes: stopping antiepileptics, alcohol withdrawal, hypoglycaemia, CNS infection, stroke, eclampsia, poisoning.

SYMPTOMS

- Ongoing generalised jerking
- No recovery of consciousness between seizures
- Known epileptic, missed drugs
- Fever, headache (infection)
- Pregnancy (eclampsia)

SIGNS

- Airway, breathing, SpO_2
- Glucose
- Temperature, BP
- Neck stiffness
- Signs of head injury

DIAGNOSTIC TESTS

Test	Finding / purpose
Capillary glucose	Immediately
Electrolytes, calcium, magnesium, creatinine	Metabolic cause
AED levels, toxicology	Non-adherence, poisoning
CT head, LP	After stabilisation

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
First aid	Recovery position, protect head, nothing in mouth, loosen clothing, time the seizure, oxygen	Immediate
Hypoglycaemia	25% dextrose 100 ml IV (child 10% dextrose 2–5 ml/kg); thiamine 100 mg IV first in alcoholics	Stat
At 5 min — first line	Lorazepam 4 mg IV (0.1 mg/kg) or diazepam 10 mg IV (0.2 mg/kg) or midazolam 10 mg IM/buccal (0.2–0.3 mg/kg; 5 mg if <40 kg)	Repeat once after 5 min
No IV access (child)	Diazepam 0.5 mg/kg per rectum or midazolam 0.3 mg/kg buccal/intranasal	Stat
At 10–20 min — second line	Levetiracetam 60 mg/kg IV (max 4.5 g) or fosphenytoin/phenytoin 20 mg/kg IV (≤50 mg/min) or valproate 40 mg/kg IV	Single load
Eclampsia	Magnesium sulphate 4 g IV over 15 min + 10 g IM (5 g each buttock)	Stat

REFER / RED FLAGS

- All status epilepticus — transfer after first-line drug
- First seizure
- Seizure with fever, head injury, pregnancy
- Failure to regain consciousness

GP PEARLS

★ *Most seizures stop within 2 minutes — do not give drugs to a seizure that has already stopped.*

★ *Never put a spoon or fingers in the mouth of a fitting patient.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Midazolam (benzodiazepine)	10 mg buccal/IM (0.2–0.3 mg/kg child)	Buccal/IM first-line	*Respiratory depression*
Lorazepam (benzodiazepine)	2–4 mg IV (0.1 mg/kg); 1–2 mg PO	IV first-line	*Respiratory depression*
Diazepam (benzodiazepine)	5–10 mg PO/IV; rectal 0.5 mg/kg child	Rectal/IV alternative	*Sedation, dependence*
Levetiracetam (anticonvulsant)	500 mg PO 12-hourly (up to 1.5 g 12-hourly)	Second-line IV	*Mood change, irritability*
Phenytoin (anticonvulsant)	20 mg/kg IV load (≤50 mg/min); 300 mg PO daily	Second-line IV	*Hypotension/arrhythmia; narrow index*
Dextrose 25%/50% IV	25% dextrose 100 ml IV (child 2–5 ml/kg 10%)	Hypoglycaemia	*Thrombophlebitis; recheck glucose 15 min*

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DISEASE 125 OF 300 | NEUROLOGY

Stroke & TIA — First Contact

FAST — note the time of onset; every minute counts for thrombolysis.

DEFINITION

Stroke is sudden focal neurological deficit of vascular origin lasting >24 h (ischaemic 85%, haemorrhagic 15%). TIA is a transient episode (usually <1 h) without infarction — a warning with high early stroke risk. Thrombolysis is possible within 4.5 h of onset; thrombectomy for large-vessel occlusion up to 24 h.

SYMPTOMS

- Face drooping, arm weakness, speech difficulty (FAST)
- Sudden loss of vision, double vision
- Sudden imbalance, vertigo
- Severe headache (haemorrhage)
- Exact time last seen normal

SIGNS

- Facial weakness, limb weakness, sensory loss
- Aphasia, dysarthria
- Hemianopia, gaze deviation
- GCS, BP, pulse (AF), glucose
- Neck stiffness (SAH)

DIAGNOSTIC TESTS

Test	Finding / purpose
Capillary glucose	Exclude hypoglycaemia mimic
Non-contrast CT head (urgent)	Haemorrhage vs infarct before any antithrombotic
ECG	AF
CBC, coagulation, creatinine, lipids, HbA1c	Before thrombolysis; risk factors
Carotid Doppler, echo	Source of embolism (TIA, infarct)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Immediate	ABC, oxygen if SpO_2 <94%, nil by mouth (swallow test first), head flat or 30°	Immediate
Transfer	To a stroke-ready hospital with CT within the window; do not lower BP unless >220/120	Urgent
Do not give	Aspirin before CT; sublingual nifedipine	—
Ischaemic (after CT, hospital)	Alteplase 0.9 mg/kg (10% bolus, rest over 1 h) or tenecteplase 0.25 mg/kg within 4.5 h; aspirin 150–325 mg after 24 h (or immediately if no lysis)	As per protocol
TIA / minor stroke	Aspirin 300 mg loading then 75 mg + clopidogrel 300 mg then 75 mg OD (DAPT 21 days, then single antiplatelet) + atorvastatin 40–80 mg	DAPT 21 days
Secondary prevention	BP <130/80, statin, AF anticoagulation (after 2–14 days by size), stop smoking, rehab	Lifelong

REFER / RED FLAGS

- All suspected stroke — emergency, by fastest route
- TIA — specialist assessment within 24 h
- Stroke in young patients
- Haemorrhage on CT

GP PEARLS

★ *Hypoglycaemia can mimic stroke perfectly — check sugar first.*

★ *Wake-up stroke: time of onset is when the patient was last seen well.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Aspirin (antiplatelet)	300 mg chewed stat; 75–150 mg daily	300 mg after haemorrhage excluded	*GI bleed; avoid in children <16*
Atorvastatin (statin)	10–80 mg PO daily (80 mg in ACS)	Secondary prevention	*Myalgia; check LFT; CYP3A4 interactions*
Clopidogrel (P2Y12 inhibitor)	300–600 mg loading; 75 mg daily	Minor stroke/TIA dual therapy (short)	*Bleeding; PPI (omeprazole) interaction*
Telmisartan (ARB)	20–80 mg PO daily	BP after acute phase	*Hyperkalaemia; avoid in pregnancy*
Apixaban (DOAC)	5 mg PO 12-hourly (2.5 mg if criteria)	AF-related stroke	*Bleeding; renal/age dose rules*
Dextrose 25%/50% IV	25% dextrose 100 ml IV (child 2–5 ml/kg 10%)	Hypoglycaemia mimic	*Thrombophlebitis; recheck glucose 15 min*

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DISEASE 126 OF 300 | NEUROLOGY

Bell's Palsy

Sudden one-sided facial weakness including the forehead — steroids within 72 hours.

DEFINITION

Acute idiopathic lower motor neuron facial (VII) nerve palsy, probably viral (HSV-1), developing over 24–72 hours. Involves the forehead (unlike stroke, where the forehead is spared). About 80% recover fully within 3 months; recovery is better with early steroids.

SYMPTOMS

- Sudden drooping of one side of the face
- Inability to close the eye, watering
- Drooling, food collecting in cheek
- Pain behind the ear
- Hyperacusis, altered taste

SIGNS

- Weakness of whole half of face including forehead
- Bell's phenomenon (eye rolls up on attempted closure)
- Loss of nasolabial fold
- Ear and palate: vesicles (Ramsay Hunt)
- Normal limbs and other cranial nerves

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	Exclude stroke, otitis media, parotid tumour, Ramsay Hunt
Blood sugar, BP	Diabetes, hypertension
MRI	No recovery at 3 months, recurrent or bilateral, other cranial nerves
HIV, Lyme, sarcoid	Bilateral palsy

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Steroid (within 72 h)	Prednisolone 60 mg OD for 5 days, then reduce by 10 mg/day (total 10 days); or 50 mg OD × 10 days	10 days
Antiviral (severe palsy, add-on)	Valacyclovir 1 g TDS or acyclovir 400 mg 5 times daily	7 days
Ramsay Hunt (vesicles)	Valacyclovir 1 g TDS + prednisolone	7 days
Eye protection (essential)	Carboxymethylcellulose eye drops hourly by day; lubricating ointment and taping eyelid shut at night; sunglasses	Until closure returns
Physiotherapy	Facial exercises in front of a mirror	Until recovery
Diabetics	Monitor sugar closely on steroids	—

REFER / RED FLAGS

- Forehead spared (UMN — stroke)
- Other neurological signs
- Ear discharge, parotid mass
- No improvement at 3 weeks or incomplete at 3 months

GP PEARLS

★ *Corneal protection is the most important part of treatment — an exposed cornea ulcerates.*

★ *Forehead wrinkling preserved = central lesion = stroke work-up.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	60 mg ×5 days then taper (≤72 h)	*Hyperglycaemia; taper if >3 weeks*
Valacyclovir (antiviral)	1 g PO 8-hourly ×7 days (zoster)	Severe palsy with steroid	*Reduce dose in CKD*
Carboxymethylcellulose 0.5% (artificial tears)	1–2 drops 4–6 times daily	Eye lubrication	*Preservative-free if frequent use*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Emollient (white soft paraffin / urea cream)	Apply liberally twice daily and after bath	Night eye ointment/taping	*Fire risk with paraffin on dressings*

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DISEASE 127 OF 300 | NEUROLOGY

Trigeminal Neuralgia

Electric-shock facial pain triggered by touch — carbamazepine works.

DEFINITION

Paroxysmal, unilateral, electric-shock-like pain in one or more divisions of the trigeminal nerve (usually V2/V3), lasting seconds, triggered by light touch, chewing, talking, brushing teeth or a breeze. Usually due to vascular compression of the nerve root; in young patients or with sensory loss, exclude multiple sclerosis or tumour.

SYMPTOMS

- Sudden stabbing pain in cheek, jaw, lip or gums
- Lasts seconds, repeats many times a day
- Triggered by washing face, eating, shaving
- Pain-free between attacks
- Often first seen by dentists

SIGNS

- Normal neurological exam
- Trigger zones
- No sensory loss (else secondary)
- Normal dental exam

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
MRI brain with trigeminal protocol	Young patients, sensory loss, bilateral, before surgery
CBC, sodium, LFT	Before and during carbamazepine
HLA-B*1502	Ideally before carbamazepine in South/East Asians (SJS risk)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
First line	Carbamazepine 100 mg BD → increase by 100–200 mg every 3 days to 200–400 mg BD (max 1200 mg/day)	Several weeks after remission, then taper
Alternative	Oxcarbazepine 300 mg BD → 600 mg BD (fewer side effects)	As above
Add-on / alternative	Baclofen 10 mg TDS, gabapentin 300 mg TDS, pregabalin 75 mg BD	As needed
Acute severe exacerbation	Refer — IV fosphenytoin or local anaesthetic nerve block	—
Refractory	Microvascular decompression, gamma knife, percutaneous rhizotomy (refer)	—

REFER / RED FLAGS

- Age <40, sensory deficit, bilateral symptoms
- Failure of two drugs
- Severe side effects (rash, hyponatraemia, low WBC)
- Persistent background pain (atypical)

GP PEARLS

★ *Stop carbamazepine at the first sign of rash — risk of Stevens–Johnson syndrome.*

★ *Many patients have had healthy teeth extracted before diagnosis — ask about trigger zones.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Carbamazepine (anticonvulsant)	100–200 mg PO 12-hourly, titrate	First-line	*HLA-B*1502 SJS (Asians); hyponatraemia*
Oxcarbazepine (anticonvulsant)	150–300 mg PO 12-hourly	Alternative	*Hyponatraemia*
Gabapentin (gabapentinoid)	300 mg at night, titrate to 600 mg 8-hourly	Add-on	*Sedation; renal dosing*
Pregabalin (gabapentinoid)	75 mg PO 12-hourly, increase to 150 mg 12-hourly	Add-on	*Dizziness, misuse; renal dosing*
Baclofen (GABA-B agonist)	5–10 mg PO 8-hourly	Add-on	*Sedation; withdrawal seizures if stopped*

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DISEASE 128 OF 300 | NEUROLOGY

Parkinson's Disease

Slow, stiff and shaking — start levodopa when symptoms impair function.

DEFINITION

Progressive neurodegenerative disorder from loss of dopaminergic neurons in the substantia nigra. Cardinal features: bradykinesia plus rest tremor and/or rigidity; postural instability later. Non-motor symptoms (constipation, anosmia, depression, sleep disorder, autonomic dysfunction) are common. Drug-induced parkinsonism (metoclopramide, antipsychotics, flunarizine) must be excluded.

SYMPTOMS

- Slowness in daily activities
- Tremor at rest, pill-rolling, asymmetric
- Stiffness, small handwriting
- Shuffling gait, falls
- Constipation, loss of smell, acting out dreams, low mood

SIGNS

- Bradykinesia (decremental finger tapping)
- Rest tremor reducing with movement
- Cogwheel rigidity
- Mask-like face, reduced blink, hypophonia
- Stooped posture, reduced arm swing, festinant gait

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	Response to levodopa supports it
Drug history	Antipsychotics, metoclopramide, flunarizine, cinnarizine
MRI brain	Atypical features (early falls, cerebellar signs, young onset)
TSH, B12	Coexisting causes of slowness

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
First line (most patients)	Levodopa-carbidopa 100/25 mg: ½ tab TDS → 1 tab TDS, 30–60 min before meals	Long term
Younger, mild symptoms	Pramipexole 0.125 mg TDS → 0.5–1 mg TDS or ropinirole	Long term
Add-on	Rasagiline 1 mg OD; entacapone 200 mg with each levodopa dose (wearing off)	As needed
Tremor-dominant young	Trihexyphenidyl 1–2 mg TDS (avoid >65 y)	As needed
Non-motor	Constipation — PEG; depression — SSRI; orthostatic hypotension — fluids, salt, domperidone	As needed
Rehabilitation	Physiotherapy, gait training, fall prevention, speech therapy	Ongoing

REFER / RED FLAGS

- New diagnosis (neurology)
- Atypical features or poor levodopa response
- Motor fluctuations, dyskinesia, hallucinations
- Falls, swallowing difficulty

GP PEARLS

★ *Never stop levodopa abruptly — risk of neuroleptic-malignant-like syndrome.*

★ *Avoid metoclopramide and haloperidol in Parkinson's; domperidone is safe for nausea.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Levodopa–carbidopa	110–275 mg PO 8-hourly, titrate	Mainstay	*Dyskinesia; orthostatic hypotension*
Pramipexole (dopamine agonist)	0.125 mg PO 8-hourly, titrate	Younger patients	*Impulse control disorders; sleep attacks*
Trihexyphenidyl (anticholinergic)	1–2 mg PO 8–12-hourly	Tremor in young	*Confusion in elderly; urinary retention*
Donepezil (cholinesterase inhibitor)	5 mg at night, then 10 mg	PD dementia (specialist)	*Bradycardia; GI upset*
Domperidone (antiemetic/prokinetic)	10 mg PO 8-hourly, ≤7 days	Nausea from levodopa	*QT prolongation; avoid with macrolides*
Lactulose (osmotic laxative)	15–30 ml PO at night (titrate to 2–3 stools in HE)	Constipation	*Bloating; dehydration if excessive*

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DISEASE 129 OF 300 | NEUROLOGY

Essential Tremor

Bilateral action tremor improved by alcohol — propranolol helps.

DEFINITION

The commonest movement disorder: bilateral postural and kinetic tremor of the hands (sometimes head and voice), slowly progressive, often familial, improving with small amounts of alcohol. Differentials: enhanced physiological tremor (anxiety, thyrotoxicosis, caffeine, salbutamol, valproate, lithium), Parkinson's (rest tremor), cerebellar tremor.

SYMPTOMS

- Shaking hands when holding a cup, writing, eating
- Head nodding ("yes-yes/no-no")
- Voice tremor
- Worse with stress, caffeine
- Family history; improves with alcohol

SIGNS

- Postural tremor with outstretched hands
- Kinetic tremor on finger-nose test
- No bradykinesia or rigidity
- Spiral drawing shows tremor
- Thyroid signs absent

DIAGNOSTIC TESTS

Test	Finding / purpose
TSH	Thyrotoxicosis
Drug review	Salbutamol, valproate, lithium, theophylline, SSRIs
LFT, copper/ceruloplasmin	Young patients — Wilson's disease
Glucose, electrolytes	Metabolic causes

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Mild	Reassurance; reduce caffeine; weighted utensils	—
First line	Propranolol 10–20 mg BD → 40–80 mg BD (or 80–160 mg SR OD); avoid in asthma	Long term
Alternative	Primidone 25 mg HS → 125–250 mg/day	Long term
Situational (public events)	Propranolol 10–40 mg 1 h before	SOS
Refractory	Topiramate, gabapentin; deep brain stimulation (refer)	—

REFER / RED FLAGS

- Tremor at rest, bradykinesia (Parkinson's)
- Young onset with liver disease (Wilson's)
- Unilateral or rapidly progressive tremor
- Disabling tremor despite treatment

GP PEARLS

★ *Essential tremor is worse on action; Parkinson's tremor is worse at rest.*

★ *Start primidone at a very low dose — the first dose often causes nausea and unsteadiness.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Propranolol (non-selective β-blocker)	10–40 mg PO 8–12-hourly	First-line	*Avoid in asthma; masks hypoglycaemia*
Topiramate (prophylaxis)	25 mg at night, titrate to 50 mg 12-hourly	Second-line	*Paraesthesia, weight loss, glaucoma*
Gabapentin (gabapentinoid)	300 mg at night, titrate to 600 mg 8-hourly	Alternative	*Sedation; renal dosing*
Clonazepam (benzodiazepine)	0.25–0.5 mg PO at night/12-hourly	Adjunct	*Dependence; falls in elderly*
Pregabalin (gabapentinoid)	75 mg PO 12-hourly, increase to 150 mg 12-hourly	Alternative	*Dizziness, misuse; renal dosing*
Alprazolam (benzodiazepine)	0.25–0.5 mg PO 8–12-hourly short-term	Short-term only	*Dependence; rebound anxiety*

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DISEASE 130 OF 300 | NEUROLOGY

Peripheral Neuropathy

Glove-and-stocking tingling — diabetes, B12, alcohol, drugs and leprosy top the list.

DEFINITION

Damage to peripheral nerves causing sensory, motor or autonomic symptoms. Symmetric distal polyneuropathy is commonest. Indian causes: diabetes, vitamin B12 deficiency (vegetarian diet, metformin), alcohol, leprosy, hypothyroidism, CKD, drugs (isoniazid, vincristine), HIV. Rapidly ascending weakness suggests Guillain-Barré syndrome.

SYMPTOMS

- Tingling, numbness, burning in feet then hands
- Weakness, tripping, foot drop
- Imbalance in the dark
- Painless injuries
- Postural dizziness, constipation, ED (autonomic)

SIGNS

- Glove-and-stocking sensory loss
- Reduced vibration and joint position sense
- Absent ankle reflexes
- Distal wasting, foot drop
- Thickened nerves, anaesthetic skin patches (leprosy)

DIAGNOSTIC TESTS

Test	Finding / purpose
Glucose / HbA1c	Diabetes
Vitamin B12, folate, CBC	Deficiency, macrocytosis
TSH, creatinine, LFT	Metabolic causes
HIV, VDRL, serum protein electrophoresis	Selected cases
Nerve conduction studies	Axonal vs demyelinating; asymmetric or motor-predominant

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Treat cause	Glycaemic control, stop alcohol, review drugs	Ongoing
B12 deficiency	Methylcobalamin 1000 µg IM daily × 7 days, weekly × 4, then monthly (or 1500 µg orally daily if mild)	≥3–6 months
Isoniazid neuropathy	Pyridoxine 50–100 mg OD	During ATT
Neuropathic pain	Pregabalin 75 mg BD → 150 mg BD or duloxetine 30–60 mg OD or amitriptyline 10–25 mg HS	≥4 weeks trial
Foot care	Inspection, footwear, avoid hot water bottles	Lifelong
Leprosy	MDT as per NLEP (see Leprosy)	6–12 months

REFER / RED FLAGS

- Rapidly progressive or ascending weakness (GBS)
- Asymmetric, motor-predominant or painful mononeuritis
- Autonomic failure
- No cause found

GP PEARLS

★ *Ascending weakness over days with areflexia — GBS: check breathing (single-breath count) and refer urgently.*

★ *Strict vegetarians and long-term metformin users need B12 checked.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Pregabalin (gabapentinoid)	75 mg PO 12-hourly, increase to 150 mg 12-hourly	Neuropathic pain	*Dizziness, misuse; renal dosing*
Duloxetine (SNRI)	30–60 mg PO daily	Neuropathic pain	*Nausea; avoid in liver disease*
Amitriptyline (TCA)	10–25 mg PO at night	Low dose at night	*Anticholinergic; avoid in elderly, IHD*
Vitamin B12 (cyanocobalamin/methylcobalamin)	1000 µg IM alternate days ×5, then monthly	B12 deficiency	*Hypokalaemia early in treatment*
Thiamine (vitamin B1)	100 mg PO/IV daily (200–500 mg IV 8-hourly if Wernicke)	Alcohol-related	*Give before glucose in alcohol users*
Tramadol (weak opioid)	50–100 mg PO 6–8-hourly; max 400 mg/day	Rescue analgesia	*Seizures, serotonin syndrome; dependence*

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DISEASE 131 OF 300 | NEUROLOGY

Carpal Tunnel Syndrome

Night-time tingling of thumb to ring finger — splint at night.

DEFINITION

Compression of the median nerve in the carpal tunnel at the wrist. Common in middle-aged women; associated with pregnancy, hypothyroidism, diabetes, obesity, rheumatoid arthritis, acromegaly and repetitive wrist work. Severe cases cause thenar wasting.

SYMPTOMS

- Tingling and numbness of thumb, index, middle and half ring finger
- Worse at night, wakes patient; shaking hand relieves
- Clumsiness, dropping objects
- Pain radiating up forearm
- Bilateral in many

SIGNS

- Tinel's sign at wrist
- Phalen's test positive (wrist flexion 60 s)
- Sensory loss sparing the palm
- Thenar wasting, weak abductor pollicis brevis (severe)
- Signs of hypothyroidism, RA

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
Nerve conduction study	Confirms and grades; before surgery
TSH, glucose, RA factor	Associated conditions
USG wrist	Median nerve swelling

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Splint	Neutral wrist splint at night	6–12 weeks
Activity modification	Avoid repetitive flexion; ergonomic keyboard	Ongoing
Analgesia	NSAID short course (ibuprofen 400 mg TDS) — limited effect	1–2 weeks
Steroid injection	Methylprednisolone 40 mg (or triamcinolone 20–40 mg) into carpal tunnel (by trained clinician)	Single; may repeat once
Pregnancy	Splint; usually resolves after delivery	—
Surgery	Carpal tunnel release for thenar wasting, persistent symptoms (refer)	—

REFER / RED FLAGS

- Thenar wasting or constant numbness
- Failure of splint and injection
- Diagnostic doubt (cervical radiculopathy)
- Rapid progression

GP PEARLS

★ *Night splinting in neutral position is the most effective first-line measure.*

★ *Check thyroid function in every new carpal tunnel patient.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Short-term pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	Short course (selected)	*Hyperglycaemia; taper if >3 weeks*
Methylprednisolone	40–125 mg IV; 4–16 mg PO daily	Local injection (trained)	*Hyperglycaemia; infection risk*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Vitamin B12 (cyanocobalamin/methylcobalamin)	1000 µg IM alternate days ×5, then monthly	Coexisting deficiency	*Hypokalaemia early in treatment*
Levothyroxine (thyroid hormone)	25–100 µg PO empty stomach (1.6 µg/kg/day)	Hypothyroid cause	*Start low in elderly/IHD; separate from iron/calcium*

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DISEASE 132 OF 300 | NEUROLOGY

Dementia

Exclude reversible causes, support the carer, avoid harmful drugs.

DEFINITION

Progressive decline in memory and at least one other cognitive domain severe enough to impair daily function. Alzheimer's disease (60%), vascular dementia, mixed, Lewy body and frontotemporal dementia. Reversible contributors: hypothyroidism, B12 deficiency, depression, drugs (anticholinergics, benzodiazepines), normal-pressure hydrocephalus, subdural haematoma.

SYMPTOMS

- Forgetting recent events, repeating questions
- Getting lost, misplacing things
- Difficulty with money, cooking, medicines
- Personality change, apathy, agitation
- Hallucinations, fluctuating cognition (Lewy body)

SIGNS

- Cognitive screening (MMSE, Mini-Cog, HMSE)
- Focal neurological signs (vascular)
- Parkinsonism (Lewy body)
- Gait apraxia, incontinence (NPH)
- Depression screen

DIAGNOSTIC TESTS

Test	Finding / purpose
CBC, TSH, B12, glucose, electrolytes, calcium, creatinine, LFT	Reversible causes
VDRL, HIV	Selected cases
CT / MRI brain	Vascular changes, atrophy, tumour, subdural, NPH
Depression screening (GDS)	Pseudodementia

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Non-drug (cornerstone)	Routine, orientation aids, safe environment, carer education and support, legal and financial planning	Ongoing
Alzheimer's / mixed — mild–moderate	Donepezil 5 mg HS → 10 mg after 4–6 weeks (or rivastigmine patch 4.6 → 9.5 mg/24 h)	Long term, review
Moderate–severe	Memantine 5 mg OD → 10 mg BD (increase weekly)	Long term
Behavioural symptoms	Look for pain, infection, constipation first; non-drug approaches; SSRI (sertraline 25–50 mg) for depression/agitation	Review
Avoid	Anticholinergics, benzodiazepines; antipsychotics only short-term for severe distress (risperidone 0.25–0.5 mg)	—
Vascular risk	Control BP, diabetes, lipids; antiplatelet if vascular	Lifelong

REFER / RED FLAGS

- Young onset (<65 y)
- Rapid progression, focal signs
- Severe behavioural symptoms
- Diagnostic uncertainty

GP PEARLS

★ *Donepezil can cause bradycardia and syncope — check pulse before and after starting.*

★ *A sudden worsening in a dementia patient is delirium until proven otherwise.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Donepezil (cholinesterase inhibitor)	5 mg at night, then 10 mg	Mild–moderate Alzheimer's	*Bradycardia; GI upset*
Memantine (NMDA antagonist)	5 mg daily, titrate to 10 mg 12-hourly	Moderate–severe	*Dizziness; renal dosing*
Quetiapine (atypical antipsychotic)	25–50 mg at night (delirium/sleep); 300–800 mg/day psychosis	Severe agitation (low dose, caution)	*Sedation, hypotension, weight gain*
Sertraline (SSRI)	25–50 mg PO daily (max 200 mg)	Depression	*GI upset; safer in IHD*
Melatonin	2–3 mg PO 1–2 h before bedtime	Sleep disturbance	*Daytime drowsiness*
Vitamin B12 (cyanocobalamin/methylcobalamin)	1000 µg IM alternate days ×5, then monthly	Deficiency	*Hypokalaemia early in treatment*

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DISEASE 133 OF 300 | NEUROLOGY

Delirium

Acute, fluctuating confusion — it is a medical emergency with a cause.

DEFINITION

Acute disturbance of attention and awareness developing over hours to days, with fluctuating course, caused by an underlying medical condition. Common in the elderly and those with dementia. Hypoactive delirium (quiet, drowsy) is often missed. Causes: infection (UTI, pneumonia), drugs, dehydration, hypoxia, hypoglycaemia, electrolyte imbalance, urinary retention, constipation, alcohol withdrawal, pain.

SYMPTOMS

- Sudden confusion, disorientation
- Fluctuating attention, worse at night
- Agitation or drowsiness
- Hallucinations, paranoia
- Recent new drug, fever, fall, surgery

SIGNS

- Inattention (cannot say months backwards)
- Fever, dehydration, hypoxia
- Palpable bladder, faecal impaction
- Focal neurology, head injury
- Tremor, sweating (withdrawal)

DIAGNOSTIC TESTS

Test	Finding / purpose
Capillary glucose, SpO_2	Immediately
CBC, electrolytes, calcium, creatinine, LFT	Metabolic causes
Urine routine, chest X-ray, blood culture	Infection
ECG	MI, arrhythmia
CT head	Falls, focal signs, anticoagulants

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Treat cause	Antibiotics, fluids, oxygen, correct glucose/electrolytes, catheter for retention, laxatives	Immediate
Stop offending drugs	Anticholinergics, benzodiazepines, opioids, antihistamines, steroids where possible	—
Non-drug measures	Family presence, glasses and hearing aids, clock and calendar, lighting, sleep hygiene, early mobilisation	Ongoing
Severe distress or danger	Haloperidol 0.5–1 mg PO/IM (elderly), repeat after 2 h if needed (max 5 mg/day)	Shortest possible
Parkinson's / Lewy body	Avoid haloperidol; quetiapine 12.5–25 mg	Short term
Alcohol withdrawal	Lorazepam / chlordiazepoxide + thiamine (see Alcohol withdrawal)	—

REFER / RED FLAGS

- Most cases — admission for evaluation
- Hypoxia, sepsis, focal signs
- Head injury on anticoagulants
- Delirium tremens

GP PEARLS

★ *Benzodiazepines worsen delirium — except in alcohol withdrawal.*

★ *Ask the family "Is this new?" — it distinguishes delirium from dementia.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Haloperidol (typical antipsychotic)	0.5–5 mg PO/IM; 5 mg IM in agitation	Severe agitation (low dose)	*Dystonia, QT, NMS*
Quetiapine (atypical antipsychotic)	25–50 mg at night (delirium/sleep); 300–800 mg/day psychosis	Agitation (Parkinson's)	*Sedation, hypotension, weight gain*
Thiamine (vitamin B1)	100 mg PO/IV daily (200–500 mg IV 8-hourly if Wernicke)	Alcohol users	*Give before glucose in alcohol users*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Dextrose 25%/50% IV	25% dextrose 100 ml IV (child 2–5 ml/kg 10%)	Hypoglycaemia	*Thrombophlebitis; recheck glucose 15 min*

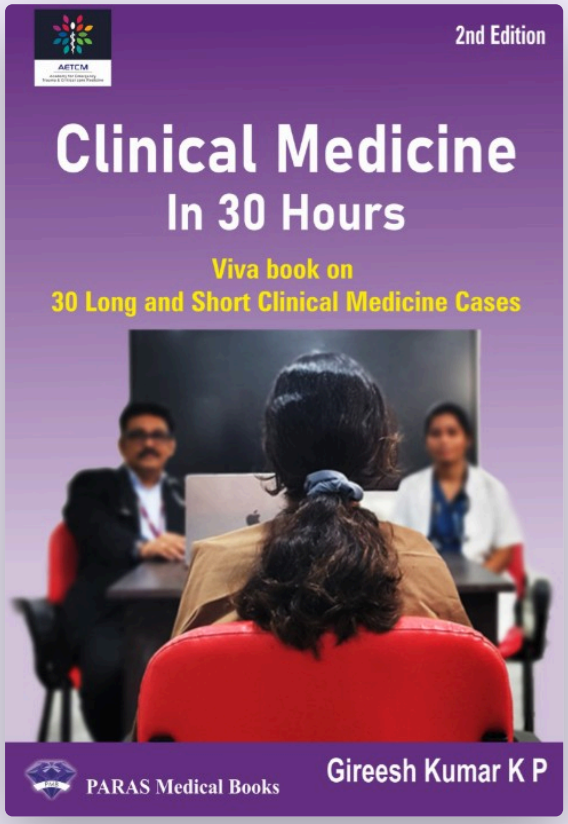
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DISEASE 134 OF 300 | MUSCULOSKELETAL

Acute Low Back Pain

Stay active, simple analgesia — and screen for red flags.

DEFINITION

Pain between the costal margins and gluteal folds lasting <6 weeks. Over 90% is non-specific mechanical pain from muscles, ligaments and facet joints, and resolves within 6 weeks. Serious causes (fracture, infection — TB spine, malignancy, cauda equina, aortic aneurysm) are rare but must be screened for.

SYMPTOMS

- Pain after lifting, bending or twisting
- Worse with movement, relieved by rest
- Stiffness, muscle spasm
- Red flags: age <20 or >55, fever, weight loss, night pain, cancer history, trauma, steroid use
- Saddle numbness, bladder/bowel disturbance (cauda equina)

SIGNS

- Paraspinal tenderness and spasm
- Restricted movement
- Straight leg raise normal (no radiculopathy)
- Neurological exam of legs normal
- Spinal tenderness, deformity, gibbus (TB)

DIAGNOSTIC TESTS

Test	Finding / purpose
None in non-specific pain <6 weeks	Imaging does not change management
X-ray LS spine	Trauma, age >55, osteoporosis risk
CBC, ESR/CRP	Red flags — infection, malignancy, TB
MRI spine (urgent)	Cauda equina, cord compression, suspected infection/malignancy

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Advice	Stay active, avoid bed rest, return to normal activity early; heat packs; correct lifting technique	—
Analgesia	Ibuprofen 400 mg TDS or naproxen 500 mg BD or aceclofenac 100 mg BD after food (+ PPI if GI risk); paracetamol alone is of little benefit	5–7 days
Muscle spasm	Thiocolchicoside 4–8 mg BD or tizanidine 2 mg TDS (short-term)	3–5 days
Severe pain	Tramadol 50 mg TDS SOS	Short course
Topical	Diclofenac gel 3–4 times daily	1–2 weeks
Physiotherapy	Core strengthening, McKenzie exercises, yoga after acute phase	4–6 weeks

REFER / RED FLAGS

- Cauda equina: saddle anaesthesia, urinary retention/incontinence — emergency
- Progressive neurological deficit
- Fever, weight loss, history of cancer or TB
- Pain >6 weeks despite treatment

GP PEARLS

★ *Bed rest delays recovery — advise early mobilisation.*

★ *Night pain with fever and weight loss in India suggests spinal TB — get an MRI.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Mild pain	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	NSAID short course	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Naproxen (NSAID)	250–500 mg PO 12-hourly after food	Alternative NSAID	*GI bleed risk; lower CV risk than other NSAIDs*
Thiocolchicoside (muscle relaxant)	4–8 mg PO 12-hourly ≤7 days	Muscle spasm ≤7 days	*Avoid in pregnancy, epilepsy*
Diclofenac gel 1% (topical NSAID)	Apply to area 3–4 times daily	Topical	*Minimal systemic effect; avoid broken skin*
Tramadol (weak opioid)	50–100 mg PO 6–8-hourly; max 400 mg/day	Severe pain short-term	*Seizures, serotonin syndrome; dependence*

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DISEASE 135 OF 300 | MUSCULOSKELETAL

Sciatica (Lumbar Radiculopathy)

Leg pain worse than back pain, below the knee, with a positive SLR.

DEFINITION

Pain radiating along the sciatic nerve distribution (buttock, posterior thigh, leg below the knee), usually from L4/L5 or L5/S1 disc herniation compressing a nerve root. Most improve within 6–12 weeks with conservative care.

SYMPTOMS

- Shooting pain from buttock down the leg below the knee
- Numbness, tingling in foot
- Worse with coughing, sitting, bending
- Back pain (often less than leg pain)
- Weakness of foot (foot drop)

SIGNS

- Straight leg raise positive (<60°); crossed SLR
- L5: weak great toe extension, numb dorsum of foot
- S1: reduced ankle jerk, numb lateral foot, weak plantar flexion
- L4: reduced knee jerk
- Perianal sensation and anal tone (cauda equina)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis initially	—
MRI LS spine	Persistent >6 weeks, progressive deficit, red flags, before surgery
CBC, ESR	If infection or malignancy suspected

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Advice	Remain as active as possible; avoid prolonged sitting	—
NSAID	Naproxen 500 mg BD or etoricoxib 90 mg OD after food + PPI	1–2 weeks
Neuropathic pain	Pregabalin 75 mg BD (→ 150 mg BD) or gabapentin 300 mg TDS — modest benefit; or duloxetine 30–60 mg OD	4–6 weeks
Short course steroid (severe)	Prednisolone 40 mg OD × 5 days (limited evidence)	5 days
Physiotherapy	Nerve gliding, core strengthening after acute phase	6–12 weeks
Interventional (refer)	Epidural steroid injection; discectomy for persistent disabling pain or deficit	—

REFER / RED FLAGS

- Cauda equina symptoms — emergency MRI
- Progressive motor weakness, foot drop
- Bilateral sciatica
- Pain uncontrolled at 6 weeks

GP PEARLS

★ *Most disc prolapses shrink naturally — MRI changes alone are not an indication for surgery.*

★ *Always ask every sciatica patient about bladder function and saddle numbness.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Pregabalin (gabapentinoid)	75 mg PO 12-hourly, increase to 150 mg 12-hourly	Radicular pain (limited evidence)	*Dizziness, misuse; renal dosing*
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	Severe radicular pain (selected)	*Hyperglycaemia; taper if >3 weeks*
Thiocolchicoside (muscle relaxant)	4–8 mg PO 12-hourly ≤7 days	Spasm	*Avoid in pregnancy, epilepsy*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Tramadol (weak opioid)	50–100 mg PO 6–8-hourly; max 400 mg/day	Severe pain	*Seizures, serotonin syndrome; dependence*

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DISEASE 136 OF 300 | MUSCULOSKELETAL

Neck Pain & Cervical Spondylosis

Mostly posture-related; watch for radiculopathy and myelopathy.

DEFINITION

Neck pain is commonly mechanical (posture, prolonged screen use, sleeping position) or due to cervical spondylosis — age-related disc and facet degeneration. Complications: cervical radiculopathy (arm pain, dermatomal numbness) and cervical myelopathy (clumsy hands, gait disturbance, hyperreflexia) which needs surgical referral.

SYMPTOMS

- Neck pain and stiffness
- Pain radiating to shoulder, arm, fingers (radiculopathy)
- Headache from the neck
- Clumsy hands, dropping things, unsteady gait (myelopathy)
- Giddiness on neck movement

SIGNS

- Restricted neck movements, muscle tenderness
- Spurling's test positive (radiculopathy)
- Dermatomal sensory loss, reduced biceps/triceps reflex
- Myelopathy: hyperreflexia, Hoffmann's sign, upgoing plantar
- Posture

DIAGNOSTIC TESTS

Test	Finding / purpose
None for simple mechanical neck pain	—
X-ray C-spine AP/lateral	Trauma, persistent pain, age >50
MRI cervical spine	Radiculopathy not improving, myelopathy, red flags
CBC, ESR	Infection or malignancy suspicion

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Advice	Posture correction, screen at eye level, frequent breaks, firm thin pillow	Ongoing
Analgesia	Ibuprofen 400 mg TDS or aceclofenac 100 mg BD after food; diclofenac gel	5–7 days
Spasm	Thiocolchicoside 4 mg BD or tizanidine 2 mg TDS	3–5 days
Radicular pain	Pregabalin 75 mg BD or amitriptyline 10–25 mg HS	4–6 weeks
Physiotherapy	Isometric neck exercises, stretching, heat	4–6 weeks
Collar	Soft collar only for short periods in acute severe pain (prolonged use weakens muscles)	≤1 week

REFER / RED FLAGS

- Myelopathy signs — urgent spine referral
- Progressive weakness
- Trauma with midline tenderness (immobilise)
- Fever, weight loss, night pain

GP PEARLS

★ *Clumsy hands and unsteady gait in an older person with neck pain is myelopathy, not "old age".*

★ *Smartphone use with flexed neck is the commonest cause of neck pain in young adults.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Diclofenac gel 1% (topical NSAID)	Apply to area 3–4 times daily	Topical	*Minimal systemic effect; avoid broken skin*
Thiocolchicoside (muscle relaxant)	4–8 mg PO 12-hourly ≤7 days	Spasm	*Avoid in pregnancy, epilepsy*
Pregabalin (gabapentinoid)	75 mg PO 12-hourly, increase to 150 mg 12-hourly	Radiculopathy	*Dizziness, misuse; renal dosing*
Amitriptyline (TCA)	10–25 mg PO at night	Chronic pain at night	*Anticholinergic; avoid in elderly, IHD*

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DISEASE 137 OF 300 | MUSCULOSKELETAL

Frozen Shoulder (Adhesive Capsulitis)

Painful, stiff shoulder with loss of external rotation — common in diabetics.

DEFINITION

Inflammation and fibrosis of the glenohumeral joint capsule causing pain and progressive global loss of active and passive movement, especially external rotation. Passes through freezing (painful), frozen (stiff) and thawing phases over 1–3 years. Associated with diabetes, thyroid disease and immobilisation.

SYMPTOMS

- Gradual onset shoulder pain, worse at night
- Cannot lie on affected side
- Progressive stiffness — combing hair, fastening bra, reaching back pocket
- Diabetes, thyroid disease
- Recent immobilisation or stroke

SIGNS

- Loss of both active and passive external rotation (hallmark)
- Restricted abduction and internal rotation
- Diffuse tenderness
- Normal X-ray
- Muscle wasting (late)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
X-ray shoulder	Exclude arthritis, calcific tendinitis, dislocation
HbA1c, TSH	Associated conditions
USG shoulder	Rotator cuff pathology if doubt

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Analgesia	Paracetamol 1 g TDS + ibuprofen 400 mg TDS or naproxen 500 mg BD after food	2–4 weeks
Intra-articular steroid (painful phase)	Triamcinolone 40 mg or methylprednisolone 40 mg with lignocaine into glenohumeral joint	Up to 2–3 injections, 6 weeks apart
Physiotherapy	Gentle stretching (pendulum, wall-climbing, towel stretch), heat before exercises	3–6 months
Oral steroid (alternative)	Prednisolone 30 mg OD × 1 week, tapering over 2 weeks (caution in diabetes)	3 weeks
Diabetes	Optimise glucose; monitor sugars after steroid injection	—
Refractory	Hydrodilatation, manipulation under anaesthesia, arthroscopic release (refer)	—

REFER / RED FLAGS

- No improvement after 3–6 months
- Severe pain uncontrolled
- Diagnostic doubt (cuff tear, arthritis, tumour)
- Trauma with loss of movement (posterior dislocation)

GP PEARLS

★ *Loss of passive external rotation distinguishes frozen shoulder from rotator cuff disease.*

★ *Reassure patients that most recover — but it may take 1–2 years.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Methylprednisolone	40–125 mg IV; 4–16 mg PO daily	Intra-articular (trained)	*Hyperglycaemia; infection risk*
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	Short course (selected)	*Hyperglycaemia; taper if >3 weeks*
Diclofenac gel 1% (topical NSAID)	Apply to area 3–4 times daily	Topical	*Minimal systemic effect; avoid broken skin*
Tramadol (weak opioid)	50–100 mg PO 6–8-hourly; max 400 mg/day	Severe pain	*Seizures, serotonin syndrome; dependence*

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DISEASE 138 OF 300 | MUSCULOSKELETAL

Rotator Cuff Tendinopathy & Impingement

Painful arc between 60° and 120° — exercise therapy is the mainstay.

DEFINITION

Degenerative or overuse disorder of the rotator cuff tendons (mainly supraspinatus), often with subacromial bursitis, causing pain on overhead activity. Partial or full-thickness tears occur with age or trauma; acute weakness after a fall suggests a tear needing early surgical opinion.

SYMPTOMS

- Pain over lateral shoulder/upper arm
- Pain on overhead activities, reaching
- Night pain lying on the shoulder
- Weakness lifting arm (tear)
- Repetitive overhead work or sport

SIGNS

- Painful arc 60–120° of abduction
- Positive impingement tests (Neer, Hawkins)
- Pain/weakness on resisted abduction (Jobe's test)
- Passive movement full (unlike frozen shoulder)
- Drop-arm sign (tear)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
USG shoulder	Tendinopathy, tears, bursitis
X-ray	Calcific tendinitis, acromial spur, arthritis
MRI	Before surgery for tears

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Activity modification	Avoid overhead work and sleeping on affected side	4–6 weeks
Analgesia	Ibuprofen 400 mg TDS or naproxen 500 mg BD after food; diclofenac gel	2 weeks
Physiotherapy (cornerstone)	Scapular stabilisation and rotator cuff strengthening (theraband)	6–12 weeks
Subacromial injection	Triamcinolone 40 mg + lignocaine 1% 4 ml into subacromial space	Max 2–3 per year
Calcific tendinitis (acute)	NSAIDs, ice; barbotage under USG (refer)	—
Full-thickness tear in active patient	Surgical repair (refer early)	—

REFER / RED FLAGS

- Acute weakness after trauma (tear)
- Persistent symptoms after 3 months of physiotherapy
- Suspected infection or tumour
- Neurological signs

GP PEARLS

★ *Repeated steroid injections weaken tendons — limit to two or three.*

★ *Shoulder pain with neck pain radiating below the elbow is often cervical, not shoulder.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Diclofenac gel 1% (topical NSAID)	Apply to area 3–4 times daily	Topical	*Minimal systemic effect; avoid broken skin*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Methylprednisolone	40–125 mg IV; 4–16 mg PO daily	Subacromial injection (trained)	*Hyperglycaemia; infection risk*
Etoricoxib (COX-2 inhibitor)	60–90 mg PO once daily (120 mg for acute gout ≤8 days)	Alternative NSAID	*Avoid in IHD, stroke, uncontrolled BP*
Tramadol (weak opioid)	50–100 mg PO 6–8-hourly; max 400 mg/day	Night pain short-term	*Seizures, serotonin syndrome; dependence*

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DISEASE 139 OF 300 | MUSCULOSKELETAL

Tennis Elbow (Lateral Epicondylitis)

Pain on gripping and lifting — mostly self-limiting within a year.

DEFINITION

Degenerative tendinopathy of the common extensor origin (extensor carpi radialis brevis) at the lateral epicondyle, from repetitive wrist extension and gripping (manual work, typing, household chores, racquet sports). Medial epicondylitis (golfer's elbow) affects the flexor origin.

SYMPTOMS

- Pain over the outer elbow
- Pain on gripping, lifting a cup, wringing clothes, shaking hands
- Weak grip
- Radiates down forearm
- Repetitive activities

SIGNS

- Tenderness just distal to lateral epicondyle
- Pain on resisted wrist and middle finger extension
- Full elbow range of movement
- Normal neurology

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
X-ray elbow	Atypical pain, trauma, reduced movement
USG	Persistent cases

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Rest from aggravating activity	Modify gripping; lift with palm up	6–12 weeks
Counterforce brace	Forearm strap 2–3 cm below the elbow during activity	6–12 weeks
Analgesia	Topical diclofenac gel TDS; ibuprofen 400 mg TDS short course	1–2 weeks
Physiotherapy	Eccentric wrist extensor strengthening, stretching	8–12 weeks
Steroid injection	Methylprednisolone 40 mg with lignocaine — short-term relief only, higher recurrence	Single
Refractory	Platelet-rich plasma; surgical release (refer)	—

REFER / RED FLAGS

- Persistent pain beyond 6–12 months
- Reduced elbow movement, swelling
- Neurological symptoms (radial tunnel)
- Trauma

GP PEARLS

★ *Steroid injection gives quick relief but worse outcomes at one year than physiotherapy — explain this.*

★ *Most cases resolve within 12 months whatever is done.*

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DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Diclofenac gel 1% (topical NSAID)	Apply to area 3–4 times daily	First-line topical	*Minimal systemic effect; avoid broken skin*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Short oral course	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Methylprednisolone	40–125 mg IV; 4–16 mg PO daily	Injection (selected)	*Hyperglycaemia; infection risk*
Naproxen (NSAID)	250–500 mg PO 12-hourly after food	Alternative	*GI bleed risk; lower CV risk than other NSAIDs*
Etoricoxib (COX-2 inhibitor)	60–90 mg PO once daily (120 mg for acute gout ≤8 days)	Alternative	*Avoid in IHD, stroke, uncontrolled BP*

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DISEASE 140 OF 300 | MUSCULOSKELETAL

De Quervain's Tenosynovitis

Painful radial wrist in new mothers — positive Finkelstein's test.

DEFINITION

Stenosing tenosynovitis of the first dorsal compartment (abductor pollicis longus and extensor pollicis brevis) at the radial styloid. Common in women, especially new mothers lifting babies, and with repetitive thumb use (phones, typing).

SYMPTOMS

- Pain over radial side of wrist
- Worse with lifting baby, gripping, wringing
- Swelling over radial styloid
- Pain radiating to thumb or forearm
- Recent childbirth or repetitive work

SIGNS

- Tenderness and swelling over first dorsal compartment
- Finkelstein's test positive (thumb in palm, ulnar deviation)
- Crepitus on thumb movement
- Normal thumb CMC joint (grind test negative)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
X-ray	Exclude thumb base arthritis
USG	Diagnostic doubt

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Rest	Avoid aggravating activities; change baby-lifting technique	4–6 weeks
Thumb spica splint	Immobilise thumb and wrist	3–6 weeks
Analgesia	Ibuprofen 400 mg TDS after food or topical diclofenac (paracetamol if breastfeeding concerns)	1–2 weeks
Steroid injection (most effective)	Methylprednisolone 40 mg or triamcinolone 10–20 mg with lignocaine into the sheath	Single; may repeat once
Surgery	Release of first dorsal compartment (refer)	—

REFER / RED FLAGS

- Failure of 2 injections
- Diagnostic uncertainty
- Associated triggering
- Trauma

GP PEARLS

★ *One well-placed steroid injection cures about 80%.*

★ *Warn about skin depigmentation and fat atrophy after injection, especially in darker skin.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Diclofenac gel 1% (topical NSAID)	Apply to area 3–4 times daily	Topical	*Minimal systemic effect; avoid broken skin*
Methylprednisolone	40–125 mg IV; 4–16 mg PO daily	Injection (trained)	*Hyperglycaemia; infection risk*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Naproxen (NSAID)	250–500 mg PO 12-hourly after food	Alternative	*GI bleed risk; lower CV risk than other NSAIDs*
Etoricoxib (COX-2 inhibitor)	60–90 mg PO once daily (120 mg for acute gout ≤8 days)	Alternative	*Avoid in IHD, stroke, uncontrolled BP*

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DISEASE 141 OF 300 | MUSCULOSKELETAL

Knee Osteoarthritis

Exercise and weight loss work better than any tablet.

DEFINITION

Degenerative joint disease with cartilage loss, osteophytes and subchondral sclerosis. The knee is the commonest site in India, related to age, obesity, female sex, squatting and cross-legged sitting habits, previous injury and genu varum. Diagnosis is clinical in those over 45 with activity-related pain and short morning stiffness.

SYMPTOMS

- Knee pain on walking, climbing stairs, squatting
- Morning stiffness <30 min, gelling after rest
- Crepitus, swelling
- Locking or giving way
- Reduced walking distance

SIGNS

- Joint line tenderness
- Crepitus, bony enlargement
- Effusion (mild)
- Varus deformity, quadriceps wasting
- Reduced range of motion

DIAGNOSTIC TESTS

Test	Finding / purpose
X-ray knee AP standing + lateral	Joint space narrowing, osteophytes (Kellgren–Lawrence grade)
CBC, ESR, uric acid, RA factor	Only if inflammatory arthritis suspected
Aspiration	Acute hot swollen joint (gout, sepsis)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Exercise (core treatment)	Quadriceps strengthening (straight-leg raises, static quads), cycling, walking, aquatic exercise	Lifelong
Weight loss	5–10% weight loss reduces pain significantly	Ongoing
Topical NSAID (first line)	Diclofenac 1% gel applied 3–4 times daily	Long term, as needed
Oral analgesia	Paracetamol 650 mg–1 g TDS SOS; ibuprofen 400 mg TDS or naproxen 500 mg BD or etoricoxib 60 mg OD + PPI (short courses)	1–2 weeks per flare
Intra-articular steroid	Triamcinolone 40 mg for flares with effusion	Max 3–4 per year
Aids	Walking stick in opposite hand, cushioned footwear, knee cap support; avoid squatting and floor sitting	—

REFER / RED FLAGS

- Severe pain, night pain, deformity limiting function (joint replacement)
- Locking (loose body, meniscal tear)
- Hot swollen joint
- Rapid progression

GP PEARLS

★ *Glucosamine, chondroitin and "cartilage builders" have little proven benefit — spend effort on exercise.*

★ *Long-term oral NSAIDs in elderly patients cause GI bleeding and renal failure — use topical first.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	First-line	*Hepatotoxic in overdose; check combination products*
Diclofenac gel 1% (topical NSAID)	Apply to area 3–4 times daily	Topical NSAID	*Minimal systemic effect; avoid broken skin*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Short courses	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Etoricoxib (COX-2 inhibitor)	60–90 mg PO once daily (120 mg for acute gout ≤8 days)	Flares	*Avoid in IHD, stroke, uncontrolled BP*
Methylprednisolone	40–125 mg IV; 4–16 mg PO daily	Intra-articular (trained)	*Hyperglycaemia; infection risk*
Tramadol (weak opioid)	50–100 mg PO 6–8-hourly; max 400 mg/day	Refractory pain	*Seizures, serotonin syndrome; dependence*

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DISEASE 142 OF 300 | MUSCULOSKELETAL

Plantar Fasciitis (Heel Pain)

First steps in the morning are the most painful — stretch the calf and fascia.

DEFINITION

Degenerative inflammation of the plantar fascia at its origin on the medial calcaneal tubercle — the commonest cause of heel pain in adults. Risk factors: obesity, prolonged standing, flat feet, tight calf muscles, hard footwear, sudden increase in walking or running. A calcaneal spur on X-ray is often incidental.

SYMPTOMS

- Heel pain with first steps in the morning
- Pain after rest, improves with walking, worse at end of day
- Sharp pain under the heel
- Prolonged standing occupation
- Recent weight gain

SIGNS

- Point tenderness at medial calcaneal tubercle
- Pain on dorsiflexion of toes (windlass)
- Tight Achilles tendon
- Flat feet
- No swelling or warmth

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
X-ray	Persistent pain, suspected stress fracture; spur is not the cause
USG	Thickened fascia >4 mm
Uric acid, HLA-B27	Bilateral heel pain in young men (enthesitis)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Stretching (key)	Plantar fascia and calf stretches 3 times daily; roll foot over a frozen water bottle 10 min	6–12 weeks
Footwear	Cushioned shoes with arch support, silicone heel cups; avoid walking barefoot on hard floors	Long term
Analgesia	Ibuprofen 400 mg TDS or naproxen 500 mg BD after food; topical diclofenac	1–2 weeks
Weight loss	If overweight	Ongoing
Night splint	Dorsiflexion splint for persistent morning pain	6–8 weeks
Steroid injection	Methylprednisolone 40 mg medial approach (risk of fat pad atrophy, fascial rupture)	Single

REFER / RED FLAGS

- No improvement after 6 months
- Bilateral heel pain with back pain (spondyloarthritis)
- Numbness (tarsal tunnel)
- Suspected stress fracture

GP PEARLS

★ *Reassure: 80–90% improve within a year with stretching and footwear alone.*

★ *The heel spur is a bystander — removing it is rarely needed.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Diclofenac gel 1% (topical NSAID)	Apply to area 3–4 times daily	Topical	*Minimal systemic effect; avoid broken skin*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Methylprednisolone	40–125 mg IV; 4–16 mg PO daily	Injection (selected)	*Hyperglycaemia; infection risk*
Naproxen (NSAID)	250–500 mg PO 12-hourly after food	Alternative	*GI bleed risk; lower CV risk than other NSAIDs*
Etoricoxib (COX-2 inhibitor)	60–90 mg PO once daily (120 mg for acute gout ≤8 days)	Alternative	*Avoid in IHD, stroke, uncontrolled BP*

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DISEASE 143 OF 300 | MUSCULOSKELETAL

Ankle Sprain

Ottawa rules decide the X-ray; early mobilisation speeds recovery.

DEFINITION

Injury to the lateral ankle ligaments (anterior talofibular most often) from inversion. Graded I (stretch), II (partial tear) and III (complete tear, instability). Ottawa ankle rules identify patients needing X-ray to exclude fracture.

SYMPTOMS

- Inversion injury ("twisted ankle")
- Pain and swelling over lateral ankle
- Difficulty bearing weight
- Bruising
- Feeling of instability (grade III)

SIGNS

- Swelling and tenderness over ATFL
- Ecchymosis
- Ottawa: tenderness at posterior edge/tip of either malleolus, base of 5th metatarsal, navicular, or inability to bear weight 4 steps
- Anterior drawer test (after swelling subsides)
- Neurovascular status

DIAGNOSTIC TESTS

Test	Finding / purpose
X-ray ankle / foot	Only if Ottawa rules positive
USG / MRI	Persistent instability or pain after 6 weeks

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
PRICE (first 48–72 h)	Protection, Rest, Ice 15–20 min every 2–3 h, Compression bandage, Elevation	2–3 days
Analgesia	Ibuprofen 400 mg TDS or naproxen 500 mg BD after food; topical diclofenac	5–7 days
Early mobilisation	Weight bear as tolerated; ankle range-of-motion exercises after 48 h	1–2 weeks
Support	Ankle brace or tubigrip for grade II–III; crutches if needed	2–6 weeks
Rehabilitation	Balance and proprioception training (single-leg stand), peroneal strengthening	4–6 weeks
Avoid	Heat, massage, alcohol in the first 72 h	—

REFER / RED FLAGS

- Fracture on X-ray
- Complete tear with instability
- Neurovascular compromise
- Pain not improving after 6 weeks

GP PEARLS

★ *Strict immobilisation in plaster delays recovery in most sprains — functional support is better.*

★ *Squeeze the upper fibula: a high ankle sprain or Maisonneuve fracture is easily missed.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain and swelling	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Diclofenac gel 1% (topical NSAID)	Apply to area 3–4 times daily	Topical	*Minimal systemic effect; avoid broken skin*
Naproxen (NSAID)	250–500 mg PO 12-hourly after food	Alternative	*GI bleed risk; lower CV risk than other NSAIDs*
Tramadol (weak opioid)	50–100 mg PO 6–8-hourly; max 400 mg/day	Severe pain	*Seizures, serotonin syndrome; dependence*
Enoxaparin (LMWH)	1 mg/kg SC 12-hourly (treatment); 40 mg daily prophylaxis	Immobilised high-risk (selected)	*Bleeding; adjust in CKD*

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DISEASE 144 OF 300 | MUSCULOSKELETAL

Rheumatoid Arthritis

Symmetric small-joint arthritis with morning stiffness >1 hour — refer early for DMARDs.

DEFINITION

Chronic autoimmune inflammatory polyarthritis causing symmetric synovitis of small joints of hands and feet, which leads to erosions and deformity if untreated. Early DMARD therapy within 3 months (the "window of opportunity") prevents damage. Extra-articular features include nodules, interstitial lung disease, vasculitis and anaemia.

SYMPTOMS

- Pain and swelling of small joints of hands (MCP, PIP), wrists, feet
- Morning stiffness >1 hour
- Fatigue, low-grade fever, weight loss
- Difficulty making a fist, opening jars
- Symmetric involvement

SIGNS

- Boggy synovitis of MCPs, PIPs, wrists
- Positive squeeze test of MCPs/MTPs
- Rheumatoid nodules
- Late deformities: ulnar deviation, swan neck, boutonnière
- Pallor; lung crepitations (ILD)

DIAGNOSTIC TESTS

Test	Finding / purpose
RA factor, anti-CCP	Anti-CCP is more specific; seronegative RA exists
ESR, CRP	Disease activity
CBC, LFT, creatinine	Baseline for DMARDs
X-ray hands and feet	Periarticular osteopenia, erosions
HBsAg, anti-HCV, HIV, CXR	Before methotrexate/biologics (screen TB)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
DMARD (anchor)	Methotrexate 7.5–10 mg once weekly → 15–25 mg once weekly (same day each week)	Long term
With methotrexate	Folic acid 5 mg once weekly (not on MTX day)	Long term
Add-on / combination	Hydroxychloroquine 200–400 mg OD (≤5 mg/kg); sulfasalazine 500 mg BD → 1 g BD; leflunomide 10–20 mg OD	Long term
Bridge therapy	Prednisolone 5–10 mg OD tapering	≤3 months
Symptom relief	Naproxen 500 mg BD or etoricoxib 90 mg OD + PPI	Short term
Monitoring	CBC, LFT, creatinine every 4–6 weeks initially then 3 monthly; yearly eye exam on HCQ after 5 years	—

REFER / RED FLAGS

- All suspected RA — rheumatology within 6 weeks
- Breathlessness or cough on methotrexate (pneumonitis)
- Cytopenias, raised LFT on DMARDs
- Vasculitis, eye involvement

GP PEARLS

★ *Methotrexate is ONCE WEEKLY — daily dosing errors are fatal; write the weekday on the prescription.*

★ *Start DMARDs early; NSAIDs and steroids alone do not prevent erosions.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Methotrexate (DMARD)	7.5–25 mg PO ONCE WEEKLY + folic acid	Anchor DMARD (weekly)	*Daily dosing is fatal; CBC, LFT monitoring*
Folic acid	5 mg PO daily (400 µg periconception)	With methotrexate	*Exclude B12 deficiency first*
Hydroxychloroquine (DMARD)	200–400 mg PO daily (≤5 mg/kg)	Combination DMARD	*Annual eye screening*
Sulfasalazine (DMARD)	500 mg daily, increase to 1 g 12-hourly	Combination DMARD	*Rash, marrow suppression; orange urine*
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	Bridging low dose	*Hyperglycaemia; taper if >3 weeks*
Naproxen (NSAID)	250–500 mg PO 12-hourly after food	Symptom relief	*GI bleed risk; lower CV risk than other NSAIDs*

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DISEASE 145 OF 300 | MUSCULOSKELETAL

Ankylosing Spondylitis

Young man with back pain that improves with exercise and wakes him at night.

DEFINITION

Chronic inflammatory disease of the spine and sacroiliac joints (axial spondyloarthritis), mostly affecting young men, strongly associated with HLA-B27. Inflammatory back pain: onset <40 years, insidious, >3 months, morning stiffness, improves with exercise not rest, night pain. Extra-articular: anterior uveitis, enthesitis, psoriasis, IBD.

SYMPTOMS

- Low back and buttock pain, alternating buttock pain
- Morning stiffness >30 min
- Pain in second half of night
- Improves with exercise
- Red painful eye (uveitis), heel pain

SIGNS

- Reduced lumbar flexion (modified Schober's <5 cm)
- Sacroiliac tenderness
- Reduced chest expansion
- Enthesitis — Achilles, plantar fascia
- Loss of lumbar lordosis, kyphosis (late)

DIAGNOSTIC TESTS

Test	Finding / purpose
ESR, CRP	Raised in active disease
HLA-B27	Supports diagnosis
X-ray pelvis (SI joints)	Sacroiliitis
MRI SI joints	Early disease with normal X-ray

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Exercise (essential)	Daily spinal extension, stretching, swimming; posture training	Lifelong
NSAID (first line)	Naproxen 500 mg BD or indomethacin 25–50 mg TDS or etoricoxib 90 mg OD + PPI	Continuous if active
Peripheral arthritis	Sulfasalazine 1 g BD	Long term
Inadequate response to 2 NSAIDs	Anti-TNF (adalimumab, etanercept) or IL-17 inhibitor (specialist; TB screening)	Long term
Smoking	Stop — worsens progression	—
Avoid	Long-term systemic steroids (ineffective for axial disease)	—

REFER / RED FLAGS

- Suspected axial spondyloarthritis (rheumatology)
- Red painful eye (same-day ophthalmology)
- Persistent activity despite NSAIDs
- Neck trauma in established AS (fracture risk)

GP PEARLS

★ *Back pain that improves with exercise and worsens with rest is inflammatory.*

★ *Patients with fused spines can fracture with trivial trauma — image after any fall.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Naproxen (NSAID)	250–500 mg PO 12-hourly after food	First-line NSAID	*GI bleed risk; lower CV risk than other NSAIDs*
Etoricoxib (COX-2 inhibitor)	60–90 mg PO once daily (120 mg for acute gout ≤8 days)	Alternative	*Avoid in IHD, stroke, uncontrolled BP*
Sulfasalazine (DMARD)	500 mg daily, increase to 1 g 12-hourly	Peripheral arthritis	*Rash, marrow suppression; orange urine*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Pantoprazole (PPI)	40 mg PO before breakfast; 40–80 mg IV	GI protection	*Long-term: B12, Mg deficiency, fractures*
Methylprednisolone	40–125 mg IV; 4–16 mg PO daily	Selected injections	*Hyperglycaemia; infection risk*

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DISEASE 146 OF 300 | MUSCULOSKELETAL

Septic Arthritis

A single hot, swollen joint is septic until aspirated.

DEFINITION

Bacterial infection of a joint (Staphylococcus aureus most often; gonococcus in young sexually active adults; streptococci; Gram-negatives in elderly and IV drug users) causing rapid cartilage destruction within days. Risk factors: RA, diabetes, prosthetic joint, intra-articular injection, skin infection, extremes of age.

SYMPTOMS

- Acute painful swollen joint, usually knee or hip
- Unable to bear weight or move joint
- Fever, rigors (may be absent in elderly)
- Recent skin infection, injection, surgery
- Child refusing to walk or move a limb (pseudoparalysis)

SIGNS

- Hot, red, swollen, tender joint
- Severe pain on any passive movement
- Effusion
- Fever
- Source: skin lesion, pustules (gonococcal)

DIAGNOSTIC TESTS

Test	Finding / purpose
Joint aspiration (before antibiotics)	Turbid fluid, WBC >50,000/µl, Gram stain, culture, crystals
Blood culture	2 sets
CBC, ESR, CRP	Raised
X-ray / USG joint	Effusion (hip in children), baseline

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Urgent referral	Orthopaedics for aspiration/washout	Same day
Empirical IV antibiotic (after aspiration)	Cloxacillin 2 g IV 6-hourly (child 50 mg/kg 6-hourly) or cefazolin 2 g IV 8-hourly; add vancomycin if MRSA risk	2 weeks IV then oral
Gonococcal	Ceftriaxone 1 g IV OD	7 days
Oral step-down	Cephalexin 1 g QID or amoxicillin-clavulanate 625 mg TDS or as per culture	Total 4–6 weeks
Pain	Paracetamol + NSAID; splint in position of function	As needed
Physiotherapy	Early mobilisation once infection controlled	—

REFER / RED FLAGS

- All suspected septic arthritis — emergency
- Prosthetic joint
- Child with a limp and fever (hip)
- Sepsis

GP PEARLS

★ *Gout and septic arthritis can coexist — crystals do not exclude infection.*

★ *Never inject steroid into a hot joint that has not been aspirated.*

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DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Cloxacillin (anti-staphylococcal penicillin)	500 mg PO 6-hourly before food	Staph cover (after aspiration)	*Penicillin allergy*
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	Empirical IV (refer urgently)	*Biliary sludge; not with calcium IV in neonates*
Clindamycin (lincosamide)	300 mg PO 6–8-hourly	Penicillin allergy	*C. difficile diarrhoea*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Linezolid (oxazolidinone)	600 mg PO/IV 12-hourly	MRSA (specialist)	*Myelosuppression; serotonin syndrome*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*

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DISEASE 147 OF 300 | MUSCULOSKELETAL

Reactive & Post-viral Arthritis

Joint pain weeks after an infection — usually self-limiting.

DEFINITION

Sterile inflammatory arthritis following infection elsewhere: reactive arthritis after enteric (Shigella, Salmonella, Campylobacter) or genital (Chlamydia) infection, typically asymmetric lower-limb oligoarthritis with enthesitis; post-viral arthritis after chikungunya, dengue, parvovirus, hepatitis B, rubella. Most resolve within 6 months.

SYMPTOMS

- Joint pain and swelling 1–4 weeks after diarrhoea or urethritis
- Asymmetric large joints of lower limb
- Heel pain, swollen toe (dactylitis)
- Red eyes (conjunctivitis), dysuria
- Mouth ulcers, rash on soles

SIGNS

- Asymmetric oligoarthritis (knee, ankle)
- Enthesitis (Achilles)
- Sausage digit
- Conjunctivitis, circinate balanitis, keratoderma blennorrhagica
- Post-viral: symmetric small joints

DIAGNOSTIC TESTS

Test	Finding / purpose
ESR, CRP, CBC	Inflammation
Joint aspiration	Exclude septic and crystal arthritis
Urine NAAT for chlamydia, stool culture	Trigger
HLA-B27, RA factor, anti-CCP	Persistent cases
Viral serology (chikungunya, parvovirus, HBV)	Post-viral

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
NSAID	Naproxen 500 mg BD or indomethacin 25–50 mg TDS + PPI	2–6 weeks
Intra-articular steroid	Triamcinolone 40 mg (knee) after excluding infection	Single
Chlamydia trigger	Doxycycline 100 mg BD (treat partner)	7 days
Short oral steroid	Prednisolone 10–20 mg OD tapering (polyarticular, NSAID failure)	2–4 weeks
Chronic (>6 months)	Sulfasalazine 1 g BD or methotrexate (rheumatology)	Months
Physiotherapy	Maintain range of movement	—

REFER / RED FLAGS

- Hot single joint with fever (exclude septic)
- Eye pain with photophobia (uveitis)
- Persistent arthritis >6 months
- Cardiac or renal involvement

GP PEARLS

★ *Antibiotics do not treat reactive arthritis itself — only the triggering chlamydial infection.*

★ *Ask about diarrhoea or urethral discharge in the previous month in any young person with acute knee swelling.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Naproxen (NSAID)	250–500 mg PO 12-hourly after food	NSAID	*GI bleed risk; lower CV risk than other NSAIDs*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	NSAID	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Doxycycline (tetracycline)	100 mg PO 12-hourly after food, upright	Chlamydia-triggered	*Avoid in pregnancy and <8 years; photosensitivity*
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	Severe (selected)	*Hyperglycaemia; taper if >3 weeks*
Sulfasalazine (DMARD)	500 mg daily, increase to 1 g 12-hourly	Chronic reactive arthritis	*Rash, marrow suppression; orange urine*

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DISEASE 148 OF 300 | MUSCULOSKELETAL

Muscle Strain & Myalgia

Common and usually benign — but check CK and drugs when it is not.

DEFINITION

Muscle pain from overuse, minor strain or viral illness is common and self-limiting. Persistent or widespread myalgia may reflect hypothyroidism, vitamin D deficiency, statin myopathy, polymyalgia rheumatica (age >50 with shoulder/hip girdle stiffness), inflammatory myositis, fibromyalgia or rhabdomyolysis (dark urine).

SYMPTOMS

- Localised pain after exertion or injury
- Generalised aches with fever (viral)
- Proximal stiffness >45 min in elderly (PMR)
- Weakness climbing stairs (myopathy)
- Dark urine after heavy exertion, heat (rhabdomyolysis)

SIGNS

- Localised tenderness, pain on stretch
- Proximal muscle weakness (myopathy, myositis)
- Heliotrope rash, Gottron's papules (dermatomyositis)
- Multiple tender points (fibromyalgia)
- Bruising

DIAGNOSTIC TESTS

Test	Finding / purpose
None for simple strain	—
CK	Statin users, weakness, dark urine
ESR/CRP	PMR (very high)
TSH, vitamin D, calcium	Persistent aches
Urine dipstick (blood without RBCs)	Myoglobinuria

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Strain — acute	Rest, ice for 48 h, then heat; gentle stretching	1–2 weeks
Analgesia	Paracetamol 1 g TDS or ibuprofen 400 mg TDS; topical diclofenac or methyl salicylate	3–7 days
Spasm	Thiocolchicoside 4 mg BD or chlorzoxazone 250–500 mg TDS	3–5 days
Statin myalgia	Stop statin if CK >4× ULN or intolerable; rechallenge with lower dose/alternative after symptoms settle	—
Polymyalgia rheumatica	Prednisolone 15 mg OD (dramatic response), taper slowly	1–2 years
Rhabdomyolysis	Refer: IV fluids aiming urine output 200 ml/h	Urgent

REFER / RED FLAGS

- Dark urine, CK >5000 (rhabdomyolysis)
- Objective weakness
- Age >50 with jaw claudication, headache (giant cell arteritis)
- Persistent symptoms with weight loss

GP PEARLS

★ *PMR responds within days to low-dose prednisolone — no response means reconsider the diagnosis.*

★ *Vitamin D and thyroid status explain many chronic body aches.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Diclofenac gel 1% (topical NSAID)	Apply to area 3–4 times daily	Topical	*Minimal systemic effect; avoid broken skin*
Thiocolchicoside (muscle relaxant)	4–8 mg PO 12-hourly ≤7 days	Spasm	*Avoid in pregnancy, epilepsy*
Chlorzoxazone (muscle relaxant)	250–500 mg PO 8-hourly	Spasm alternative	*Hepatotoxicity rarely; drowsiness*
Cholecalciferol (vitamin D3)	60,000 IU weekly ×8 weeks, then monthly	Deficiency myalgia	*Hypercalcaemia if overused*

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DISEASE 149 OF 300 | MUSCULOSKELETAL

Fractures — First Aid & Splinting

Immobilise the joint above and below, check the circulation, refer.

DEFINITION

Break in bone continuity from trauma (or minor trauma in osteoporosis — fragility fracture). Open (compound) fractures communicate with a wound and carry high infection risk. Complications: neurovascular injury, compartment syndrome, fat embolism, blood loss (femur up to 1.5 l, pelvis >2 l), non-union and malunion.

SYMPTOMS

- Pain, swelling, inability to use the limb
- Deformity
- Mechanism of injury
- Numbness, tingling, pallor distally
- Pain out of proportion, worse on passive stretch (compartment syndrome)

SIGNS

- Tenderness, swelling, bruising
- Deformity, abnormal mobility, crepitus
- Wound over fracture (open)
- Distal pulses, capillary refill, sensation
- Tense swollen compartment

DIAGNOSTIC TESTS

Test	Finding / purpose
X-ray — two views, joint above and below	Confirms fracture and displacement
Hb, cross-match	Femur, pelvic fractures
CT	Complex, intra-articular, spinal
DXA	Fragility fracture

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Primary survey	ABCDE first; control external bleeding with direct pressure	Immediate
Splinting	Immobilise joint above and below with padded splint (cardboard, wooden plank, SAM splint); sling for upper limb; buddy strap fingers	Until definitive care
Analgesia	Paracetamol 1 g + ibuprofen 400 mg; tramadol 50–100 mg IM or diclofenac 75 mg IM; morphine 2.5–5 mg IV for severe pain	As needed
Open fracture	Cover with sterile saline-soaked dressing; cefazolin 2 g IV (or cefuroxime 1.5 g) within 1 h; tetanus prophylaxis	Stat
Elevation & ice	Reduce swelling; remove rings and bangles	—
Suspected spine injury	Spinal immobilisation, log roll	—

REFER / RED FLAGS

- All suspected fractures for X-ray and orthopaedics
- Open fracture, neurovascular deficit — emergency
- Compartment syndrome (pain on passive stretch)
- Femur, pelvis, spine, hip fractures

GP PEARLS

★ *Check and document distal pulses and sensation before and after splinting.*

★ *Remove rings immediately in hand and forearm injuries — swelling turns them into tourniquets.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Tramadol (weak opioid)	50–100 mg PO 6–8-hourly; max 400 mg/day	Moderate–severe pain	*Seizures, serotonin syndrome; dependence*
Morphine (strong opioid)	IR 5–10 mg PO 4-hourly; 2–5 mg IV titrated	Severe pain (titrated IV)	*Respiratory depression; give laxative; NDPS record*
Tetanus–diphtheria (Td) vaccine	0.5 ml IM	Open fractures	*Booster if last dose >5 y (dirty wound) or >10 y (clean)*
Cephalexin (1st-gen cephalosporin)	500 mg PO 6–8-hourly	Open fracture (first dose)	*Penicillin cross-allergy (low)*

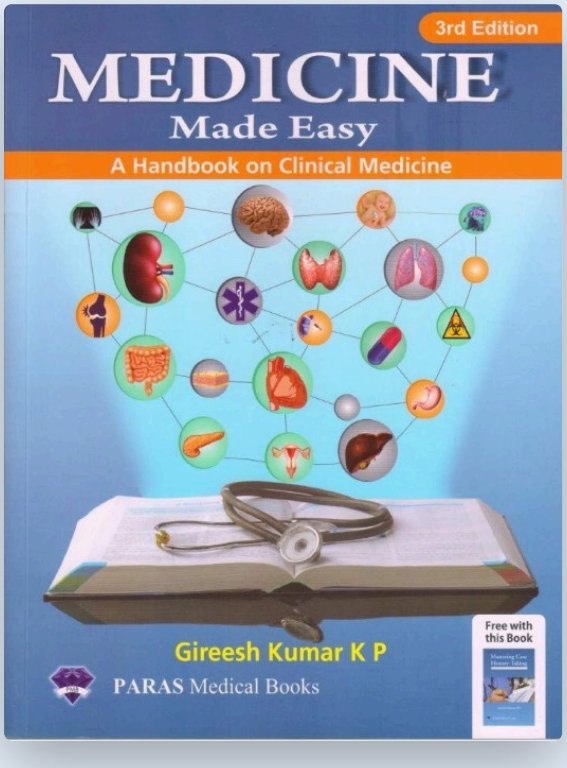
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DISEASE 150 OF 300 | SKIN

Tinea Corporis & Cruris (Ringworm)

Itchy annular plaques — no steroid creams, adequate antifungal course.

DEFINITION

Superficial dermatophyte infection (Trichophyton rubrum, T. mentagrophytes/indotineae) of the body (corporis) or groin (cruris). India faces an epidemic of chronic, recurrent and steroid-modified tinea due to misuse of steroid-antifungal combination creams and emerging terbinafine resistance.

SYMPTOMS

- Intensely itchy red patches
- Spreading rings with clearing centre
- Groin, buttocks, waist, under breasts
- Recurrence, family members affected
- Previous use of "combination" creams

SIGNS

- Annular plaques with raised scaly active edge
- Central clearing
- Multiple, large lesions in steroid-modified tinea (tinea incognito)
- Pseudo-imbricata (concentric rings)
- Scrotum usually spared in tinea cruris

DIAGNOSTIC TESTS

Test	Finding / purpose
KOH mount of scraping	Branching septate hyphae
Fungal culture	Recurrent, extensive or treatment-resistant
Blood sugar	Recurrent infections

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Topical (limited disease)	Luliconazole 1% or sertaconazole 2% or amorolfine 0.25% cream OD–BD, 2 cm beyond edge	4 weeks, and 2 weeks after clearance
Extensive / recurrent — oral	Itraconazole 100 mg BD (200 mg/day) with a full meal; 200 mg BD for extensive disease (child 5 mg/kg/day)	4–6 weeks
Alternative oral	Terbinafine 250 mg OD (resistance common); fluconazole 150–300 mg once weekly	4–6 weeks
Itch	Levocetirizine 5 mg OD or hydroxyzine 10–25 mg HS	2 weeks
Hygiene	Loose cotton clothes, dry skin folds, wash clothes in hot water and sun-dry, do not share towels; treat family	Ongoing
Avoid	Steroid-containing creams (clobetasol/betamethasone combinations)	—

REFER / RED FLAGS

- Extensive disease not responding to 6 weeks of itraconazole
- Immunocompromised
- Diagnostic doubt
- Children with widespread disease

GP PEARLS

★ *Stop all steroid combination creams — they are the main driver of chronic tinea in India.*

★ *Take itraconazole with a full meal; acid suppressants reduce absorption.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Luliconazole 1% cream	Apply once daily ×2–4 weeks	Topical azole	*Avoid steroid combinations*
Terbinafine (allylamine antifungal)	250 mg PO daily; 1% cream 12-hourly	Topical/oral	*Hepatotoxicity; taste disturbance*
Itraconazole (azole antifungal)	100–200 mg PO daily ×2–4 weeks with food	Extensive/resistant	*Hepatotoxic; CHF; interactions*
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	Itching	*Mild sedation; reduce dose in CKD*
Clotrimazole (azole antifungal — topical)	1% cream 12-hourly; 500 mg vaginal pessary single	Topical alternative	*Local irritation*

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DISEASE 151 OF 300 | SKIN

Tinea Capitis

Scaly patches with broken hairs in a child — needs oral antifungal.

DEFINITION

Dermatophyte infection of the scalp hair, mainly in prepubertal children (Trichophyton, Microsporum). Presents as scaly patches with hair loss, black dots or an inflamed boggy swelling (kerion). Topical agents alone cannot reach the hair shaft.

SYMPTOMS

- Itchy scaly patches on the scalp
- Patchy hair loss
- Painful boggy swelling with pus (kerion)
- Other children or pets affected
- Enlarged neck glands

SIGNS

- Grey scaly patches with broken hairs
- Black dots (hairs broken at surface)
- Kerion — tender, boggy, pustular plaque
- Occipital lymphadenopathy
- Id reaction on body

DIAGNOSTIC TESTS

Test	Finding / purpose
KOH mount of plucked hairs and scale	Endothrix/ectothrix spores
Wood's lamp	Green fluorescence (Microsporum)
Fungal culture	Species identification

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
First line (Trichophyton)	Terbinafine: 10–20 kg 62.5 mg; 20–40 kg 125 mg; >40 kg 250 mg OD	4–6 weeks
Microsporum / alternative	Griseofulvin 20–25 mg/kg/day with fatty food (microsize)	6–8 weeks
Alternative	Itraconazole 5 mg/kg/day	4–6 weeks
Adjunct	Ketoconazole 2% or selenium sulphide shampoo twice weekly (child and family)	2–4 weeks
Kerion	Oral antifungal; short prednisolone 1 mg/kg × 1 week if very inflamed; do not incise	As above
Hygiene	Do not share combs, caps; examine contacts and pets	—

REFER / RED FLAGS

- Kerion with scarring risk
- Failure of treatment
- Adults with tinea capitis (consider immunosuppression)
- Widespread infection

GP PEARLS

★ *A kerion is a fungal infection, not an abscess — incision causes scarring alopecia.*

★ *Children may return to school once treatment starts.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Griseofulvin (antifungal)	10–20 mg/kg/day PO with fatty food (tinea capitis)	First-line (children)	*Photosensitivity; avoid in pregnancy*
Terbinafine (allylamine antifungal)	250 mg PO daily; 1% cream 12-hourly	Trichophyton	*Hepatotoxicity; taste disturbance*
Ketoconazole 2% shampoo	Lather, leave 5 min, rinse; twice weekly	Reduce spore shedding	*Scalp irritation*
Itraconazole (azole antifungal)	100–200 mg PO daily ×2–4 weeks with food	Alternative	*Hepatotoxic; CHF; interactions*
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	Itching	*Mild sedation; reduce dose in CKD*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Kerion pain	*Hepatotoxic in overdose; check combination products*

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DISEASE 152 OF 300 | SKIN

Tinea Pedis & Onychomycosis

Itchy macerated toe webs and thick yellow nails — treat feet to protect the diabetic foot.

DEFINITION

Tinea pedis is dermatophyte infection of the feet (interdigital maceration, moccasin scaling). Onychomycosis is fungal infection of the nail (dermatophytes, Candida, moulds) causing thick, discoloured, crumbly nails. In diabetics, web-space fissures are portals for cellulitis.

SYMPTOMS

- Itching, burning between toes
- Peeling, cracking, smell
- Thick, yellow-brown, brittle nails
- Occlusive footwear, sweating, wet work
- Diabetes

SIGNS

- White macerated fourth toe web
- Dry scaling of sole (moccasin)
- Vesicles on instep
- Subungual hyperkeratosis, onycholysis, discolouration
- Secondary bacterial infection

DIAGNOSTIC TESTS

Test	Finding / purpose
KOH mount of skin/nail clippings	Hyphae
Fungal culture	Before long oral therapy for nails
LFT	Before prolonged oral terbinafine/itraconazole
Blood sugar	Diabetes

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Tinea pedis	Clotrimazole 1% or luliconazole 1% cream BD + dusting powder in socks/shoes	4 weeks
Onychomycosis — fingernails	Terbinafine 250 mg OD	6 weeks
Onychomycosis — toenails	Terbinafine 250 mg OD (12 weeks) or itraconazole pulse 200 mg BD for 1 week each month	12 weeks / 3 pulses
Mild / few nails, contraindication to oral	Amorolfine 5% nail lacquer once or twice weekly (file nail first)	6–12 months
Candidal nail	Itraconazole pulse as above or fluconazole 150 mg weekly	3–6 months
Foot hygiene	Dry between toes, cotton socks, open footwear, do not walk barefoot in shared bathrooms	Ongoing

REFER / RED FLAGS

- Diabetic with cellulitis or fissures
- Painful dystrophic nail (exclude psoriasis, tumour)
- Failure of oral therapy
- Liver disease

GP PEARLS

★ *Nails take 12–18 months to grow out — they look abnormal long after the fungus is gone.*

★ *Confirm fungus before 3 months of oral therapy: half of thick nails are not fungal.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Terbinafine (allylamine antifungal)	250 mg PO daily; 1% cream 12-hourly	Onychomycosis 6–12 weeks	*Hepatotoxicity; taste disturbance*
Itraconazole (azole antifungal)	100–200 mg PO daily ×2–4 weeks with food	Pulse therapy	*Hepatotoxic; CHF; interactions*
Luliconazole 1% cream	Apply once daily ×2–4 weeks	Tinea pedis	*Avoid steroid combinations*
Clotrimazole (azole antifungal — topical)	1% cream 12-hourly; 500 mg vaginal pessary single	Topical	*Local irritation*
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	Itching	*Mild sedation; reduce dose in CKD*
Emollient (white soft paraffin / urea cream)	Apply liberally twice daily and after bath	Skin care	*Fire risk with paraffin on dressings*

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DISEASE 153 OF 300 | SKIN

Pityriasis Versicolor

Fine scaly hypopigmented patches on the upper trunk — returns every summer.

DEFINITION

Superficial infection with the yeast Malassezia, favoured by heat, humidity and sweating, producing hypo- or hyperpigmented finely scaly macules on the chest, back, neck and upper arms. Pigment takes months to return after the yeast is cleared. Recurrence is common.

SYMPTOMS

- Light or dark patches on chest, back, neck
- Mild itch, worse with sweating
- Patches more noticeable after sun exposure
- Recurs in hot weather
- Young adults

SIGNS

- Round to oval macules coalescing into patches
- Fine branny scale (evoked scale sign on scratching)
- Hypopigmented (or hyperpigmented)
- Yellow-green fluorescence on Wood's lamp
- No loss of sensation (unlike leprosy)

DIAGNOSTIC TESTS

Test	Finding / purpose
KOH mount	"Spaghetti and meatballs" hyphae and spores
Sensation testing	Exclude leprosy in hypopigmented patches

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Topical (first line)	Ketoconazole 2% shampoo: apply to body, leave 5–10 min, wash off	Daily × 5–7 days
Alternative topical	Selenium sulphide 2.5% lotion 10 min daily × 7 days; clotrimazole/ketoconazole cream BD	2–4 weeks
Extensive / recurrent	Fluconazole 300 mg once weekly × 2 doses or itraconazole 200 mg OD × 5–7 days	As stated
Prophylaxis	Ketoconazole shampoo once weekly, or fluconazole 300 mg once a month in summer	3–6 months
Advice	Pigment returns slowly over months with sun exposure	—

REFER / RED FLAGS

- Hypopigmented patch with sensory loss (leprosy)
- Diagnostic doubt (vitiligo, pityriasis alba)
- Frequent recurrence despite prophylaxis
- —

GP PEARLS

★ *Hypopigmentation persisting after treatment does not mean failure — check scale and KOH instead.*

★ *Always test sensation in hypopigmented patches in India.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ketoconazole 2% shampoo	Lather, leave 5 min, rinse; twice weekly	Wash 5 min ×7 days	*Scalp irritation*
Selenium sulphide 2.5% lotion	Apply 10 min, rinse; daily ×7 days	Alternative	*Irritation; discolours jewellery*
Fluconazole (azole antifungal)	150 mg PO single dose (vaginal); 150 mg weekly (tinea)	Extensive (single/weekly)	*QT; hepatotoxic; avoid in pregnancy*
Itraconazole (azole antifungal)	100–200 mg PO daily ×2–4 weeks with food	Alternative	*Hepatotoxic; CHF; interactions*
Clotrimazole (azole antifungal — topical)	1% cream 12-hourly; 500 mg vaginal pessary single	Small areas	*Local irritation*
Luliconazole 1% cream	Apply once daily ×2–4 weeks	Topical	*Avoid steroid combinations*

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DISEASE 154 OF 300 | SKIN

Cutaneous Candidiasis & Intertrigo

Red, moist skin folds with satellite pustules — dry and treat with azole.

DEFINITION

Inflammation of skin folds (groin, under breasts, abdominal folds, axillae, finger webs) from friction, moisture and heat, often secondarily infected with Candida or bacteria. Common in obesity, diabetes, hot climate, incontinence and with antibiotic or steroid use.

SYMPTOMS

- Itchy, sore, red skin in folds
- Burning, maceration, smell
- Obesity, diabetes, sweating
- Occupation with wet hands (finger web)
- Recent antibiotic or steroid

SIGNS

- Bright red, moist plaques in folds
- Satellite papules and pustules (Candida)
- Fissures in fold depth
- Erosions
- Interdigital candidiasis in finger web (erosio interdigitalis)

DIAGNOSTIC TESTS

Test	Finding / purpose
KOH mount	Budding yeasts and pseudohyphae
Blood sugar / HbA1c	Diabetes
Swab culture	If bacterial superinfection suspected

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Keep dry	Dry folds after bathing, separate folds with cotton cloth, loose clothes; weight loss	Ongoing
Topical antifungal	Clotrimazole 1% or miconazole 2% cream BD; nystatin cream	2 weeks
Inflamed	Add hydrocortisone 1% cream BD (not potent steroids)	≤7 days
Extensive or recurrent	Fluconazole 150 mg once weekly	2–4 weeks
Powder	Clotrimazole dusting powder after drying	Ongoing
Diabetes	Optimise glycaemic control; note SGLT2 inhibitor contribution	—

REFER / RED FLAGS

- Recurrent candidiasis — check diabetes, HIV
- Bacterial cellulitis
- Not responding to 2 weeks of treatment
- Diagnostic doubt (inverse psoriasis, erythrasma)

GP PEARLS

★ *Satellite pustules distinguish Candida from tinea (which has a scaly edge).*

★ *Potent steroid creams worsen fungal infections — use only 1% hydrocortisone briefly.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Clotrimazole (azole antifungal — topical)	1% cream 12-hourly; 500 mg vaginal pessary single	Topical azole	*Local irritation*
Fluconazole (azole antifungal)	150 mg PO single dose (vaginal); 150 mg weekly (tinea)	Extensive/recurrent	*QT; hepatotoxic; avoid in pregnancy*
Hydrocortisone 1% cream (mild steroid)	Apply thinly 12-hourly ≤7 days (face/flexures)	Inflamed intertrigo (short)	*Atrophy with prolonged use*
Emollient (white soft paraffin / urea cream)	Apply liberally twice daily and after bath	Barrier care	*Fire risk with paraffin on dressings*
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	Itching	*Mild sedation; reduce dose in CKD*
Metformin (biguanide)	500 mg daily–1 g 12-hourly with meals	Diabetic control	*GI upset; stop if eGFR <30, contrast, sepsis*

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DISEASE 155 OF 300 | SKIN

Scabies

Night itch in the whole family — treat everyone on the same day.

DEFINITION

Infestation with the mite Sarcoptes scabiei, spread by close skin-to-skin contact. Intense nocturnal itch begins 2–6 weeks after first infestation (1–3 days with reinfestation). Crusted (Norwegian) scabies with millions of mites occurs in the elderly and immunosuppressed. Secondary bacterial infection can lead to post-streptococcal glomerulonephritis.

SYMPTOMS

- Severe itch, worse at night
- Several family members itching
- Rash on hands, wrists, waist, genitals
- Itchy nodules on genitals (men)
- Children: palms, soles, face

SIGNS

- Burrows — short grey wavy lines in finger webs, wrists
- Papules, excoriations: finger webs, wrists, elbows, axillae, umbilicus, buttocks, genitals, breasts
- Nodules on penis/scrotum
- Pustules, crusting (secondary infection)
- Thick crusts (crusted scabies)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
Skin scraping / dermoscopy	Mite, eggs ("jet with contrail")
Urine routine	Haematuria if infected scabies in children (PSGN)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
First line	Permethrin 5% cream: apply from neck down (include scalp/face in infants) to cool dry skin, wash off after 8–12 h; repeat after 1 week	2 applications
Oral alternative / adjunct	Ivermectin 200 µg/kg single dose with food, repeat after 1 week (not <15 kg, pregnancy)	2 doses
Alternative topical	Benzyl benzoate 25% (12.5% in children) on 3 consecutive nights	3 days
Treat contacts	All household and close contacts simultaneously, even without symptoms	Same day
Environment	Wash clothes, bedding in hot water and sun-dry; seal unwashable items in a bag for 72 h	Same day
Itch	Levocetirizine 5 mg or hydroxyzine 10–25 mg HS; calamine; itch may persist 2–4 weeks	2–4 weeks
Infected scabies	Cephalexin 500 mg QID (child 25 mg/kg/day) or amoxicillin-clavulanate	5–7 days

REFER / RED FLAGS

- Crusted scabies
- Institutional outbreaks
- Failure after two correct treatments
- Haematuria or oedema in children

GP PEARLS

★ *Treatment failure is almost always due to untreated contacts or wrong application — explain clearly.*

★ *Itch lasting 2–4 weeks after successful treatment is expected; do not keep re-treating.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Permethrin 5% cream (scabicide)	Apply neck down, wash after 8–12 h; repeat after 7 days	First-line, treat contacts	*Treat contacts; itch persists 2–4 weeks*
Ivermectin (anthelmintic/scabicide)	200 µg/kg PO single dose, repeat in 1–2 weeks	Crusted/institutional	*Avoid <15 kg, pregnancy*
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	Itching	*Mild sedation; reduce dose in CKD*
Hydroxyzine (antihistamine)	10–25 mg PO at night or 8-hourly	Night itch	*Sedation; QT prolongation*
Mupirocin 2% ointment (topical antibiotic)	Apply 8-hourly ×5–7 days	Secondary infection	*Resistance with long use*
Emollient (white soft paraffin / urea cream)	Apply liberally twice daily and after bath	Post-scabies dryness	*Fire risk with paraffin on dressings*

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DISEASE 156 OF 300 | SKIN

Head Lice (Pediculosis Capitis)

Itchy scalp with nits behind the ears — treat, comb, repeat in a week.

DEFINITION

Infestation of the scalp hair with Pediculus humanus capitis, spread by head-to-head contact, especially among school children and girls with long hair. Diagnosis requires live lice; nits (eggs) close to the scalp suggest active infestation. Secondary infection causes impetigo and cervical lymphadenopathy.

SYMPTOMS

- Scalp itching, especially behind ears and nape
- Seeing lice or nits
- Classmates or siblings affected
- Sores on scalp
- Disturbed sleep

SIGNS

- Live lice on scalp
- Nits firmly attached to hair shafts near scalp
- Excoriations, impetiginised crusts
- Occipital/cervical lymphadenopathy

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical — wet combing with fine-toothed comb	Live lice confirm diagnosis

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
First line	Permethrin 1% lotion: apply to dry hair, leave 10 min (or 5% cream overnight), rinse; repeat on day 7–9	2 applications
Alternative	Ivermectin 0.5% lotion single application; or dimeticone 4% lotion (physical, no resistance) 8 h, repeat in 7 days	As stated
Resistant / extensive	Oral ivermectin 200 µg/kg, repeat in 7–10 days (≥15 kg)	2 doses
Wet combing	Conditioner + fine nit comb every 3–4 days	2 weeks
Secondary infection	Mupirocin 2% ointment TDS or oral cephalexin	5–7 days
Contacts	Check all family members; treat only those with live lice; wash combs, pillow covers	—

REFER / RED FLAGS

- Extensive secondary infection
- Treatment failure despite correct use
- Infants <6 months
- —

GP PEARLS

★ *Shaving the head is unnecessary and humiliating — treatment works.*

★ *Lindane is no longer recommended — it is neurotoxic.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Permethrin 1% lotion (pediculicide)	Apply to dry hair 10 min, rinse; repeat day 7–10	First-line	*Comb out nits*
Ivermectin (anthelmintic/scabicide)	200 µg/kg PO single dose, repeat in 1–2 weeks	Resistant cases	*Avoid <15 kg, pregnancy*
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	Itching	*Mild sedation; reduce dose in CKD*
Mupirocin 2% ointment (topical antibiotic)	Apply 8-hourly ×5–7 days	Excoriated scalp	*Resistance with long use*

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DISEASE 157 OF 300 | SKIN

Impetigo

Honey-coloured crusts around the nose and mouth in a child.

DEFINITION

Highly contagious superficial bacterial skin infection caused by Staphylococcus aureus and/or Streptococcus pyogenes. Non-bullous impetigo (70%) produces honey-coloured crusts; bullous impetigo (S. aureus) forms flaccid bullae. Common in children, in hot humid weather, and secondary to scabies, eczema or insect bites.

SYMPTOMS

- Red sores that rapidly crust
- Around nose, mouth, limbs
- Mild itch
- Spread to siblings
- Preceding insect bites, scabies, eczema

SIGNS

- Golden-yellow (honey-coloured) crusts on red base
- Flaccid bullae leaving collarettes (bullous)
- Satellite lesions
- Regional lymphadenopathy
- No systemic toxicity usually

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
Swab culture	Recurrent, extensive, not responding
Urine routine	Haematuria, oedema after 2–3 weeks (PSGN)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Localised	Remove crusts with warm saline soaks; mupirocin 2% or fusidic acid 2% ointment TDS	5–7 days
Extensive / bullous / systemic	Cephalexin 500 mg QID (child 25–50 mg/kg/day in 4 doses) or cloxacillin 500 mg QID	7 days
Penicillin allergy	Azithromycin 500 mg day 1 then 250 mg × 4 days (child 10 mg/kg day 1, 5 mg/kg days 2–5) or clindamycin	5 days
Hygiene	Hand-washing, short nails, separate towels; keep child home until crusted or 48 h on antibiotics	—
Underlying cause	Treat scabies, eczema, head lice	—

REFER / RED FLAGS

- Fever, cellulitis, lymphangitis
- Recurrent impetigo (screen for nasal carriage)
- Neonates (staphylococcal scalded skin)
- Haematuria or facial puffiness

GP PEARLS

★ *Look for scabies or head lice beneath every recurrent impetigo.*

★ *Avoid topical neomycin and gentian violet — contact dermatitis and poor efficacy.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Mupirocin 2% ointment (topical antibiotic)	Apply 8-hourly ×5–7 days	Localised lesions	*Resistance with long use*
Fusidic acid 2% cream	Apply 8-hourly ×7 days	Alternative	*Resistance; short courses only*
Cephalexin (1st-gen cephalosporin)	500 mg PO 6–8-hourly	Widespread impetigo	*Penicillin cross-allergy (low)*
Cloxacillin (anti-staphylococcal penicillin)	500 mg PO 6-hourly before food	Alternative oral	*Penicillin allergy*
Amoxicillin–clavulanate (penicillin + β-lactamase inhibitor)	625 mg PO 8-hourly (child 25–45 mg/kg/day amox)	Alternative	*Diarrhoea, cholestatic jaundice*
Povidone-iodine (antiseptic)	5–10% solution/ointment for wound cleaning	Crust removal	*Avoid large areas in thyroid disease*

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DISEASE 158 OF 300 | SKIN

Folliculitis & Furunculosis (Boils)

Recurrent boils — check sugar, look for staph carriage.

DEFINITION

Folliculitis is superficial infection of hair follicles; a furuncle (boil) is deeper infection of a follicle with abscess, and a carbuncle is a group of interconnected furuncles (nape, back — commoner in diabetics). Usually Staphylococcus aureus. Recurrent boils suggest nasal carriage, diabetes or poor hygiene.

SYMPTOMS

- Painful red lump with pus head
- Small itchy pustules (folliculitis)
- Recurrent boils in family members
- Fever (carbuncle)
- Diabetes, obesity, shaving

SIGNS

- Follicular pustules
- Tender, fluctuant nodule with central core
- Carbuncle: multiple discharging sinuses
- Surrounding cellulitis
- Lymphadenopathy

DIAGNOSTIC TESTS

Test	Finding / purpose
Blood sugar / HbA1c	Diabetes (always for carbuncle or recurrence)
Pus culture & sensitivity	Recurrent, MRSA suspicion
CBC	Systemic features

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Small boil	Warm compresses 3–4 times daily; do not squeeze	Until drains
Fluctuant boil / carbuncle	Incision and drainage	Stat
Antibiotic (cellulitis, fever, face, diabetic, multiple)	Cloxacillin 500 mg QID or cephalexin 500 mg QID; MRSA — co-trimoxazole 960 mg BD or doxycycline 100 mg BD	5–7 days
Folliculitis	Chlorhexidine or benzoyl peroxide wash; mupirocin or fusidic acid cream BD	1–2 weeks
Recurrent boils — decolonisation	Mupirocin 2% nasal ointment BD × 5 days + chlorhexidine 4% body wash daily; treat family; repeat monthly × 3	3 months
Hygiene	Separate towels, wash clothes in hot water, avoid shaving over lesions	—

REFER / RED FLAGS

- Boils on the central face (cavernous sinus risk)
- Carbuncle in diabetic, fever, sepsis
- Recurrent despite decolonisation
- Hidradenitis (axilla/groin recurrent nodules)

GP PEARLS

★ *Do not squeeze boils in the "danger triangle" of the face.*

★ *Recurrent boils in a family — treat everyone's nose, not just the patient.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Mupirocin 2% ointment (topical antibiotic)	Apply 8-hourly ×5–7 days	Folliculitis	*Resistance with long use*
Cephalexin (1st-gen cephalosporin)	500 mg PO 6–8-hourly	Furunculosis	*Penicillin cross-allergy (low)*
Cloxacillin (anti-staphylococcal penicillin)	500 mg PO 6-hourly before food	Alternative	*Penicillin allergy*
Clindamycin (lincosamide)	300 mg PO 6–8-hourly	Penicillin allergy	*C. difficile diarrhoea*
Povidone-iodine (antiseptic)	5–10% solution/ointment for wound cleaning	Antiseptic wash	*Avoid large areas in thyroid disease*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*

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DISEASE 159 OF 300 | SKIN

Cellulitis & Erysipelas

Spreading red, hot, tender skin — mark the edge and start antibiotics.

DEFINITION

Acute bacterial infection of the dermis and subcutaneous tissue (cellulitis) or upper dermis with sharply demarcated edge (erysipelas), usually Streptococcus pyogenes or Staphylococcus aureus. Entry through cracks in toe webs (tinea), wounds, ulcers, insect bites. Necrotising fasciitis is the dangerous mimic.

SYMPTOMS

- Painful, red, swollen area, usually lower leg
- Rapid spread over 1–2 days
- Fever, chills
- Preceding wound, tinea pedis, insect bite
- Pain out of proportion (necrotising fasciitis)

SIGNS

- Warm, tender, erythematous swelling with ill-defined edge (cellulitis)
- Raised, sharply demarcated edge (erysipelas)
- Lymphangitis, tender nodes
- Blisters, bullae
- Crepitus, skin necrosis, anaesthesia (necrotising fasciitis)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	Mark the edge with a pen and date
CBC, CRP, glucose, creatinine	Severity, diabetes
Blood culture	Systemic toxicity
USG / Doppler	Abscess, DVT

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Mild (outpatient)	Cephalexin 500 mg QID or cloxacillin 500 mg QID or amoxicillin-clavulanate 625 mg TDS	5–7 days (extend if slow)
Penicillin allergy	Clindamycin 300–450 mg TDS	5–7 days
Moderate–severe (refer)	Cefazolin 1–2 g IV 8-hourly or ceftriaxone 1–2 g IV OD; vancomycin if MRSA	Switch to oral when improving
Supportive	Elevate limb, paracetamol/ibuprofen, rest	Until settles
Entry site	Treat tinea pedis, wounds, oedema	—
Recurrent (≥2/year)	Penicillin V 250 mg BD or benzathine penicillin 1.2 MU IM every 3–4 weeks	6–12 months

REFER / RED FLAGS

- Fever, hypotension, rapid spread despite antibiotics
- Pain out of proportion, bullae, crepitus, necrosis (necrotising fasciitis — surgical emergency)
- Periorbital/facial cellulitis
- Diabetic foot, immunosuppression

GP PEARLS

★ *Redness may spread in the first 24–48 h despite effective antibiotics — the pen mark helps judge true progression.*

★ *Bilateral "cellulitis" is usually venous eczema or lipodermatosclerosis.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Cephalexin (1st-gen cephalosporin)	500 mg PO 6–8-hourly	Mild cellulitis	*Penicillin cross-allergy (low)*
Cloxacillin (anti-staphylococcal penicillin)	500 mg PO 6-hourly before food	Alternative	*Penicillin allergy*
Amoxicillin–clavulanate (penicillin + β-lactamase inhibitor)	625 mg PO 8-hourly (child 25–45 mg/kg/day amox)	Bite/mixed	*Diarrhoea, cholestatic jaundice*
Clindamycin (lincosamide)	300 mg PO 6–8-hourly	Penicillin allergy	*C. difficile diarrhoea*
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	Severe/IV	*Biliary sludge; not with calcium IV in neonates*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*

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DISEASE 160 OF 300 | SKIN

Skin Abscess (Incision & Drainage)

Pus must be let out — antibiotics are secondary.

DEFINITION

Localised collection of pus in the dermis or subcutaneous tissue, usually S. aureus. Common sites: axilla, buttocks, thigh, breast, injection sites. Incision and drainage is the definitive treatment; antibiotics are added for cellulitis, systemic features, diabetes or immunosuppression.

SYMPTOMS

- Painful, throbbing swelling
- Redness, warmth
- Pointing or discharging pus
- Fever (larger abscess)
- Injection or wound at site

SIGNS

- Tender, fluctuant swelling
- Surrounding erythema
- Central pointing
- Lymphadenopathy
- USG for deep abscess

DIAGNOSTIC TESTS

Test	Finding / purpose
Blood sugar	Diabetes
Pus culture	Recurrent, large, immunocompromised
USG	Depth, size, fluctuation uncertain

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Incision & drainage	Local anaesthesia (lignocaine 1–2%, field block); cruciate or linear incision over fluctuant point; break loculi (Hilton's method for deep abscess); irrigate	Stat
Packing	Loose gauze wick for cavities >5 cm; remove/redress in 24–48 h	—
Antibiotic (if cellulitis, fever, diabetes, face/hand)	Cloxacillin 500 mg QID or cephalexin 500 mg QID; MRSA — co-trimoxazole 960 mg BD or clindamycin 300 mg TDS	5–7 days
Analgesia	Paracetamol 650 mg + ibuprofen 400 mg TDS	3–5 days
Wound care	Daily dressing, warm saline soaks	Until healed
Tetanus	As per prophylaxis guidelines	—

REFER / RED FLAGS

- Deep abscess (breast, perianal, palm, neck)
- Abscess near major vessels or face
- Systemic sepsis
- Recurrent abscesses (hidradenitis)

GP PEARLS

★ *Hilton's method: open deep abscesses by blunt dissection with artery forceps to avoid damaging vessels and nerves.*

★ *Recurrent groin or axillary abscesses may be hidradenitis suppurativa — refer to dermatology.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Lidocaine 2% (local anaesthetic) for procedures	Max 3 mg/kg (7 mg/kg with adrenaline)	Local anaesthesia for I&D	*No adrenaline on digits as per local practice*
Cephalexin (1st-gen cephalosporin)	500 mg PO 6–8-hourly	Surrounding cellulitis	*Penicillin cross-allergy (low)*
Clindamycin (lincosamide)	300 mg PO 6–8-hourly	Allergy/MRSA risk	*C. difficile diarrhoea*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Povidone-iodine (antiseptic)	5–10% solution/ointment for wound cleaning	Wound care	*Avoid large areas in thyroid disease*

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DISEASE 161 OF 300 | SKIN

Paronychia

Acute: painful red nail fold — drain pus. Chronic: wet work and Candida.

DEFINITION

Infection of the nail fold. Acute paronychia is bacterial (S. aureus, streptococci) after minor trauma (nail biting, manicure, hangnail). Chronic paronychia (>6 weeks) affects people with wet work (housewives, cooks, dishwashers) — irritant dermatitis with Candida — causing loss of cuticle and nail dystrophy.

SYMPTOMS

- Acute: throbbing pain, swelling at nail edge
- Pus under nail fold
- Chronic: swollen, tender nail folds on several fingers
- Wet work, diabetes
- Nail ridging, discolouration

SIGNS

- Red, swollen, tender lateral nail fold
- Fluctuant collection
- Loss of cuticle, bogginess (chronic)
- Nail plate dystrophy
- Felon (pulp space) — tense swollen fingertip

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
Pus culture, KOH	Chronic or recurrent
Blood sugar	Recurrent
X-ray	Long-standing — osteomyelitis

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Acute — no pus	Warm water soaks 15 min, 3–4 times daily; fusidic acid/mupirocin cream	5–7 days
Acute — pus	Drain: lift nail fold with blade or needle under digital block; partial nail removal if pus under nail	Stat
Antibiotic (cellulitis)	Cephalexin 500 mg QID or cloxacillin 500 mg QID (amoxicillin-clavulanate if from biting)	5–7 days
Chronic paronychia	Avoid wet work, wear cotton-lined gloves; potent topical steroid (clobetasol 0.05%) + clotrimazole cream BD	4–6 weeks
Chronic with Candida	Itraconazole 200 mg OD (or pulse) if not responding	2–4 weeks

REFER / RED FLAGS

- Felon (pulp space infection)
- Spreading cellulitis, tenosynovitis (finger held flexed, pain on extension)
- Recurrent with nail destruction
- Suspected melanoma or tumour under nail

GP PEARLS

★ *Pain on passive extension of a flexed swollen finger means flexor tenosynovitis — surgical emergency.*

★ *Chronic paronychia is mainly irritant dermatitis — keeping hands dry is the cure.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Cephalexin (1st-gen cephalosporin)	500 mg PO 6–8-hourly	Acute bacterial	*Penicillin cross-allergy (low)*
Mupirocin 2% ointment (topical antibiotic)	Apply 8-hourly ×5–7 days	Early mild	*Resistance with long use*
Clotrimazole (azole antifungal — topical)	1% cream 12-hourly; 500 mg vaginal pessary single	Chronic candidal	*Local irritation*
Lidocaine 2% (local anaesthetic) for procedures	Max 3 mg/kg (7 mg/kg with adrenaline)	Digital block for drainage	*No adrenaline on digits as per local practice*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*

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DISEASE 162 OF 300 | SKIN

Acne Vulgaris

Topical retinoid for all; add benzoyl peroxide, then oral doxycycline for inflammatory acne.

DEFINITION

Chronic inflammatory disease of pilosebaceous units, with comedones (blackheads, whiteheads), papules, pustules, nodules and cysts on face, chest and back, mainly in adolescents and young adults. Scarring and post-inflammatory pigmentation are common in Indian skin. In adult women, consider PCOS.

SYMPTOMS

- Pimples on face, chest, back
- Oily skin
- Flare before menses
- Irregular periods, hirsutism (PCOS)
- Use of oily cosmetics, steroids, gym supplements

SIGNS

- Comedones (open and closed)
- Inflammatory papules, pustules
- Nodules, cysts (severe)
- Scars, hyperpigmentation
- Signs of hyperandrogenism

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
LH, FSH, testosterone, USG pelvis	Women with irregular periods, hirsutism
LFT, lipids, pregnancy test	Before isotretinoin

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Mild (comedonal)	Adapalene 0.1% gel at night (or tretinoin 0.025%), pea-sized amount to whole face	≥12 weeks
Mild–moderate inflammatory	Adapalene 0.1% + benzoyl peroxide 2.5% gel at night; clindamycin 1% gel morning (always with BPO)	12 weeks
Moderate–severe	Add doxycycline 100 mg OD (or minocycline 50–100 mg OD) with topical retinoid + BPO	3 months max
Hormonal (women)	Combined OCP (ethinylestradiol + cyproterone/drospirenone); spironolactone 50–100 mg OD	6 months
Severe nodulocystic / scarring	Isotretinoin 0.25–0.5 mg/kg/day (specialist; strict contraception)	6–9 months
Skin care	Gentle cleanser twice daily, oil-free moisturiser and sunscreen; do not pick	Ongoing

REFER / RED FLAGS

- Nodulocystic or scarring acne (isotretinoin)
- Failure after 3 months of appropriate therapy
- Suspected PCOS or other hormonal cause
- Psychological distress

GP PEARLS

★ *Never use topical or oral antibiotics alone — always combine with benzoyl peroxide to prevent resistance.*

★ *Retinoids cause initial dryness and flare — warn patients so they persist for 8–12 weeks.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Benzoyl peroxide 2.5–5% gel	Apply once daily at night	All grades	*Irritation; bleaches cloth*
Adapalene 0.1% gel (retinoid)	Apply at night to whole area	Comedones	*Irritation; avoid in pregnancy*
Clindamycin 1% gel (topical antibiotic)	Apply 12-hourly with benzoyl peroxide	With BPO	*Resistance if used alone*
Doxycycline (tetracycline)	100 mg PO 12-hourly after food, upright	Moderate inflammatory acne	*Avoid in pregnancy and <8 years; photosensitivity*
Isotretinoin (oral retinoid)	0.25–0.5 mg/kg/day PO (specialist)	Severe/scarring (specialist)	*Teratogenic — contraception; mood, lipids*
Combined oral contraceptive (EE 30 µg + LNG)	1 tablet daily ×21 days, 7-day break	Hormonal acne (women)	*VTE, migraine with aura, smokers >35*

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DISEASE 163 OF 300 | SKIN

Seborrhoeic Dermatitis & Dandruff

Greasy scaling of scalp, eyebrows and nasolabial folds — antifungal shampoo.

DEFINITION

Chronic relapsing inflammation of sebum-rich areas (scalp, eyebrows, nasolabial folds, behind ears, chest), associated with Malassezia yeast. Dandruff is its mildest form. Infantile form causes cradle cap. Severe or sudden onset in adults may indicate HIV or Parkinson's disease.

SYMPTOMS

- Flaking scalp, itching
- Red scaly patches on face
- Worse in winter and with stress
- Cradle cap in infants
- Recurrent

SIGNS

- Greasy yellow scales on erythematous base
- Scalp, eyebrows, glabella, nasolabial folds, ears
- Blepharitis
- Pre-sternal patches
- Thick adherent crusts in infants

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
HIV test	Severe or extensive adult-onset

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Scalp	Ketoconazole 2% shampoo: lather, leave 5 min, rinse, twice weekly (or selenium sulphide, zinc pyrithione, ciclopirox)	4 weeks, then weekly
Thick scaling	Salicylic acid 3–6% or coal tar shampoo/ointment	2–4 weeks
Face and body	Ketoconazole 2% cream BD ± hydrocortisone 1% cream (≤1 week)	2–4 weeks
Itchy scalp flare	Clobetasol propionate 0.05% scalp lotion OD	1–2 weeks
Infant cradle cap	Warm coconut/olive oil massage, gentle brushing, mild baby shampoo	Until clear
Maintenance	Antifungal shampoo once weekly	Long term

REFER / RED FLAGS

- Widespread or resistant disease (check HIV)
- Erythroderma
- Infant with failure to thrive or widespread rash
- Diagnostic doubt (psoriasis)

GP PEARLS

★ *Seborrhoeic dermatitis is controlled, not cured — explain maintenance shampoo.*

★ *Facial steroids cause rosacea-like eruptions — keep courses short.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ketoconazole 2% shampoo	Lather, leave 5 min, rinse; twice weekly	Scalp twice weekly	*Scalp irritation*
Clotrimazole (azole antifungal — topical)	1% cream 12-hourly; 500 mg vaginal pessary single	Face/flexures	*Local irritation*
Hydrocortisone 1% cream (mild steroid)	Apply thinly 12-hourly ≤7 days (face/flexures)	Inflamed patches (short)	*Atrophy with prolonged use*
Selenium sulphide 2.5% lotion	Apply 10 min, rinse; daily ×7 days	Alternative shampoo	*Irritation; discolours jewellery*
Tacrolimus 0.03–0.1% ointment	Apply 12-hourly to eczema/vitiligo	Steroid-sparing face	*Burning; sun protection*
Emollient (white soft paraffin / urea cream)	Apply liberally twice daily and after bath	Barrier care	*Fire risk with paraffin on dressings*

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DISEASE 164 OF 300 | SKIN

Atopic Eczema

Dry, itchy, flexural rash — emollients every day, steroids for flares.

DEFINITION

Chronic, relapsing, itchy inflammatory skin disease with an impaired skin barrier, usually starting in infancy, associated with asthma and allergic rhinitis. Infants have cheek and extensor involvement; older children and adults have flexural lichenified eczema. Complications: bacterial infection, eczema herpeticum.

SYMPTOMS

- Intense itch, disturbed sleep
- Dry skin
- Flares with soaps, heat, sweat, woollens, stress
- Personal/family history of asthma, rhinitis
- Onset in childhood

SIGNS

- Ill-defined erythematous, scaly patches
- Flexures: elbows, knees, neck, wrists
- Lichenification, excoriations
- Weeping, crusting (infection)
- Punched-out erosions (eczema herpeticum)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
Swab	Infected eczema
IgE, allergy testing	Only for suspected food allergy in severe infant eczema

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Emollients (foundation)	Liquid paraffin/white soft paraffin or ceramide moisturiser liberally 2–3 times daily and after bath; soap substitutes	Lifelong
Mild flare	Hydrocortisone 1% cream OD–BD (face, flexures, infants)	1–2 weeks
Moderate flare (body)	Mometasone 0.1% or fluticasone 0.05% cream OD	1–2 weeks
Severe flare (adults, thick lesions)	Clobetasol 0.05% OD (not face)	≤2 weeks
Steroid-sparing (face, frequent flares)	Tacrolimus 0.03% (child) / 0.1% (adult) ointment BD; proactive twice weekly	Weeks–months
Itch	Hydroxyzine 10–25 mg HS (child 0.5–1 mg/kg); cetirizine 10 mg	2 weeks
Infected	Cephalexin 500 mg QID (child 25 mg/kg/day)	5–7 days

REFER / RED FLAGS

- Eczema herpeticum (punched-out erosions, fever) — urgent acyclovir
- Severe or widespread not controlled (systemic therapy)
- Growth failure
- Erythroderma

GP PEARLS

★ *Fingertip unit: one adult fingertip of cream covers two adult palm areas.*

★ *Undertreating with weak steroids prolongs flares; use the right strength for a short time.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Emollient (white soft paraffin / urea cream)	Apply liberally twice daily and after bath	Daily emollient	*Fire risk with paraffin on dressings*
Hydrocortisone 1% cream (mild steroid)	Apply thinly 12-hourly ≤7 days (face/flexures)	Face/flexures	*Atrophy with prolonged use*
Mometasone 0.1% cream (moderate–potent steroid)	Apply thinly once daily ≤2 weeks	Body flares	*Avoid face; atrophy; no fungal infection*
Tacrolimus 0.03–0.1% ointment	Apply 12-hourly to eczema/vitiligo	Steroid-sparing	*Burning; sun protection*
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	Itch at night	*Mild sedation; reduce dose in CKD*
Fusidic acid + hydrocortisone cream	Apply 12-hourly ≤7 days (infected eczema)	Infected eczema	*Short courses; resistance*

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DISEASE 165 OF 300 | SKIN

Contact Dermatitis

Rash at the site of contact — find and avoid the culprit.

DEFINITION

Eczematous reaction from external agents. Irritant contact dermatitis (most common): detergents, soaps, cement, wet work — affects housewives and workers' hands. Allergic contact dermatitis is a type IV hypersensitivity: nickel (jewellery), hair dye (PPD), footwear rubber/chromate, cosmetics, topical medicines, Parthenium weed.

SYMPTOMS

- Itchy, burning rash at contact site
- Hands, wrists (bangles), earlobes, feet, face, scalp margins
- Relation to new product, occupation
- Hair-dye: scalp, forehead, ears swelling
- Parthenium: exposed areas, worse in summer

SIGNS

- Erythema, vesicles, oozing (acute)
- Scaling, fissures, lichenification (chronic)
- Sharp borders corresponding to contact
- Patterned distribution (watch strap, footwear)
- Photo-exposed pattern (airborne)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
Patch testing	Suspected allergic, chronic, occupational
KOH	Exclude tinea

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Avoid cause	Identify and remove allergen/irritant; gloves (cotton inside rubber); soap substitutes	Lifelong
Acute oozing	Wet compresses with saline or potassium permanganate (1:10,000) 15 min BD	2–3 days
Topical steroid	Mometasone 0.1% cream OD (body) / clobetasol 0.05% (palms, soles); hydrocortisone 1% (face)	1–2 weeks
Emollient	Liberal, frequent; barrier creams before work	Ongoing
Itch	Cetirizine 10 mg or hydroxyzine 25 mg HS	1–2 weeks
Severe / widespread	Prednisolone 0.5 mg/kg (30–40 mg) OD tapering	1–2 weeks

REFER / RED FLAGS

- Occupational dermatitis threatening livelihood
- Recurrent/chronic needing patch tests
- Severe facial swelling (hair dye)
- Parthenium dermatitis (chronic)

GP PEARLS

★ *Hair-dye allergy recurs with every dye containing PPD — "herbal" and "natural" brands often contain it.*

★ *Bangle or watch dermatitis usually means nickel allergy.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Mometasone 0.1% cream (moderate–potent steroid)	Apply thinly once daily ≤2 weeks	Moderate dermatitis	*Avoid face; atrophy; no fungal infection*
Hydrocortisone 1% cream (mild steroid)	Apply thinly 12-hourly ≤7 days (face/flexures)	Face/mild	*Atrophy with prolonged use*
Emollient (white soft paraffin / urea cream)	Apply liberally twice daily and after bath	Barrier repair	*Fire risk with paraffin on dressings*
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	Itching	*Mild sedation; reduce dose in CKD*
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	Severe widespread (short)	*Hyperglycaemia; taper if >3 weeks*
Calamine lotion (antipruritic)	Apply 8-hourly to itchy areas	Acute weeping	*Drying; soothing only*

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DISEASE 166 OF 300 | SKIN

Urticaria & Angioedema

Itchy wheals that come and go within 24 hours — non-sedating antihistamine, up to 4× dose.

DEFINITION

Transient itchy wheals (each lasting <24 h) with or without angioedema (deeper swelling of lips, eyelids, genitals). Acute (<6 weeks): infections, drugs (NSAIDs, antibiotics), foods, insect stings. Chronic spontaneous urticaria (>6 weeks) is usually autoimmune/idiopathic. Angioedema with airway involvement or hypotension is anaphylaxis.

SYMPTOMS

- Itchy raised wheals, appear and disappear in hours
- Swelling of lips, eyes, face
- Trigger: drug, food, infection, cold, pressure
- Breathlessness, throat tightness, dizziness (anaphylaxis)
- Recurrent daily episodes (chronic)

SIGNS

- Wheals with surrounding flare, varying shape
- Dermographism
- Angioedema of lips, eyelids
- Stridor, wheeze, hypotension (anaphylaxis)
- Lesions lasting >24 h with bruising (urticarial vasculitis)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis for acute	—
CBC, ESR/CRP, TSH, anti-TPO	Chronic urticaria
Stool for ova	Eosinophilia, chronic
Skin biopsy	Wheals >24 h, bruising
C4	Angioedema without wheals (hereditary/ACEi)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Antihistamine (first line)	Levocetirizine 5 mg OD or cetirizine 10 mg OD or fexofenadine 180 mg OD (child cetirizine 0.25 mg/kg/day)	2–6 weeks; continue for chronic
Not controlled	Increase same antihistamine up to 4 times standard dose (e.g. levocetirizine 10 mg BD)	2–4 weeks then review
Severe acute flare	Prednisolone 30–40 mg OD	3–5 days
Chronic refractory (specialist)	Omalizumab 300 mg SC every 4 weeks; cyclosporine	Months
Avoid triggers	NSAIDs, aspirin, codeine; ACE inhibitors (angioedema)	—
Anaphylaxis features	Adrenaline 0.5 mg IM (see Anaphylaxis)	Immediate

REFER / RED FLAGS

- Airway swelling, stridor, hypotension (emergency)
- Chronic urticaria not controlled on 4× antihistamine
- Wheals lasting >24 h (vasculitis)
- Recurrent angioedema without wheals

GP PEARLS

★ *Sedating antihistamines (chlorpheniramine) are no better and impair driving and school work.*

★ *Angioedema without wheals in a patient on an ACE inhibitor — stop the ACE inhibitor for life.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	First-line (up to 4× dose)	*Mild sedation; reduce dose in CKD*
Fexofenadine (non-sedating antihistamine)	120–180 mg PO once daily	Non-sedating	*Avoid with fruit juice at dosing*
Adrenaline (sympathomimetic)	0.5 mg IM (0.5 ml of 1:1000) into thigh; repeat in 5 min	Angioedema with airway threat	*Never IV bolus 1:1000 outside arrest*
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	Severe acute urticaria (short)	*Hyperglycaemia; taper if >3 weeks*
Chlorpheniramine (1st-gen antihistamine)	4 mg PO 6–8-hourly; 10 mg IV in reactions	Acute injection	*Sedation; avoid in glaucoma, BPH, infants*
Montelukast (leukotriene antagonist)	10 mg PO at night (4–5 mg child)	Add-on chronic urticaria	*Neuropsychiatric effects (dreams, mood)*

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DISEASE 167 OF 300 | SKIN

Insect Bite Reactions

Itchy grouped papules on exposed skin — common in children.

DEFINITION

Local hypersensitivity reactions to bites of mosquitoes, bedbugs, fleas and mites. Papular urticaria is a recurrent eruption of itchy papules in children sensitised to bites. Complications: secondary infection (impetigo, cellulitis). Large local reactions and anaphylaxis occur mostly with bee and wasp stings.

SYMPTOMS

- Itchy bumps on arms, legs, face
- Appear overnight (bedbugs) or outdoors
- Several family members affected
- Recurrent in summer and monsoon
- Blisters in children

SIGNS

- Grouped erythematous papules with central punctum
- Linear groups of 3 ("breakfast, lunch, dinner" — bedbugs)
- Bullae on legs
- Excoriations, crusting
- Lymphadenopathy if infected

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
Inspect bedding / home	Bedbugs, fleas from pets

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Local itch	Calamine lotion; cold compresses; hydrocortisone 1% or mometasone 0.1% cream BD	5–7 days
Antihistamine	Cetirizine 10 mg (child 0.25 mg/kg/day) or hydroxyzine HS	1–2 weeks
Large local reaction	Prednisolone 0.5–1 mg/kg (max 40 mg) OD	3–5 days
Secondary infection	Mupirocin 2% ointment TDS; cephalexin if extensive	5–7 days
Prevention	Mosquito nets, repellents (DEET 20–30%, picaridin), long sleeves; treat pets, wash bedding, pest control for bedbugs	Ongoing

REFER / RED FLAGS

- Systemic reaction: wheeze, hypotension, throat swelling
- Cellulitis, lymphangitis
- Bullous lesions with fever
- Persistent nodules (exclude other causes)

GP PEARLS

★ *Papular urticaria recurs until the source is controlled — treat the house and pets, not only the child.*

★ *Avoid topical antihistamine creams — they sensitise the skin.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	Itching	*Mild sedation; reduce dose in CKD*
Calamine lotion (antipruritic)	Apply 8-hourly to itchy areas	Local soothing	*Drying; soothing only*
Hydrocortisone 1% cream (mild steroid)	Apply thinly 12-hourly ≤7 days (face/flexures)	Local inflammation	*Atrophy with prolonged use*
Mupirocin 2% ointment (topical antibiotic)	Apply 8-hourly ×5–7 days	Infected bites	*Resistance with long use*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Adrenaline (sympathomimetic)	0.5 mg IM (0.5 ml of 1:1000) into thigh; repeat in 5 min	Anaphylaxis	*Never IV bolus 1:1000 outside arrest*

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DISEASE 168 OF 300 | SKIN

Psoriasis

Well-defined silvery plaques on elbows, knees and scalp — chronic, controllable.

DEFINITION

Chronic immune-mediated inflammatory skin disease with well-demarcated red plaques and silvery scale, typically on extensor surfaces, scalp, lower back and nails. Associations: psoriatic arthritis (up to 30%), metabolic syndrome, depression. Triggers: streptococcal infection, stress, alcohol, smoking, drugs (beta-blockers, lithium, antimalarials, steroid withdrawal).

SYMPTOMS

- Scaly patches on elbows, knees, scalp, back
- Itching (variable)
- Nail pitting, discolouration
- Joint pain, swelling (psoriatic arthritis)
- Flares with stress, infection

SIGNS

- Well-demarcated erythematous plaques with silvery scale
- Auspitz sign (pinpoint bleeding on scraping)
- Koebner phenomenon
- Nail pitting, onycholysis, oil-drop sign
- Dactylitis, enthesitis

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
BSA involvement, PASI	Severity
Lipids, glucose, LFT, BMI	Comorbidities; baseline before systemic therapy
X-ray hands/feet, RF	Psoriatic arthritis
Skin biopsy	Diagnostic doubt

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Emollients	Liquid paraffin/petrolatum liberally BD; bathing oils	Lifelong
Limited plaques	Clobetasol 0.05% ointment OD (≤4 weeks) + calcipotriol 0.005% ointment BD (or combined calcipotriol-betamethasone OD)	4 weeks, then maintenance
Scalp	Salicylic acid 6% + coal tar; clobetasol scalp lotion OD; ketoconazole shampoo	2–4 weeks
Thick scale	Salicylic acid 3–6% ointment	2 weeks
Moderate–severe (>10% BSA) — specialist	Methotrexate 7.5–25 mg ONCE weekly + folic acid; phototherapy (NB-UVB); acitretin; cyclosporine; biologics	Long term
Avoid	Systemic steroids (rebound pustular/erythrodermic flares); stop smoking and alcohol	—

REFER / RED FLAGS

- Erythroderma or pustular psoriasis (emergency)
- >10% body surface or impact on quality of life
- Psoriatic arthritis
- Failure of topical therapy

GP PEARLS

★ *Never treat psoriasis with oral steroids — withdrawal flares can be life-threatening.*

★ *Ask every psoriasis patient about joint pain and heel pain.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Emollient (white soft paraffin / urea cream)	Apply liberally twice daily and after bath	All patients	*Fire risk with paraffin on dressings*
Clobetasol 0.05% (super-potent steroid)	Apply thinly once daily ≤2 weeks	Thick plaques (body)	*Never on face/groin; misuse with antifungals*
Coal tar / salicylic acid ointment	Apply once daily	Scalp/plaques	*Staining; photosensitivity*
Salicylic acid 16–17% (keratolytic)	Apply to wart daily after soaking	Scaling	*Protect surrounding skin*
Methotrexate (DMARD)	7.5–25 mg PO ONCE WEEKLY + folic acid	Extensive (specialist)	*Daily dosing is fatal; CBC, LFT monitoring*
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	Itch	*Mild sedation; reduce dose in CKD*

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DISEASE 169 OF 300 | SKIN

Herpes Zoster (Shingles)

Dermatomal painful vesicles — start antivirals within 72 hours.

DEFINITION

Reactivation of latent varicella-zoster virus in a sensory ganglion, causing a painful unilateral dermatomal vesicular eruption, commonly thoracic. Higher incidence with age, diabetes, HIV and immunosuppression. Complications: post-herpetic neuralgia (PHN), herpes zoster ophthalmicus, Ramsay Hunt syndrome, disseminated zoster.

SYMPTOMS

- Burning or shooting pain in one dermatome, days before rash
- Cluster of blisters on one side of the body
- Fever, malaise
- Eye pain, blurred vision (ophthalmicus)
- Ear pain, facial weakness (Ramsay Hunt)

SIGNS

- Grouped vesicles on erythematous base in a dermatome, not crossing midline
- Crusting by 7–10 days
- Hutchinson's sign (vesicle on nose tip — eye involvement)
- Multiple dermatomes or disseminated (immunosuppressed)
- Facial palsy, vesicles in ear canal

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
Tzanck smear / VZV PCR	Atypical
HIV test, blood sugar	Young patients, multidermatomal, recurrent

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Antiviral (within 72 h; any time if new lesions, eye, immunocompromised, >50 y)	Valacyclovir 1 g TDS or acyclovir 800 mg 5 times daily or famciclovir 500 mg TDS	7 days
Acute pain	Paracetamol 1 g QID + ibuprofen 400 mg TDS; tramadol 50 mg TDS SOS	As needed
Neuropathic pain	Pregabalin 75 mg BD or amitriptyline 10–25 mg HS (also reduces PHN)	4–8 weeks
Local care	Calamine lotion, keep dry and clean; avoid topical antivirals	Until crusted
Post-herpetic neuralgia	Pregabalin 75–150 mg BD or gabapentin 300–600 mg TDS; lignocaine 5% patch; capsaicin cream	Months
Prevention	Recombinant zoster vaccine (age ≥50, 2 doses 2–6 months apart)	—

REFER / RED FLAGS

- Herpes zoster ophthalmicus (same-day eye referral)
- Ramsay Hunt syndrome
- Disseminated zoster, immunocompromised
- Severe PHN

GP PEARLS

★ *Vesicles on the tip of the nose mean the nasociliary nerve — and the eye — are involved.*

★ *Zoster patients can transmit chickenpox to non-immune contacts — cover lesions.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Valacyclovir (antiviral)	1 g PO 8-hourly ×7 days (zoster)	Within 72 h	*Reduce dose in CKD*
Acyclovir (antiviral)	800 mg PO 5 times daily ×7 days (zoster)	Alternative	*Hydrate; reduce dose in CKD*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Pregabalin (gabapentinoid)	75 mg PO 12-hourly, increase to 150 mg 12-hourly	Acute/post-herpetic pain	*Dizziness, misuse; renal dosing*
Amitriptyline (TCA)	10–25 mg PO at night	Post-herpetic neuralgia	*Anticholinergic; avoid in elderly, IHD*
Calamine lotion (antipruritic)	Apply 8-hourly to itchy areas	Rash care	*Drying; soothing only*

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DISEASE 170 OF 300 | SKIN

Herpes Simplex (Cold Sores)

Recurrent tingling then blisters on the lip — early antiviral shortens the attack.

DEFINITION

Infection with herpes simplex virus (HSV-1 mostly oral, HSV-2 mostly genital). Primary infection may cause gingivostomatitis in children; recurrences (herpes labialis) are triggered by fever, sunlight, stress and menstruation. Complications: eczema herpeticum, herpetic whitlow, keratitis, encephalitis, erythema multiforme.

SYMPTOMS

- Tingling or burning on the lip before blisters
- Painful grouped vesicles that crust in 7–10 days
- Fever, painful mouth, drooling (primary in child)
- Recurrences at the same site
- Red, painful eye (keratitis)

SIGNS

- Grouped vesicles on red base, lip margin
- Crusted erosions
- Gingivostomatitis: ulcers throughout mouth, swollen gums
- Tender submandibular nodes
- Dendritic ulcer on fluorescein (eye)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
Tzanck smear / HSV PCR	Atypical or severe

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Recurrent labialis (early)	Acyclovir 5% cream 5 times daily (start at tingling) or valacyclovir 2 g BD for 1 day	5 days / 1 day
Primary gingivostomatitis (child)	Acyclovir 15 mg/kg 5 times daily (max 200 mg/dose) within 72–96 h; fluids, paracetamol	7 days
Primary in adults	Valacyclovir 1 g BD or acyclovir 400 mg TDS	7–10 days
Frequent recurrences (≥6/year)	Acyclovir 400 mg BD or valacyclovir 500 mg OD suppression	6–12 months
Prevention	Sunscreen lip balm; avoid kissing infants during active lesions	—
Pain	Paracetamol; lignocaine gel for mouth ulcers	As needed

REFER / RED FLAGS

- Eye involvement (dendritic ulcer) — ophthalmology
- Eczema herpeticum
- Neonates, immunocompromised
- Child not drinking (dehydration)

GP PEARLS

★ *Never prescribe steroid eye drops for a red eye with possible herpes — it can perforate the cornea.*

★ *Antiviral cream works only if started at the tingling stage.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Acyclovir (antiviral)	800 mg PO 5 times daily ×7 days (zoster)	Topical/oral for recurrent	*Hydrate; reduce dose in CKD*
Valacyclovir (antiviral)	1 g PO 8-hourly ×7 days (zoster)	Frequent recurrences	*Reduce dose in CKD*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Benzydamine mouthwash / triamcinolone oral paste	Rinse 15 ml 8-hourly / apply to ulcer 8-hourly	Painful lesions	*Numbness; short use*
Mupirocin 2% ointment (topical antibiotic)	Apply 8-hourly ×5–7 days	Secondary infection	*Resistance with long use*
Lidocaine 2% jelly/5% ointment (local anaesthetic)	Apply locally before defecation/3–4 times daily	Pain	*Allergy rare; avoid excess on mucosa*

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DISEASE 171 OF 300 | SKIN

Viral Warts

Benign and often self-resolving — salicylic acid and patience.

DEFINITION

Benign epidermal proliferations caused by human papillomavirus (HPV). Types: common warts (hands), plantar warts (soles — painful), plane warts (face, dorsum of hands), filiform warts (face), and anogenital warts (sexually transmitted). Most resolve spontaneously within 1–2 years in children.

SYMPTOMS

- Rough skin-coloured growths on hands, fingers
- Painful lumps on sole (plantar)
- Flat small papules on face (plane)
- Spreading after scratching or shaving
- Genital growths (anogenital)

SIGNS

- Hyperkeratotic papules with black dots (thrombosed capillaries)
- Plantar wart interrupts skin lines (unlike corn)
- Plane warts in linear arrangement (Koebner)
- Filiform projections
- Anogenital cauliflower-like warts

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
Biopsy	Atypical, bleeding, in elderly (exclude SCC)
STI screen (HIV, VDRL)	Anogenital warts

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Common / plantar	Salicylic acid 16.7% + lactic acid 16.7% paint daily after soaking and paring with emery board	8–12 weeks
Cryotherapy	Liquid nitrogen every 2–3 weeks	3–4 sessions
Plane warts	Tretinoin 0.025–0.05% cream at night; imiquimod 5% cream 3 times weekly	6–12 weeks
Anogenital	Podophyllotoxin 0.5% solution BD for 3 days/week (not pregnancy) or imiquimod 5% 3 times weekly; cryotherapy; treat partner	4–16 weeks
Resistant	Electrocautery, radiofrequency ablation (refer)	—
Prevention	HPV vaccine (girls 9–14 y: 2 doses)	—

REFER / RED FLAGS

- Facial or extensive warts in immunocompromised
- Anogenital warts in children (consider abuse)
- Bleeding, ulcerating lesion
- Failure of treatment

GP PEARLS

★ *Many warts resolve without treatment — avoid scarring treatments in children.*

★ *A corn is tender to direct pressure; a plantar wart to side-to-side pinching.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Salicylic acid 16–17% (keratolytic)	Apply to wart daily after soaking	Common/plantar warts	*Protect surrounding skin*
Imiquimod 5% cream (immune modifier)	Apply at night 3 times a week, wash after 6–10 h	Genital/flat warts (topical)	*Local irritation; avoid in pregnancy*
Podophyllin 20% (clinic-applied)	Apply weekly by clinician; wash off after 1–4 h	Anogenital warts (clinic-applied)	*Contraindicated in pregnancy; protect normal skin*
Lidocaine 2% (local anaesthetic) for procedures	Max 3 mg/kg (7 mg/kg with adrenaline)	Anaesthesia for cautery/cryo	*No adrenaline on digits as per local practice*
Povidone-iodine (antiseptic)	5–10% solution/ointment for wound cleaning	Post-procedure care	*Avoid large areas in thyroid disease*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Post-procedure pain	*Hepatotoxic in overdose; check combination products*

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DISEASE 172 OF 300 | SKIN

Vitiligo

Milky-white patches with normal sensation — treatable, not contagious.

DEFINITION

Acquired autoimmune loss of melanocytes producing well-demarcated depigmented (milky-white) patches. Types: non-segmental (symmetrical, progressive — commonest) and segmental (unilateral, stable). Associated with autoimmune thyroid disease, diabetes, alopecia areata. Social stigma in India makes counselling essential.

SYMPTOMS

- White patches, often starting on face, hands, genitals
- Spreading or stable
- Premature greying, white hair in patches
- Family history
- Emotional distress

SIGNS

- Chalk-white macules with sharp borders
- Normal skin texture and sensation (vs leprosy)
- Leukotrichia (white hairs — poor prognosis)
- Koebner phenomenon
- Bright on Wood's lamp

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
TSH, anti-TPO	Autoimmune thyroid disease
Blood sugar, CBC	Associated conditions
Sensation testing	Exclude leprosy

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Limited / face	Tacrolimus 0.1% ointment BD (face, flexures)	3–6 months
Limited / body	Mometasone 0.1% or clobetasol 0.05% cream OD (cycles: 2 weeks on, 1 week off)	3–6 months
Rapidly spreading	Oral mini-pulse: betamethasone/dexamethasone 5 mg on 2 consecutive days per week (specialist)	3–6 months
Extensive	Narrow-band UVB phototherapy 2–3 times weekly (specialist); ruxolitinib cream	6–12 months
Stable >1 year, segmental	Surgical grafting (refer)	—
Supportive	Sunscreen SPF 30+, camouflage cosmetics, counselling (not contagious, not from food)	—

REFER / RED FLAGS

- Rapidly spreading disease
- Extensive involvement (phototherapy)
- Psychological distress
- Stable lesions suitable for surgery

GP PEARLS

★ *Vitiligo is not linked to eating fish with milk — dispel the myth.*

★ *Hypopigmented (off-white) patches with sensory loss suggest leprosy, not vitiligo.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Tacrolimus 0.03–0.1% ointment	Apply 12-hourly to eczema/vitiligo	Face, neck	*Burning; sun protection*
Mometasone 0.1% cream (moderate–potent steroid)	Apply thinly once daily ≤2 weeks	Limited body patches	*Avoid face; atrophy; no fungal infection*
Clobetasol 0.05% (super-potent steroid)	Apply thinly once daily ≤2 weeks	Short pulses (body)	*Never on face/groin; misuse with antifungals*
Emollient (white soft paraffin / urea cream)	Apply liberally twice daily and after bath	Skin care	*Fire risk with paraffin on dressings*
Cholecalciferol (vitamin D3)	60,000 IU weekly ×8 weeks, then monthly	Deficiency	*Hypercalcaemia if overused*
Levothyroxine (thyroid hormone)	25–100 µg PO empty stomach (1.6 µg/kg/day)	Associated hypothyroidism	*Start low in elderly/IHD; separate from iron/calcium*

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DISEASE 173 OF 300 | SKIN

Hair Loss (Alopecia)

Diffuse shedding after illness, patterned thinning, or round bald patches — each has a different cure.

DEFINITION

Telogen effluvium: diffuse shedding 2–3 months after fever (dengue, COVID), childbirth, crash dieting, surgery or stress; self-limiting. Androgenetic alopecia: patterned thinning (vertex/temples in men, central widening in women). Alopecia areata: autoimmune round patches of non-scarring hair loss. Other: iron deficiency, thyroid disease, tinea capitis.

SYMPTOMS

- Increased hair fall on combing, washing
- Thinning crown or temples
- Sudden round bald patch
- Recent illness, childbirth, diet, stress
- Irregular periods, acne (PCOS)

SIGNS

- Hair pull test positive (>6 hairs) in effluvium
- Patterned thinning, miniaturised hairs
- Smooth round patch with exclamation-mark hairs (areata)
- Nail pitting (areata)
- Scaling, inflammation, scarring (other causes)

DIAGNOSTIC TESTS

Test	Finding / purpose
CBC, ferritin	Iron deficiency (target ferritin >40 ng/ml)
TSH, vitamin D, B12	Common contributors
Testosterone, DHEAS, USG pelvis	Women with hyperandrogenism
KOH of scale	Tinea capitis

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Telogen effluvium	Reassurance (recovers in 3–6 months); correct iron, protein, vitamin D	6 months
Androgenetic — men	Minoxidil 5% solution 1 ml BD to scalp ± finasteride 1 mg OD	Long term (≥6 months to judge)
Androgenetic — women	Minoxidil 2–5% solution 1 ml BD; spironolactone 50–100 mg OD (specialist, with contraception)	Long term
Alopecia areata — few patches	Clobetasol 0.05% lotion OD or intralesional triamcinolone 5–10 mg/ml every 4–6 weeks	3–6 months
Iron deficiency	Ferrous sulphate 200 mg OD–BD	3 months
Extensive areata	Refer — oral mini-pulse steroids, JAK inhibitors	—

REFER / RED FLAGS

- Scarring alopecia (inflammation, loss of follicular openings)
- Extensive or rapidly progressive alopecia areata
- Signs of virilisation in women
- Children with tinea capitis/kerion

GP PEARLS

★ *Warn that minoxidil causes initial increased shedding in the first 4–8 weeks.*

★ *Hair fall 3 months after dengue or COVID is telogen effluvium — it recovers.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Cholecalciferol (vitamin D3)	60,000 IU weekly ×8 weeks, then monthly	Deficiency	*Hypercalcaemia if overused*
Ferrous sulphate/ascorbate (oral iron)	60–100 mg elemental iron daily or alternate days	Iron deficiency (ferritin low)	*Black stools, constipation*
Levothyroxine (thyroid hormone)	25–100 µg PO empty stomach (1.6 µg/kg/day)	Hypothyroidism	*Start low in elderly/IHD; separate from iron/calcium*
Mometasone 0.1% cream (moderate–potent steroid)	Apply thinly once daily ≤2 weeks	Alopecia areata patches	*Avoid face; atrophy; no fungal infection*
Ketoconazole 2% shampoo	Lather, leave 5 min, rinse; twice weekly	Dandruff-associated	*Scalp irritation*

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DISEASE 174 OF 300 | SKIN

Leprosy (Hansen's Disease)

A hypopigmented patch with loss of sensation is leprosy — MDT is free and curative.

DEFINITION

Chronic infection with Mycobacterium leprae affecting skin and peripheral nerves. India accounts for over half the world's new cases. Classified under NLEP as paucibacillary (PB: 1–5 skin lesions, no nerve or only one nerve involved, smear negative) or multibacillary (MB: ≥6 lesions, >1 nerve, or smear positive). Reactions (type 1, ENL) cause nerve damage.

SYMPTOMS

- Pale or reddish skin patch with reduced sensation
- Numbness, tingling of hands/feet
- Painless burns or injuries
- Weakness of hands, foot drop
- Nodules on face, ears; nasal stuffiness (MB)

SIGNS

- Hypopigmented/erythematous patch with sensory loss
- Thickened, tender peripheral nerves (ulnar, common peroneal, posterior tibial, great auricular)
- Claw hand, foot drop, lagophthalmos
- Infiltration of ear lobes, loss of eyebrows (MB)
- Trophic ulcers

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis (one cardinal sign)	Sensory-deficient patch, thickened nerve with deficit, or positive smear
Slit skin smear	Acid-fast bacilli — bacterial index
Skin biopsy	Doubtful cases
Voluntary muscle and sensory testing	Baseline nerve function

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
MB adult (NLEP — WHO uniform)	Rifampicin 600 mg + clofazimine 300 mg once monthly (supervised) + dapsone 100 mg daily + clofazimine 50 mg daily	12 months
PB adult	Same three-drug MB regimen (WHO 2018 / NLEP)	6 months
Child (10–14 y)	Rifampicin 450 mg + clofazimine 150 mg monthly; dapsone 50 mg daily + clofazimine 50 mg alternate days	6 / 12 months
Type 1 reaction / neuritis	Prednisolone 40 mg OD tapering by 5 mg every 2 weeks (refer)	12–20 weeks
Contacts	Single-dose rifampicin post-exposure prophylaxis (SDR-PEP) for contacts after screening	Single
Disability care	Self-care of anaesthetic hands/feet, MCR footwear, eye protection	Lifelong

REFER / RED FLAGS

- All new cases (notify; free MDT via NLEP)
- Reactions: painful nerves, new weakness, painful nodules with fever
- Eye involvement
- Disabilities needing reconstructive surgery

GP PEARLS

★ *Test sensation in every hypopigmented patch — it is the simplest way not to miss leprosy.*

★ *Patients become non-infectious after the first dose of rifampicin — no isolation needed.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	Lepra reactions (specialist)	*Hyperglycaemia; taper if >3 weeks*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Neuritis pain	*Hepatotoxic in overdose; check combination products*
Emollient (white soft paraffin / urea cream)	Apply liberally twice daily and after bath	Anaesthetic skin care	*Fire risk with paraffin on dressings*
Ferrous sulphate/ascorbate (oral iron)	60–100 mg elemental iron daily or alternate days	Anaemia on dapsone	*Black stools, constipation*

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DISEASE 175 OF 300 | SKIN

Cutaneous Drug Reactions

Any new rash: look at the drug chart — and recognise the dangerous ones.

DEFINITION

Adverse skin reactions to drugs range from benign (maculopapular exanthem, urticaria, fixed drug eruption) to life-threatening severe cutaneous adverse reactions (SCARs): Stevens–Johnson syndrome/toxic epidermal necrolysis (SJS/TEN) and DRESS. Common culprits: antiepileptics (carbamazepine, phenytoin, lamotrigine), allopurinol, sulfonamides, NSAIDs, beta-lactams, nevirapine, antitubercular drugs.

SYMPTOMS

- Rash starting 4–28 days after new drug (1–8 weeks for DRESS)
- Itching
- Recurrent dark patch at same site after a drug (FDE)
- Fever, sore throat, painful skin, mouth ulcers (SJS)
- Facial swelling, fever, lymph nodes (DRESS)

SIGNS

- Symmetric maculopapular rash (exanthem)
- Round dusky violaceous patch (fixed drug eruption)
- Target lesions, blisters, skin peeling, positive Nikolsky (SJS/TEN)
- Mucosal erosions: lips, eyes, genitals
- Facial oedema, lymphadenopathy, hepatomegaly (DRESS)

DIAGNOSTIC TESTS

Test	Finding / purpose
Drug timeline	Identify culprit
CBC (eosinophilia), LFT, creatinine	DRESS — organ involvement
Skin biopsy	SCAR confirmation

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Stop suspected drug	Immediately; document allergy clearly and inform patient	—
Mild exanthem / urticaria	Levocetirizine 5 mg OD; calamine; mometasone 0.1% cream BD (body)	1–2 weeks
Fixed drug eruption	Mometasone 0.1% cream; avoid drug and cross-reactive drugs	1–2 weeks
SJS/TEN	Emergency referral (burns/ICU-type care); fluids, eye care; cyclosporine 3–5 mg/kg/day in hospital	Hospital
DRESS	Refer: systemic steroid (prednisolone 1 mg/kg) with slow taper	6–8 weeks
Alternative drugs	Choose structurally unrelated drug	—

REFER / RED FLAGS

- Mucosal involvement, blisters, skin pain (SJS/TEN)
- Fever, facial swelling, eosinophilia, raised LFT (DRESS)
- Purpura, systemic features
- Erythroderma

GP PEARLS

★ *Painful skin and sore eyes with a rash after carbamazepine or allopurinol — think SJS and refer the same day.*

★ *Write the drug allergy in capitals on the prescription and the patient's card.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	Itching	*Mild sedation; reduce dose in CKD*
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	Moderate–severe reactions	*Hyperglycaemia; taper if >3 weeks*
Emollient (white soft paraffin / urea cream)	Apply liberally twice daily and after bath	Skin care	*Fire risk with paraffin on dressings*
Hydrocortisone 1% cream (mild steroid)	Apply thinly 12-hourly ≤7 days (face/flexures)	Local inflammation	*Atrophy with prolonged use*
Adrenaline (sympathomimetic)	0.5 mg IM (0.5 ml of 1:1000) into thigh; repeat in 5 min	Anaphylaxis	*Never IV bolus 1:1000 outside arrest*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain/fever	*Hepatotoxic in overdose; check combination products*

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DISEASE 176 OF 300 | SKIN

Chronic Leg Ulcer

Venous, arterial, neuropathic or other? The site and ABI tell you.

DEFINITION

Ulcer below the knee not healing for >4–6 weeks. Venous ulcers (70%) are shallow, above the medial malleolus with surrounding pigmentation; arterial ulcers are punched-out, painful, on toes and pressure points; neuropathic (diabetic, leprosy) on weight-bearing sites. Others: pressure, vasculitis, pyoderma gangrenosum, infection, malignancy (Marjolin's).

SYMPTOMS

- Duration, pain (arterial — severe at night, relieved by dependency)
- Leg swelling, varicose veins (venous)
- Claudication, smoking (arterial)
- Numbness (neuropathic)
- Diabetes, leprosy, trauma history

SIGNS

- Venous: shallow, sloping edges, granulation, medial gaiter area, haemosiderin, lipodermatosclerosis
- Arterial: deep, punched-out, pale base, cold foot, absent pulses
- Neuropathic: painless, callus rim, plantar
- Rolled/everted edge (malignancy)
- Cellulitis

DIAGNOSTIC TESTS

Test	Finding / purpose
ABI	>0.8 safe for compression; <0.5 severe ischaemia
Blood sugar, CBC, albumin	Diabetes, anaemia, nutrition
Venous/arterial Doppler	Reflux, arterial disease
Swab (only if infected), X-ray	Infection, osteomyelitis
Biopsy edge	Non-healing >3 months, atypical — exclude SCC

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Venous — compression (cornerstone)	Multilayer compression bandage (if ABI ≥0.8), then class II–III stockings after healing	Until healed; lifelong stockings
Wound care	Clean with saline, debride slough, non-adherent/moist dressings; treat surrounding eczema	Twice weekly
Elevation & mobility	Leg elevation above heart, calf exercises, walking	Ongoing
Infection (cellulitis only)	Cephalexin 500 mg QID or amoxicillin-clavulanate 625 mg TDS	7 days
Adjunct for venous ulcer	Pentoxifylline 400 mg TDS; diosmin-hesperidin 1000 mg OD	3–6 months
Arterial ulcer	No compression; vascular referral; aspirin + statin; stop smoking	—

REFER / RED FLAGS

- ABI <0.8 or absent pulses
- Not healing after 12 weeks
- Atypical appearance (biopsy)
- Spreading cellulitis, osteomyelitis

GP PEARLS

★ *Most venous ulcers heal with compression alone — the dressing matters less than the bandage.*

★ *Never compress a leg before measuring ABI.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Povidone-iodine (antiseptic)	5–10% solution/ointment for wound cleaning	Wound cleaning	*Avoid large areas in thyroid disease*
Pentoxifylline (haemorheologic)	400 mg PO 8-hourly	Venous ulcers	*GI upset; bleeding risk*
Cephalexin (1st-gen cephalosporin)	500 mg PO 6–8-hourly	Infected ulcer	*Penicillin cross-allergy (low)*
Emollient (white soft paraffin / urea cream)	Apply liberally twice daily and after bath	Surrounding skin	*Fire risk with paraffin on dressings*
Flavonoids (diosmin–hesperidin)	1000 mg PO 12-hourly ×4 days then daily	Venous insufficiency	*GI upset; adjunct only*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*

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DISEASE 177 OF 300 | SKIN

Ingrown Toenail

Painful red nail fold of the big toe — correct nail cutting, then wedge resection if recurrent.

DEFINITION

Penetration of the lateral edge of the nail plate into the nail fold, usually of the great toe, causing pain, inflammation, infection and granulation tissue. Causes: cutting nails curved or too short, tight footwear, sweaty feet, trauma. Common in adolescents and young adults.

SYMPTOMS

- Pain at the side of the big toe nail
- Swelling, redness
- Pus discharge
- Pain with shoes
- Recurrent episodes

SIGNS

- Erythema and swelling of lateral nail fold
- Nail edge embedded in skin
- Pus
- Overgrown granulation tissue (late)
- Cellulitis

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
Blood sugar	Diabetics, recurrent infection
X-ray	Long-standing — osteomyelitis, subungual exostosis

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Mild	Warm saline soaks 15 min TDS; lift nail edge with cotton wisp or dental floss; open footwear	1–2 weeks
Infection	Topical mupirocin; oral cephalexin 500 mg QID if cellulitis	5–7 days
Nail care advice	Cut nails straight across, not too short; well-fitting shoes	Ongoing
Moderate–severe / recurrent	Partial (wedge) nail avulsion under ring (digital) block with phenol 80–88% ablation of nail matrix	Single procedure
Post-procedure	Elevation, daily dressing, paracetamol/ibuprofen	1–2 weeks

REFER / RED FLAGS

- Diabetic or ischaemic foot
- Recurrence after procedure
- Osteomyelitis
- Suspected subungual tumour

GP PEARLS

★ *Digital block: inject lignocaine plain (no adrenaline) at both sides of the toe base.*

★ *Antibiotics alone rarely cure an ingrown nail — the nail spike must be removed.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Lidocaine 2% (local anaesthetic) for procedures	Max 3 mg/kg (7 mg/kg with adrenaline)	Digital block for wedge resection	*No adrenaline on digits as per local practice*
Cephalexin (1st-gen cephalosporin)	500 mg PO 6–8-hourly	Infected toe	*Penicillin cross-allergy (low)*
Povidone-iodine (antiseptic)	5–10% solution/ointment for wound cleaning	Soaks	*Avoid large areas in thyroid disease*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Mupirocin 2% ointment (topical antibiotic)	Apply 8-hourly ×5–7 days	Post-procedure	*Resistance with long use*

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DISEASE 178 OF 300 | SKIN

Generalised Pruritus

Itch without a rash — look inside: liver, kidney, thyroid, blood, drugs.

DEFINITION

Itching may be due to skin disease (scabies, eczema, urticaria, xerosis) or, without a primary rash, to systemic causes: dry skin in the elderly (commonest), cholestasis, CKD, iron deficiency, thyroid disease, diabetes, lymphoma, polycythaemia, HIV, drugs (opioids, chloroquine) and psychogenic itch.

SYMPTOMS

- Itch all over, worse at night
- Worse after hot water bath (xerosis, polycythaemia)
- Weight loss, night sweats (lymphoma)
- Jaundice, dark urine
- Family members itching (scabies)

SIGNS

- Excoriations only, no primary lesions
- Dry, scaly skin (xerosis)
- Jaundice, lymphadenopathy, hepatosplenomegaly
- Pallor, uraemic features
- Burrows in finger webs

DIAGNOSTIC TESTS

Test	Finding / purpose
CBC, ferritin, ESR	Iron deficiency, polycythaemia, lymphoma
LFT, creatinine, glucose, TSH	Systemic causes
HIV, hepatitis serology	Selected
Chest X-ray	Lymphadenopathy, persistent unexplained itch

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Skin care	Short lukewarm baths, mild soap substitutes, emollient within 3 min of bath, cotton clothing	Ongoing
Antihistamine	Hydroxyzine 10–25 mg HS or cetirizine 10 mg OD	2–4 weeks
Topical relief	Calamine, menthol 1% in aqueous cream	As needed
Cholestatic itch	Cholestyramine 4 g BD; rifampicin 150–300 mg OD (specialist); sertraline 50 mg	As needed
Uraemic itch	Emollients, gabapentin 100 mg after dialysis or pregabalin 25–75 mg OD	Long term
Iron deficiency	Iron replacement	3 months

REFER / RED FLAGS

- Weight loss, night sweats, nodes (lymphoma)
- Abnormal LFT, jaundice
- Persistent itch without cause after initial tests
- Severe itch in pregnancy (cholestasis)

GP PEARLS

★ *Itching in the third trimester without rash — check bile acids and LFT for obstetric cholestasis.*

★ *In the elderly, winter itch is usually xerosis — emollients are enough.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Emollient (white soft paraffin / urea cream)	Apply liberally twice daily and after bath	First-line	*Fire risk with paraffin on dressings*
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	Itch	*Mild sedation; reduce dose in CKD*
Hydroxyzine (antihistamine)	10–25 mg PO at night or 8-hourly	Night itch	*Sedation; QT prolongation*
Cholestyramine (bile-acid sequestrant)	4 g PO 1–3 times daily (pruritus)	Cholestatic pruritus	*Separate other drugs by 4 h*
Sertraline (pruritus/depression)	25–50 mg PO daily	Refractory pruritus	*GI upset*
Calamine lotion (antipruritic)	Apply 8-hourly to itchy areas	Soothing	*Drying; soothing only*

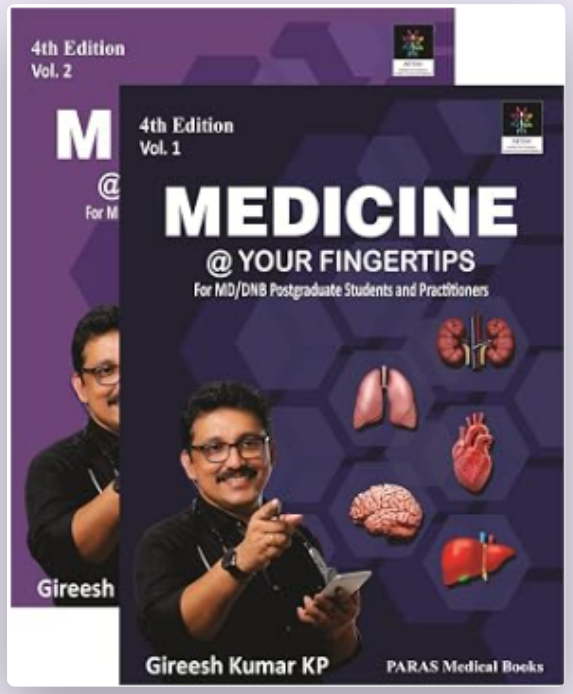
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DISEASE 179 OF 300 | EYE

Red Eye — Approach

Pain, reduced vision, photophobia or a fixed pupil means refer the same day.

DEFINITION

A red eye is most often benign (conjunctivitis, subconjunctival haemorrhage, dry eye, blepharitis) but may signal sight-threatening disease: acute angle-closure glaucoma, keratitis/corneal ulcer, anterior uveitis, scleritis, chemical injury or penetrating trauma. Visual acuity is the vital sign of the eye.

SYMPTOMS

- Discharge and grittiness without pain (conjunctivitis)
- Deep eye pain, headache, vomiting, haloes (glaucoma)
- Photophobia, blurred vision (keratitis, uveitis)
- Trauma, chemical splash, contact lens use
- Itching (allergy)

SIGNS

- Visual acuity — always record
- Pattern: diffuse conjunctival vs circumcorneal (ciliary) flush
- Cornea: clarity, fluorescein staining
- Pupil: size, shape, reaction
- Discharge type; anterior chamber (hypopyon, hyphaema)

DIAGNOSTIC TESTS

Test	Finding / purpose
Visual acuity (Snellen chart)	Reduced = refer
Fluorescein staining (blue light)	Abrasion, ulcer, dendrite
Torch examination of pupils and AC	Fixed mid-dilated pupil, hypopyon
Intraocular pressure (if available)	Glaucoma

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Bacterial conjunctivitis	See page — moxifloxacin or chloramphenicol drops	5–7 days
Viral / allergic	Lubricants; antihistamine drops for allergy	1–2 weeks
Subconjunctival haemorrhage	Reassure; check BP, bleeding tendency if recurrent; resolves in 2–3 weeks	—
Chemical injury	Irrigate immediately with ≥1–2 litres of saline/water for 20–30 min	Immediate
Avoid	Steroid eye drops unless prescribed by ophthalmologist; anaesthetic drops for home use	—

REFER / RED FLAGS

- Reduced vision
- Moderate–severe pain, photophobia
- Corneal opacity or staining, hypopyon
- Abnormal pupil, raised IOP, trauma, chemical injury, contact lens wearer

GP PEARLS

★ *Conjunctivitis never reduces vision once discharge is wiped — reduced acuity means something more serious.*

★ *Ciliary flush (redness around the cornea) indicates keratitis, uveitis or glaucoma.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Chloramphenicol 0.5% eye drops	1 drop 2–4-hourly ×5–7 days	Bacterial conjunctivitis	*Allergy; avoid prolonged use*
Carboxymethylcellulose 0.5% (artificial tears)	1–2 drops 4–6 times daily	Dry eye	*Preservative-free if frequent use*
Olopatadine 0.1% eye drops (antihistamine/mast cell)	1 drop 12-hourly	Allergic conjunctivitis	*Burning on instillation*
Moxifloxacin 0.5% eye drops	1 drop 8-hourly ×5–7 days (2-hourly in keratitis)	Contact lens wearer	*No steroid combinations without diagnosis*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Prednisolone acetate 1% eye drops	1 drop 1–6-hourly as advised by ophthalmologist	Only by ophthalmologist	*Never for undiagnosed red eye (herpes, ulcer)*

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DISEASE 180 OF 300 | EYE

Bacterial Conjunctivitis

Sticky purulent discharge, eyelids stuck in the morning — topical antibiotic.

DEFINITION

Acute infection of the conjunctiva by Staphylococcus, Streptococcus pneumoniae, Haemophilus or Moraxella, presenting with redness and purulent discharge. Usually self-limiting in 5–7 days; antibiotics speed recovery. Hyperacute purulent conjunctivitis (gonococcal) and neonatal conjunctivitis (ophthalmia neonatorum) are emergencies.

SYMPTOMS

- Red eye, gritty feeling
- Yellow-green discharge
- Eyelids stuck together on waking
- Starts in one eye, spreads to other
- Vision normal

SIGNS

- Diffuse conjunctival injection
- Mucopurulent discharge
- Normal cornea and pupils
- Lid oedema (mild)
- Copious discharge with chemosis (gonococcal)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
Swab Gram stain and culture	Neonates, hyperacute, recurrent, severe

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Hygiene	Clean lids with boiled cooled water/saline-soaked cotton from inside out; hand-washing; no towel sharing	Until resolved
Topical antibiotic	Moxifloxacin 0.5% drops 1 drop QID (or ciprofloxacin 0.3%, tobramycin 0.3% for children, chloramphenicol 0.5%)	5–7 days
Night	Antibiotic eye ointment (chloramphenicol 1%/tobramycin) HS	5–7 days
Neonate (ophthalmia neonatorum)	Refer: ceftriaxone 25–50 mg/kg IM single (gonococcal); erythromycin syrup 50 mg/kg/day × 14 days (chlamydial)	As stated
Contact lenses	Stop wearing; refer if pain or corneal staining (Pseudomonas)	—
Avoid	Steroid or steroid-antibiotic combination drops	—

REFER / RED FLAGS

- Reduced vision, severe pain, photophobia
- Hyperacute copious discharge (gonococcal)
- Neonates
- Contact lens wearers; no improvement in 5–7 days

GP PEARLS

★ *Most bacterial conjunctivitis settles without treatment; antibiotics mainly reduce spread and duration.*

★ *Teach patients to instil drops: pull lower lid, look up, one drop, close eyes gently for a minute.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Chloramphenicol 0.5% eye drops	1 drop 2–4-hourly ×5–7 days	First-line drops	*Allergy; avoid prolonged use*
Moxifloxacin 0.5% eye drops	1 drop 8-hourly ×5–7 days (2-hourly in keratitis)	Alternative	*No steroid combinations without diagnosis*
Carboxymethylcellulose 0.5% (artificial tears)	1–2 drops 4–6 times daily	Comfort	*Preservative-free if frequent use*
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	Associated rhinitis	*Mild sedation; reduce dose in CKD*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Discomfort	*Hepatotoxic in overdose; check combination products*

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DISEASE 181 OF 300 | EYE

Viral Conjunctivitis (Madras Eye)

Watery red eyes in epidemics — highly contagious, self-limiting.

DEFINITION

Highly contagious conjunctivitis usually caused by adenovirus (epidemic keratoconjunctivitis) or enterovirus (acute haemorrhagic conjunctivitis), occurring in seasonal outbreaks ("Madras eye"). Lasts 1–3 weeks. Subepithelial corneal infiltrates may cause blurring and glare for weeks.

SYMPTOMS

- Watery discharge, red gritty eyes
- Both eyes, often sequentially
- Recent cold, sore throat
- Contacts or family affected
- Mild photophobia, blurring (keratitis)

SIGNS

- Diffuse injection, follicles on tarsal conjunctiva
- Watery discharge
- Tender preauricular lymph node
- Subconjunctival haemorrhages (haemorrhagic type)
- Normal pupils

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
Fluorescein	Punctate keratitis, dendrites (exclude herpes)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Supportive	Cold compresses, artificial tears (carboxymethylcellulose 0.5%) QID–hourly, dark glasses	1–2 weeks
Infection control	Strict hand hygiene, separate towels, avoid touching eyes; stay home from school/work while eyes red and watering	7–10 days
Secondary bacterial infection	Moxifloxacin 0.5% drops QID only if purulent discharge	5 days
Itch	Olopatadine 0.1% drops BD	1 week
Avoid	Steroid drops (unless ophthalmologist-directed for membranes/infiltrates)	—

REFER / RED FLAGS

- Reduced vision or photophobia
- Membranes or pseudomembranes
- Corneal infiltrates
- Herpetic dendrite on fluorescein

GP PEARLS

★ *Antibiotic drops do not shorten viral conjunctivitis — they are needed only for secondary infection.*

★ *Clean the tonometer and torch after examining — clinics spread epidemics.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Carboxymethylcellulose 0.5% (artificial tears)	1–2 drops 4–6 times daily	Comfort	*Preservative-free if frequent use*
Olopatadine 0.1% eye drops (antihistamine/mast cell)	1 drop 12-hourly	Itching	*Burning on instillation*
Chloramphenicol 0.5% eye drops	1 drop 2–4-hourly ×5–7 days	Secondary infection only	*Allergy; avoid prolonged use*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Discomfort	*Hepatotoxic in overdose; check combination products*
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	Associated symptoms	*Mild sedation; reduce dose in CKD*
Prednisolone acetate 1% eye drops	1 drop 1–6-hourly as advised by ophthalmologist	Only by ophthalmologist	*Never for undiagnosed red eye (herpes, ulcer)*

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DISEASE 182 OF 300 | EYE

Allergic Conjunctivitis

Itching is the hallmark — antihistamine/mast cell stabiliser drops.

DEFINITION

IgE-mediated conjunctival inflammation. Seasonal/perennial allergic conjunctivitis accompanies allergic rhinitis. Vernal keratoconjunctivitis (VKC) affects boys in hot climates with intense itch, ropy discharge and giant papillae; it can threaten vision through shield ulcers and steroid misuse.

SYMPTOMS

- Intense itching, rubbing eyes
- Watery or ropy white discharge
- Bilateral, seasonal
- Sneezing, runny nose
- Photophobia (VKC)

SIGNS

- Bilateral conjunctival injection, chemosis
- Papillae on upper tarsal conjunctiva
- Giant cobblestone papillae, Horner–Trantas dots (VKC)
- Lid swelling
- Normal vision

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
Fluorescein	Shield ulcer in VKC

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Avoid allergens & rubbing	Cold compresses, sunglasses, wash face after outdoors	Ongoing
Antihistamine/mast cell stabiliser drops	Olopatadine 0.1% BD or 0.2% OD, or ketotifen 0.025% BD	2–4 weeks; seasonally
Lubricants	Preservative-free artificial tears QID (refrigerated for comfort)	As needed
Oral antihistamine (with rhinitis)	Cetirizine 10 mg or fexofenadine 120–180 mg OD	Season
VKC / severe (ophthalmologist)	Short pulse loteprednol 0.5% or fluorometholone 0.1%; cyclosporine 0.05–0.1% or tacrolimus 0.03% ointment	Under supervision

REFER / RED FLAGS

- Reduced vision, shield ulcer
- VKC needing steroids
- Long-term steroid drop use (glaucoma, cataract risk)
- Atopic keratoconjunctivitis

GP PEARLS

★ *Unsupervised steroid drops for "eye allergy" cause steroid-induced glaucoma and cataract — never prescribe repeat refills.*

★ *Eye rubbing in allergic children is linked to keratoconus.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Olopatadine 0.1% eye drops (antihistamine/mast cell)	1 drop 12-hourly	First-line	*Burning on instillation*
Carboxymethylcellulose 0.5% (artificial tears)	1–2 drops 4–6 times daily	Wash out allergens	*Preservative-free if frequent use*
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	Systemic symptoms	*Mild sedation; reduce dose in CKD*
Fexofenadine (non-sedating antihistamine)	120–180 mg PO once daily	Non-sedating	*Avoid with fruit juice at dosing*
Montelukast (leukotriene antagonist)	10 mg PO at night (4–5 mg child)	Associated rhinitis/asthma	*Neuropsychiatric effects (dreams, mood)*

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DISEASE 183 OF 300 | EYE

Stye & Chalazion

Painful lid-margin boil (stye) vs painless lump in the lid (chalazion).

DEFINITION

An external hordeolum (stye) is an acute staphylococcal infection of an eyelash follicle or gland of Zeis/Moll — painful and pointing at the lid margin. Internal hordeolum involves a meibomian gland. A chalazion is a chronic, painless, granulomatous lipogranuloma of a meibomian gland, often with blepharitis or rosacea.

SYMPTOMS

- Painful red swelling at eyelid margin (stye)
- Painless firm lump in eyelid (chalazion)
- Watering, mild redness
- Recurrent lesions
- Blurring if large chalazion presses on cornea

SIGNS

- Tender pointing swelling with pus at lash base (stye)
- Firm, non-tender nodule away from lid margin (chalazion)
- Granuloma on conjunctival side
- Blepharitis signs
- Preseptal cellulitis (diffuse swelling)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
Blood sugar	Recurrent styes
Biopsy	Recurrent chalazion at same site in elderly (exclude sebaceous carcinoma)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Warm compresses (both)	Clean warm cloth 10 min, 3–4 times daily + gentle lid massage	1–2 weeks
Stye	Epilation of the involved lash may drain it; chloramphenicol or tobramycin ointment TDS	5–7 days
Preseptal cellulitis / multiple	Amoxicillin-clavulanate 625 mg TDS (child 25 mg/kg/dose BD) or cloxacillin 500 mg QID	7 days
Chalazion persisting >4–6 weeks	Incision and curettage under local anaesthesia (ophthalmology) or intralesional triamcinolone	—
Recurrent chalazia	Lid hygiene; doxycycline 100 mg OD (adults) for meibomian dysfunction/rosacea	6–12 weeks
Avoid	Squeezing or needle puncture at home	—

REFER / RED FLAGS

- Diffuse lid swelling with fever, proptosis or painful eye movements (orbital cellulitis)
- Recurrent chalazion at same site (biopsy)
- Visual disturbance
- Infant with lid swelling

GP PEARLS

★ *Pain with eye movement or proptosis means orbital cellulitis — emergency.*

★ *Most chalazia resolve with warm compresses alone within 2 months.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Chloramphenicol 0.5% eye drops	1 drop 2–4-hourly ×5–7 days	Infected stye	*Allergy; avoid prolonged use*
Cloxacillin (anti-staphylococcal penicillin)	500 mg PO 6-hourly before food	Spreading lid cellulitis	*Penicillin allergy*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Carboxymethylcellulose 0.5% (artificial tears)	1–2 drops 4–6 times daily	Comfort	*Preservative-free if frequent use*
Doxycycline (tetracycline)	100 mg PO 12-hourly after food, upright	Recurrent chalazion/blepharitis	*Avoid in pregnancy and <8 years; photosensitivity*

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DISEASE 184 OF 300 | EYE

Dry Eye & Blepharitis

Gritty, burning eyes worse with screens — lubricants and lid hygiene.

DEFINITION

Dry eye disease results from reduced tear production or excess evaporation, increasingly common with screen use, air-conditioning, ageing, contact lenses, diabetes and drugs (antihistamines, antidepressants). Blepharitis is chronic lid-margin inflammation (anterior — staphylococcal/seborrhoeic; posterior — meibomian gland dysfunction) that worsens dry eye.

SYMPTOMS

- Grittiness, burning, foreign-body sensation
- Worse at end of day, with screen use, air-conditioning
- Redness, intermittent blurring improving with blinking
- Crusting of lashes, itchy lid margins (blepharitis)
- Reflex watering

SIGNS

- Mild conjunctival redness
- Reduced tear meniscus, punctate staining
- Crusts at lash bases, red thick lid margins
- Capped/blocked meibomian orifices
- Normal vision

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
Schirmer's test, tear break-up time	Severity (ophthalmology)
ANA, anti-Ro/La	Severe dry eye with dry mouth (Sjögren's)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Lubricants	Carboxymethylcellulose 0.5% or hydroxypropyl methylcellulose drops QID (preservative-free if >4/day); gel at night	Long term
Screen habits	20-20-20 rule (every 20 min look 20 feet away for 20 s), blink consciously, screen below eye level	Ongoing
Lid hygiene (blepharitis)	Warm compresses 5–10 min, lid massage, clean lid margins with diluted baby shampoo or lid wipes	Daily, long term
Blepharitis flare	Azithromycin 1% eye drops BD × 2 days then OD, or chloramphenicol ointment to lid margins HS	2–4 weeks
Meibomian dysfunction / rosacea	Doxycycline 100 mg OD → 50 mg OD; omega-3 fatty acids	6–12 weeks
Moderate–severe dry eye	Cyclosporine 0.05% drops BD (ophthalmology)	Months

REFER / RED FLAGS

- Reduced vision, corneal staining, pain
- Dry mouth, joint pain (Sjögren's)
- Lid margin ulceration or loss of lashes (tumour)
- No improvement on treatment

GP PEARLS

★ *A watery eye can be a dry eye — reflex tearing from surface irritation.*

★ *Blepharitis is chronic: lid hygiene must continue after symptoms settle.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Carboxymethylcellulose 0.5% (artificial tears)	1–2 drops 4–6 times daily	Artificial tears	*Preservative-free if frequent use*
Doxycycline (tetracycline)	100 mg PO 12-hourly after food, upright	Meibomian gland dysfunction	*Avoid in pregnancy and <8 years; photosensitivity*
Chloramphenicol 0.5% eye drops	1 drop 2–4-hourly ×5–7 days	Lid margin ointment	*Allergy; avoid prolonged use*
Azithromycin (macrolide)	500 mg PO once daily ×3 days (child 10 mg/kg)	Alternative to doxycycline	*QT prolongation; avoid with other QT drugs*

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DISEASE 185 OF 300 | EYE

Corneal Abrasion & Foreign Body

Painful watering eye after something flew in — fluorescein, remove, antibiotic ointment.

DEFINITION

Corneal abrasion is a defect of the corneal epithelium from trauma (fingernail, paper, branch, contact lens). Corneal foreign bodies (dust, metal grinding particles, sawdust) are common in workers. Metallic bodies leave a rust ring. High-velocity injuries (hammering, grinding) may cause penetrating injury.

SYMPTOMS

- Sudden pain, foreign-body sensation
- Watering, photophobia
- Blurring
- History: grinding, hammering, wind, plant matter
- Contact lens use

SIGNS

- Fluorescein-staining epithelial defect
- Visible foreign body, rust ring
- Linear vertical abrasions — FB under upper lid (evert the lid)
- Normal or slightly reduced vision
- Irregular pupil, shallow AC, Seidel positive (penetrating)

DIAGNOSTIC TESTS

Test	Finding / purpose
Visual acuity	Before anything else
Fluorescein with blue light	Size of defect
Lid eversion	Subtarsal foreign body
X-ray / CT orbit	High-velocity injury — intraocular metal (no MRI)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Topical anaesthetic (for examination only)	Proparacaine 0.5% 1 drop	In clinic only
Loose FB	Irrigate with saline or remove with moist cotton bud	Stat
Embedded superficial FB	Remove with 26G needle bevel-up under magnification (trained clinician); rust ring — refer	Stat
Antibiotic	Chloramphenicol 1% or moxifloxacin ointment QID (contact lens wearer: moxifloxacin/ciprofloxacin drops for Pseudomonas)	5 days
Pain	Paracetamol 1 g / ibuprofen 400 mg TDS; cycloplegic (homatropine 2% BD) for large abrasions	2–3 days
Review	At 24–48 h; no contact lenses until healed	—

REFER / RED FLAGS

- Suspected penetrating injury, high-velocity mechanism
- Central or deep FB, rust ring
- Abrasion not healed in 48–72 h
- Infiltrate or ulcer

GP PEARLS

★ *Never give topical anaesthetic drops to take home — they delay healing and cause ulcers.*

★ *Always evert the upper lid — a hidden foreign body keeps scratching.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Moxifloxacin 0.5% eye drops	1 drop 8-hourly ×5–7 days (2-hourly in keratitis)	Prophylactic antibiotic drops	*No steroid combinations without diagnosis*
Carboxymethylcellulose 0.5% (artificial tears)	1–2 drops 4–6 times daily	Comfort	*Preservative-free if frequent use*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Tetanus–diphtheria (Td) vaccine	0.5 ml IM	If tetanus-prone	*Booster if last dose >5 y (dirty wound) or >10 y (clean)*
Atropine 1% / homatropine 2% eye drops (cycloplegic)	1 drop 8–12-hourly (uveitis)	Cycloplegia for pain (selected)	*Never in angle-closure glaucoma*

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DISEASE 186 OF 300 | EYE

Corneal Ulcer (Keratitis)

Painful red eye with a white corneal spot — sight-threatening, refer the same day.

DEFINITION

Infection of the cornea with epithelial defect and stromal infiltrate. Bacterial (Pseudomonas in contact lens users, Staphylococcus, Pneumococcus), fungal (Fusarium, Aspergillus — after vegetative trauma in agricultural workers, very common in India), viral (herpes simplex — dendritic) and Acanthamoeba. Can perforate within days.

SYMPTOMS

- Severe pain, photophobia, watering
- Reduced vision
- Injury with vegetable matter (fungal)
- Contact lens wear (bacterial/Acanthamoeba)
- Previous cold sores, recurrent red eye (herpes)

SIGNS

- Ciliary flush
- White/grey corneal infiltrate with staining defect
- Feathery margins, satellite lesions (fungal)
- Hypopyon
- Dendritic ulcer on fluorescein (herpes)

DIAGNOSTIC TESTS

Test	Finding / purpose
Visual acuity, fluorescein	Size and site
Corneal scraping — Gram stain, KOH, culture (ophthalmology)	Organism
Blood sugar	Diabetes

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Urgent ophthalmology referral	Same day	—
Pre-referral (bacterial suspected)	Moxifloxacin 0.5% or ciprofloxacin 0.3% drops hourly	Until seen
Fungal (specialist)	Natamycin 5% drops hourly; voriconazole 1% drops	Weeks
Herpetic dendritic	Acyclovir 3% ointment 5 times daily or ganciclovir 0.15% gel 5 times daily	10–14 days
Pain, cycloplegia	Homatropine 2% or atropine 1% BD; oral analgesics	As advised
Avoid	Steroid drops, patching, traditional remedies	—

REFER / RED FLAGS

- All suspected corneal ulcers — same day
- Hypopyon, thinning, perforation
- Contact lens–related keratitis
- Failure to improve in 48 h

GP PEARLS

★ *A corneal ulcer after a paddy-leaf or stick injury is fungal until proven otherwise.*

★ *Steroid drops on a herpetic or fungal ulcer can lead to perforation.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Moxifloxacin 0.5% eye drops	1 drop 8-hourly ×5–7 days (2-hourly in keratitis)	Hourly drops (refer same day)	*No steroid combinations without diagnosis*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Atropine 1% / homatropine 2% eye drops (cycloplegic)	1 drop 8–12-hourly (uveitis)	Cycloplegic (specialist)	*Never in angle-closure glaucoma*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Acyclovir (antiviral)	800 mg PO 5 times daily ×7 days (zoster)	Herpetic keratitis (specialist)	*Hydrate; reduce dose in CKD*

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DISEASE 187 OF 300 | EYE

Acute Angle-Closure Glaucoma

Painful red eye, haloes, vomiting, hazy cornea, mid-dilated pupil — emergency.

DEFINITION

Sudden rise in intraocular pressure (often >40 mmHg) from closure of the drainage angle by the iris, typically in hypermetropic older women with shallow anterior chambers. Precipitated by dim light, mydriatics, anticholinergics, antihistamines, topiramate. Untreated, permanent vision loss within hours to days.

SYMPTOMS

- Severe eye pain, headache
- Blurred vision, coloured haloes around lights
- Nausea, vomiting (may mimic GI illness)
- Red eye
- Previous episodes of evening haloes and ache

SIGNS

- Ciliary flush
- Hazy (oedematous) cornea
- Fixed, mid-dilated, oval pupil
- Shallow anterior chamber
- Rock-hard eye on palpation

DIAGNOSTIC TESTS

Test	Finding / purpose
Visual acuity	Reduced
Intraocular pressure (tonometry)	Markedly raised
Gonioscopy (ophthalmology)	Closed angle

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Immediate referral	Emergency ophthalmology	Same hour
Lower IOP (start before transfer)	Acetazolamide 500 mg IV or orally stat, then 250 mg QID	Until laser
Topical	Timolol 0.5% 1 drop + pilocarpine 2% 1 drop every 15 min × 2, then QID (pilocarpine after IOP starts falling); brimonidine 0.2% 1 drop	Until laser
Osmotic (severe)	Mannitol 20% 1–2 g/kg IV over 45 min or oral glycerol 1 g/kg (non-diabetic)	Single
Symptomatic	Analgesics, ondansetron 4 mg; lie supine	As needed
Definitive	Laser peripheral iridotomy (both eyes)	—

REFER / RED FLAGS

- Every suspected case — immediate
- Vomiting with red painful eye
- History of intermittent haloes (prophylactic iridotomy)
- —

GP PEARLS

★ *Elderly patients "vomiting with headache" may have acute glaucoma — look at the eye.*

★ *Avoid dilating drops and anticholinergics in patients with known shallow angles.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Acetazolamide (carbonic anhydrase inhibitor)	500 mg IV/PO stat, then 250 mg 6-hourly	500 mg stat	*Sulfa allergy; hypokalaemia; paraesthesia*
Timolol 0.5% eye drops (β-blocker)	1 drop 12-hourly	Lower IOP	*Systemic β-blockade — asthma, bradycardia*
Pilocarpine 2% eye drops (miotic)	1 drop every 15 min ×2 then 6-hourly (angle closure)	After pressure starts falling	*Brow ache; after specialist advice*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Vomiting	*QT; constipation*

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DISEASE 188 OF 300 | EYE

Anterior Uveitis (Iritis)

Painful red eye with photophobia, small pupil and ciliary flush.

DEFINITION

Inflammation of the iris and ciliary body. Associated with HLA-B27 spondyloarthritis, reactive arthritis, IBD, sarcoidosis, TB, herpes, juvenile idiopathic arthritis (often painless), and Behçet's. Complications: posterior synechiae, glaucoma, cataract, macular oedema.

SYMPTOMS

- Aching eye pain
- Photophobia
- Blurred vision
- Redness, watering (no discharge)
- Back pain, joint pain, past episodes

SIGNS

- Ciliary (circumcorneal) flush
- Small, sluggish or irregular pupil
- Keratic precipitates on corneal back
- Cells and flare in AC; hypopyon
- Normal or raised IOP

DIAGNOSTIC TESTS

Test	Finding / purpose
Slit-lamp exam (ophthalmology)	Diagnosis and grading
HLA-B27, X-ray SI joints	Spondyloarthritis
CBC, ESR, CRP, VDRL, Mantoux/IGRA, CXR, ACE	Recurrent, bilateral or granulomatous

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Urgent ophthalmology	Within 24 h	—
Steroid drops (specialist-led)	Prednisolone acetate 1% hourly initially, then slow taper	4–8 weeks
Cycloplegic	Cyclopentolate 1% TDS or homatropine 2% BD–TDS (relieves pain, prevents synechiae)	1–2 weeks
Raised IOP	Timolol 0.5% BD	As needed
Underlying disease	Treat spondyloarthritis, TB, herpes as indicated	—

REFER / RED FLAGS

- All suspected uveitis — urgent
- Reduced vision, hypopyon
- Recurrent or bilateral uveitis
- Children with JIA (regular screening)

GP PEARLS

★ *Iritis recurrences in a young man with back pain — check HLA-B27 and refer to rheumatology.*

★ *Do not start steroid drops without slit-lamp confirmation — herpetic keratitis worsens.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Prednisolone acetate 1% eye drops	1 drop 1–6-hourly as advised by ophthalmologist	By ophthalmologist	*Never for undiagnosed red eye (herpes, ulcer)*
Atropine 1% / homatropine 2% eye drops (cycloplegic)	1 drop 8–12-hourly (uveitis)	Cycloplegic	*Never in angle-closure glaucoma*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Timolol 0.5% eye drops (β-blocker)	1 drop 12-hourly	Raised IOP	*Systemic β-blockade — asthma, bradycardia*
HRZE fixed-dose combination (anti-TB)	Weight-band FDC tablets daily (NTEP)	TB uveitis (specialist)	*Hepatotoxicity; red urine; visual checks*

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DISEASE 189 OF 300 | EYE

Acute Dacryocystitis

Painful swelling at the inner corner of the eye — antibiotic, then DCR.

DEFINITION

Acute infection of the lacrimal sac secondary to nasolacrimal duct obstruction, usually by Staphylococcus or Streptococcus. Chronic dacryocystitis causes persistent watering and mucopurulent regurgitation. Congenital nasolacrimal duct obstruction in infants causes sticky watering eye, usually resolving by 1 year.

SYMPTOMS

- Painful red swelling below the inner canthus
- Watering eye (epiphora)
- Discharge from the eye
- Fever
- Infant: persistent sticky watery eye since birth

SIGNS

- Tender, red, swollen lacrimal sac area
- Regurgitation of pus on pressure over sac
- Preseptal cellulitis
- Fistula (chronic)
- Infant: discharge, no conjunctival injection

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
Pus culture	Severe or recurrent
Syringing (after acute phase)	Patency of duct

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Acute — antibiotic	Amoxicillin-clavulanate 625 mg TDS (child 25 mg/kg/dose BD) or cephalexin 500 mg QID	7–10 days
Topical	Moxifloxacin 0.5% drops QID	7 days
Warm compresses, analgesia	Warm compress TDS; paracetamol/ibuprofen	Until settled
Abscess	Incision and drainage (ophthalmology)	—
Definitive (adult)	Dacryocystorhinostomy (DCR) after infection settles	—
Infant (congenital NLDO)	Crigler massage over sac 10 strokes QID; antibiotic drops if discharge; probing if persists beyond 12 months	Until 12 months

REFER / RED FLAGS

- Orbital cellulitis signs
- Abscess formation
- Recurrent dacryocystitis (DCR)
- Infant NLDO beyond 12 months

GP PEARLS

★ *Never syringe or probe an acutely inflamed sac.*

★ *Chronic dacryocystitis must be treated before cataract surgery — risk of endophthalmitis.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Amoxicillin–clavulanate (penicillin + β-lactamase inhibitor)	625 mg PO 8-hourly (child 25–45 mg/kg/day amox)	Oral antibiotic	*Diarrhoea, cholestatic jaundice*
Cephalexin (1st-gen cephalosporin)	500 mg PO 6–8-hourly	Alternative	*Penicillin cross-allergy (low)*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	Orbital spread (refer)	*Biliary sludge; not with calcium IV in neonates*
Chloramphenicol 0.5% eye drops	1 drop 2–4-hourly ×5–7 days	Adjunct drops	*Allergy; avoid prolonged use*

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DISEASE 190 OF 300 | EYE

Chemical & Blunt Eye Injury

Chemical splash: irrigate first, ask questions later.

DEFINITION

Chemical injuries (alkali — lime, cement, ammonia, which penetrate deeply; acid — battery acid) are ophthalmic emergencies; outcome depends on immediate irrigation. Blunt trauma (cricket ball, fist, firecrackers) can cause hyphaema, traumatic iritis, lens dislocation, retinal detachment, globe rupture and orbital blow-out fracture.

SYMPTOMS

- Chemical splash: burning pain, watering, blurred vision
- Blunt injury: pain, swelling, bruising
- Blurred or double vision
- Floaters, flashes, curtain (retinal detachment)
- Numb cheek (orbital floor fracture)

SIGNS

- Chemical: corneal haze, epithelial loss, limbal blanching (severe)
- Hyphaema (blood level in AC)
- Irregular pupil, subconjunctival haemorrhage 360°
- Restricted upward gaze, enophthalmos (blow-out)
- Soft eye, irregular pupil, prolapsed tissue (rupture)

DIAGNOSTIC TESTS

Test	Finding / purpose
pH of tear film (litmus)	Continue irrigation until pH 7.0–7.5
Visual acuity	After irrigation; before other examination in trauma
CT orbit	Fracture, foreign body, globe rupture

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Chemical — irrigate	Topical anaesthetic, then irrigate with normal saline/RL/clean tap water ≥1–2 litres for at least 20–30 min; sweep fornices to remove particles (lime)	Immediately
After irrigation	Moxifloxacin drops QID, cycloplegic, lubricants; refer	Same day
Hyphaema	Bed rest, head elevated 30–45°, eye shield; avoid aspirin/NSAIDs; refer (IOP monitoring)	5 days
Suspected globe rupture	Rigid shield (no pressure, no drops), nil by mouth, antiemetic, IV antibiotics, tetanus; refer	Emergency
Lid haematoma (black eye)	Cold compresses; paracetamol	48 h
Blow-out fracture	Avoid nose blowing; amoxicillin-clavulanate prophylaxis; refer	7 days

REFER / RED FLAGS

- All chemical injuries after irrigation
- Reduced vision, hyphaema, irregular pupil
- Diplopia, restricted eye movement
- Firecracker or penetrating injuries

GP PEARLS

★ *Do not wait to find neutralising solutions — water is fine, time is critical.*

★ *During Diwali, firecracker eye injuries peak — counsel parents to supervise children.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Carboxymethylcellulose 0.5% (artificial tears)	1–2 drops 4–6 times daily	Copious irrigation first (saline)	*Preservative-free if frequent use*
Moxifloxacin 0.5% eye drops	1 drop 8-hourly ×5–7 days (2-hourly in keratitis)	Epithelial defect	*No steroid combinations without diagnosis*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Atropine 1% / homatropine 2% eye drops (cycloplegic)	1 drop 8–12-hourly (uveitis)	Traumatic iritis (specialist)	*Never in angle-closure glaucoma*
Tetanus–diphtheria (Td) vaccine	0.5 ml IM	Penetrating injury	*Booster if last dose >5 y (dirty wound) or >10 y (clean)*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Vomiting	*QT; constipation*

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DISEASE 191 OF 300 | EYE

Sudden Painless Loss of Vision

Sudden painless loss of vision is an eye stroke or retinal emergency until proven otherwise.

DEFINITION

Causes: central retinal artery occlusion (CRAO — eye stroke), central retinal vein occlusion, vitreous haemorrhage (diabetic retinopathy), retinal detachment, giant cell arteritis (age >50), ischaemic optic neuropathy, and optic neuritis (painful eye movements, young women). Transient monocular loss (amaurosis fugax) is a TIA.

SYMPTOMS

- Sudden loss of vision in one eye
- Floaters, flashes of light, a curtain (retinal detachment)
- Transient blackout lasting minutes (amaurosis fugax)
- Headache, jaw claudication, scalp tenderness (GCA)
- Pain on eye movement, colour desaturation (optic neuritis)

SIGNS

- Reduced visual acuity, field defect
- Relative afferent pupillary defect (RAPD)
- Fundus: cherry-red spot (CRAO), "stormy sunset" haemorrhages (CRVO), no red reflex (vitreous haemorrhage)
- Tender, thickened temporal artery
- BP, pulse (AF), carotid bruit

DIAGNOSTIC TESTS

Test	Finding / purpose
Visual acuity, pupils, fundus	Bedside assessment
ESR, CRP	Age >50 — giant cell arteritis
Blood sugar, lipids, ECG	Vascular risk factors, AF
Carotid Doppler, echo	Embolic source (CRAO, amaurosis)
MRI brain/orbits	Optic neuritis

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Same-day ophthalmology	All sudden vision loss	Immediate
Suspected GCA	Prednisolone 60 mg OD immediately (before biopsy) — protects the other eye	Long course
CRAO / amaurosis	Treat as stroke: urgent stroke pathway; aspirin 300 mg after haemorrhage excluded	Urgent
Retinal detachment	Rest, urgent vitreoretinal surgery	Within 24 h
Vitreous haemorrhage (diabetic)	Head elevation, avoid strenuous activity; laser/vitrectomy (refer)	—
Risk factor control	BP, glucose, lipids, smoking	Lifelong

REFER / RED FLAGS

- All sudden vision loss — same day
- Age >50 with headache (GCA)
- Flashes and new floaters (retinal tear)
- Amaurosis fugax — stroke TIA pathway

GP PEARLS

★ *New flashes and floaters need a dilated fundus examination within 24 hours.*

★ *Start steroids immediately in suspected GCA — blindness in the second eye can follow within days.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Aspirin (antiplatelet)	300 mg chewed stat; 75–150 mg daily	Suspected retinal artery occlusion — refer	*GI bleed; avoid in children <16*
Atorvastatin (statin)	10–80 mg PO daily (80 mg in ACS)	Vascular risk	*Myalgia; check LFT; CYP3A4 interactions*
Telmisartan (ARB)	20–80 mg PO daily	BP control	*Hyperkalaemia; avoid in pregnancy*
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	GCA suspected (urgent)	*Hyperglycaemia; taper if >3 weeks*
Metformin (biguanide)	500 mg daily–1 g 12-hourly with meals	Diabetes	*GI upset; stop if eGFR <30, contrast, sepsis*

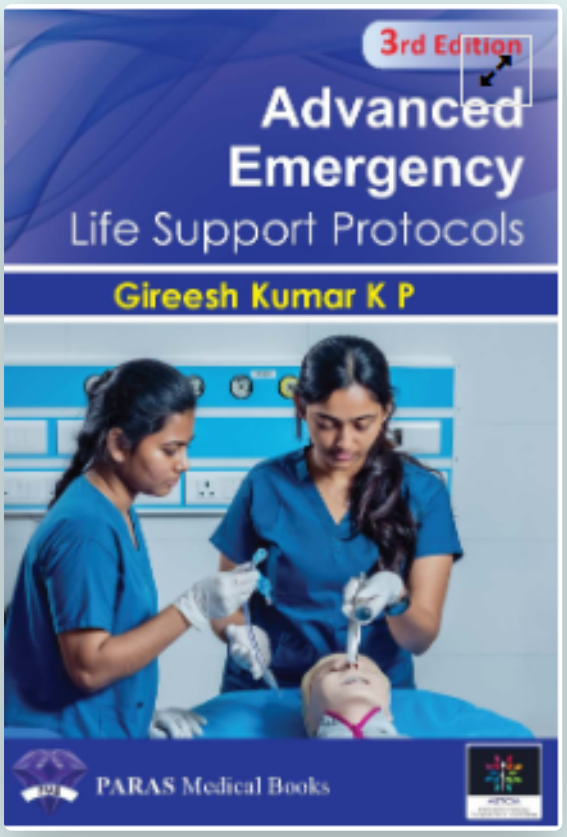
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DISEASE 192 OF 300 | ENT & ORAL

Acute Otitis Media

Earache with a red bulging drum in a child after a cold — analgesia ± amoxicillin.

DEFINITION

Acute infection of the middle ear, common in children 6 months–3 years, usually following an upper respiratory infection (S. pneumoniae, H. influenzae, M. catarrhalis, viruses). Most resolve within 3 days; perforation may relieve pain with discharge. Complications: mastoiditis, facial palsy, meningitis.

SYMPTOMS

- Ear pain, ear pulling in infants
- Fever, irritability, poor sleep
- Preceding cold
- Reduced hearing
- Sudden discharge with relief of pain (perforation)

SIGNS

- Red, bulging tympanic membrane, loss of light reflex
- Reduced mobility of drum
- Discharge in canal (perforation)
- Postauricular swelling, ear pushed forward (mastoiditis)
- Facial weakness

DIAGNOSTIC TESTS

Test	Finding / purpose
Otoscopy	Diagnosis
None routinely	—
Audiometry	Persistent effusion after 3 months

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Analgesia (all)	Paracetamol 15 mg/kg/dose 6-hourly or ibuprofen 10 mg/kg/dose 8-hourly (adult 650 mg / 400 mg)	3–5 days
Antibiotic indicated (<2 y bilateral, otorrhoea, systemically unwell, no improvement in 48–72 h)	Amoxicillin 40–45 mg/kg/dose BD (90 mg/kg/day); adult 500 mg TDS	5–7 days (10 days if <2 y)
Failure / recent amoxicillin	Amoxicillin-clavulanate 45 mg/kg/dose BD (amoxicillin component)	7–10 days
Penicillin allergy	Azithromycin 10 mg/kg day 1, 5 mg/kg days 2–5; or cefuroxime 15 mg/kg BD	5 / 7 days
Nasal decongestion	Saline nasal drops; oxymetazoline 0.025% (6–12 y) for ≤5 days	5 days
Perforation	Keep ear dry; usually heals in 2–6 weeks	—

REFER / RED FLAGS

- Mastoiditis, facial palsy, neck stiffness, severe headache
- Infants <3 months with fever
- Recurrent AOM (≥3 in 6 months)
- Persistent discharge >2 weeks or effusion >3 months

GP PEARLS

★ *Watchful waiting with analgesia is appropriate for most children over 2 years with mild AOM.*

★ *Do not instil oily drops or home remedies into a discharging ear.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (child)	15 mg/kg PO 6-hourly; max 60 mg/kg/day	Pain and fever	*Use weight-based dose; avoid adult tablets*
Ibuprofen (child)	5–10 mg/kg PO 8-hourly after food	Pain	*Avoid in dehydration, dengue, asthma flares*
Amoxicillin (penicillin)	500 mg PO 8-hourly (child 15–25 mg/kg 8-hourly)	First-line if antibiotics indicated	*Penicillin allergy; rash in EBV*
Amoxicillin–clavulanate (penicillin + β-lactamase inhibitor)	625 mg PO 8-hourly (child 25–45 mg/kg/day amox)	Failure/recent amoxicillin	*Diarrhoea, cholestatic jaundice*
Azithromycin (macrolide)	500 mg PO once daily ×3 days (child 10 mg/kg)	Penicillin allergy	*QT prolongation; avoid with other QT drugs*
Saline nasal drops/spray	2–3 drops each nostril as needed	Nasal congestion	*Safe in infants and pregnancy*

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DISEASE 193 OF 300 | ENT & ORAL

Chronic Suppurative Otitis Media

Painless recurrent ear discharge with a perforation — dry mopping and antibiotic drops.

DEFINITION

Chronic inflammation of the middle ear with persistent perforation and recurrent discharge for more than 2 weeks. Mucosal (tubotympanic, safe) type has a central perforation and mucoid discharge; squamosal (atticoaural, unsafe) type has attic/marginal perforation with cholesteatoma and scanty foul-smelling discharge, risking intracranial complications. Common in India.

SYMPTOMS

- Painless recurrent ear discharge
- Hearing loss
- Foul-smelling scanty discharge (cholesteatoma)
- Tinnitus
- Headache, vertigo, fever (complications)

SIGNS

- Central perforation with mucoid discharge (safe)
- Attic/marginal perforation, cholesteatoma flakes, granulations (unsafe)
- Conductive hearing loss (Rinne negative)
- Postauricular swelling
- Facial weakness, nystagmus

DIAGNOSTIC TESTS

Test	Finding / purpose
Otoscopy after cleaning	Type of perforation
Pus culture	Persistent discharge
Pure tone audiometry	Hearing loss
CT temporal bone	Unsafe ear, complications, before surgery

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Aural toilet	Dry mopping with cotton wicks 3–4 times daily until dry	Until dry
Topical antibiotic	Ciprofloxacin 0.3% ear drops (or ofloxacin 0.3%) 4–5 drops TDS after mopping; avoid aminoglycoside drops with perforation	7–14 days
Oral antibiotic (acute exacerbation)	Amoxicillin-clavulanate 625 mg TDS or as per culture	7 days
Water precautions	Cotton plug smeared with petroleum jelly while bathing; no swimming	Until perforation repaired
Treat URTI/nasal disease	Nasal decongestants, treat sinusitis/adenoids	—
Surgery (refer)	Tympanoplasty for safe ear when dry; mastoidectomy for unsafe ear	—

REFER / RED FLAGS

- Unsafe ear (cholesteatoma)
- Headache, fever, vomiting, vertigo, facial palsy (complications)
- Persistent discharge despite treatment
- Hearing loss in children

GP PEARLS

★ *Foul scanty discharge with an attic perforation = cholesteatoma — needs surgery, not more drops.*

★ *Mopping until dry is the most important step; drops do not reach a pus-filled canal.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ciprofloxacin 0.3% ear drops	3–4 drops 12-hourly ×7 days	Topical quinolone drops	*Safe with perforation (non-ototoxic)*
Povidone-iodine (antiseptic)	5–10% solution/ointment for wound cleaning	Aural toilet only	*Avoid large areas in thyroid disease*
Amoxicillin–clavulanate (penicillin + β-lactamase inhibitor)	625 mg PO 8-hourly (child 25–45 mg/kg/day amox)	Acute exacerbation	*Diarrhoea, cholestatic jaundice*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	Allergic rhinitis	*Mild sedation; reduce dose in CKD*
Fluticasone nasal spray (50 µg)	2 sprays each nostril once daily	Eustachian dysfunction	*Epistaxis; correct technique needed*

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DISEASE 194 OF 300 | ENT & ORAL

Otitis Externa & Otomycosis

Painful itchy ear canal — clean it, then drops. Black or white fungal debris needs antifungal.

DEFINITION

Inflammation of the external ear canal. Bacterial otitis externa (Pseudomonas, Staphylococcus) follows moisture, ear-bud use and trauma; furuncle is a localised abscess of the outer canal. Otomycosis (Aspergillus niger — black spores; Candida — white) is common in humid climates and after antibiotic drops. Malignant otitis externa affects elderly diabetics.

SYMPTOMS

- Ear pain worse on moving the pinna or chewing
- Itching (otomycosis prominent)
- Discharge, blocked feeling
- Ear-bud use, swimming, oil instillation
- Severe pain and headache in an elderly diabetic

SIGNS

- Tender tragus and pinna on pulling
- Swollen, red canal with debris
- Black/grey/white fluffy debris, "wet newspaper" (fungal)
- Localised boil (furuncle)
- Granulation tissue in canal floor (malignant OE)

DIAGNOSTIC TESTS

Test	Finding / purpose
Otoscopy	Diagnosis; check drum after cleaning
Swab culture	Recurrent, severe
Blood sugar	Recurrent, otomycosis, malignant OE
ESR, CT temporal bone	Suspected malignant otitis externa

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Aural toilet	Gentle suction or dry mopping (ENT microscope if available)	Before drops
Bacterial	Ciprofloxacin 0.3% + dexamethasone 0.1% ear drops 4 drops BD–TDS (or ofloxacin)	7 days
Very swollen canal	Insert wick soaked in drops (or glycerine-ichthammol) for 24–48 h	1–2 days
Otomycosis	Clotrimazole 1% ear drops 3–4 drops TDS after cleaning (ensure intact drum)	2–3 weeks
Pain	Ibuprofen 400 mg TDS or paracetamol	3–5 days
Cellulitis / furuncle	Cloxacillin 500 mg QID or amoxicillin-clavulanate 625 mg TDS; drain if pointing	5–7 days

REFER / RED FLAGS

- Elderly diabetic with severe pain, granulations (malignant OE)
- Spreading cellulitis of pinna, perichondritis
- Failure after cleaning and drops
- Facial palsy

GP PEARLS

★ *Ear buds, hairpins and oil drops cause most otitis externa — tell patients to stop.*

★ *Fungal debris returns unless it is physically removed — drops alone fail.*

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DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ciprofloxacin 0.3% ear drops	3–4 drops 12-hourly ×7 days	Bacterial otitis externa	*Safe with perforation (non-ototoxic)*
Clotrimazole 1% ear drops	3–4 drops 8-hourly ×2 weeks after cleaning	Otomycosis	*Clean debris first*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Ciprofloxacin (fluoroquinolone)	500 mg PO 12-hourly	Necrotising OE in diabetes (specialist)	*Tendinopathy, QT, avoid in pregnancy/children*

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DISEASE 195 OF 300 | ENT & ORAL

Ear Wax (Cerumen Impaction)

Blocked ear and muffled hearing — soften then remove; never use buds.

DEFINITION

Cerumen is a normal protective secretion that clears itself. Impaction occurs with ear-bud use, narrow canals, hearing aids and in the elderly, causing hearing loss, fullness, tinnitus and sometimes vertigo or cough.

SYMPTOMS

- Blocked ear, muffled hearing
- Fullness
- Tinnitus
- Itching, mild discomfort
- Recently swam or bathed (wax swells)

SIGNS

- Brown/black wax occluding canal
- Drum not visible
- Conductive hearing loss
- No discharge or tenderness

DIAGNOSTIC TESTS

Test	Finding / purpose
Otoscopy	Diagnosis; examine drum after removal
Tuning fork tests	Conductive loss

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Softening	Sodium bicarbonate 5% or soda-glycerine ear drops (or olive oil) 3–4 drops TDS	3–5 days
Alternative cerumenolytic	Paradichlorobenzene-turpentine-chlorbutol drops (Waxolve type) 3–4 drops, 10–15 min, BD	3–5 days
Removal — syringing/irrigation	Body-temperature water directed along posterosuperior canal wall (only if no perforation/surgery/infection)	After softening
Removal — instrumental	Jobson-Horne probe or suction under direct vision (ENT)	As needed
Prevention	Avoid ear buds; drops once weekly if recurrent	Ongoing

REFER / RED FLAGS

- Known perforation, previous ear surgery, active infection
- Failure of removal
- Persistent hearing loss after removal
- Pain, discharge, vertigo after syringing

GP PEARLS

★ *Irrigate with water at body temperature — cold or hot water causes vertigo.*

★ *Ear buds push wax deeper; "the ear cleans itself".*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Wax softener (sodium bicarbonate/paraffin drops)	3–4 drops 8-hourly ×3–5 days	Softening 3–5 days before syringing	*Avoid if perforation suspected*
Ciprofloxacin 0.3% ear drops	3–4 drops 12-hourly ×7 days	Post-syringing otitis externa	*Safe with perforation (non-ototoxic)*
Clotrimazole 1% ear drops	3–4 drops 8-hourly ×2 weeks after cleaning	Fungal debris after wax removal	*Clean debris first*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Ear pain	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Ear pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*

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DISEASE 196 OF 300 | ENT & ORAL

Foreign Body in Ear & Nose

Unilateral foul nasal discharge in a child is a foreign body until proven otherwise.

DEFINITION

Children insert beads, seeds, paper, pencil leads, foam and batteries into ears and noses. Live insects enter ears at night. Button batteries in the nose or ear are emergencies (liquefactive necrosis within hours). Nasal foreign bodies risk aspiration.

SYMPTOMS

- Child admits to inserting object
- Unilateral foul-smelling nasal discharge, epistaxis
- Ear pain, buzzing (live insect), reduced hearing
- Mouth breathing
- Often asymptomatic

SIGNS

- Visible object with otoscope or nasal speculum
- Unilateral purulent nasal discharge, excoriated nostril
- Canal laceration, bleeding
- Swollen mucosa around a long-standing object
- Check other ear and nostril

DIAGNOSTIC TESTS

Test	Finding / purpose
Direct inspection with good light	Diagnosis
X-ray	Metallic or button battery suspected

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Live insect in ear	Kill first: instil mineral/olive oil or lignocaine 2% drops, then remove/irrigate	Stat
Ear — non-organic object	Irrigation with warm water (not for vegetable matter — swells) or remove with hook/forceps under direct vision	Stat (one attempt)
Nose — positive pressure ("parent's kiss")	Occlude the opposite nostril; parent gives a sharp puff into child's mouth	Stat
Nose — instrumental	Topical decongestant, then hook behind object (not forceps for round objects)	Stat
Button battery	Urgent ENT removal — do not irrigate	Within hours
After removal	Antibiotic drops/ointment if mucosal injury; check for second foreign body	5 days

REFER / RED FLAGS

- Button battery or magnet
- Uncooperative child, failed first attempt
- Posterior nasal foreign body (aspiration risk)
- Canal or drum injury

GP PEARLS

★ *The first attempt is the best chance — if it fails, refer rather than push the object deeper.*

★ *Never irrigate seeds or beans — they swell and impact.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Lidocaine 2% (local anaesthetic) for procedures	Max 3 mg/kg (7 mg/kg with adrenaline)	Local for nasal FB removal	*No adrenaline on digits as per local practice*
Xylometazoline 0.1% nasal drops	2 drops each nostril 8–12-hourly, ≤5 days	Vasoconstriction before removal	*Rebound congestion if used >5 days*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Amoxicillin–clavulanate (penicillin + β-lactamase inhibitor)	625 mg PO 8-hourly (child 25–45 mg/kg/day amox)	Infected nasal FB	*Diarrhoea, cholestatic jaundice*
Ciprofloxacin 0.3% ear drops	3–4 drops 12-hourly ×7 days	Ear canal trauma	*Safe with perforation (non-ototoxic)*
EMLA / lignocaine gel (topical anaesthetic)	Apply 30–60 min before procedure	Topical anaesthesia	*Methaemoglobinaemia in infants with excess*

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DISEASE 197 OF 300 | ENT & ORAL

Sudden Hearing Loss & Tinnitus

Sudden one-sided deafness with a normal ear canal is an emergency — steroids within days.

DEFINITION

Sudden sensorineural hearing loss (SSNHL): loss of ≥30 dB over 3 frequencies developing within 72 h, usually idiopathic (viral, vascular). Outcome is better with early steroids. Tinnitus is perception of sound without external source — commonly with presbycusis, noise exposure, wax, otitis, Ménière's, drugs (aspirin, aminoglycosides) or, if unilateral, acoustic neuroma.

SYMPTOMS

- Sudden hearing loss in one ear, often on waking
- Ear fullness, tinnitus
- Vertigo (some)
- Ringing or buzzing in ears
- Noise exposure, ototoxic drugs

SIGNS

- Normal ear canal and drum (SSNHL)
- Weber lateralises to good ear; Rinne positive bilaterally (sensorineural)
- Wax or effusion (conductive causes)
- Cranial nerve exam
- BP

DIAGNOSTIC TESTS

Test	Finding / purpose
Tuning fork tests (512 Hz)	Distinguish conductive vs sensorineural
Pure tone audiometry	Confirm and quantify
MRI with gadolinium (IAM)	Unilateral SSNHL or tinnitus — acoustic neuroma
Glucose, lipids, CBC, VDRL	Risk factors

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
SSNHL — urgent ENT (within 72 h)	Prednisolone 1 mg/kg/day (max 60 mg) OD	7–14 days with taper
Salvage (specialist)	Intratympanic dexamethasone	As advised
Tinnitus — reassurance	Explain benign nature; sound enrichment (fan, soft music at night)	Ongoing
Tinnitus — treat cause	Remove wax; stop ototoxic drugs; hearing aids for hearing loss	—
Distress / insomnia	CBT, tinnitus retraining; treat anxiety/depression	—
Noise protection	Ear plugs/muffs at loud events and work	Ongoing

REFER / RED FLAGS

- Sudden hearing loss (same week)
- Unilateral or pulsatile tinnitus
- Hearing loss with vertigo or neurological signs
- Hearing loss in children (speech delay)

GP PEARLS

★ *Do not dismiss sudden hearing loss with a normal-looking ear as "wax" — do a tuning fork test.*

★ *Pulsatile tinnitus needs vascular imaging.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	Sudden SNHL within 2 weeks (1 mg/kg)	*Hyperglycaemia; taper if >3 weeks*
Betahistine (anti-vertigo)	16 mg PO 8-hourly	Ménière's	*Avoid in phaeochromocytoma*
Atorvastatin (statin)	10–80 mg PO daily (80 mg in ACS)	Vascular risk	*Myalgia; check LFT; CYP3A4 interactions*
Telmisartan (ARB)	20–80 mg PO daily	BP control	*Hyperkalaemia; avoid in pregnancy*
Cinnarizine (antihistamine anti-vertigo)	25 mg PO 8-hourly ≤1 week	Short-term vertigo	*Drowsiness; parkinsonism in elderly*

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DISEASE 198 OF 300 | ENT & ORAL

Acute Rhinosinusitis

Usually viral — antibiotics only for >10 days, severe, or "double worsening".

DEFINITION

Inflammation of the nose and paranasal sinuses with blockage/discharge plus facial pain or reduced smell, lasting <12 weeks. Most is viral and resolves in 7–10 days. Acute bacterial sinusitis is suggested by symptoms >10 days, severe onset (fever ≥39 °C with purulent discharge for 3–4 days), or worsening after initial improvement.

SYMPTOMS

- Nasal blockage, discoloured discharge
- Facial pain/pressure, worse bending forward
- Reduced sense of smell
- Postnasal drip, cough
- Toothache in upper teeth (maxillary)

SIGNS

- Tenderness over maxillary/frontal sinuses
- Congested turbinates, pus in middle meatus
- Postnasal discharge
- Fever
- Periorbital swelling (complication)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	X-ray PNS not routinely helpful
CT PNS	Complications, chronic sinusitis, before surgery
Blood sugar	Recurrent or fungal concern

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Symptomatic (all)	Saline nasal irrigation/spray, steam inhalation, paracetamol/ibuprofen	7–10 days
Nasal steroid	Fluticasone or mometasone spray 2 sprays each nostril OD–BD	2–4 weeks
Decongestant	Oxymetazoline 0.05% 2 sprays BD	≤5 days
Bacterial (criteria met)	Amoxicillin 500 mg TDS (or 1 g TDS) or amoxicillin-clavulanate 625 mg TDS (child 45 mg/kg/dose BD)	5–7 days
Penicillin allergy	Doxycycline 100 mg BD (adults) or cefuroxime 500 mg BD	5–7 days
Avoid	Routine antibiotics for viral rhinosinusitis	—

REFER / RED FLAGS

- Periorbital swelling, diplopia, reduced vision (orbital complication)
- Severe headache, neck stiffness, confusion (intracranial)
- Diabetic with black nasal crust/facial numbness (mucormycosis)
- Symptoms >12 weeks or recurrent

GP PEARLS

★ *Black nasal eschar with facial pain in a diabetic or post-steroid patient — mucormycosis, emergency.*

★ *Nasal saline irrigation is the most effective and underused remedy.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Saline nasal drops/spray	2–3 drops each nostril as needed	Nasal irrigation	*Safe in infants and pregnancy*
Fluticasone nasal spray (50 µg)	2 sprays each nostril once daily	Intranasal steroid	*Epistaxis; correct technique needed*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Amoxicillin (penicillin)	500 mg PO 8-hourly (child 15–25 mg/kg 8-hourly)	Bacterial (>10 days/severe)	*Penicillin allergy; rash in EBV*
Amoxicillin–clavulanate (penicillin + β-lactamase inhibitor)	625 mg PO 8-hourly (child 25–45 mg/kg/day amox)	Failure/recent antibiotics	*Diarrhoea, cholestatic jaundice*
Xylometazoline 0.1% nasal drops	2 drops each nostril 8–12-hourly, ≤5 days	≤5 days	*Rebound congestion if used >5 days*

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DISEASE 199 OF 300 | ENT & ORAL

Allergic Rhinitis

Sneezing fits, watery discharge, itchy nose — intranasal steroid is the best single drug.

DEFINITION

IgE-mediated inflammation of nasal mucosa triggered by allergens (house-dust mite, pollen, mould, animal dander, cockroach). Intermittent or persistent; mild or moderate–severe (affects sleep, work). Frequently coexists with asthma, allergic conjunctivitis and sinusitis.

SYMPTOMS

- Paroxysmal sneezing, especially mornings
- Watery nasal discharge
- Nasal blockage, itchy nose, palate, eyes
- Seasonal or perennial
- Snoring, mouth breathing, poor sleep

SIGNS

- Pale, boggy inferior turbinates
- Clear discharge
- Allergic salute, transverse nasal crease (children)
- Dark circles (allergic shiners)
- Wheeze (associated asthma)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
Absolute eosinophil count, IgE	Supportive
Skin prick test / specific IgE	Before immunotherapy
Nasal endoscopy / CT	Polyps, deviated septum, unilateral symptoms

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Allergen avoidance	Dust-mite covers, wash bedding weekly in hot water, avoid carpets, damp control	Ongoing
Intranasal steroid (first line, moderate–severe)	Fluticasone furoate 27.5 µg or mometasone 50 µg: 2 sprays each nostril OD (child 1 spray)	≥4 weeks; seasonal or continuous
Oral antihistamine	Levocetirizine 5 mg OD, fexofenadine 120–180 mg OD (child cetirizine 0.25 mg/kg)	As needed
Combination spray	Azelastine + fluticasone 1 spray each nostril BD	2–4 weeks
With asthma	Montelukast 10 mg HS (child 4–5 mg) — note neuropsychiatric warning	1–3 months
Refractory	Allergen immunotherapy (sublingual/subcutaneous) — specialist	3–5 years

REFER / RED FLAGS

- Unilateral symptoms, bloody discharge, polyps
- Poorly controlled asthma
- Failure of nasal steroid
- Complications — sinusitis, OME in children

GP PEARLS

★ *Teach technique: aim the nozzle towards the outer wall (away from the septum) to prevent epistaxis.*

★ *Nasal steroids take several days for full effect — advise regular use, not SOS.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Mometasone nasal spray (50 µg)	2 sprays each nostril once daily	First-line	*Takes days for full effect*
Fluticasone nasal spray (50 µg)	2 sprays each nostril once daily	Alternative	*Epistaxis; correct technique needed*
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	Sneezing, itch	*Mild sedation; reduce dose in CKD*
Fexofenadine (non-sedating antihistamine)	120–180 mg PO once daily	Non-sedating	*Avoid with fruit juice at dosing*
Montelukast (leukotriene antagonist)	10 mg PO at night (4–5 mg child)	With asthma	*Neuropsychiatric effects (dreams, mood)*
Saline nasal drops/spray	2–3 drops each nostril as needed	Irrigation	*Safe in infants and pregnancy*

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DISEASE 200 OF 300 | ENT & ORAL

Epistaxis

Lean forward, pinch the soft nose for 10–15 minutes — most bleeds stop.

DEFINITION

Bleeding from the nose. Anterior epistaxis (90%) arises from Little's area (Kiesselbach's plexus) — common in children, dry weather, nose picking, URTI. Posterior bleeding is heavier, in older hypertensive or anticoagulated patients. Other causes: trauma, bleeding disorders, dengue, tumour (juvenile angiofibroma in adolescent boys).

SYMPTOMS

- Bleeding from one or both nostrils
- Blood trickling down the throat (posterior)
- Recurrent episodes
- Anticoagulants, aspirin, hypertension
- Fever (dengue), bruising (bleeding disorder)

SIGNS

- Vital signs, BP
- Bleeding point at anterior septum
- Blood in oropharynx (posterior)
- Pallor
- Petechiae, purpura

DIAGNOSTIC TESTS

Test	Finding / purpose
Usually none for simple anterior bleed	—
CBC, platelets, PT/INR	Heavy/recurrent bleed, anticoagulants, suspected bleeding disorder
Dengue NS1/IgM	Fever
Nasal endoscopy	Recurrent, unilateral in adolescent male (angiofibroma)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
First aid	Sit up, lean forward, pinch soft part of the nose firmly 10–15 min; spit out blood; ice on bridge	Immediate
If continues	Cotton soaked in oxymetazoline 0.05% or xylometazoline (± lignocaine) in nostril for 10 min, then pressure	Stat
Visible bleeding point	Silver nitrate cautery (one side of septum at a time)	Stat
Persistent anterior bleed	Anterior nasal pack (Merocel or BIPP/ribbon gauze with antibiotic ointment); oral amoxicillin-clavulanate while packed	24–48 h
After bleed	Mupirocin or petroleum jelly to anterior nose BD; avoid picking, hot drinks, heavy lifting	7–10 days
Tranexamic acid	Topical (soaked pledget) or 1 g PO TDS in recurrent/anticoagulated	3–5 days

REFER / RED FLAGS

- Posterior bleed, bleeding despite packing
- Haemodynamic instability
- Recurrent epistaxis in adolescent boy (angiofibroma)
- Bleeding disorder, INR above range

GP PEARLS

★ *Most patients pinch the bony bridge — teach them to pinch the soft nose below it.*

★ *Do not lower BP aggressively during an acute bleed; control it afterwards.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Xylometazoline 0.1% nasal drops	2 drops each nostril 8–12-hourly, ≤5 days	Soaked pack/drops	*Rebound congestion if used >5 days*
Tranexamic acid (antifibrinolytic)	500–1000 mg PO 8-hourly (HMB); 1 g IV in trauma	Topical/oral in recurrent	*Avoid in active thrombosis*
Mupirocin 2% ointment (topical antibiotic)	Apply 8-hourly ×5–7 days	Nasal vestibulitis/crusting	*Resistance with long use*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Avoid NSAIDs — use paracetamol	*Hepatotoxic in overdose; check combination products*
Amlodipine (dihydropyridine CCB)	2.5–10 mg PO daily	Hypertension control	*Ankle oedema; headache*
Saline nasal drops/spray	2–3 drops each nostril as needed	Moisturise	*Safe in infants and pregnancy*

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DISEASE 201 OF 300 | ENT & ORAL

Acute Pharyngitis & Tonsillitis

Most sore throats are viral — use Centor/McIsaac to decide on penicillin.

DEFINITION

Inflammation of the pharynx and tonsils. Most cases are viral; group A beta-haemolytic Streptococcus causes 15–30% in children (5–15 years), and treatment prevents rheumatic fever (important in India). Centor criteria: fever >38 °C, tonsillar exudate, tender anterior cervical nodes, absence of cough (+1 if 3–14 y; −1 if ≥45 y).

SYMPTOMS

- Sore throat, painful swallowing
- Fever, headache
- Cough, runny nose, hoarseness (suggest viral)
- Abdominal pain, vomiting (children, strep)
- Drooling, muffled voice (quinsy)

SIGNS

- Red swollen tonsils with exudate
- Tender anterior cervical lymph nodes
- Palatal petechiae
- Sandpaper rash, strawberry tongue (scarlet fever)
- Grey adherent membrane bleeding on removal (diphtheria)

DIAGNOSTIC TESTS

Test	Finding / purpose
Centor/McIsaac score	0–1 no antibiotic; 2–3 test or consider; ≥4 treat
Rapid antigen test / throat swab	Where available
CBC, monospot	Suspected glandular fever
Throat swab for C. diphtheriae	Membrane, unimmunised

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Symptomatic (all)	Warm saline gargles, fluids, paracetamol 15 mg/kg or ibuprofen 10 mg/kg (adult 650 mg / 400 mg)	3–5 days
Streptococcal (score ≥4 or test +)	Amoxicillin 50 mg/kg OD (max 1 g) or 25 mg/kg BD; adult 500 mg TDS (or penicillin V 500 mg BD–QID)	10 days
Single injection option	Benzathine penicillin 1.2 MU IM (0.6 MU if <27 kg)	Single
Penicillin allergy	Azithromycin 12 mg/kg OD (adult 500 mg)	5 days
Severe pain/odynophagia (adults)	Dexamethasone 10 mg PO/IM single dose	Single
Recurrent (≥7/year, 5/year × 2 y, 3/year × 3 y)	Tonsillectomy referral	—

REFER / RED FLAGS

- Unable to swallow saliva, drooling, trismus (quinsy, epiglottitis)
- Stridor, respiratory distress
- Membrane (diphtheria)
- Persistent sore throat >3 weeks in adults (malignancy)

GP PEARLS

★ *Complete 10 days of penicillin/amoxicillin for strep throat — it is what prevents rheumatic fever.*

★ *Avoid amoxicillin if glandular fever is likely — it causes a rash.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain and fever	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Phenoxymethylpenicillin (penicillin V)	250–500 mg PO 6-hourly ×10 days	Streptococcal tonsillitis 10 days	*Compliance for full 10 days*
Amoxicillin (penicillin)	500 mg PO 8-hourly (child 15–25 mg/kg 8-hourly)	Alternative 10 days	*Penicillin allergy; rash in EBV*
Azithromycin (macrolide)	500 mg PO once daily ×3 days (child 10 mg/kg)	Penicillin allergy	*QT prolongation; avoid with other QT drugs*

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DISEASE 202 OF 300 | ENT & ORAL

Peritonsillar Abscess (Quinsy)

Severe one-sided sore throat, trismus, hot-potato voice, deviated uvula — drain it.

DEFINITION

Collection of pus between the tonsil capsule and the superior constrictor muscle, usually a complication of acute tonsillitis in adolescents and young adults (streptococci, anaerobes). Can extend to parapharyngeal space or compromise the airway.

SYMPTOMS

- Severe unilateral sore throat
- Difficulty swallowing, drooling
- Muffled "hot-potato" voice
- Difficulty opening mouth (trismus)
- Referred ear pain, fever

SIGNS

- Unilateral peritonsillar bulge
- Uvula deviated to opposite side
- Trismus
- Tender cervical nodes
- Fever, dehydration

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
Needle aspiration (ENT)	Diagnostic and therapeutic
CBC, glucose	Severity, diabetes
CT neck	Suspected deep neck space extension

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Refer to ENT	Needle aspiration or incision and drainage	Same day
Antibiotic	Amoxicillin-clavulanate 1.2 g IV TDS → 625 mg TDS orally, or penicillin + metronidazole 400 mg TDS; clindamycin 600 mg IV TDS if allergic	10–14 days
Steroid	Dexamethasone 8–10 mg IV single dose (reduces pain and trismus)	Single
Fluids & analgesia	IV fluids if unable to swallow; paracetamol 1 g IV/PO, ibuprofen	As needed
Recurrence	Interval tonsillectomy after 6 weeks if recurrent	—

REFER / RED FLAGS

- All suspected quinsy
- Airway compromise, stridor
- Neck swelling, torticollis (parapharyngeal abscess)
- Diabetic, immunocompromised

GP PEARLS

★ *Uvula pushed to the opposite side distinguishes quinsy from simple tonsillitis.*

★ *Never discharge a patient who cannot swallow saliva.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Amoxicillin–clavulanate (penicillin + β-lactamase inhibitor)	625 mg PO 8-hourly (child 25–45 mg/kg/day amox)	After drainage	*Diarrhoea, cholestatic jaundice*
Clindamycin (lincosamide)	300 mg PO 6–8-hourly	Penicillin allergy	*C. difficile diarrhoea*
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	IV if unable to swallow	*Biliary sludge; not with calcium IV in neonates*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Dexamethasone (corticosteroid)	4–8 mg IV/IM/PO; 0.15–0.6 mg/kg child	Single dose for swelling (selected)	*Hyperglycaemia; GI bleeding*

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DISEASE 203 OF 300 | ENT & ORAL

Acute Laryngitis & Hoarseness

Hoarseness after a cold settles with voice rest; hoarseness >3 weeks needs laryngoscopy.

DEFINITION

Acute laryngitis is viral inflammation of the larynx, often after URTI or voice overuse, resolving within 2 weeks. Hoarseness lasting more than 3 weeks needs direct visualisation to exclude vocal cord nodules, polyps, recurrent laryngeal nerve palsy (thyroid, lung or oesophageal cancer, surgery) and laryngeal cancer (smokers).

SYMPTOMS

- Hoarse or lost voice
- Sore throat, dry cough
- Preceding cold, shouting, singing
- Heartburn (laryngopharyngeal reflux)
- Smoking, weight loss, dysphagia, haemoptysis (red flags)

SIGNS

- Mild pharyngeal congestion
- Normal neck or cervical nodes
- Stridor (urgent)
- Neck mass, thyroid swelling
- Signs of lung cancer

DIAGNOSTIC TESTS

Test	Finding / purpose
None for acute laryngitis <3 weeks	—
Indirect/fibreoptic laryngoscopy	Hoarseness >3 weeks, smokers
Chest X-ray	Vocal cord palsy, smoker
TSH, USG neck	Thyroid mass

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Voice rest	Avoid shouting and whispering (strains cords); talk softly	1–2 weeks
Hydration & steam	Warm fluids, steam inhalation, humidified air	1–2 weeks
Avoid irritants	Stop smoking, alcohol, spicy food late at night	Ongoing
Reflux laryngitis	Pantoprazole 40 mg BD before meals + alginate after meals and HS	8 weeks
Analgesia	Paracetamol 650 mg TDS SOS; lozenges	3–5 days
Antibiotics	Not indicated for viral laryngitis	—

REFER / RED FLAGS

- Hoarseness >3 weeks (especially smokers)
- Stridor, breathing difficulty
- Dysphagia, haemoptysis, neck lump, weight loss
- Hoarseness after thyroid or chest surgery

GP PEARLS

★ *Whispering strains the vocal cords more than soft speech.*

★ *Teachers and singers with recurrent hoarseness need voice therapy for nodules.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Pantoprazole (PPI)	40 mg PO before breakfast; 40–80 mg IV	Laryngopharyngeal reflux	*Long-term: B12, Mg deficiency, fractures*
Budesonide nebuliser (ICS)	0.5–1 mg neb 12-hourly	Steam/voice rest adjunct	*Rinse mouth; use mask/spacer in children*
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	Allergic cause	*Mild sedation; reduce dose in CKD*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*

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DISEASE 204 OF 300 | ENT & ORAL

Foreign Body in Throat (Fish Bone)

Fish bone feeling after a meal — most are in the tonsil or tongue base.

DEFINITION

Sharp foreign bodies (fish and chicken bones) lodge commonly in the tonsils, base of tongue, vallecula or pyriform fossa. A persistent sensation may also be a mucosal scratch. Oesophageal impaction (bolus, coin, denture) causes inability to swallow saliva and risks perforation, mediastinitis.

SYMPTOMS

- Pricking sensation on swallowing after eating fish
- Can localise the side
- Painful swallowing
- Drooling, inability to swallow saliva (oesophageal)
- Chest pain, fever (perforation)

SIGNS

- Visible bone in tonsil or tongue base (good light, tongue depressor)
- Tenderness on side of neck
- Pooling of saliva
- Subcutaneous emphysema (perforation)
- Fever, neck swelling

DIAGNOSTIC TESTS

Test	Finding / purpose
Oropharynx exam with headlight	Tonsil/tongue base
Indirect laryngoscopy	Vallecula, pyriform fossa
X-ray soft tissue neck lateral	Radio-opaque bones, prevertebral swelling
CT neck/chest	Persistent symptoms, perforation suspected

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Visible bone	Remove with Tilley's or McGill forceps after topical lignocaine spray	Stat
Not visible, mild symptoms	Observation; soft diet; review in 24–48 h (scratch symptoms settle)	24–48 h
Avoid	Swallowing bread balls or bananas to "push it down"	—
Oesophageal impaction / not found with symptoms	Refer for endoscopy (within 24 h; urgent if sharp or unable to swallow saliva)	Urgent
Mucosal injury	Paracetamol, saline gargles; amoxicillin-clavulanate if laceration	5 days

REFER / RED FLAGS

- Inability to swallow saliva, drooling
- Sharp object, button battery, coins in children
- Fever, neck swelling, chest pain (perforation)
- Symptoms persisting >24–48 h

GP PEARLS

★ *Folk remedies (dry rice balls) can drive a bone deeper into the oesophageal wall.*

★ *Button batteries in the oesophagus need removal within 2 hours.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Lidocaine 2% (local anaesthetic) for procedures	Max 3 mg/kg (7 mg/kg with adrenaline)	Topical lignocaine spray for examination	*No adrenaline on digits as per local practice*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Amoxicillin–clavulanate (penicillin + β-lactamase inhibitor)	625 mg PO 8-hourly (child 25–45 mg/kg/day amox)	Mucosal injury infection	*Diarrhoea, cholestatic jaundice*
Benzydamine mouthwash / triamcinolone oral paste	Rinse 15 ml 8-hourly / apply to ulcer 8-hourly	Soothing gargle	*Numbness; short use*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*

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DISEASE 205 OF 300 | ENT & ORAL

Acute Parotitis & Sialadenitis

Painful swelling of a salivary gland — hydrate, sialogogues, antibiotic if pus.

DEFINITION

Acute bacterial (suppurative) parotitis (Staphylococcus aureus) occurs in dehydrated, elderly, post-operative patients or poor oral hygiene. Sialolithiasis (stones, mostly submandibular) causes meal-time swelling and pain. Viral parotitis (mumps) is bilateral and non-purulent. Recurrent swelling with dry eyes and mouth suggests Sjögren's.

SYMPTOMS

- Painful swelling in front of the ear (parotid) or under the jaw (submandibular)
- Swelling and pain increasing with meals (stone)
- Fever, foul taste
- Dehydration, recent surgery
- Dry mouth and eyes (Sjögren's)

SIGNS

- Tender, warm swollen gland
- Pus from duct on massage (Stensen's / Wharton's)
- Palpable stone in floor of mouth
- Fluctuation (abscess)
- Facial nerve function

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
Pus culture	Purulent discharge
USG	Stone, abscess
Blood sugar, CBC	Severity
ANA, anti-Ro/La	Recurrent bilateral swelling

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Hydration and sialogogues	Plenty of fluids; sour lemon drops/sugar-free sweets; warm compresses; gland massage towards duct	Until settled
Oral hygiene	Chlorhexidine 0.2% mouthwash BD	1–2 weeks
Bacterial sialadenitis	Amoxicillin-clavulanate 625 mg TDS or cloxacillin 500 mg QID (+ metronidazole if anaerobic)	7–10 days
Pain	Ibuprofen 400 mg TDS or paracetamol	5–7 days
Stone near duct opening	Milking or minor excision (ENT); sialendoscopy/gland excision for deep stones	—
Abscess	Incision and drainage (ENT)	—

REFER / RED FLAGS

- Abscess, facial nerve weakness
- Hard, fixed or progressive swelling (tumour)
- Recurrent sialadenitis
- Airway compromise (floor of mouth swelling — Ludwig's angina)

GP PEARLS

★ *Bacterial parotitis is unilateral with pus from Stensen's duct; mumps is usually bilateral without pus.*

★ *Facial palsy with parotid swelling suggests malignancy.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain and swelling	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Amoxicillin–clavulanate (penicillin + β-lactamase inhibitor)	625 mg PO 8-hourly (child 25–45 mg/kg/day amox)	Bacterial parotitis	*Diarrhoea, cholestatic jaundice*
Clindamycin (lincosamide)	300 mg PO 6–8-hourly	Allergy alternative	*C. difficile diarrhoea*
Oral rehydration salts (low osmolarity)	200–400 ml after each loose stool; 75 ml/kg over 4 h for some dehydration	Hydration, sialogogues	*Use clean water; correct mixing*
Chlorhexidine 0.2% mouthwash	10 ml rinse 12-hourly ×1–2 weeks	Oral hygiene	*Tooth staining; taste change*

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DISEASE 206 OF 300 | ENT & ORAL

Aphthous Ulcers

Recurrent painful round ulcers — topical steroid, and check for deficiencies.

DEFINITION

Recurrent aphthous stomatitis: painful, round or oval shallow ulcers with yellow-grey base and red halo on non-keratinised oral mucosa, healing in 7–14 days (minor). Triggers: trauma, stress, menses, certain toothpastes (SLS). Recurrent or severe ulcers warrant checks for iron, B12, folate deficiency, coeliac disease, IBD, Behçet's, HIV. A single ulcer >3 weeks needs biopsy.

SYMPTOMS

- Painful mouth ulcers, recurrent
- Pain eating spicy or acidic food
- Triggers: stress, biting, menses
- Genital ulcers, red eyes (Behçet's)
- Diarrhoea, weight loss (IBD, coeliac)

SIGNS

- Shallow round ulcers <1 cm with red halo (minor)
- Large deep ulcers healing with scars (major)
- Crops of tiny ulcers (herpetiform)
- Pallor, glossitis
- Single indurated non-healing ulcer (malignancy)

DIAGNOSTIC TESTS

Test	Finding / purpose
None for occasional minor ulcers	—
CBC, ferritin, B12, folate	Recurrent
tTG-IgA, HIV	Selected
Biopsy	Ulcer >3 weeks, indurated, smoker/tobacco user

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Topical steroid	Triamcinolone 0.1% oral paste (in orabase) applied TDS after meals and HS	5–7 days
Topical analgesic	Lignocaine 2% viscous gel or benzydamine mouthwash before meals	As needed
Antiseptic	Chlorhexidine 0.2% mouthwash BD	1 week
Deficiency	Iron, B12 (methylcobalamin 1500 µg OD), folic acid 5 mg OD as indicated	3 months
Severe recurrent (specialist)	Prednisolone 20–30 mg OD × 5–7 days; colchicine 0.5 mg BD for prevention	As advised
Avoid triggers	SLS-free toothpaste, soft brush, avoid sharp/spicy food	Ongoing

REFER / RED FLAGS

- Any ulcer lasting >3 weeks (biopsy — oral cancer)
- Associated genital ulcers, eye inflammation
- Weight loss, chronic diarrhoea
- Immunocompromised

GP PEARLS

★ *India has a high oral cancer burden — any non-healing ulcer in a tobacco user must be biopsied.*

★ *Sharp tooth edges and ill-fitting dentures cause traumatic ulcers — check the teeth.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Benzydamine mouthwash / triamcinolone oral paste	Rinse 15 ml 8-hourly / apply to ulcer 8-hourly	Pain relief	*Numbness; short use*
Chlorhexidine 0.2% mouthwash	10 ml rinse 12-hourly ×1–2 weeks	Prevent secondary infection	*Tooth staining; taste change*
Vitamin B-complex / riboflavin	1 tablet PO daily	Deficiency-associated	*Yellow urine (riboflavin)*
Folic acid	5 mg PO daily (400 µg periconception)	Deficiency	*Exclude B12 deficiency first*
Vitamin B12 (cyanocobalamin/methylcobalamin)	1000 µg IM alternate days ×5, then monthly	Deficiency	*Hypokalaemia early in treatment*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*

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DISEASE 207 OF 300 | ENT & ORAL

Oral Candidiasis (Thrush)

White plaques that wipe off leaving red mucosa — topical antifungal; find the cause in adults.

DEFINITION

Infection of the oral mucosa by Candida albicans. Common in infants, denture wearers, after antibiotics, inhaled steroid use without rinsing, diabetes and immunosuppression (HIV, chemotherapy). Oesophageal candidiasis (odynophagia) in an adult suggests HIV.

SYMPTOMS

- White patches in mouth
- Soreness, burning, altered taste
- Infants: poor feeding, irritability; mother may have nipple pain
- Painful swallowing (oesophageal)
- Recent antibiotics, steroid inhaler

SIGNS

- Creamy white plaques that wipe off leaving raw red base
- Red atrophic patches under dentures
- Angular cheilitis
- Hairy leukoplakia (HIV)
- Check for lymphadenopathy, weight loss

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
KOH scraping	Pseudohyphae
Blood sugar, HIV	Adults without obvious cause

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Infants	Nystatin suspension 100,000 U/ml, 1 ml QID after feeds (0.5 ml each side) or miconazole oral gel 1.25 ml QID (>4 months); treat mother's nipples with miconazole cream	7–14 days
Adults — mild	Clotrimazole 10 mg troche 5 times daily or nystatin suspension 5 ml QID swish and swallow	7–14 days
Adults — moderate / immunocompromised	Fluconazole 200 mg day 1, then 100 mg OD	7–14 days
Oesophageal	Fluconazole 200–400 mg OD	14–21 days
Denture stomatitis	Remove dentures at night, soak in chlorhexidine; miconazole gel to denture surface	2 weeks
Inhaled steroid users	Rinse mouth and gargle after each use; use spacer	Ongoing

REFER / RED FLAGS

- Oesophageal symptoms
- Recurrent thrush without cause (HIV test)
- Infant with poor feeding or weight loss
- Failure of treatment

GP PEARLS

★ *Sterilise bottles and pacifiers, and treat the mother's nipples, or the infant will be reinfected.*

★ *Fluconazole interacts with warfarin, sulfonylureas and statins — check before prescribing.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Clotrimazole troche / nystatin suspension	10 mg troche 5 times daily / 1 ml 6-hourly	First-line local	*Treat dentures too*
Fluconazole (azole antifungal)	150 mg PO single dose (vaginal); 150 mg weekly (tinea)	Moderate/oesophageal	*QT; hepatotoxic; avoid in pregnancy*
Chlorhexidine 0.2% mouthwash	10 ml rinse 12-hourly ×1–2 weeks	Denture hygiene	*Tooth staining; taste change*
Metformin (biguanide)	500 mg daily–1 g 12-hourly with meals	Diabetic control	*GI upset; stop if eGFR <30, contrast, sepsis*
Budesonide nebuliser (ICS)	0.5–1 mg neb 12-hourly	Rinse after inhaled steroid	*Rinse mouth; use mask/spacer in children*

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DISEASE 208 OF 300 | ENT & ORAL

Toothache & Dental Abscess

Analgesia and drainage first; antibiotics only for spreading infection.

DEFINITION

Toothache usually arises from dental caries progressing to pulpitis (reversible — brief pain with sweet/cold; irreversible — spontaneous lingering throbbing pain) and periapical abscess (pain on biting, swelling). Spreading infection may cause facial cellulitis or Ludwig's angina (floor of mouth — airway emergency). Definitive treatment is dental: root canal or extraction.

SYMPTOMS

- Pain with hot, cold or sweet foods
- Spontaneous throbbing pain, worse at night
- Pain on biting
- Facial swelling, bad taste, fever
- Difficulty swallowing or opening mouth (spreading infection)

SIGNS

- Visible cavity, broken tooth
- Tenderness on tapping the tooth
- Gum swelling, sinus with pus
- Facial swelling, lymphadenopathy
- Raised tender floor of mouth, trismus (Ludwig's)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
Dental X-ray (IOPA/OPG)	Periapical lesion (dentist)
Blood sugar	Recurrent infection, diabetics

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Analgesia	Ibuprofen 400 mg TDS + paracetamol 1 g QID (combination is most effective); mefenamic acid 500 mg TDS alternative	3–5 days
Dental referral	Root canal treatment, drainage or extraction	Within days
Antibiotic (swelling, fever, spreading)	Amoxicillin 500 mg TDS ± metronidazole 400 mg TDS; or amoxicillin-clavulanate 625 mg TDS	5 days
Penicillin allergy	Clindamycin 300 mg QID or azithromycin 500 mg OD (3 days)	5 days
Local	Warm saline mouthwash; clove oil on cavity for temporary relief	SOS
Prevention	Fluoride toothpaste twice daily, reduce sugary snacks, 6-monthly dental check	Ongoing

REFER / RED FLAGS

- Floor-of-mouth swelling, trismus, difficulty breathing (Ludwig's angina) — emergency
- Facial cellulitis with fever
- Periorbital spread
- Diabetic or immunocompromised with swelling

GP PEARLS

★ *Antibiotics do not cure toothache — the tooth needs dental treatment.*

★ *A combination of ibuprofen and paracetamol relieves dental pain better than opioids.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Amoxicillin + metronidazole (dental infection)	Amoxicillin 500 mg 8-hourly + metronidazole 400 mg 8-hourly ×5 days	Spreading infection (until dental care)	*Antibiotics do not replace dental drainage*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain (best for dental)	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Chlorhexidine 0.2% mouthwash	10 ml rinse 12-hourly ×1–2 weeks	Mouthwash	*Tooth staining; taste change*
Clindamycin (lincosamide)	300 mg PO 6–8-hourly	Penicillin allergy	*C. difficile diarrhoea*
Tramadol (weak opioid)	50–100 mg PO 6–8-hourly; max 400 mg/day	Severe pain short-term	*Seizures, serotonin syndrome; dependence*

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DISEASE 209 OF 300 | ENT & ORAL

Gingivitis & Periodontitis

Bleeding gums on brushing — better brushing, scaling, and check diabetes.

DEFINITION

Gingivitis is plaque-induced reversible inflammation of the gums. Periodontitis is destructive inflammation of tooth-supporting tissues with pocketing, bone loss and tooth mobility — strongly linked to diabetes and smoking. Acute necrotising ulcerative gingivitis (ANUG) causes painful punched-out papillae and foul breath in stressed, malnourished or HIV patients.

SYMPTOMS

- Bleeding gums on brushing
- Red, swollen gums
- Bad breath
- Loose teeth, gum recession (periodontitis)
- Painful bleeding gums with foul smell (ANUG)

SIGNS

- Red, swollen gingival margins
- Plaque and calculus
- Periodontal pockets, tooth mobility
- Punched-out ulcerated papillae, grey slough (ANUG)
- Gum hypertrophy (phenytoin, amlodipine, leukaemia)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
Blood sugar / HbA1c	Periodontitis, recurrent abscess
CBC	Gum hypertrophy, bleeding (leukaemia, scurvy, platelet disorder)
HIV	ANUG

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Oral hygiene	Brush twice daily with soft brush (2 min, modified Bass technique), interdental cleaning/floss	Lifelong
Antiseptic mouthwash	Chlorhexidine 0.2% 10 ml rinse BD for 1 min (may stain teeth)	2 weeks
Professional	Scaling and root planing by dentist	Every 6 months
ANUG	Metronidazole 400 mg TDS + chlorhexidine; debridement	3–5 days
Periodontal abscess	Drainage + amoxicillin 500 mg TDS ± metronidazole	5 days
Diabetes, smoking	Improve glycaemic control; stop tobacco	Ongoing

REFER / RED FLAGS

- Gum hypertrophy with bleeding, bruising, fever (leukaemia)
- Loose teeth, advanced periodontitis
- Non-healing ulcer
- Drug-induced overgrowth needing review

GP PEARLS

★ *Treating periodontitis improves HbA1c in diabetics — refer them to a dentist.*

★ *Bleeding gums are often due to brushing too little, not too hard.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Chlorhexidine 0.2% mouthwash	10 ml rinse 12-hourly ×1–2 weeks	Plaque control	*Tooth staining; taste change*
Metronidazole (nitroimidazole)	400 mg PO 8-hourly (child 7.5 mg/kg)	Acute necrotising gingivitis	*No alcohol; metallic taste*
Amoxicillin + metronidazole (dental infection)	Amoxicillin 500 mg 8-hourly + metronidazole 400 mg 8-hourly ×5 days	Periodontal abscess	*Antibiotics do not replace dental drainage*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*

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DISEASE 210 OF 300 | ENT & ORAL

Angular Cheilitis & Glossitis

Cracks at the mouth corners — treat Candida, correct nutrition.

DEFINITION

Angular cheilitis is inflammation and fissuring at the corners of the mouth, caused by Candida and/or Staphylococcus aureus, favoured by saliva pooling (ill-fitting dentures, lip licking), iron, B-complex (riboflavin, B12, folate) deficiency, diabetes and immunosuppression. Glossitis (smooth red tongue) also reflects nutritional deficiencies.

SYMPTOMS

- Painful cracks at mouth corners
- Burning tongue, soreness with spicy food
- Lip licking habit, dentures
- Fatigue (anaemia)
- Recurrent episodes

SIGNS

- Erythema, fissures, crusting at commissures
- Smooth, red, depapillated tongue
- Pallor, koilonychia
- Oral thrush
- Deep folds at mouth corners (elderly)

DIAGNOSTIC TESTS

Test	Finding / purpose
CBC, ferritin, B12, folate	Deficiencies
Blood sugar	Diabetes
Swab / KOH	Recurrent

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Topical antifungal + mild steroid	Clotrimazole 1% + hydrocortisone 1% cream BD (or miconazole cream)	7–14 days
Bacterial component	Mupirocin 2% or fusidic acid cream TDS	7 days
Nutritional	Vitamin B-complex 1 tab OD; iron/folic acid if deficient; riboflavin-rich diet	1–3 months
Barrier	Petroleum jelly to lip corners at night; stop lip licking	Ongoing
Dentures	Refit dentures, clean nightly, treat denture stomatitis	—

REFER / RED FLAGS

- Persistent despite treatment
- Unexplained anaemia
- Immunocompromise
- Non-healing lesions on lip (biopsy)

GP PEARLS

★ *Angular cheilitis in a child is often riboflavin and iron deficiency — look at the diet.*

★ *Treat both Candida and Staphylococcus — they often coexist.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Vitamin B-complex / riboflavin	1 tablet PO daily	Riboflavin deficiency	*Yellow urine (riboflavin)*
Ferrous sulphate/ascorbate (oral iron)	60–100 mg elemental iron daily or alternate days	Iron deficiency	*Black stools, constipation*
Clotrimazole (azole antifungal — topical)	1% cream 12-hourly; 500 mg vaginal pessary single	Candidal angular cheilitis	*Local irritation*
Fusidic acid 2% cream	Apply 8-hourly ×7 days	Staphylococcal cheilitis	*Resistance; short courses only*
Vitamin B12 (cyanocobalamin/methylcobalamin)	1000 µg IM alternate days ×5, then monthly	B12 deficiency	*Hypokalaemia early in treatment*
Folic acid	5 mg PO daily (400 µg periconception)	Folate deficiency	*Exclude B12 deficiency first*

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DISEASE 211 OF 300 | ENT & ORAL

Oral Premalignant Lesions

White or red patches and stiff cheeks in tobacco and areca users — stop the habit, biopsy.

DEFINITION

Oral potentially malignant disorders include leukoplakia (white patch that cannot be rubbed off), erythroplakia (red patch — highest malignant risk), oral submucous fibrosis (OSMF — from areca nut/gutka; progressive stiffening and reduced mouth opening) and oral lichen planus. India has one of the highest oral cancer burdens in the world.

SYMPTOMS

- White or red patch in mouth
- Burning with spicy food
- Progressive difficulty opening mouth (OSMF)
- Tobacco chewing, gutka, betel quid, smoking, alcohol
- Non-healing ulcer, lump, bleeding (cancer)

SIGNS

- Homogeneous or speckled white patch (leukoplakia)
- Velvety red patch (erythroplakia)
- Blanched mucosa with palpable fibrous bands, reduced inter-incisal opening (OSMF)
- Indurated ulcer, fixed lump
- Cervical lymph nodes

DIAGNOSTIC TESTS

Test	Finding / purpose
Oral visual examination (all tobacco users)	Screening under NPCDCS
Biopsy	All red, speckled, ulcerated, non-healing or suspicious lesions
Mouth opening measurement	OSMF staging

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Stop tobacco and areca nut	Tobacco cessation counselling, NRT; quitline 1800-11-2356	Lifelong
Leukoplakia	Remove irritants (sharp teeth, dentures); biopsy; excision if dysplasia	Follow-up 3–6 monthly
OSMF	Mouth-opening exercises, antioxidants/lycopene; intralesional steroid + hyaluronidase (specialist)	Months
Nutrition	Fruits, vegetables; correct iron and B-complex deficiencies	Ongoing
Follow-up	Regular review with photographs	Lifelong

REFER / RED FLAGS

- Erythroplakia or speckled lesion
- Ulcer or lump >3 weeks, induration, bleeding
- Neck node with oral lesion
- Progressive trismus

GP PEARLS

★ *Examine the mouth of every tobacco user — it takes one minute and can detect cancer early.*

★ *Areca nut (supari) alone, without tobacco, causes submucous fibrosis.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

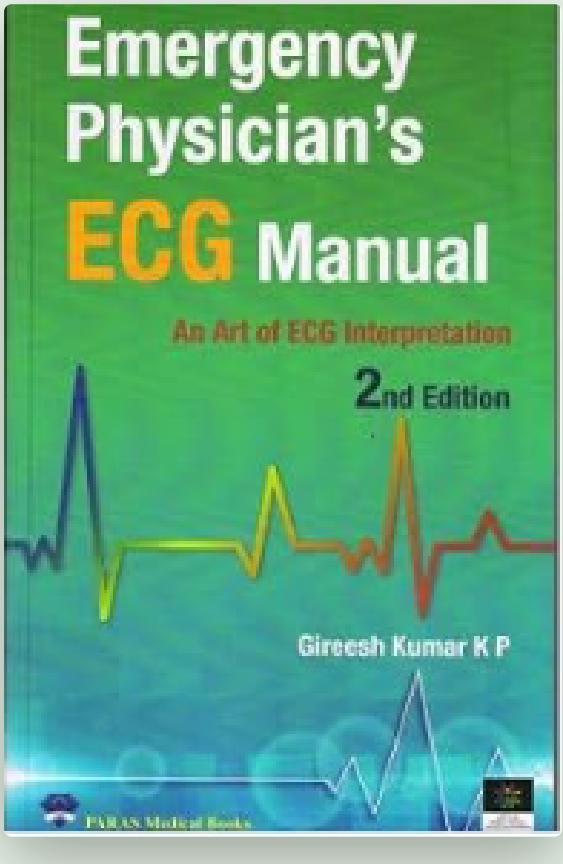
Drug (class)	Adult dose (usual)	Indication here	Key caution
Chlorhexidine 0.2% mouthwash	10 ml rinse 12-hourly ×1–2 weeks	Oral hygiene	*Tooth staining; taste change*
Nicotine replacement (gum 2/4 mg; patch)	Gum 1 piece every 1–2 h; patch 14–21 mg/day	Quit tobacco/areca	*Mouth irritation; sleep disturbance*
Varenicline (partial nicotinic agonist)	0.5 mg daily ×3 d → 1 mg 12-hourly ×12 weeks	Quit tobacco	*Nausea, vivid dreams*
Bupropion SR (smoking cessation)	150 mg daily ×3 days then 12-hourly	Quit tobacco alternative	*Seizure risk; insomnia*
Vitamin B-complex / riboflavin	1 tablet PO daily	Nutritional support in OSMF	*Yellow urine (riboflavin)*
Multivitamin–mineral supplement	1 tablet PO daily	Antioxidant-rich diet support	*Not a substitute for diet*

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DISEASE 212 OF 300 | OBSTETRICS & GYNAECOLOGY

Heavy Menstrual Bleeding

Heavy periods — rule out pregnancy, check Hb, treat with tranexamic acid or LNG-IUS.

DEFINITION

Excessive menstrual blood loss that interferes with quality of life (classically >80 ml/cycle). Classified by PALM-COEIN: Polyp, Adenomyosis, Leiomyoma (fibroid), Malignancy/hyperplasia; Coagulopathy, Ovulatory dysfunction, Endometrial, Iatrogenic, Not classified. Hypothyroidism and anaemia are common associations.

SYMPTOMS

- Heavy periods, flooding, clots
- Changing pads every 1–2 hours, night soaking
- Periods >7 days
- Fatigue, breathlessness (anaemia)
- Intermenstrual or post-coital bleeding (red flag)

SIGNS

- Pallor
- Enlarged irregular uterus (fibroids), bulky tender uterus (adenomyosis)
- Cervical polyp or lesion on speculum
- Thyroid signs
- Bruising (coagulopathy)

DIAGNOSTIC TESTS

Test	Finding / purpose
Urine pregnancy test	Always
CBC, ferritin	Anaemia
TSH	Thyroid dysfunction
USG pelvis (TVS)	Fibroids, polyps, adenomyosis, endometrial thickness
Endometrial biopsy	Age ≥40–45, risk factors (obesity, PCOS), failed treatment, intermenstrual bleeding
Coagulation screen / vWF	HMB since menarche, bleeding history

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
During heavy flow	Tranexamic acid 1 g TDS (max 4 g/day) during menses	Up to 5 days/cycle
With pain	Mefenamic acid 500 mg TDS during menses	Up to 5 days/cycle
First line long-term	Levonorgestrel IUS (52 mg) — reduces bleeding by >90%	5–8 years
Hormonal alternatives	Combined OCP (if no contraindication); norethisterone 5 mg TDS days 5–26; medroxyprogesterone 10 mg OD days 16–25	3–6 cycles
Acute heavy bleed	Norethisterone 10 mg TDS until bleeding stops (then taper) or tranexamic acid 1 g IV/PO	Up to 7–10 days
Anaemia	Ferrous sulphate 200 mg BD or IV ferric carboxymaltose if Hb <8 or intolerance	3 months

REFER / RED FLAGS

- Hb <8 g/dl or haemodynamic instability
- Intermenstrual/post-coital bleeding, age >45, risk factors (biopsy)
- Large fibroids, failed medical therapy
- Suspected bleeding disorder

GP PEARLS

★ *A pregnancy test before every assessment of abnormal bleeding.*

★ *Post-coital bleeding needs a cervical examination — not just hormones.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Tranexamic acid (antifibrinolytic)	500–1000 mg PO 8-hourly (HMB); 1 g IV in trauma	1 g TDS during menses	*Avoid in active thrombosis*
Mefenamic acid (NSAID)	250–500 mg PO 8-hourly with food, ≤5 days	Pain and flow reduction	*Diarrhoea, haemolysis rarely; avoid in CKD*
Norethisterone (progestin)	5 mg PO 8-hourly ×10 days (bleeding)	Acute heavy bleeding	*Thrombosis risk; not in pregnancy*
Combined oral contraceptive (EE 30 µg + LNG)	1 tablet daily ×21 days, 7-day break	Cycle control	*VTE, migraine with aura, smokers >35*
Ferrous sulphate/ascorbate (oral iron)	60–100 mg elemental iron daily or alternate days	Iron deficiency	*Black stools, constipation*
Medroxyprogesterone (progestin)	10 mg PO daily ×10–14 days	Anovulatory bleeding	*Breakthrough bleeding*

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DISEASE 213 OF 300 | OBSTETRICS & GYNAECOLOGY

Dysmenorrhoea

NSAIDs started before the pain; secondary dysmenorrhoea needs a cause.

DEFINITION

Painful menstruation. Primary dysmenorrhoea begins within 1–2 years of menarche, due to prostaglandins, with normal pelvic anatomy. Secondary dysmenorrhoea arises later from endometriosis, adenomyosis, fibroids, PID or IUCD. Endometriosis causes progressive pain, dyspareunia, dyschezia and infertility.

SYMPTOMS

- Cramping lower abdominal pain starting with menses, lasting 1–3 days
- Radiates to back and thighs
- Nausea, vomiting, diarrhoea, headache
- Progressive pain, deep dyspareunia, painful defecation (endometriosis)
- Heavy periods (adenomyosis, fibroids)

SIGNS

- Normal pelvic exam (primary)
- Tender uterosacral nodules, fixed retroverted uterus (endometriosis)
- Bulky tender uterus (adenomyosis)
- Adnexal mass (endometrioma)
- Cervical motion tenderness (PID)

DIAGNOSTIC TESTS

Test	Finding / purpose
None for typical primary dysmenorrhoea	—
USG pelvis	Secondary features, failure of treatment
STI screen	PID suspected
Laparoscopy	Suspected endometriosis not responding (specialist)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
NSAID (first line)	Mefenamic acid 500 mg TDS or ibuprofen 400 mg TDS or naproxen 500 mg BD after food, start 1–2 days before or at onset	2–3 days/cycle
Antispasmodic	Drotaverine 80 mg TDS or dicyclomine 20 mg + mefenamic acid combination	2–3 days/cycle
Hormonal	Combined OCP (continuous or cyclic) or progestogen-only (dienogest 2 mg OD) or LNG-IUS	3–6 months
Non-drug	Heat pad to lower abdomen, exercise, yoga	Ongoing
Endometriosis (specialist)	Dienogest 2 mg OD; GnRH analogues; laparoscopic surgery	Long term

REFER / RED FLAGS

- Secondary dysmenorrhoea or pelvic mass
- Failure of NSAIDs + hormonal therapy
- Infertility
- Fever, discharge (PID)

GP PEARLS

★ *NSAIDs work best when started before pain is established.*

★ *Missing school or work each month is not "normal" — consider endometriosis.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Mefenamic acid (NSAID)	250–500 mg PO 8-hourly with food, ≤5 days	First-line NSAID	*Diarrhoea, haemolysis rarely; avoid in CKD*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Alternative NSAID	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Drotaverine (antispasmodic)	40–80 mg PO 8-hourly	Antispasmodic	*Hypotension rarely*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Mild pain	*Hepatotoxic in overdose; check combination products*
Combined oral contraceptive (EE 30 µg + LNG)	1 tablet daily ×21 days, 7-day break	Contraception + dysmenorrhoea	*VTE, migraine with aura, smokers >35*
Dicyclomine (antispasmodic)	10–20 mg PO 8-hourly	Cramps	*Anticholinergic; avoid in infants <6 months*

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DISEASE 214 OF 300 | OBSTETRICS & GYNAECOLOGY

Secondary Amenorrhoea

No periods for 3 months — pregnancy first, then PCOS, thyroid, prolactin, weight.

DEFINITION

Absence of menses for ≥3 months in a woman with previously regular cycles (or 6 months if irregular). Causes: pregnancy (commonest), lactation, PCOS, hypothalamic (stress, weight loss, excess exercise), hyperprolactinaemia (pituitary adenoma, drugs), thyroid disease, premature ovarian insufficiency (<40 y), Asherman's syndrome (after D&C), contraceptives.

SYMPTOMS

- No periods for ≥3 months
- Possible pregnancy
- Weight change, exercise, stress
- Galactorrhoea, headache, visual change (prolactinoma)
- Hot flushes (ovarian insufficiency); hirsutism, acne (PCOS)

SIGNS

- BMI
- Hirsutism, acne, acanthosis (PCOS)
- Galactorrhoea, visual fields
- Thyroid signs
- Breast/genital exam

DIAGNOSTIC TESTS

Test	Finding / purpose
Urine/serum β-hCG	Exclude pregnancy first
TSH, prolactin	Thyroid, hyperprolactinaemia
FSH, LH, oestradiol	High FSH — ovarian insufficiency; low — hypothalamic
Testosterone, USG pelvis	PCOS
MRI pituitary	Prolactin markedly raised, headache, visual field defect
Progestogen challenge	Withdrawal bleed confirms oestrogen and patent outflow

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Pregnancy	Antenatal care	—
PCOS	See PCOS page	—
Induce withdrawal bleed	Medroxyprogesterone 10 mg OD × 10 days (protects endometrium)	Every 1–3 months
Hyperprolactinaemia	Cabergoline 0.25 mg twice weekly → 0.5–1 mg twice weekly (after excluding drugs, hypothyroidism)	Months–years
Hypothalamic	Restore weight, reduce excessive exercise, stress management	Ongoing
Premature ovarian insufficiency	HRT/combined OCP until natural menopause age (bone and heart protection)	Until ~51 y

REFER / RED FLAGS

- Premature ovarian insufficiency
- Prolactinoma, visual field defect
- Amenorrhoea after D&C (Asherman's)
- Primary amenorrhoea (no periods by 15 y)

GP PEARLS

★ *Check for pregnancy even if the patient says it is impossible.*

★ *Antipsychotics and metoclopramide commonly raise prolactin — review drugs before imaging.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Medroxyprogesterone (progestin)	10 mg PO daily ×10–14 days	Progesterone challenge	*Breakthrough bleeding*
Combined oral contraceptive (EE 30 µg + LNG)	1 tablet daily ×21 days, 7-day break	Hormone replacement (selected)	*VTE, migraine with aura, smokers >35*
Cabergoline (dopamine agonist)	0.25–0.5 mg twice weekly (hyperprolactinaemia)	Hyperprolactinaemia	*Valvulopathy at high doses*
Levothyroxine (thyroid hormone)	25–100 µg PO empty stomach (1.6 µg/kg/day)	Hypothyroidism	*Start low in elderly/IHD; separate from iron/calcium*
Metformin (biguanide)	500 mg daily–1 g 12-hourly with meals	PCOS	*GI upset; stop if eGFR <30, contrast, sepsis*
Calcium carbonate (supplement)	500–1000 mg elemental calcium daily in divided doses	Bone health	*Constipation; separate from iron/thyroxine*

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DISEASE 215 OF 300 | OBSTETRICS & GYNAECOLOGY

Polycystic Ovary Syndrome

Irregular periods, acne and hirsutism — lifestyle first, then treat the symptom that matters.

DEFINITION

Common endocrine disorder of women of reproductive age. Rotterdam criteria (2 of 3): oligo/anovulation, clinical or biochemical hyperandrogenism, polycystic ovaries on ultrasound (after excluding thyroid disease, hyperprolactinaemia, CAH). Associated with insulin resistance, obesity, diabetes, dyslipidaemia, fatty liver, endometrial hyperplasia, infertility and depression.

SYMPTOMS

- Irregular or absent periods
- Acne, excess facial/body hair
- Scalp hair thinning
- Weight gain, difficulty losing weight
- Difficulty conceiving

SIGNS

- Hirsutism (modified Ferriman–Gallwey score)
- Acne, androgenic alopecia
- Acanthosis nigricans
- Central obesity, BP
- Signs of virilisation (clitoromegaly — tumour, refer)

DIAGNOSTIC TESTS

Test	Finding / purpose
USG pelvis (TVS)	≥20 follicles per ovary or ovarian volume ≥10 ml
Total testosterone	Raised; very high (>200 ng/dl) — tumour
TSH, prolactin, 17-OH progesterone	Exclude mimics
OGTT / HbA1c, lipids	Metabolic screening
β-hCG	Pregnancy

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Lifestyle (all)	5–10% weight loss, low glycaemic diet, 150 min/week exercise	Ongoing
Irregular cycles, hirsutism, acne (not trying to conceive)	Combined OCP (ethinylestradiol 20–35 µg + drospirenone or cyproterone acetate) cyclically	6–12 months, continue
Endometrial protection (if not on COC)	Medroxyprogesterone 10 mg OD × 10–14 days every 1–3 months	Ongoing
Insulin resistance, IGT, weight	Metformin 500 mg OD → 1 g BD with meals	Long term
Hirsutism add-on	Spironolactone 50–100 mg OD (with contraception); eflornithine cream; laser	6 months
Infertility (refer)	Letrozole 2.5–7.5 mg OD days 3–7 (ovulation induction)	Up to 6 cycles

REFER / RED FLAGS

- Infertility
- Rapid virilisation or very high testosterone
- Endometrial thickening with prolonged amenorrhoea
- Diabetes, severe depression

GP PEARLS

★ *A woman with PCOS and no period for 3 months needs a progestogen withdrawal to protect the endometrium.*

★ *Even 5% weight loss can restore ovulation.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Metformin (biguanide)	500 mg daily–1 g 12-hourly with meals	Insulin resistance	*GI upset; stop if eGFR <30, contrast, sepsis*
Combined oral contraceptive (EE 30 µg + LNG)	1 tablet daily ×21 days, 7-day break	Cycle control, hirsutism	*VTE, migraine with aura, smokers >35*
Letrozole (aromatase inhibitor)	2.5–7.5 mg PO days 3–7 (ovulation induction)	Ovulation induction (specialist)	*Specialist use; multiple pregnancy*
Medroxyprogesterone (progestin)	10 mg PO daily ×10–14 days	Withdrawal bleed	*Breakthrough bleeding*
Orlistat (lipase inhibitor)	120 mg PO with each fatty meal	Weight management	*Oily stools; fat-soluble vitamins*
Folic acid	5 mg PO daily (400 µg periconception)	Pre-conception	*Exclude B12 deficiency first*

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DISEASE 216 OF 300 | OBSTETRICS & GYNAECOLOGY

Bacterial Vaginosis

Thin grey fishy discharge — metronidazole; partner treatment not needed.

DEFINITION

Commonest cause of vaginal discharge, resulting from replacement of normal lactobacilli by anaerobes (Gardnerella, Mobiluncus). Not an STI, but associated with sexual activity, douching and IUCDs. In pregnancy linked to preterm birth. Amsel criteria (3 of 4): thin homogeneous discharge, pH >4.5, positive whiff test, clue cells.

SYMPTOMS

- Thin grey-white discharge
- Fishy odour, worse after intercourse or menses
- Little or no itching
- Recurrent episodes
- Douching habit

SIGNS

- Homogeneous grey discharge coating vaginal walls
- No vulvovaginal inflammation
- Vaginal pH >4.5
- Positive whiff test (KOH)
- Normal cervix

DIAGNOSTIC TESTS

Test	Finding / purpose
Vaginal pH, whiff test, wet mount	Clue cells
Gram stain (Nugent score)	Reference test
STI screen	If risk factors

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
First line	Metronidazole 400–500 mg BD (avoid alcohol until 48 h after)	7 days
Alternative	Metronidazole 0.75% vaginal gel 5 g HS × 5 days, or clindamycin 2% vaginal cream 5 g HS × 7 days	As stated
Alternative oral	Tinidazole 2 g OD × 2 days or secnidazole 2 g single dose	As stated
Pregnancy	Metronidazole 400 mg BD × 7 days (safe in 2nd/3rd trimesters)	7 days
Recurrent (≥3/year)	Metronidazole gel twice weekly	4–6 months
Advice	Avoid douching, perfumed soaps; partner treatment not required	—

REFER / RED FLAGS

- Pregnancy with history of preterm birth
- Recurrent despite suppression
- Before gynaecological procedures/IUCD insertion
- Atypical discharge

GP PEARLS

★ *NACO syndromic kit 2 (green) covers vaginal discharge — BV, trichomonas and candida together.*

★ *Do not treat male partners for BV — it does not reduce recurrence.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Metronidazole (nitroimidazole)	400 mg PO 8-hourly (child 7.5 mg/kg)	400 mg BD ×7 days	*No alcohol; metallic taste*
Tinidazole (nitroimidazole)	2 g PO single dose (or daily ×3–5 days)	2 g single dose alternative	*No alcohol; avoid in 1st trimester*
Secnidazole (nitroimidazole)	2 g PO single dose	Single dose	*Metallic taste; avoid alcohol*
Clindamycin (lincosamide)	300 mg PO 6–8-hourly	Clindamycin cream/oral	*C. difficile diarrhoea*

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DISEASE 217 OF 300 | OBSTETRICS & GYNAECOLOGY

Vulvovaginal Candidiasis

Itchy curdy white discharge — clotrimazole pessary or fluconazole 150 mg.

DEFINITION

Vaginal infection with Candida albicans (90%) causing vulvovaginal itch, soreness and discharge. Predisposed by pregnancy, diabetes, antibiotics, steroids, SGLT2 inhibitors, immunosuppression and tight synthetic clothing. Recurrent VVC = ≥4 episodes per year.

SYMPTOMS

- Intense vulval itching, burning
- Thick white curd-like discharge, no odour
- Superficial dyspareunia
- External dysuria
- Recent antibiotics, pregnancy, diabetes

SIGNS

- Vulval erythema, oedema, fissures
- Satellite lesions
- Adherent white plaques on vaginal walls
- Vaginal pH normal (<4.5)
- Normal cervix

DIAGNOSTIC TESTS

Test	Finding / purpose
Wet mount / KOH	Budding yeasts, pseudohyphae
Culture	Recurrent, non-albicans species
Blood sugar	Recurrent

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Uncomplicated	Clotrimazole 500 mg vaginal pessary single dose HS (or 100 mg × 7 nights) or fluconazole 150 mg orally single dose	Single / 7 days
Vulval symptoms	Clotrimazole 1% cream BD to vulva	7 days
Severe	Fluconazole 150 mg on day 1 and day 4 (and day 7)	2–3 doses
Pregnancy	Clotrimazole 100 mg pessary nightly (no oral fluconazole)	7 days
Recurrent (≥4/year)	Fluconazole 150 mg every 72 h × 3 doses, then 150 mg once weekly	6 months
Advice	Cotton underwear, avoid douching/perfumed products; partner treatment only if symptomatic	—

REFER / RED FLAGS

- Recurrent VVC despite suppression
- Diabetes poorly controlled, immunocompromised
- Non-albicans resistant species
- Diagnostic doubt

GP PEARLS

★ *Self-diagnosed "thrush" is often something else — examine if recurrent.*

★ *Women on SGLT2 inhibitors should be warned about genital candidiasis.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Clotrimazole (azole antifungal — topical)	1% cream 12-hourly; 500 mg vaginal pessary single	Clotrimazole pessary	*Local irritation*
Fluconazole (azole antifungal)	150 mg PO single dose (vaginal); 150 mg weekly (tinea)	150 mg single dose (not in pregnancy)	*QT; hepatotoxic; avoid in pregnancy*
Itraconazole (azole antifungal)	100–200 mg PO daily ×2–4 weeks with food	Alternative	*Hepatotoxic; CHF; interactions*
Emollient (white soft paraffin / urea cream)	Apply liberally twice daily and after bath	Vulval skin care	*Fire risk with paraffin on dressings*
Hydrocortisone 1% cream (mild steroid)	Apply thinly 12-hourly ≤7 days (face/flexures)	Vulval inflammation (short)	*Atrophy with prolonged use*
Metformin (biguanide)	500 mg daily–1 g 12-hourly with meals	Diabetic control	*GI upset; stop if eGFR <30, contrast, sepsis*

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DISEASE 218 OF 300 | OBSTETRICS & GYNAECOLOGY

Trichomoniasis

Frothy yellow-green discharge with strawberry cervix — treat both partners.

DEFINITION

Sexually transmitted infection with the protozoan Trichomonas vaginalis. Causes vaginitis in women (up to half asymptomatic) and urethritis in men. Associated with preterm birth and increased HIV transmission. Both partners must be treated.

SYMPTOMS

- Profuse frothy yellow-green discharge
- Offensive odour
- Vulval itching, soreness
- Dysuria, dyspareunia
- Partner with urethritis

SIGNS

- Frothy discharge
- Vulvovaginal erythema
- Strawberry cervix (punctate haemorrhages)
- Vaginal pH >4.5

DIAGNOSTIC TESTS

Test	Finding / purpose
Wet mount	Motile flagellated trichomonads
NAAT	Most sensitive
Screen for other STIs, HIV, syphilis	With consent

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Women	Metronidazole 400–500 mg BD	7 days
Men	Metronidazole 2 g single dose (or 500 mg BD × 7 days)	As stated
Alternative	Tinidazole 2 g single dose	Single
Pregnancy	Metronidazole 400 mg BD × 7 days	7 days
Partner	Treat simultaneously; abstain until both complete treatment	—
Advice	No alcohol during and 48 h after metronidazole (72 h after tinidazole)	—

REFER / RED FLAGS

- Persistent infection despite treatment of both partners
- Pregnancy complications
- HIV co-infection
- Atypical presentation

GP PEARLS

★ *Treating only the woman guarantees reinfection — insist on partner treatment.*

★ *Retest at 3 months — reinfection rates are high.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Metronidazole (nitroimidazole)	400 mg PO 8-hourly (child 7.5 mg/kg)	400 mg BD ×7 days	*No alcohol; metallic taste*
Tinidazole (nitroimidazole)	2 g PO single dose (or daily ×3–5 days)	2 g single dose	*No alcohol; avoid in 1st trimester*
Secnidazole (nitroimidazole)	2 g PO single dose	Alternative	*Metallic taste; avoid alcohol*
Azithromycin (STI dose)	1 g PO single dose	Co-infection testing	*QT; GI upset*
Clotrimazole (azole antifungal — topical)	1% cream 12-hourly; 500 mg vaginal pessary single	Mixed infection	*Local irritation*

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DISEASE 219 OF 300 | OBSTETRICS & GYNAECOLOGY

Pelvic Inflammatory Disease

Lower abdominal pain with cervical motion tenderness in a sexually active woman — treat empirically.

DEFINITION

Ascending infection of the upper genital tract (endometritis, salpingitis, tubo-ovarian abscess), caused by Chlamydia, Neisseria gonorrhoeae and anaerobes. Complications: infertility, ectopic pregnancy, chronic pelvic pain. Low threshold for empirical treatment is recommended. NACO syndromic kit 6 (yellow).

SYMPTOMS

- Bilateral lower abdominal pain
- Abnormal vaginal discharge
- Deep dyspareunia
- Abnormal bleeding (post-coital, intermenstrual)
- Fever, malaise

SIGNS

- Lower abdominal tenderness
- Cervical motion tenderness
- Adnexal tenderness ± mass
- Mucopurulent cervical discharge
- Fever >38 °C

DIAGNOSTIC TESTS

Test	Finding / purpose
Urine pregnancy test	Exclude ectopic pregnancy
Endocervical NAAT for gonorrhoea/chlamydia	Confirm organism
CBC, CRP	Severity
USG pelvis	Tubo-ovarian abscess
HIV, VDRL	Screen

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Outpatient (NACO kit 6)	Ceftriaxone 500 mg IM single dose (or cefixime 400 mg orally) + doxycycline 100 mg BD + metronidazole 400 mg BD	14 days (doxycycline, metronidazole)
Alternative	Ofloxacin 400 mg BD + metronidazole 400 mg BD	14 days
Admission (severe)	Ceftriaxone 1 g IV OD + doxycycline 100 mg BD + metronidazole 500 mg IV TDS	IV until improved, total 14 days
Pain	Ibuprofen 400 mg TDS or paracetamol	As needed
IUCD	May remain in place in mild PID; remove if no improvement in 72 h	—
Partner	Treat for gonorrhoea and chlamydia; abstain until both treated	—

REFER / RED FLAGS

- Pregnancy (exclude ectopic)
- Tubo-ovarian abscess, peritonitis
- Severe illness, high fever, vomiting
- No response to oral therapy in 72 h

GP PEARLS

★ *Every woman with suspected PID needs a pregnancy test — ectopic pregnancy is the deadly mimic.*

★ *Delay in treatment increases tubal damage and infertility.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	250–500 mg IM single dose	*Biliary sludge; not with calcium IV in neonates*
Doxycycline (tetracycline)	100 mg PO 12-hourly after food, upright	100 mg BD ×14 days	*Avoid in pregnancy and <8 years; photosensitivity*
Metronidazole (nitroimidazole)	400 mg PO 8-hourly (child 7.5 mg/kg)	400 mg BD ×14 days	*No alcohol; metallic taste*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Azithromycin (STI dose)	1 g PO single dose	Doxycycline alternative	*QT; GI upset*

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DISEASE 220 OF 300 | OBSTETRICS & GYNAECOLOGY

Combined Oral Contraceptives

Check BP, migraine with aura, smoking over 35, clot history — then prescribe.

DEFINITION

Combined oral contraceptives (ethinylestradiol 20–35 µg + a progestogen) suppress ovulation; >99% effective with perfect use (~91% typical use). Provided free as Mala-N/Mala-D under the National Family Planning Programme. Use is guided by WHO Medical Eligibility Criteria (MEC).

SYMPTOMS

- Contraceptive need, cycle history
- Migraine with aura (contraindicated)
- Smoking and age >35
- Previous DVT/PE, stroke, heart disease
- Breastfeeding <6 months postpartum

SIGNS

- BP (avoid if ≥160/100; caution 140–159/90–99)
- BMI
- Breast exam (if indicated)
- Signs of liver disease

DIAGNOSTIC TESTS

Test	Finding / purpose
Pregnancy test	Before starting if any doubt
BP	Before and yearly
Other tests	Not routinely required

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Starting	Start on day 1–5 of the cycle (no backup needed) or any day with 7 days condom backup	—
Regimen	One tablet daily same time; 21 active tablets + 7-day break (or 28-day pack with 7 inert/iron tablets)	Ongoing
Missed pill (1 pill <48 h)	Take as soon as remembered, continue; no backup needed	—
Missed ≥2 pills	Take latest missed pill, continue; condoms for 7 days; emergency contraception if in week 1 after unprotected sex; skip pill-free week if in week 3	—
Interactions	Rifampicin, carbamazepine, phenytoin, some antiretrovirals reduce efficacy — use IUCD or DMPA	—
Alternatives	Centchroman (ormeloxifene) 30 mg twice weekly × 3 months then weekly (non-hormonal, free); DMPA 150 mg IM every 3 months; Cu-IUCD	As per method

REFER / RED FLAGS

- Migraine with aura, history of VTE/stroke, breast cancer
- Severe hypertension, smoker >35
- New severe headache, leg swelling, chest pain on pill
- Liver disease

GP PEARLS

★ *Warning signs "ACHES": abdominal pain, chest pain, headache, eye problems, severe leg pain — stop and seek help.*

★ *Vomiting within 3 hours of taking a pill counts as a missed pill.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Combined oral contraceptive (EE 30 µg + LNG)	1 tablet daily ×21 days, 7-day break	Daily 21+7 regimen	*VTE, migraine with aura, smokers >35*
Levonorgestrel 1.5 mg (emergency contraception)	1.5 mg PO single dose within 72 h (≤120 h)	Missed pill backup if needed	*Less effective later; not abortifacient*
Centchroman (ormeloxifene)	30 mg twice weekly ×3 months, then weekly	Non-hormonal weekly pill	*Delayed periods; avoid in PCOS/liver disease*
Medroxyprogesterone (progestin)	10 mg PO daily ×10–14 days	Progestin-only alternative	*Breakthrough bleeding*
Ferrous sulphate/ascorbate (oral iron)	60–100 mg elemental iron daily or alternate days	Anaemia	*Black stools, constipation*
Folic acid	5 mg PO daily (400 µg periconception)	Pre-conception	*Exclude B12 deficiency first*

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DISEASE 221 OF 300 | OBSTETRICS & GYNAECOLOGY

Emergency Contraception

Sooner is better: LNG within 72 h, ulipristal within 120 h, Cu-IUCD within 5 days (most effective).

DEFINITION

Prevention of pregnancy after unprotected intercourse or contraceptive failure (condom burst, missed pills). Options: levonorgestrel 1.5 mg (within 72 h, less effective with time and in obesity), ulipristal acetate 30 mg (within 120 h) and copper IUCD (within 5 days — most effective, also provides ongoing contraception). Not an abortifacient.

SYMPTOMS

- Time since unprotected intercourse
- Date of last menstrual period, cycle length
- Other episodes in this cycle
- Current contraception, missed pills
- Possibility of sexual assault (offer support, STI prophylaxis)

SIGNS

- Usually not required
- Weight/BMI (LNG less effective >70 kg)
- Pelvic exam if IUCD chosen

DIAGNOSTIC TESTS

Test	Finding / purpose
Pregnancy test	If period late or unprotected sex earlier in cycle
STI screen	If at risk

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Levonorgestrel (first line, free in programme)	Levonorgestrel 1.5 mg single dose (3 mg if BMI >26/weight >70 kg or on enzyme inducers)	Within 72 h
Ulipristal acetate	Ulipristal 30 mg single dose (delay hormonal contraception 5 days after)	Within 120 h
Copper IUCD (most effective)	Cu-T 380A insertion	Within 5 days
Vomiting within 2–3 h	Repeat the dose	—
Afterwards	Start regular contraception; pregnancy test if period >7 days late	—

REFER / RED FLAGS

- Sexual assault — medico-legal and psychological care
- Period delayed >7 days after EC
- Repeated EC use (counsel for regular contraception)
- Abdominal pain after EC (exclude ectopic)

GP PEARLS

★ *EC does not protect against later intercourse in the same cycle.*

★ *Repeated use of EC pills is safe but less effective than regular contraception.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Levonorgestrel 1.5 mg (emergency contraception)	1.5 mg PO single dose within 72 h (≤120 h)	Within 72 h (up to 120 h)	*Less effective later; not abortifacient*
Combined oral contraceptive (EE 30 µg + LNG)	1 tablet daily ×21 days, 7-day break	Yuzpe method alternative	*VTE, migraine with aura, smokers >35*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Nausea	*QT; constipation*
Centchroman (ormeloxifene)	30 mg twice weekly ×3 months, then weekly	Ongoing contraception	*Delayed periods; avoid in PCOS/liver disease*

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DISEASE 222 OF 300 | OBSTETRICS & GYNAECOLOGY

Menopause

Hot flushes and night sweats — HRT is effective and safe for most women under 60.

DEFINITION

Permanent cessation of menses for 12 months due to loss of ovarian function; average age around 46–48 years in India. Perimenopause brings irregular cycles, vasomotor symptoms, sleep and mood disturbance and genitourinary syndrome of menopause. Long-term risks: osteoporosis and cardiovascular disease. Menopause before 40 is premature ovarian insufficiency.

SYMPTOMS

- Hot flushes, night sweats
- Irregular then absent periods
- Sleep disturbance, mood swings, poor concentration
- Vaginal dryness, dyspareunia, urinary urgency
- Joint pains

SIGNS

- BP, BMI
- Atrophic vaginitis
- Breast exam
- Height (osteoporosis)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis (>45 y)	FSH not needed
FSH (twice, 4–6 weeks apart)	Age <45 or suspected premature ovarian insufficiency
Lipids, glucose, TSH	Cardiovascular risk, mimic
Mammography, Pap smear	Screening before HRT
DXA	Risk factors for osteoporosis

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Lifestyle	Exercise, layered clothing, avoid triggers (spicy food, alcohol, caffeine), calcium and vitamin D	Ongoing
HRT — with uterus	Oestradiol 1–2 mg OD (or transdermal 50 µg) + progestogen (micronised progesterone 200 mg days 1–12 cyclic, or 100 mg daily continuous; or LNG-IUS)	Review yearly
HRT — after hysterectomy	Oestrogen alone (oestradiol 1–2 mg OD or tibolone 2.5 mg OD)	Review yearly
Non-hormonal (HRT contraindicated)	Paroxetine 7.5–10 mg OD, venlafaxine 37.5–75 mg OD, gabapentin 300 mg HS; fezolinetant where available	Review
Genitourinary syndrome	Vaginal oestriol 0.1% cream 0.5 g daily × 2 weeks, then twice weekly; vaginal moisturisers	Long term
Premature ovarian insufficiency	HRT until average age of menopause	Until ~51 y

REFER / RED FLAGS

- Postmenopausal bleeding
- HRT contraindications: breast cancer, VTE, active liver disease, undiagnosed bleeding
- Menopause <40 y
- Osteoporosis with fracture

GP PEARLS

★ *Benefits of HRT outweigh risks for most symptomatic women under 60 or within 10 years of menopause.*

★ *Any bleeding after 12 months of amenorrhoea is postmenopausal bleeding — investigate.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Calcium carbonate (supplement)	500–1000 mg elemental calcium daily in divided doses	Bone health	*Constipation; separate from iron/thyroxine*
Cholecalciferol (vitamin D3)	60,000 IU weekly ×8 weeks, then monthly	Bone health	*Hypercalcaemia if overused*
Alendronate (bisphosphonate)	70 mg PO weekly, empty stomach, upright 30 min	Osteoporosis	*Oesophagitis; osteonecrosis rare*
Escitalopram (SSRI)	5–10 mg PO daily (max 20 mg)	Hot flushes/mood (non-hormonal)	*Nausea, QT; activation early; hyponatraemia*
Gabapentin (gabapentinoid)	300 mg at night, titrate to 600 mg 8-hourly	Hot flushes (non-hormonal)	*Sedation; renal dosing*

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DISEASE 223 OF 300 | OBSTETRICS & GYNAECOLOGY

Postmenopausal Bleeding

Any bleeding a year after the last period is endometrial cancer until excluded.

DEFINITION

Vaginal bleeding occurring ≥12 months after the last menstrual period. About 10% have endometrial cancer. Other causes: atrophic vaginitis/endometritis, endometrial hyperplasia, polyps, cervical cancer, HRT, tamoxifen, bleeding from urinary tract or rectum.

SYMPTOMS

- Any vaginal bleeding or spotting after menopause
- Blood-stained discharge
- Use of HRT or tamoxifen
- Obesity, diabetes, nulliparity (risk factors)
- Post-coital bleeding (cervical cancer)

SIGNS

- Atrophic vagina
- Cervical lesion, polyp
- Bulky uterus, pelvic mass
- Pallor
- Exclude urinary/rectal source

DIAGNOSTIC TESTS

Test	Finding / purpose
Transvaginal USG	Endometrial thickness >4 mm needs sampling
Endometrial biopsy (pipelle) / hysteroscopy	Histology
Pap smear / VIA, cervical biopsy	Cervical lesion
CBC, blood sugar	Anaemia, diabetes

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Refer to gynaecology	Urgent (within 2 weeks)	—
Atrophic vaginitis (after excluding malignancy)	Vaginal oestriol 0.1% cream nightly × 2 weeks, then twice weekly	Long term
Polyps	Hysteroscopic polypectomy	—
Hyperplasia without atypia	LNG-IUS or oral progestogen (specialist)	6 months
Malignancy	Surgical staging (specialist)	—

REFER / RED FLAGS

- All postmenopausal bleeding
- Visible cervical lesion
- Pelvic mass
- Heavy bleeding with anaemia

GP PEARLS

★ *Never attribute postmenopausal bleeding to "hormones" without imaging and biopsy.*

★ *Women on tamoxifen with any bleeding need urgent assessment.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Tranexamic acid (antifibrinolytic)	500–1000 mg PO 8-hourly (HMB); 1 g IV in trauma	Heavy bleeding before evaluation	*Avoid in active thrombosis*
Ferrous sulphate/ascorbate (oral iron)	60–100 mg elemental iron daily or alternate days	Anaemia	*Black stools, constipation*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Medroxyprogesterone (progestin)	10 mg PO daily ×10–14 days	Hyperplasia (specialist)	*Breakthrough bleeding*
Metformin (biguanide)	500 mg daily–1 g 12-hourly with meals	Diabetes	*GI upset; stop if eGFR <30, contrast, sepsis*
Telmisartan (ARB)	20–80 mg PO daily	Hypertension	*Hyperkalaemia; avoid in pregnancy*

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DISEASE 224 OF 300 | OBSTETRICS & GYNAECOLOGY

Antenatal Care — First Visit

Date the pregnancy, screen, supplement and plan — at least 4 visits, ideally 8.

DEFINITION

Antenatal care aims to monitor maternal and fetal well-being, prevent and detect complications, and plan delivery. Under the National Health Mission and PMSMA, at least 4 ANC visits (WHO recommends 8 contacts) with free investigations, iron-folic acid, calcium and Td vaccination are provided. Early registration in the first trimester is the goal.

SYMPTOMS

- LMP and cycle regularity (EDD by Naegele's rule)
- Nausea, vomiting, bleeding, pain
- Obstetric history (gravida, para, previous complications, caesarean)
- Medical history: hypertension, diabetes, thyroid, epilepsy, heart disease
- Medications, tobacco, alcohol

SIGNS

- Weight, height, BMI
- BP
- Pallor, oedema
- Thyroid, breasts, heart and lungs
- Fundal height (later visits)

DIAGNOSTIC TESTS

Test	Finding / purpose
Hb, blood group & Rh, urine routine & culture	Anaemia, Rh negative, asymptomatic bacteriuria
HIV, VDRL/RPR, HBsAg	PPTCT, congenital syphilis, hepatitis B
OGTT 75 g (any time at first visit; repeat 24–28 weeks)	2-h ≥140 mg/dl = GDM (DIPSI)
TSH	Hypothyroidism
Dating USG (first trimester); NT scan 11–14 weeks; anomaly scan 18–20 weeks	Gestation, aneuploidy, anomalies

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Folic acid	Folic acid 400 µg OD (5 mg OD if previous NTD, epilepsy on AEDs, diabetes, obesity)	First 12 weeks (pre-conception ideally)
Iron-folic acid	IFA (60 mg elemental iron + 500 µg folic acid) OD from 14 weeks; BD if anaemic	Through pregnancy + 6 months postpartum
Calcium	Calcium carbonate 500 mg BD (after 14 weeks; not with iron)	Pregnancy + 6 months postpartum
Td vaccine	Td 0.5 ml IM — 2 doses 4 weeks apart (or 1 booster if vaccinated in last 3 years)	As stated
Deworming	Albendazole 400 mg single dose in 2nd trimester	Single
Low-dose aspirin (high pre-eclampsia risk)	Aspirin 75–150 mg HS from 12 to 36 weeks	Until 36 weeks

REFER / RED FLAGS

- Previous caesarean, stillbirth, preterm birth, pre-eclampsia
- Medical disorders (heart disease, diabetes, epilepsy, hypertension)
- Rh negative
- Multiple pregnancy, age <18 or >35

GP PEARLS

★ *Iron and calcium should be taken at least 2 hours apart — they block each other's absorption.*

★ *Every pregnant woman should know the danger signs: bleeding, headache, blurred vision, fits, reduced fetal movements, leaking fluid.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Iron–folic acid (IFA) tablet	1 tablet (60 mg Fe + 500 µg FA) daily	Iron + folic acid from 2nd trimester	*Constipation; take with vitamin C*
Folic acid	5 mg PO daily (400 µg periconception)	400 µg pre-conception to 12 weeks	*Exclude B12 deficiency first*

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DISEASE 225 OF 300 | OBSTETRICS & GYNAECOLOGY

Nausea, Vomiting of Pregnancy & Hyperemesis

Small frequent meals and doxylamine-pyridoxine; ketones and weight loss mean hyperemesis.

DEFINITION

Nausea and vomiting affect up to 80% of pregnancies, starting around 6 weeks and usually resolving by 16–20 weeks. Hyperemesis gravidarum is severe vomiting with dehydration, ketosis, >5% weight loss and electrolyte imbalance. Associated with multiple and molar pregnancy and hyperthyroidism. Wernicke's encephalopathy is a rare serious complication.

SYMPTOMS

- Nausea and vomiting, worse in the morning
- Unable to keep fluids down
- Weight loss, dizziness
- Reduced urine output
- Confusion, ataxia, double vision (Wernicke's)

SIGNS

- Dehydration: dry tongue, tachycardia, postural drop
- Weight loss
- Ketotic breath
- Uterus large for dates (molar, twins)
- Thyroid signs

DIAGNOSTIC TESTS

Test	Finding / purpose
Urine ketones	Severity
Electrolytes, creatinine, LFT	Hypokalaemia, hyponatraemia, deranged LFT
CBC, TSH	Haemoconcentration; gestational thyrotoxicosis
USG	Multiple pregnancy, molar pregnancy
Urine culture	UTI

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Diet	Small frequent dry meals, avoid triggers, ginger, fluids between meals	Ongoing
First line	Doxylamine 10 mg + pyridoxine 10 mg: 2 tabs HS, increase to 1 morning + 1 afternoon + 2 HS	Until symptoms settle
Second line	Promethazine 25 mg TDS or metoclopramide 10 mg TDS (≤5 days) or ondansetron 4–8 mg TDS (after first trimester preferred)	As needed
Hyperemesis (admit)	IV normal saline with KCl (avoid dextrose first); thiamine 100 mg IV/PO daily; antiemetics IV	Until oral intake
Reflux	Antacids, famotidine 20 mg BD	As needed
Thromboprophylaxis	Enoxaparin 40 mg SC OD if admitted	During admission

REFER / RED FLAGS

- Ketonuria with inability to keep fluids down
- Weight loss >5%, electrolyte imbalance
- Vomiting starting after 10 weeks or with pain/fever (other causes)
- Neurological symptoms (Wernicke's)

GP PEARLS

★ *Give thiamine before dextrose in protracted vomiting to prevent Wernicke's encephalopathy.*

★ *Vomiting starting for the first time after 12 weeks is not simple NVP — look for UTI, hepatitis, pancreatitis.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Doxylamine–pyridoxine (antiemetic)	10/10 mg 1–2 tablets at night (up to 4/day)	First-line	*Drowsiness; safe in pregnancy*
Ondansetron (pregnancy)	4–8 mg PO 8-hourly	Second-line	*Small cleft risk in 1st trimester — weigh benefit*
Metoclopramide (antiemetic)	10 mg PO/IV 8-hourly, ≤5 days	Alternative	*Extrapyramidal effects; avoid in children*
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Dehydration/ketonuria	*Fluid overload in HF/CKD*
Thiamine (vitamin B1)	100 mg PO/IV daily (200–500 mg IV 8-hourly if Wernicke)	Prolonged vomiting	*Give before glucose in alcohol users*
Famotidine (H2 blocker)	20–40 mg PO 12-hourly	Heartburn	*Reduce dose in CKD*

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DISEASE 226 OF 300 | OBSTETRICS & GYNAECOLOGY

Anaemia in Pregnancy

Hb <11 g/dl — oral iron BD; IV iron if severe or late in pregnancy.

DEFINITION

Haemoglobin <11 g/dl in pregnancy (mild 10–10.9, moderate 7–9.9, severe <7 g/dl). Over half of pregnant women in India are anaemic, mostly iron deficiency, also folate and B12 deficiency, hookworm, malaria and haemoglobinopathies. Increases risk of preterm birth, low birth weight, postpartum haemorrhage and maternal death. Anaemia Mukt Bharat provides IFA and IV iron.

SYMPTOMS

- Fatigue, weakness
- Breathlessness, palpitations
- Dizziness
- Pica (eating mud, ice)
- Previous closely spaced pregnancies, heavy periods

SIGNS

- Pallor of conjunctiva, tongue, nails
- Koilonychia, glossitis
- Tachycardia, flow murmur
- Oedema
- Signs of heart failure (severe)

DIAGNOSTIC TESTS

Test	Finding / purpose
Hb, CBC with indices	Microcytic hypochromic (iron) or macrocytic (B12/folate)
Serum ferritin	<30 ng/ml confirms iron deficiency
Peripheral smear, HPLC	Thalassaemia trait, sickle cell (in endemic areas)
Stool for ova, malaria test	Hookworm, malaria
B12, folate	Macrocytosis

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Mild–moderate	Ferrous sulphate/fumarate 1 tablet (60 mg elemental iron) BD + folic acid 500 µg, between meals with vitamin C; recheck Hb in 4 weeks (expect ≥1 g/dl rise)	Until Hb normal + 3 months
IV iron (moderate–severe, intolerance, >30 weeks, non-response)	Ferric carboxymaltose 1000 mg (20 mg/kg, max 1000 mg) IV over 15 min (2nd/3rd trimester)	Single, repeat if needed
Alternative IV	Iron sucrose 200 mg IV on alternate days (total by deficit)	As calculated
Severe (<7 g/dl) near term or with failure	Blood transfusion (refer)	—
Deworming	Albendazole 400 mg single dose (2nd trimester)	Single
Diet	Green leafy vegetables, jaggery, legumes, meat; avoid tea/coffee with meals	Ongoing

REFER / RED FLAGS

- Hb <7 g/dl
- Breathlessness, heart failure
- No response to iron in 4 weeks
- Suspected haemoglobinopathy

GP PEARLS

★ *Black stools and constipation on iron are expected — warn the patient so she does not stop.*

★ *Thalassaemia trait looks like iron deficiency — check ferritin before endless iron.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Iron–folic acid (IFA) tablet	1 tablet (60 mg Fe + 500 µg FA) daily	Prophylaxis/mild anaemia	*Constipation; take with vitamin C*
Ferrous sulphate/ascorbate (oral iron)	60–100 mg elemental iron daily or alternate days	Therapeutic oral iron	*Black stools, constipation*
Ferric carboxymaltose (IV iron)	15–20 mg/kg (max 1 g) IV single dose	Moderate–severe after 1st trimester	*Hypophosphataemia; anaphylaxis rare*
Folic acid	5 mg PO daily (400 µg periconception)	Folate	*Exclude B12 deficiency first*
Vitamin B12 (cyanocobalamin/methylcobalamin)	1000 µg IM alternate days ×5, then monthly	B12 deficiency	*Hypokalaemia early in treatment*
Albendazole (anthelmintic)	400 mg PO single dose (200 mg if 1–2 years)	Hookworm (after 1st trimester)	*Avoid in 1st trimester*

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DISEASE 227 OF 300 | OBSTETRICS & GYNAECOLOGY

Bleeding in Early Pregnancy

Bleeding with a positive test — ectopic pregnancy must be excluded.

DEFINITION

Vaginal bleeding before 20 weeks. Causes: threatened, inevitable, incomplete or complete miscarriage; missed miscarriage; ectopic pregnancy (life-threatening — 1–2%); molar pregnancy; cervical lesions. Shoulder-tip pain, syncope or haemodynamic instability suggests ruptured ectopic.

SYMPTOMS

- Vaginal bleeding, passage of clots or tissue
- Lower abdominal cramps
- Unilateral pain, shoulder-tip pain, fainting (ectopic)
- Amenorrhoea 6–8 weeks
- Excessive vomiting (molar)

SIGNS

- Vital signs — tachycardia, hypotension
- Abdominal tenderness, guarding
- Speculum: os open/closed, products in os
- Cervical motion tenderness, adnexal tenderness (ectopic)
- Uterine size vs dates

DIAGNOSTIC TESTS

Test	Finding / purpose
Urine/serum β-hCG	Confirm pregnancy
Transvaginal USG	Intrauterine pregnancy, viability, retained products, ectopic, molar
Serial β-hCG (48 h)	Pregnancy of unknown location
CBC, blood group & Rh	Anaemia; anti-D if Rh negative

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Shocked or suspected ruptured ectopic	Two large IV lines, RL/NS, cross-match; emergency referral for surgery	Immediate
Threatened miscarriage (viable IUP, closed os)	Reassurance, avoid strenuous activity; micronised progesterone 400 mg vaginally BD (if previous miscarriage)	Until 16 weeks
Incomplete miscarriage	Misoprostol 600 µg PO or 400 µg SL/vaginal single dose, or surgical evacuation (MVA)	As stated
Missed miscarriage	Mifepristone 200 mg PO, then misoprostol 800 µg vaginally after 24–48 h (specialist)	As stated
Rh negative	Anti-D immunoglobulin 50 µg (<12 weeks) or 300 µg IM within 72 h	Single
Pain	Paracetamol 1 g QID	As needed

REFER / RED FLAGS

- Haemodynamic instability, severe pain, shoulder-tip pain
- Suspected ectopic or molar pregnancy
- Heavy bleeding, retained products
- Rh negative needing anti-D

GP PEARLS

★ *A woman of reproductive age with abdominal pain and fainting has a ruptured ectopic until proven otherwise.*

★ *An empty uterus with a positive hCG is not a "complete miscarriage" until ectopic is excluded.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Anti-D immunoglobulin	300 µg IM within 72 h (50 µg if <12 weeks)	Rh-negative mothers	*Rh-negative mothers only*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Misoprostol (prostaglandin E1)	As per MTP/PPH protocol (e.g., 600 µg PO for PPH)	Incomplete miscarriage (per protocol)	*Not in suspected ectopic; teratogenic*
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Haemodynamic instability	*Fluid overload in HF/CKD*
Ferrous sulphate/ascorbate (oral iron)	60–100 mg elemental iron daily or alternate days	Anaemia	*Black stools, constipation*

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DISEASE 228 OF 300 | OBSTETRICS & GYNAECOLOGY

Hypertension in Pregnancy & Pre-eclampsia

BP ≥140/90 after 20 weeks — check protein, symptoms and labs; magnesium for severe features.

DEFINITION

Gestational hypertension: new BP ≥140/90 after 20 weeks. Pre-eclampsia: hypertension with proteinuria or organ dysfunction (thrombocytopenia, raised creatinine, liver involvement, neurological symptoms, pulmonary oedema, fetal growth restriction). Severe features: BP ≥160/110, symptoms. Eclampsia = seizures. HELLP: haemolysis, elevated liver enzymes, low platelets.

SYMPTOMS

- Often asymptomatic
- Severe headache, visual disturbance (flashing lights)
- Epigastric/right upper quadrant pain, vomiting
- Sudden swelling of face and hands
- Reduced fetal movements

SIGNS

- BP (correct cuff, sitting)
- Proteinuria on dipstick
- Brisk reflexes, clonus
- RUQ tenderness
- Fundal height small for dates

DIAGNOSTIC TESTS

Test	Finding / purpose
Urine protein (dipstick, PCR)	≥1+ or PCR ≥0.3
CBC (platelets), LFT, creatinine, uric acid, LDH	Organ involvement, HELLP
USG with Doppler, NST	Fetal growth and well-being
Coagulation profile	Platelets <1 lakh

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Prevention (high risk)	Aspirin 75–150 mg HS from 12 weeks to 36 weeks; calcium 1–1.5 g/day	As stated
Antihypertensive (target 135/85)	Labetalol 100 mg BD → max 2400 mg/day, or nifedipine SR 10–20 mg BD → 60 mg BD, or methyldopa 250 mg TDS → 1 g TDS	Until delivery + postpartum
Severe BP ≥160/110 (urgent)	Labetalol 20 mg IV → 40 → 80 mg every 10 min (max 300 mg), or nifedipine 10 mg oral immediate-release, repeat in 20 min	Immediate
Severe features / eclampsia — magnesium (Pritchard)	$MgSO_4$ 4 g IV (20%) over 15–20 min + 10 g IM (5 g in each buttock, 50%), then 5 g IM every 4 h in alternate buttocks	24 h after delivery/last fit
Monitor on $MgSO_4$	Knee jerk present, RR >12, urine >30 ml/h; antidote calcium gluconate 10% 10 ml IV	—
Definitive	Delivery (timing by severity and gestation; ≥37 weeks for gestational HTN/mild PE)	—

REFER / RED FLAGS

- BP ≥160/110 or any severe feature
- Proteinuria with hypertension (pre-eclampsia)
- Seizure (give $MgSO_4$ before transfer)
- Fetal growth restriction, reduced movements

GP PEARLS

★ *Give the loading dose of magnesium sulphate before referral — it is the most effective drug for eclampsia.*

★ *ACE inhibitors and ARBs are contraindicated in pregnancy — switch before conception.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Methyldopa / labetalol / nifedipine (pregnancy BP)	Methyldopa 250 mg 8-hourly; labetalol 100 mg 12-hourly	Labetalol/nifedipine/methyldopa	*ACE inhibitors/ARBs contraindicated*
Magnesium sulphate	4 g IV over 15–20 min loading (eclampsia)	Severe pre-eclampsia/eclampsia	*Monitor reflexes, RR, urine; antidote calcium gluconate*
Aspirin (pre-eclampsia prophylaxis)	75–150 mg at night from 12–16 weeks to 36 weeks	Prophylaxis in high risk	*Stop at 36 weeks*
Calcium carbonate (supplement)	500–1000 mg elemental calcium daily in divided doses	Calcium supplementation	*Constipation; separate from iron/thyroxine*
Nifedipine retard (CCB)	10–20 mg PO 12-hourly (retard only)	Retard for BP	*Never sublingual short-acting*
Labetalol (α/β-blocker)	100–200 mg PO 12-hourly; 20 mg IV	IV in severe hypertension	*Avoid in asthma*

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DISEASE 229 OF 300 | OBSTETRICS & GYNAECOLOGY

Gestational Diabetes

One-step 75 g OGTT (DIPSI) — diet first, then metformin or insulin.

DEFINITION

Glucose intolerance first detected in pregnancy. India's national guideline uses the single-step DIPSI test: 75 g oral glucose irrespective of fasting state, 2-h plasma glucose ≥140 mg/dl = GDM; tested at first visit and again at 24–28 weeks. Risks: macrosomia, shoulder dystocia, polyhydramnios, neonatal hypoglycaemia, stillbirth, and future type 2 diabetes for the mother.

SYMPTOMS

- Usually asymptomatic
- Risk factors: obesity, family history, previous GDM or big baby, PCOS, age >25
- Polyuria, recurrent infections
- Previous unexplained stillbirth

SIGNS

- BMI, weight gain
- Fundal height large for dates
- Polyhydramnios
- BP

DIAGNOSTIC TESTS

Test	Finding / purpose
75 g OGTT (DIPSI)	2-h ≥140 mg/dl = GDM
Fasting and 2-h post-meal glucose (SMBG)	Targets: fasting <95, 1-h PP <140, 2-h PP <120 mg/dl
HbA1c	Pre-existing diabetes if ≥6.5% early
USG growth scans	Macrosomia, polyhydramnios

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Medical nutrition therapy	Small frequent meals, complex carbohydrates, avoid sweets/juices; 30 min walk after meals	Throughout pregnancy
Not at target after 2 weeks	Metformin 500 mg OD → up to 2 g/day in divided doses	Until delivery
Insulin (if metformin fails or high glucose)	Human insulin: NPH at bedtime for fasting; regular insulin before meals; start 0.1–0.2 U/kg/day, titrate every 3 days	Until delivery
Monitoring	SMBG fasting and post-meal; growth scans; fetal well-being	Ongoing
After delivery	Stop drugs; check glucose before discharge; 75 g OGTT at 6–12 weeks postpartum, then yearly	Lifelong screening
Breastfeeding	Encourage — reduces neonatal hypoglycaemia and maternal diabetes risk	—

REFER / RED FLAGS

- Glucose not controlled on diet and metformin
- Pre-existing diabetes
- Macrosomia, polyhydramnios
- Hypertension or other complications

GP PEARLS

★ *GDM mothers have up to a 50% chance of type 2 diabetes in 10 years — screen yearly for life.*

★ *Do not use sulfonylureas in pregnancy; metformin and insulin are preferred.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Metformin (biguanide)	500 mg daily–1 g 12-hourly with meals	If diet fails (specialist)	*GI upset; stop if eGFR <30, contrast, sepsis*
Premixed / NPH insulin	Start 0.1–0.2 U/kg/day; titrate by FBG	Insulin if targets not met	*Hypoglycaemia; teach injection & storage*
Regular / rapid-acting insulin	0.1 U/kg/h IV infusion in DKA; SC with meals	Prandial insulin	*Check K+ before insulin in DKA*
Dextrose 25%/50% IV	25% dextrose 100 ml IV (child 2–5 ml/kg 10%)	Hypoglycaemia	*Thrombophlebitis; recheck glucose 15 min*

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DISEASE 230 OF 300 | OBSTETRICS & GYNAECOLOGY

Mastalgia & Breast Lump

Every breast lump gets triple assessment — examination, imaging, needle biopsy.

DEFINITION

Cyclical mastalgia (premenstrual, bilateral, diffuse) is common and benign. Breast lumps in young women are usually fibroadenomas or cysts; in women over 35 cancer must be excluded. Breast cancer is the commonest cancer in Indian women, often presenting late. Triple assessment: clinical, imaging (USG <35 y, mammography ≥35–40 y) and FNAC/core biopsy.

SYMPTOMS

- Breast pain before periods (cyclical)
- A lump — duration, growth, pain
- Nipple discharge (bloody — red flag), retraction
- Skin changes: dimpling, peau d'orange
- Family history of breast/ovarian cancer

SIGNS

- Smooth, mobile, rubbery lump (fibroadenoma, "breast mouse")
- Hard, irregular, fixed lump (cancer)
- Skin tethering, nipple retraction, peau d'orange
- Axillary and supraclavicular nodes
- Lumpy tender breasts (fibroadenosis)

DIAGNOSTIC TESTS

Test	Finding / purpose
USG breast	Women <35; cysts vs solid
Mammography	Women ≥35–40
FNAC / core needle biopsy	All solid lumps
Discharge cytology	Single duct, bloody discharge

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Cyclical mastalgia	Reassurance (after exam), well-fitting supportive bra, reduce caffeine; topical diclofenac gel	3 months
Persistent mastalgia	Evening primrose oil 1 g BD (limited evidence); ormeloxifene 30 mg alternate days × 3 months or tamoxifen 10 mg OD (specialist)	3 months
Simple cyst	Aspiration if painful; refer if blood-stained or residual lump	—
Fibroadenoma (confirmed)	Observation if <3 cm; excision if large, growing or patient prefers	—
Suspected cancer	Urgent referral to breast surgeon	Within 2 weeks
Breast self-awareness	Monthly self-examination after periods; clinical exam yearly	Ongoing

REFER / RED FLAGS

- Any lump in a woman ≥30–35, or persistent lump at any age
- Bloody nipple discharge, nipple retraction, skin changes
- Axillary node
- Lump in male breast (non-gynaecomastia)

GP PEARLS

★ *Never reassure a woman with a lump without triple assessment.*

★ *Pain does not exclude cancer — but cyclical bilateral pain without a lump is rarely sinister.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Mastalgia	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Diclofenac gel 1% (topical NSAID)	Apply to area 3–4 times daily	Topical NSAID	*Minimal systemic effect; avoid broken skin*

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DISEASE 231 OF 300 | OBSTETRICS & GYNAECOLOGY

Lactational Mastitis & Breast Abscess

Keep breastfeeding — emptying the breast is part of the cure.

DEFINITION

Inflammation of the breast in breastfeeding women, usually from milk stasis (engorgement, blocked duct, poor attachment) with or without infection (Staphylococcus aureus). Untreated, 5–10% progress to breast abscess. Peak in first 6 weeks postpartum.

SYMPTOMS

- Painful, red, swollen wedge-shaped area of breast
- Fever, chills, flu-like symptoms
- Sore, cracked nipples
- Engorged, full breasts
- Fluctuant painful lump (abscess)

SIGNS

- Tender, warm, erythematous area
- Fever
- Cracked nipple
- Fluctuant mass (abscess) — USG confirms
- Axillary nodes

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
Milk culture	Severe, recurrent, hospital-acquired
USG breast	Suspected abscess

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Continue breastfeeding	Feed frequently from affected side first; correct latch; express if needed	Ongoing
Supportive	Warm compresses before feeds, cold after; rest, fluids	Until settled
Analgesia	Paracetamol 650 mg–1 g QID or ibuprofen 400 mg TDS (safe in breastfeeding)	5–7 days
Antibiotic (symptoms >24 h, fever, cracked nipple)	Cloxacillin 500 mg QID or cephalexin 500 mg QID (clindamycin 300 mg QID if allergic)	10–14 days
Abscess	USG-guided needle aspiration (repeat) or incision and drainage; continue feeding from other side	—
Cracked nipples	Expressed breast milk on nipples, correct positioning	Ongoing

REFER / RED FLAGS

- Abscess
- Not improving after 48 h of antibiotics
- Sepsis
- Recurrent mastitis at same site (exclude tumour)

GP PEARLS

★ *Stopping breastfeeding worsens mastitis — reassure that milk from the affected breast is safe for the baby.*

★ *Recurrent mastitis at the same site in a non-lactating woman may be inflammatory breast cancer.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Cloxacillin (anti-staphylococcal penicillin)	500 mg PO 6-hourly before food	Lactational mastitis	*Penicillin allergy*
Cephalexin (1st-gen cephalosporin)	500 mg PO 6–8-hourly	Alternative	*Penicillin cross-allergy (low)*
Clindamycin (lincosamide)	300 mg PO 6–8-hourly	Penicillin allergy	*C. difficile diarrhoea*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain/fever	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain (safe in lactation)	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Lidocaine 2% (local anaesthetic) for procedures	Max 3 mg/kg (7 mg/kg with adrenaline)	Aspiration/I&D of abscess	*No adrenaline on digits as per local practice*

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DISEASE 232 OF 300 | OBSTETRICS & GYNAECOLOGY

Drugs in Pregnancy & Lactation

Prescribe only what is needed, use well-known safe drugs, lowest effective dose.

DEFINITION

Most drugs cross the placenta; the first trimester (organogenesis) carries the highest teratogenic risk. Many drugs pass into breast milk, but most are compatible with breastfeeding. This page lists commonly used safe options and drugs to avoid. Always check current references for any individual drug.

SYMPTOMS

- Is she pregnant or could she be? (LMP)
- Is she breastfeeding? Baby's age, prematurity
- Current medications, supplements, herbal products
- Chronic illness needing ongoing treatment (epilepsy, hypertension, thyroid, asthma)

SIGNS

- Gestational age (by dates and USG)
- Weight for dose calculation
- BP, renal and hepatic function
- Infant age, weight, prematurity (lactation)
- Severity of the condition being treated

DIAGNOSTIC TESTS

Test	Finding / purpose
Pregnancy test	Before teratogenic drugs, X-rays
Reference	LactMed/drug formulary for specific drugs

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Pain / fever — safe	Paracetamol 500–1000 mg QID. Avoid NSAIDs after 20 weeks (renal, ductus) and in first trimester if possible	As needed
Antibiotics — safe	Penicillins (amoxicillin, amoxicillin-clavulanate), cephalosporins, azithromycin, nitrofurantoin (avoid at term), metronidazole (2nd/3rd trimester)	As indicated
Antibiotics — avoid	Tetracyclines/doxycycline, fluoroquinolones, aminoglycosides, co-trimoxazole (1st trimester and near term)	—
Other safe options	Antacids, famotidine; doxylamine-pyridoxine; cetirizine/loratadine; salbutamol, budesonide inhalers; levothyroxine; labetalol, nifedipine, methyldopa; insulin, metformin; enoxaparin	As indicated
Avoid in pregnancy	Valproate, phenytoin, carbamazepine (if alternatives), isotretinoin, warfarin (1st trimester), ACEi/ARB, statins, methotrexate, misoprostol, danazol, lithium (specialist)	—
Lactation — avoid/caution	Combined OCP (first 6 weeks), codeine/tramadol (infant sedation), amiodarone, lithium, cytotoxics, high-dose aspirin, bromocriptine/cabergoline (suppress milk)	—

REFER / RED FLAGS

- Women with chronic illness planning pregnancy (pre-conception review)
- Inadvertent exposure to a known teratogen
- Need for drugs with limited safety data
- Infant adverse effects during breastfeeding

GP PEARLS

★ *Never stop an antiepileptic abruptly on discovering pregnancy — seizures are more dangerous; refer for review.*

★ *Most drugs are compatible with breastfeeding — unnecessary weaning harms mother and baby.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Safest analgesic	*Hepatotoxic in overdose; check combination products*
Iron–folic acid (IFA) tablet	1 tablet (60 mg Fe + 500 µg FA) daily	Pregnancy supplement	*Constipation; take with vitamin C*
Amoxicillin (penicillin)	500 mg PO 8-hourly (child 15–25 mg/kg 8-hourly)	Safe antibiotic	*Penicillin allergy; rash in EBV*
Cephalexin (1st-gen cephalosporin)	500 mg PO 6–8-hourly	Safe antibiotic	*Penicillin cross-allergy (low)*
Methyldopa / labetalol / nifedipine (pregnancy BP)	Methyldopa 250 mg 8-hourly; labetalol 100 mg 12-hourly	Safe antihypertensives	*ACE inhibitors/ARBs contraindicated*
Premixed / NPH insulin	Start 0.1–0.2 U/kg/day; titrate by FBG	Diabetes in pregnancy	*Hypoglycaemia; teach injection & storage*

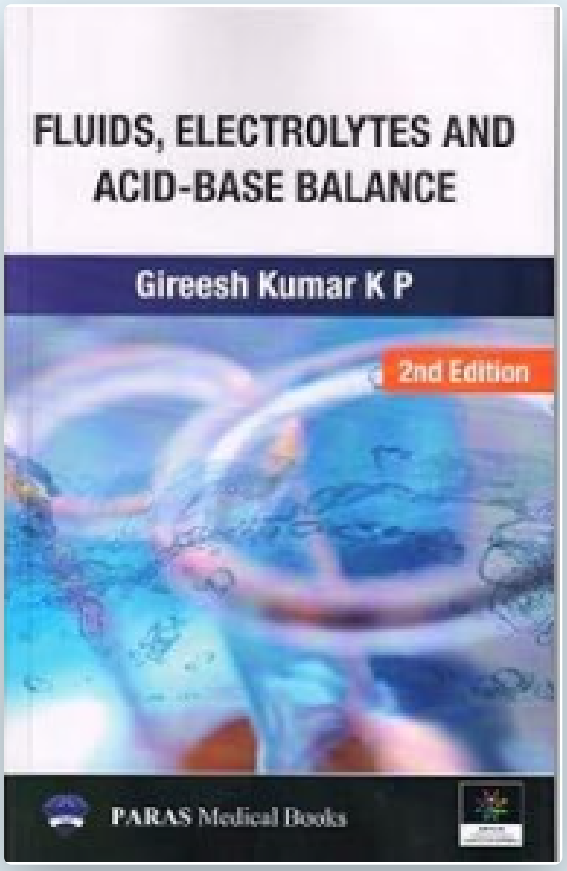
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DISEASE 233 OF 300 | PAEDIATRICS

Fever in a Child

Look at the child, not the thermometer — check danger signs and the source.

DEFINITION

Temperature ≥38 °C. Most fevers in children are viral. Infants under 3 months with fever, and any child with IMNCI general danger signs, need urgent assessment. Serious bacterial infections to exclude: UTI, pneumonia, meningitis, septicaemia, osteomyelitis; in India also malaria, dengue, typhoid and scrub typhus.

SYMPTOMS

- Duration and height of fever
- Feeding, activity, urine output
- Cough, fast breathing, vomiting, diarrhoea, ear pain, rash
- Convulsions, drowsiness
- Immunisation status, sick contacts

SIGNS

- IMNCI danger signs: unable to drink/breastfeed, vomits everything, convulsions, lethargic/unconscious
- Fast breathing (≥60 <2 mo; ≥50 2–12 mo; ≥40 1–5 y), chest indrawing
- Capillary refill, hydration
- Neck stiffness, bulging fontanelle, non-blanching rash
- Ear, throat, joints, skin

DIAGNOSTIC TESTS

Test	Finding / purpose
None for a well child with clear viral source	—
Urine routine and culture	No focus, <2 y, or >3 days of fever
CBC, CRP	Ill-appearing or fever >3–5 days
Malaria RDT/smear, dengue NS1	Endemic area/season
Chest X-ray, blood culture, LP	As indicated (hospital)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Antipyretic	Paracetamol 15 mg/kg/dose 6-hourly (max 60 mg/kg/day) SOS for distress; ibuprofen 10 mg/kg/dose 8-hourly (>3 months, not in dengue/dehydration)	Until afebrile
Fluids	Continue breastfeeding and fluids; extra fluids during fever	Throughout
Comfort	Light clothing; tepid sponging only if distressed	—
Treat source	AOM, pneumonia, UTI: see relevant pages	As per cause
Avoid	Aspirin (Reye's), alternating antipyretics routinely, nimesulide, antibiotics for viral fever	—
Safety-netting	Return if danger signs, rash, fever >3 days, poor feeding	—

REFER / RED FLAGS

- Infant <3 months with fever ≥38 °C
- Any IMNCI danger sign
- Non-blanching rash, neck stiffness
- Fast breathing, chest indrawing, dehydration

GP PEARLS

★ *Antipyretics treat discomfort, not the number — they do not prevent febrile seizures.*

★ *Always examine the urine of a febrile infant without a clear focus.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (child)	15 mg/kg PO 6-hourly; max 60 mg/kg/day	15 mg/kg 6-hourly	*Use weight-based dose; avoid adult tablets*
Ibuprofen (child)	5–10 mg/kg PO 8-hourly after food	Alternative (not in dengue)	*Avoid in dehydration, dengue, asthma flares*
Oral rehydration salts (low osmolarity)	200–400 ml after each loose stool; 75 ml/kg over 4 h for some dehydration	Hydration	*Use clean water; correct mixing*
Amoxicillin (penicillin)	500 mg PO 8-hourly (child 15–25 mg/kg 8-hourly)	Specific bacterial focus	*Penicillin allergy; rash in EBV*
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	Toxic child — first dose & refer	*Biliary sludge; not with calcium IV in neonates*

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DISEASE 234 OF 300 | PAEDIATRICS

Febrile Seizures

Frightening for parents, benign for most children — find the fever source.

DEFINITION

Seizures with fever ≥38 °C in children aged 6 months to 5 years without CNS infection or previous afebrile seizures. Simple: generalised, <15 minutes, once in 24 h. Complex: focal, >15 min or recurrent within 24 h. Recurrence occurs in about 30%; risk of later epilepsy is only slightly raised.

SYMPTOMS

- Generalised jerking with fever
- Short duration, followed by drowsiness
- Fever source: URTI, AOM, gastroenteritis, roseola
- Family history
- Previous febrile seizures

SIGNS

- Temperature
- Return to normal consciousness within an hour
- No neck stiffness, bulging fontanelle
- Source of fever
- Normal neurological examination

DIAGNOSTIC TESTS

Test	Finding / purpose
Capillary glucose	During/after seizure
Investigate fever source	Urine, CBC as indicated
Lumbar puncture	<12 months, meningism, prolonged drowsiness, pretreated with antibiotics
EEG, neuroimaging	Not needed for simple febrile seizures

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
During seizure	Place on side, protect from injury, nothing in mouth, time it	Immediate
Seizure >5 min	Midazolam 0.2–0.3 mg/kg buccal/intranasal (max 10 mg) or diazepam 0.5 mg/kg rectal or lorazepam 0.1 mg/kg IV	Stat; repeat once
Fever	Paracetamol 15 mg/kg/dose SOS (for comfort)	As needed
Treat cause	As indicated	—
Intermittent prophylaxis (frequent recurrences only)	Clobazam 0.75 mg/kg/day in 2 doses during fever	2–3 days per febrile illness
Parent education	Explain benign nature; first aid; home rescue medication for recurrent cases	—

REFER / RED FLAGS

- Complex febrile seizure
- Seizure >5 min or not recovering within 1 h
- Meningism, age <12 months
- First febrile seizure (assessment)

GP PEARLS

★ *Regular antipyretics do not prevent febrile seizures — reassure parents that this is not their failure.*

★ *Long-term antiepileptics are not indicated for simple febrile seizures.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (child)	15 mg/kg PO 6-hourly; max 60 mg/kg/day	Fever comfort	*Use weight-based dose; avoid adult tablets*
Midazolam (benzodiazepine)	10 mg buccal/IM (0.2–0.3 mg/kg child)	Seizure >5 min (buccal)	*Respiratory depression*
Diazepam (benzodiazepine)	5–10 mg PO/IV; rectal 0.5 mg/kg child	Rectal alternative	*Sedation, dependence*
Ibuprofen (child)	5–10 mg/kg PO 8-hourly after food	Fever comfort	*Avoid in dehydration, dengue, asthma flares*
Oral rehydration salts (low osmolarity)	200–400 ml after each loose stool; 75 ml/kg over 4 h for some dehydration	Hydration	*Use clean water; correct mixing*
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	Suspected meningitis	*Biliary sludge; not with calcium IV in neonates*

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DISEASE 235 OF 300 | PAEDIATRICS

Acute Diarrhoea & Dehydration in Children

ORS and zinc for every child — antibiotics only for dysentery and cholera.

DEFINITION

Passage of ≥3 loose/watery stools in 24 h for <14 days. Main danger is dehydration; rotavirus and other viruses predominate. IMNCI classifies dehydration as none, some (Plan B) or severe (Plan C). Persistent diarrhoea lasts ≥14 days; dysentery is blood in stools (Shigella).

SYMPTOMS

- Frequency and nature of stools, blood
- Vomiting
- Thirst, reduced urine
- Feeding, lethargy
- Fever, recent antibiotics

SIGNS

- Some dehydration: restless/irritable, sunken eyes, drinks eagerly, skin pinch goes back slowly
- Severe: lethargic, sunken eyes, drinks poorly, skin pinch very slow (>2 s)
- Weight
- Abdominal distension
- Signs of malnutrition

DIAGNOSTIC TESTS

Test	Finding / purpose
None in most	Clinical assessment
Electrolytes, creatinine	Severe dehydration
Stool microscopy	Dysentery, persistent diarrhoea

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Plan A (no dehydration)	Low-osmolarity ORS after each stool: <2 y 50–100 ml; 2–10 y 100–200 ml; continue feeding	Until diarrhoea stops
Plan B (some dehydration)	ORS 75 ml/kg over 4 h in clinic, then reassess	4 h
Plan C (severe)	IV Ringer lactate 100 ml/kg: infants <12 mo — 30 ml/kg in 1 h then 70 ml/kg in 5 h; ≥12 mo — 30 ml/kg in 30 min then 70 ml/kg in 2.5 h	As stated
Zinc (all)	Zinc 10 mg OD (2–6 months), 20 mg OD (>6 months)	14 days
Dysentery	Azithromycin 10–20 mg/kg OD × 3 days or ceftriaxone 50–100 mg/kg/day (severe)	3–5 days
Avoid	Antidiarrhoeals, antimotility drugs, routine antibiotics, antiemetics (ondansetron 0.15 mg/kg single dose acceptable for vomiting)	—

REFER / RED FLAGS

- Severe dehydration
- Blood in stool with fever, <6 months
- Persistent diarrhoea ≥14 days
- Severe malnutrition, unable to drink

GP PEARLS

★ *Continue breastfeeding throughout — never stop feeding in diarrhoea.*

★ *ORS + zinc reduces duration and the next 3 months' episodes.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Oral rehydration salts (low osmolarity)	200–400 ml after each loose stool; 75 ml/kg over 4 h for some dehydration	Plan A/B rehydration	*Use clean water; correct mixing*
Zinc sulphate (child diarrhoea)	20 mg daily ×14 days (10 mg <6 months)	10–20 mg ×14 days	*Vomiting if taken empty stomach*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Single dose for vomiting	*QT; constipation*
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Plan C (RL/NS)	*Fluid overload in HF/CKD*
Racecadotril (antisecretory)	100 mg PO 8-hourly (child 1.5 mg/kg)	Adjunct (selected)	*Adjunct only; not in bloody diarrhoea*

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DISEASE 236 OF 300 | PAEDIATRICS

Croup (Laryngotracheobronchitis)

Barking cough and stridor at night in a toddler — one dose of dexamethasone.

DEFINITION

Viral (parainfluenza) infection of the larynx and trachea in children 6 months to 3 years, causing subglottic swelling with barking cough, hoarse voice and inspiratory stridor, typically worse at night. Most cases are mild. Differentials: epiglottitis, bacterial tracheitis, foreign body, retropharyngeal abscess.

SYMPTOMS

- Seal-like barking cough
- Hoarse voice
- Noisy breathing (stridor), worse at night and when crying
- Preceding cold, low-grade fever
- Drooling, toxic look (epiglottitis — different)

SIGNS

- Stridor at rest (moderate–severe) or only when agitated (mild)
- Chest indrawing
- SpO_2
- Agitation, lethargy, cyanosis (severe)
- Not toxic, can swallow

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	Westley croup score
Avoid throat examination with spatula if epiglottitis suspected	—
Neck X-ray	Not routinely (steeple sign)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
All severities	Dexamethasone 0.15–0.6 mg/kg orally or IM (max 10 mg) single dose; or prednisolone 1 mg/kg	Single (repeat at 24 h if needed)
Alternative	Nebulised budesonide 2 mg	Single
Moderate–severe (stridor at rest)	Nebulised adrenaline 1:1000, 0.5 ml/kg (max 5 ml) — observe for 3–4 h after; refer	May repeat
Comfort	Keep child calm on parent's lap; avoid distressing procedures; fluids	—
Fever	Paracetamol 15 mg/kg SOS	As needed
Not useful	Steam/humidified air, antibiotics, cough syrups	—

REFER / RED FLAGS

- Stridor at rest, chest indrawing, SpO_2 <92%
- Toxic, drooling, unable to swallow (epiglottitis)
- Received nebulised adrenaline
- Age <6 months or recurrent croup

GP PEARLS

★ *Do not lie the child down or examine the throat forcibly — agitation worsens obstruction.*

★ *Oral dexamethasone works as well as injection.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Dexamethasone (corticosteroid)	4–8 mg IV/IM/PO; 0.15–0.6 mg/kg child	0.15–0.6 mg/kg single dose	*Hyperglycaemia; GI bleeding*
Nebulised adrenaline (croup)	0.5 ml/kg of 1:1000 (max 5 ml) nebulised	Moderate–severe croup	*Observe 2–4 h for rebound*
Budesonide nebuliser (ICS)	0.5–1 mg neb 12-hourly	Alternative steroid	*Rinse mouth; use mask/spacer in children*
Paracetamol (child)	15 mg/kg PO 6-hourly; max 60 mg/kg/day	Fever	*Use weight-based dose; avoid adult tablets*
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	Hypoxia	*Avoid hyperoxia in COPD CO2 retainers*
Ibuprofen (child)	5–10 mg/kg PO 8-hourly after food	Comfort	*Avoid in dehydration, dengue, asthma flares*

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DISEASE 237 OF 300 | PAEDIATRICS

Bronchiolitis

Wheezy, breathless infant after a cold — supportive care only.

DEFINITION

Acute viral lower respiratory infection (RSV most often) in infants under 2 years (peak 2–6 months), causing inflammation and obstruction of small airways. Symptoms peak on days 3–5 and settle over 2–3 weeks. Higher risk: prematurity, age <3 months, congenital heart disease, chronic lung disease.

SYMPTOMS

- Coryza for 1–3 days, then cough
- Fast breathing, wheeze
- Poor feeding (less than half usual)
- Apnoea in young infants
- Low-grade fever

SIGNS

- Tachypnoea, subcostal recession, nasal flaring
- Fine crackles and/or wheeze
- SpO_2 <92% (severe)
- Dehydration
- Grunting, cyanosis (severe)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
SpO_2	Key decision tool
Chest X-ray, CBC	Only if severe or diagnostic doubt

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Supportive	Nasal saline drops and gentle suction before feeds; small frequent feeds	Until recovered
Oxygen (hospital)	If SpO_2 <92%	As needed
Hydration	NG or IV fluids if unable to feed (hospital)	As needed
Fever	Paracetamol 15 mg/kg SOS	As needed
Not recommended	Salbutamol, steroids, antibiotics, cough syrups, adrenaline routinely	—
Safety-netting	Return if breathing worse, feeds <50%, no urine 12 h, apnoea	—

REFER / RED FLAGS

- SpO_2 <92%, apnoea, cyanosis, grunting
- Feeding <50% or dehydration
- Age <3 months, prematurity, heart/lung disease
- Severe chest indrawing, RR >70

GP PEARLS

★ *Bronchiolitis gets worse before it gets better — warn parents about days 3–5.*

★ *A trial of salbutamol is reasonable only in older infants with a strong atopic history.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	SpO2 <92%	*Avoid hyperoxia in COPD CO2 retainers*
Saline nasal drops/spray	2–3 drops each nostril as needed	Nasal suctioning	*Safe in infants and pregnancy*
Hypertonic saline 3% nebulisation	4 ml nebulised 6–8-hourly (bronchiolitis, in hospital)	Hospital nebulisation	*Pre-treat with bronchodilator if wheeze*
Paracetamol (child)	15 mg/kg PO 6-hourly; max 60 mg/kg/day	Fever	*Use weight-based dose; avoid adult tablets*
Oral rehydration salts (low osmolarity)	200–400 ml after each loose stool; 75 ml/kg over 4 h for some dehydration	Hydration	*Use clean water; correct mixing*
Salbutamol (SABA)	MDI 100 µg 2–4 puffs; neb 2.5–5 mg	Trial only if atopic	*Tremor, hypokalaemia, tachycardia*

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DISEASE 238 OF 300 | PAEDIATRICS

Pneumonia in Children

Fast breathing is pneumonia — amoxicillin for 5 days; chest indrawing means refer.

DEFINITION

Acute lower respiratory infection — a leading cause of death in children under 5 in India. IMNCI defines pneumonia by cough or difficult breathing with fast breathing (≥50/min at 2–12 months; ≥40/min at 1–5 years). Severe pneumonia has chest indrawing (in hospital protocols), any danger sign or SpO_2 <90%. Pathogens: S. pneumoniae, H. influenzae, viruses.

SYMPTOMS

- Cough, fever
- Fast or difficult breathing
- Poor feeding, vomiting
- Lethargy
- Grunting

SIGNS

- Respiratory rate (count a full minute)
- Lower chest indrawing
- Crepitations, bronchial breathing
- SpO_2
- Danger signs: unable to drink, convulsions, lethargy, central cyanosis

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis (IMNCI)	—
SpO_2	<90% = severe
Chest X-ray, CBC, CRP	Severe, not responding

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Pneumonia (fast breathing)	Amoxicillin 40–45 mg/kg/dose BD (dispersible 250 mg tabs: 2–12 mo 1 tab BD; 12 mo–5 y 2 tabs BD)	5 days
Severe pneumonia — pre-referral	First dose ampicillin 50 mg/kg IM + gentamicin 7.5 mg/kg IM (or ceftriaxone 50–100 mg/kg)	Stat
Hospital	Ampicillin 50 mg/kg IV 6-hourly + gentamicin, or ceftriaxone 75–100 mg/kg/day; oxygen if SpO_2 <90%	5–7 days
Atypical (≥5 y)	Azithromycin 10 mg/kg day 1 then 5 mg/kg days 2–5	5 days
Fever, fluids	Paracetamol 15 mg/kg; continue breastfeeding	As needed
Review	After 2–3 days (IMNCI follow-up)	—

REFER / RED FLAGS

- Chest indrawing with danger sign, SpO_2 <90%
- Age <2 months
- Severe malnutrition
- No improvement in 48–72 h

GP PEARLS

★ *Count the respiratory rate for a full 60 seconds with the child calm.*

★ *Pneumococcal (PCV) and Hib vaccines prevent most severe pneumonia — check immunisation.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Amoxicillin (penicillin)	500 mg PO 8-hourly (child 15–25 mg/kg 8-hourly)	Oral amoxicillin (IMNCI)	*Penicillin allergy; rash in EBV*
Amoxicillin–clavulanate (penicillin + β-lactamase inhibitor)	625 mg PO 8-hourly (child 25–45 mg/kg/day amox)	Not improving	*Diarrhoea, cholestatic jaundice*
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	Severe pneumonia — first dose & refer	*Biliary sludge; not with calcium IV in neonates*
Azithromycin (macrolide)	500 mg PO once daily ×3 days (child 10 mg/kg)	Atypical in older child	*QT prolongation; avoid with other QT drugs*
Paracetamol (child)	15 mg/kg PO 6-hourly; max 60 mg/kg/day	Fever	*Use weight-based dose; avoid adult tablets*
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	Hypoxia	*Avoid hyperoxia in COPD CO2 retainers*

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DISEASE 239 OF 300 | PAEDIATRICS

Childhood Wheeze & Asthma

Inhaler with spacer for every wheezy child — never nebuliser-only.

DEFINITION

Recurrent wheeze in preschool children is often viral-induced; persistent or multi-trigger wheeze with atopy suggests asthma. In children ≥5 years, asthma is diagnosed by recurrent symptoms with variable airflow. Treatment uses inhalers via spacer (with mask in under-4s).

SYMPTOMS

- Recurrent wheeze, cough at night or with exercise
- Triggers: colds, dust, smoke, cold air
- Family history of asthma, eczema
- Breathlessness limiting play
- Frequent "chest infections"

SIGNS

- Wheeze, prolonged expiration
- Tachypnoea, chest indrawing (acute)
- SpO_2
- Eczema, allergic rhinitis
- Growth parameters

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis (<5 y)	Response to treatment
Spirometry or PEF variability (≥5 y)	Reversibility
Chest X-ray	Atypical features, first severe episode
CBC (eosinophils), IgE	Atopy

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Reliever	Salbutamol MDI 100 µg 2–4 puffs via spacer (± mask) SOS; up to 10 puffs every 20 min in acute attack	SOS
Acute attack	Prednisolone 1–2 mg/kg (max 40 mg) OD	3 days
Controller (frequent symptoms)	Budesonide 100–200 µg BD or fluticasone 50–100 µg BD via spacer	3 months, then review
Add-on / viral wheeze	Montelukast 4 mg (2–5 y), 5 mg (6–14 y) HS	3 months
Child ≥6 y step 3	Low-dose ICS-formoterol (budesonide-formoterol 100/6 µg) BD	Review
Environment	No smoking at home, reduce dust mites, avoid mosquito coils/biomass smoke	Ongoing

REFER / RED FLAGS

- Severe attack, SpO_2 <92%, silent chest
- Poor growth, recurrent pneumonia
- Wheeze from birth or with feeding (structural cause)
- Uncontrolled on moderate-dose ICS

GP PEARLS

★ *An MDI with a spacer is as effective as a nebuliser and costs a fraction.*

★ *Inhaled steroids at standard doses do not stunt growth meaningfully — uncontrolled asthma does.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Salbutamol (SABA)	MDI 100 µg 2–4 puffs; neb 2.5–5 mg	MDI with spacer	*Tremor, hypokalaemia, tachycardia*
Budesonide nebuliser (ICS)	0.5–1 mg neb 12-hourly	Controller/acute	*Rinse mouth; use mask/spacer in children*
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	1–2 mg/kg ×3 days	*Hyperglycaemia; taper if >3 weeks*
Montelukast (leukotriene antagonist)	10 mg PO at night (4–5 mg child)	Viral wheeze/allergic	*Neuropsychiatric effects (dreams, mood)*
Ipratropium (short-acting antimuscarinic)	Neb 500 µg (250 µg child) 6–8-hourly	Severe attack	*Dry mouth; protect eyes in glaucoma*
Budesonide–formoterol inhaler (ICS-LABA)	200/6 µg 1–2 puffs 12-hourly (also as reliever)	Older children maintenance	*Rinse mouth; oral thrush*

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DISEASE 240 OF 300 | PAEDIATRICS

Excessive Crying & Infant Colic

A thriving baby crying in the evenings — reassure, but examine fully first.

DEFINITION

Infant colic is paroxysmal inconsolable crying >3 hours/day, >3 days/week in a healthy, thriving infant under 3–4 months, typically in the evening, resolving by 3–4 months. Exclude organic causes: hunger, infection (UTI, otitis), hair tourniquet, incarcerated hernia, intussusception, fracture, reflux, cow's milk protein allergy, raised ICP.

SYMPTOMS

- Bouts of crying, drawing up legs, red face
- Evening predominance
- Feeding and weight gain normal
- Vomiting (bilious — surgical), blood in stool (intussusception, CMPA)
- Fever, lethargy (infection)

SIGNS

- Weight and growth
- Full examination: fontanelle, ears, hernial orifices, testes
- Hair tourniquet on fingers, toes, penis
- Abdominal mass, distension
- Bruising, limb tenderness (non-accidental injury)

DIAGNOSTIC TESTS

Test	Finding / purpose
None if thriving and normal examination	—
Urine routine and culture	Fever or poor feeding
USG abdomen	Suspected intussusception

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Reassurance & support	Explain natural course; parents take turns; never shake the baby	Until 3–4 months
Soothing	Holding, rocking, swaddling, white noise, car/pram rides, warm bath	As needed
Feeding	Check latch and positioning; burp well; avoid overfeeding	—
Probiotic (breastfed infants)	Lactobacillus reuteri DSM 17938 5 drops OD	3–4 weeks
Suspected cow's milk protein allergy	Mother excludes dairy (breastfed) or extensively hydrolysed formula	2–4 week trial
Avoid	Dicyclomine (apnoea risk in infants), gripe water, sedatives, opium-containing remedies	—

REFER / RED FLAGS

- Poor weight gain, fever, lethargy
- Bilious vomiting, blood in stool, abdominal mass
- Abnormal examination or signs of injury
- Parental exhaustion or risk of harm

GP PEARLS

★ *Ask parents how they are coping — infant crying is a major trigger for shaken baby injury.*

★ *Dicyclomine drops are contraindicated under 6 months.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Probiotic (Saccharomyces boulardii)	250 mg PO 12-hourly	Infant colic (L. reuteri — limited evidence)	*Avoid in severely immunocompromised*
Paracetamol (child)	15 mg/kg PO 6-hourly; max 60 mg/kg/day	If pain/fever	*Use weight-based dose; avoid adult tablets*
Lactulose (osmotic laxative)	15–30 ml PO at night (titrate to 2–3 stools in HE)	Constipation	*Bloating; dehydration if excessive*

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DISEASE 241 OF 300 | PAEDIATRICS

Neonatal Jaundice

Jaundice in the first 24 hours is never physiological.

DEFINITION

Yellow discoloration of the newborn from raised bilirubin. Physiological jaundice appears after 24 h, peaks on day 3–5 and resolves by 2 weeks (3 weeks in preterm). Pathological: onset <24 h, rapid rise, high levels (risk of kernicterus), prolonged (>2 weeks), or conjugated (pale stools, dark urine — biliary atresia). Causes: ABO/Rh haemolysis, G6PD deficiency, sepsis, hypothyroidism, breastfeeding/breast milk jaundice.

SYMPTOMS

- Age at onset of jaundice
- Feeding adequacy, urine and stool output
- Pale stools, dark urine (cholestasis)
- Lethargy, poor suck, high-pitched cry (bilirubin encephalopathy)
- Mother's blood group, sibling with jaundice

SIGNS

- Cephalocaudal spread (Kramer zones) — face → soles
- Pallor, hepatosplenomegaly (haemolysis)
- Signs of sepsis
- Weight loss >10% (poor feeding)
- Hypotonia, opisthotonus (kernicterus)

DIAGNOSTIC TESTS

Test	Finding / purpose
Total and direct serum bilirubin (or transcutaneous)	Plot on hour-specific nomogram (AAP/NICE)
Mother's and baby's blood group, DCT	Isoimmune haemolysis
Hb, reticulocytes, smear, G6PD	Haemolysis
TSH, urine culture	Prolonged jaundice
Stool colour card, USG	Pale stools — biliary atresia (urgent)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Physiological	Frequent breastfeeding 8–12 times/day; check weight; review in 24–48 h	Until resolved
Above phototherapy threshold (by age in hours, gestation, risk)	Phototherapy (hospital); continue breastfeeding	Until below threshold
Near exchange threshold / encephalopathy	Urgent referral — intensive phototherapy, exchange transfusion, IVIG for isoimmune	Emergency
Breast milk jaundice (well, thriving)	Continue breastfeeding; reassure	—
Avoid	Sunlight exposure as treatment, glucose water, stopping breastfeeding	—

REFER / RED FLAGS

- Jaundice within 24 h of birth
- Bilirubin near/above phototherapy threshold
- Pale stools, dark urine, conjugated bilirubin >1 mg/dl (biliary atresia — before 6 weeks)
- Lethargic, poor feeding, signs of sepsis or encephalopathy

GP PEARLS

★ *Pale stools in a jaundiced infant need same-week referral — biliary atresia surgery is best before 60 days.*

★ *Visual estimation underestimates bilirubin in dark-skinned babies — measure it.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Vitamin K1 for newborn	1 mg IM at birth (0.5 mg if <1.5 kg)	Given at birth (all newborns)	*Prevents haemorrhagic disease of newborn*
Gentamicin (aminoglycoside)	5–7 mg/kg IV/IM once daily	Suspected neonatal sepsis (with ampicillin, hospital)	*Nephro- and ototoxic; check renal function*

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DISEASE 242 OF 300 | PAEDIATRICS

Severe Acute Malnutrition

MUAC <11.5 cm or bilateral oedema — screen every child 6–59 months.

DEFINITION

SAM in children 6–59 months: weight-for-height < −3 SD, or MUAC <11.5 cm, or bilateral pitting oedema. Complicated SAM (poor appetite, medical complications, oedema +++) needs facility-based care at a Nutritional Rehabilitation Centre (NRC); uncomplicated SAM with good appetite can be managed in the community. Moderate acute malnutrition: WHZ −2 to −3 SD or MUAC 11.5–12.5 cm.

SYMPTOMS

- Weight loss, poor growth
- Poor appetite
- Recurrent diarrhoea, infections
- Swelling of feet/face (oedematous)
- Lethargy

SIGNS

- MUAC <11.5 cm
- Visible severe wasting, "old man" face
- Bilateral pitting pedal oedema
- Hair and skin changes (flaky paint dermatosis)
- Hypothermia, hypoglycaemia, dehydration, infection signs

DIAGNOSTIC TESTS

Test	Finding / purpose
Weight, height, MUAC, WHZ	Classification
Appetite test with RUTF	Pass = outpatient possible
Blood glucose, Hb	Hypoglycaemia, anaemia
Urine, malaria, TB screen, HIV	Hidden infections

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Complicated SAM	Refer to NRC: F-75 then F-100 feeds, warmth, glucose, antibiotics (WHO 10 steps)	Inpatient
Uncomplicated — antibiotic	Amoxicillin 40–45 mg/kg/dose BD	5–7 days
Nutrition	Therapeutic food (RUTF/energy-dense home food) per protocol; continue breastfeeding	Until recovery
Micronutrients	Vitamin A per age (if not in last 1 month); folic acid 5 mg day 1 then 1 mg/day; zinc, iron after 2 weeks (not in first phase)	As per protocol
Deworming	Albendazole 200 mg (1–2 y) / 400 mg (>2 y) after stabilisation	Single
Immunisation	Complete as per schedule (measles if not given)	—

REFER / RED FLAGS

- Complicated SAM (medical complications, oedema, failed appetite test)
- Age <6 months with malnutrition
- Hypoglycaemia, hypothermia, shock
- Not gaining weight on outpatient programme

GP PEARLS

★ *Measure MUAC in every child 6–59 months at every visit — it takes 30 seconds.*

★ *Do not start iron in the initial stabilisation phase — it worsens infection.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ready-to-use therapeutic food (RUTF)	~200 kcal/kg/day as per weight band	Outpatient therapeutic feeding	*Monitor appetite test and weight gain*
F-75 / F-100 therapeutic milk	F-75 130 ml/kg/day in stabilisation	Inpatient stabilisation	*Avoid fluid overload; give slowly*
ReSoMal (rehydration for SAM)	5 ml/kg every 30 min ×2 h, then 5–10 ml/kg/h	Dehydration in SAM	*Not standard ORS in SAM*
Amoxicillin (penicillin)	500 mg PO 8-hourly (child 15–25 mg/kg 8-hourly)	Routine antibiotic	*Penicillin allergy; rash in EBV*
Vitamin A (megadose)	1 lakh IU (<1 y) / 2 lakh IU (>1 y) PO	Vitamin A	*Avoid repeat within 1 month (except measles schedule)*
Albendazole (anthelmintic)	400 mg PO single dose (200 mg if 1–2 years)	Deworming	*Avoid in 1st trimester*

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DISEASE 243 OF 300 | PAEDIATRICS

Iron Deficiency Anaemia in Children

Pale, irritable toddler drinking lots of milk — iron for 3 months and deworm.

DEFINITION

Most common nutritional deficiency in Indian children (NFHS: ~2/3 of under-5s anaemic). Causes: inadequate dietary iron, excess cow's milk, delayed complementary feeding, prematurity, hookworm, malaria, chronic blood loss. Anaemia Mukt Bharat provides biweekly IFA syrup (6–59 months) and weekly IFA tablets (5–19 years).

SYMPTOMS

- Pallor noticed by parents
- Irritability, poor appetite, fatigue
- Pica (mud, chalk)
- Poor school performance
- Excess milk intake, little solid food

SIGNS

- Pallor of palms, conjunctiva, tongue
- Tachycardia, flow murmur
- Koilonychia
- Splenomegaly (malaria, haemolysis — consider other causes)
- Growth faltering

DIAGNOSTIC TESTS

Test	Finding / purpose
Hb, CBC with indices, smear	Microcytic hypochromic; Hb cut-off <11 g/dl (6–59 mo), <11.5 (5–11 y)
Serum ferritin	Low
Stool for ova	Hookworm
HPLC	Thalassaemia trait if no response or family history

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Treatment	Elemental iron 3 mg/kg/day (max 60 mg) once daily, between meals	3 months beyond Hb normalisation
Prevention (programme)	6–59 months: IFA syrup 1 ml (20 mg iron) biweekly; 5–9 y: 45 mg weekly; 10–19 y: 60 mg weekly	Ongoing
Deworming	Albendazole 200 mg (1–2 y), 400 mg (>2 y) every 6 months	Biannual
Diet	Limit cow's milk to ≤500 ml/day; iron-rich foods (green leafy vegetables, legumes, jaggery, eggs, meat) with vitamin C	Ongoing
Follow-up	Hb after 4 weeks (expect ≥1 g/dl rise)	—
Severe (Hb <7) or failure	Refer — investigate; transfusion if decompensated	—

REFER / RED FLAGS

- Hb <7 g/dl or heart failure
- No response after 4 weeks of adequate iron
- Hepatosplenomegaly, jaundice (haemolysis)
- Bicytopenia/pancytopenia

GP PEARLS

★ *Iron liquid stains teeth — give with a dropper at the back of the mouth and brush afterwards.*

★ *Failure to respond usually means non-adherence, ongoing loss or thalassaemia trait.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Oral iron (child)	3 mg/kg/day elemental iron for 3 months	3 mg/kg/day ×3 months	*Accidental overdose toxic; keep away*
Albendazole (anthelmintic)	400 mg PO single dose (200 mg if 1–2 years)	Deworming 6-monthly	*Avoid in 1st trimester*
Iron–folic acid (IFA) tablet	1 tablet (60 mg Fe + 500 µg FA) daily	Weekly IFA for adolescents (WIFS)	*Constipation; take with vitamin C*
Vitamin A (megadose)	1 lakh IU (<1 y) / 2 lakh IU (>1 y) PO	Vitamin A per programme	*Avoid repeat within 1 month (except measles schedule)*
Multivitamin–mineral supplement	1 tablet PO daily	Diet support	*Not a substitute for diet*

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DISEASE 244 OF 300 | PAEDIATRICS

Nocturnal Enuresis

Bedwetting after 5 years — reassure, motivate, alarm; desmopressin for sleepovers.

DEFINITION

Involuntary voiding during sleep in a child aged ≥5 years, at least twice a week. Primary (never dry) is common, familial, and resolves spontaneously at about 15% per year. Secondary enuresis (after ≥6 months dry) suggests UTI, diabetes, constipation, stress or abuse. Daytime symptoms suggest bladder dysfunction.

SYMPTOMS

- Wetting frequency, nights per week
- Daytime wetting, urgency, frequency
- Constipation
- Polyuria, polydipsia, weight loss (diabetes)
- Snoring (sleep apnoea), stress at home or school

SIGNS

- Usually normal
- Abdominal faecal masses
- Spine — sacral dimple, hair tuft
- Lower limb neurology
- Genital exam

DIAGNOSTIC TESTS

Test	Finding / purpose
Urine routine (glucose, protein, infection)	All
Urine culture	Secondary enuresis, symptoms
Blood sugar	Polyuria
USG KUB, uroflowmetry	Daytime symptoms, abnormal stream

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Reassurance	Not the child's fault; no punishment; star chart rewards for agreed behaviours	Ongoing
Fluids & voiding	Adequate fluids in the day, reduce in the evening; void before bed; avoid caffeine	Ongoing
Treat constipation	PEG 0.4–0.8 g/kg/day	As needed
Enuresis alarm (first line, ≥7 y)	Body-worn alarm nightly	At least 3–4 months
Desmopressin	Melt 120 µg (→ 240 µg) or tablet 0.2 mg (→ 0.4 mg) at bedtime; no fluids 1 h before to 8 h after (hyponatraemia)	3 months, then withdraw
Avoid	Imipramine as first line (toxic in overdose)	—

REFER / RED FLAGS

- Secondary enuresis with concerning cause
- Daytime wetting, poor stream, recurrent UTI
- Neurological signs, spinal abnormality
- Failure of alarm and desmopressin

GP PEARLS

★ *Most children outgrow bedwetting — avoid shaming, which worsens it.*

★ *Desmopressin needs evening fluid restriction to avoid water intoxication.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Desmopressin (vasopressin analogue)	120–240 µg melt at bedtime (enuresis)	Short-term/camps	*Restrict fluids at night — hyponatraemia*
Oxybutynin (antimuscarinic)	2.5–5 mg PO 8–12-hourly	Daytime symptoms	*Cognitive effects in elderly*
Amitriptyline (TCA)	10–25 mg PO at night	Second-line (specialist)	*Anticholinergic; avoid in elderly, IHD*
Lactulose (osmotic laxative)	15–30 ml PO at night (titrate to 2–3 stools in HE)	Constipation contributor	*Bloating; dehydration if excessive*
Cephalexin (1st-gen cephalosporin)	500 mg PO 6–8-hourly	UTI if present	*Penicillin cross-allergy (low)*

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DISEASE 245 OF 300 | PAEDIATRICS

Immunisation Schedule (NIS)

Check the card at every visit — catch up missed doses.

DEFINITION

India's Universal Immunisation Programme provides free vaccines against 12 diseases. Most minor illnesses (cold, mild fever, diarrhoea) are not contraindications. Missed vaccines are given as catch-up without restarting the series. Optional vaccines (IAP) include hepatitis A, varicella, typhoid conjugate, influenza, MMR at 15 months, HPV.

SYMPTOMS

- Immunisation card and history
- Previous reactions
- Immunosuppression (live vaccines)
- Current illness (moderate–severe febrile illness — defer)
- Recent blood products (measles vaccine timing)

SIGNS

- Temperature
- General condition
- BCG scar
- Growth

DIAGNOSTIC TESTS

Test	Finding / purpose
None routinely	—

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Birth	BCG, OPV-0, Hepatitis B birth dose (within 24 h)	—
6, 10, 14 weeks	Pentavalent (DPT-HepB-Hib) 1-2-3; OPV 1-2-3; Rotavirus 1-2-3; fIPV at 6 & 14 weeks; PCV at 6 & 14 weeks	—
9–12 months	MR-1; PCV booster; fIPV-3 (9 months); JE-1 (endemic districts); Vitamin A 1 lakh IU	—
16–24 months	MR-2, DPT booster-1, OPV booster, JE-2; Vitamin A 2 lakh IU every 6 months till 5 years	—
5–6 years	DPT booster-2	—
10 and 16 years; pregnancy	Td at 10 and 16 years; Td 2 doses (or 1 booster) in pregnancy	—

REFER / RED FLAGS

- Anaphylaxis after a previous dose
- Immunocompromised child (live vaccines)
- Progressive neurological disorder (DPT whole-cell)
- Adverse event following immunisation — report (AEFI)

GP PEARLS

★ *Mild fever after DPT/pentavalent is common — give paracetamol 15 mg/kg if distressed, not prophylactically.*

★ *Never restart a series because of a delay — just continue from where it stopped.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
BCG vaccine	0.05 ml (newborn) ID left upper arm	At birth	*Live; avoid in HIV-symptomatic infants*
OPV / fIPV / pentavalent / rotavirus (NIS)	As per National Immunisation Schedule	OPV/IPV/Penta/Rota/PCV per NIS	*Follow NIS contraindications*
MMR / MR vaccine	0.5 ml SC at 9 and 16–24 months (NIS)	MR at 9 and 16–24 months	*Live vaccine — avoid in pregnancy, immunosuppression*
Hepatitis B vaccine	20 µg IM at 0, 1, 6 months (adult)	Birth dose	*Check anti-HBs in healthcare workers*
Vitamin A (megadose)	1 lakh IU (<1 y) / 2 lakh IU (>1 y) PO	Vitamin A with MR	*Avoid repeat within 1 month (except measles schedule)*
Paracetamol (child)	15 mg/kg PO 6-hourly; max 60 mg/kg/day	Post-vaccine fever	*Use weight-based dose; avoid adult tablets*

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DISEASE 246 OF 300 | PAEDIATRICS

Kawasaki Disease

Fever ≥5 days with red eyes, red lips, rash, swollen hands, a node — think Kawasaki.

DEFINITION

Acute systemic vasculitis of unknown cause in children (mostly <5 years), the commonest cause of acquired heart disease in children in developed countries and increasingly recognised in India. Coronary artery aneurysms develop in 25% untreated, reduced to <5% with IVIG within 10 days. Diagnosis: fever ≥5 days + ≥4 of 5 principal features.

SYMPTOMS

- High fever ≥5 days, unresponsive to antipyretics
- Red eyes without discharge
- Red cracked lips, strawberry tongue
- Rash
- Swollen red hands and feet; peeling of fingertips later

SIGNS

- Bilateral non-purulent conjunctival injection
- Oral changes: cracked lips, strawberry tongue
- Polymorphous rash
- Extremity changes: oedema, erythema, periungual desquamation (week 2–3)
- Cervical lymph node ≥1.5 cm (usually unilateral); BCG scar redness

DIAGNOSTIC TESTS

Test	Finding / purpose
CBC, ESR, CRP	Leucocytosis, high ESR/CRP; thrombocytosis after week 1
LFT, albumin, urine	Raised transaminases, low albumin, sterile pyuria
Echocardiography	Coronary artery dilatation/aneurysm — at diagnosis, 2 and 6 weeks
Exclude	Scarlet fever, measles, viral exanthem, drug reaction, dengue

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Refer urgently	Paediatric admission	Same day
IVIG (hospital)	IVIG 2 g/kg single infusion over 10–12 h, within 10 days of fever onset	Single
Aspirin	High dose 30–50 mg/kg/day in 4 doses until afebrile 48 h, then 3–5 mg/kg OD	6–8 weeks (longer if aneurysms)
High-risk / IVIG resistance (specialist)	Prednisolone 2 mg/kg/day; infliximab	As advised
Live vaccines	Defer measles/varicella vaccine for 11 months after IVIG	—

REFER / RED FLAGS

- All suspected Kawasaki disease
- Incomplete Kawasaki (prolonged fever + 2–3 features + high CRP)
- Infants <6 months with prolonged fever
- Coronary changes on echo

GP PEARLS

★ *Consider Kawasaki in any child with fever over 5 days not responding to antibiotics.*

★ *Redness and crusting at the BCG scar is a useful early clue in infants.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
IV immunoglobulin	2 g/kg IV over 10–12 h (Kawasaki)	2 g/kg (refer urgently)	*Specialist/hospital use; anaphylaxis rare*
Aspirin (antiplatelet)	300 mg chewed stat; 75–150 mg daily	High dose then low dose (specialist)	*GI bleed; avoid in children <16*
Paracetamol (child)	15 mg/kg PO 6-hourly; max 60 mg/kg/day	Fever before diagnosis	*Use weight-based dose; avoid adult tablets*
Oral rehydration salts (low osmolarity)	200–400 ml after each loose stool; 75 ml/kg over 4 h for some dehydration	Hydration	*Use clean water; correct mixing*
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	Refractory cases (specialist)	*Hyperglycaemia; taper if >3 weeks*

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DISEASE 247 OF 300 | PAEDIATRICS

Phimosis & Undescended Testis

Physiological phimosis needs no surgery; undescended testis needs surgery by 18 months.

DEFINITION

Physiological phimosis (non-retractile foreskin) is normal in young boys and resolves with age; pathological phimosis (scarring, balanitis xerotica obliterans) needs treatment. Paraphimosis — retracted foreskin that cannot be returned — is an emergency. Undescended testis (cryptorchidism) affects 1–4% of term boys; testes not descended by 6 months need orchidopexy by 6–18 months (fertility, malignancy, torsion risk).

SYMPTOMS

- Foreskin not retracting, ballooning on urination
- Recurrent balanitis, painful erection
- Painful swollen glans with tight ring (paraphimosis)
- Empty scrotum noticed by parents
- Testis seen sometimes, not always (retractile)

SIGNS

- Pliable non-scarred foreskin (physiological) vs white scarred ring (pathological)
- Oedematous glans with constricting band (paraphimosis)
- Empty hemiscrotum; testis palpable in groin or impalpable
- Retractile testis can be brought to scrotum and stays
- Inguinal hernia

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
Urine routine	Recurrent balanitis/UTI
USG	Not required for palpable testis; limited value for impalpable (laparoscopy by surgeon)
Karyotype/hormones	Bilateral impalpable testes or ambiguous genitalia

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Physiological phimosis	Reassurance; no forceful retraction; gentle hygiene	—
Pathological / symptomatic phimosis	Betamethasone 0.05–0.1% cream applied to foreskin tip BD with gentle retraction	4–8 weeks
Balanitis	Warm saline soaks; clotrimazole cream or mupirocin; oral cephalexin if cellulitis	5–7 days
Paraphimosis	Analgesia, ice/compression of glans, manual reduction (thumbs on glans, fingers pull foreskin forward); refer if fails	Immediate
Undescended testis	Refer to paediatric surgeon by 6 months for orchidopexy at 6–18 months	—
Retractile testis	Annual review until puberty (may ascend)	Yearly

REFER / RED FLAGS

- Paraphimosis not reducing
- Pathological phimosis, urinary retention, recurrent balanitis
- Undescended testis at 6 months
- Bilateral impalpable testes (endocrine/genetic evaluation)

GP PEARLS

★ *Forceful retraction of a child's foreskin causes scarring — advise parents against it.*

★ *Always replace the foreskin after catheterisation or cleaning to prevent paraphimosis.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
EMLA / lignocaine gel (topical anaesthetic)	Apply 30–60 min before procedure	Topical before procedures	*Methaemoglobinaemia in infants with excess*
Hydrocortisone 1% cream (mild steroid)	Apply thinly 12-hourly ≤7 days (face/flexures)	Phimosis — topical steroid 4–6 weeks	*Atrophy with prolonged use*
Mometasone 0.1% cream (moderate–potent steroid)	Apply thinly once daily ≤2 weeks	Phimosis alternative	*Avoid face; atrophy; no fungal infection*
Paracetamol (child)	15 mg/kg PO 6-hourly; max 60 mg/kg/day	Pain	*Use weight-based dose; avoid adult tablets*
Mupirocin 2% ointment (topical antibiotic)	Apply 8-hourly ×5–7 days	Balanitis (bacterial)	*Resistance with long use*
Clotrimazole (azole antifungal — topical)	1% cream 12-hourly; 500 mg vaginal pessary single	Candidal balanitis	*Local irritation*

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DISEASE 248 OF 300 | PAEDIATRICS

Paediatric Dosing — Quick Guide

Weigh every child; calculate per kg; never exceed the adult dose.

DEFINITION

Children's doses are calculated by weight (mg/kg) or body surface area. Use actual weight (ideal weight in obesity). Round to a measurable volume. Common syrups: paracetamol 125 mg/5 ml and 250 mg/5 ml, drops 100 mg/ml; ibuprofen 100 mg/5 ml; amoxicillin 125, 250 mg/5 ml; cetirizine 5 mg/5 ml. Estimated weight (1–10 y) ≈ (age × 2) + 8 kg.

SYMPTOMS

- Age and weight (weigh the child)
- Allergies
- Renal or hepatic disease
- Other medicines (avoid combination OTC syrups)
- Ability to take tablets

SIGNS

- Weight and hydration
- Growth chart

DIAGNOSTIC TESTS

Test	Finding / purpose
Weight	Mandatory before every prescription
Formula check	Dose (mg) ÷ strength (mg/ml) = volume (ml)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Paracetamol	15 mg/kg/dose 6-hourly (max 60 mg/kg/day)	SOS, 3–5 days
Ibuprofen (>3 months)	10 mg/kg/dose 8-hourly with food (max 30 mg/kg/day)	SOS, 3 days
Amoxicillin	40–45 mg/kg/dose BD (high dose for AOM, pneumonia); 25 mg/kg/dose BD for strep throat	5–10 days
Amoxicillin-clavulanate / cephalexin / azithromycin	Amox-clav 25–45 mg/kg/dose BD; cephalexin 12.5–25 mg/kg/dose QID; azithromycin 10 mg/kg OD (3 days) or 10 → 5 mg/kg (5 days)	As per indication
Cetirizine / ondansetron / salbutamol	Cetirizine 0.25 mg/kg/day (2–6 y 2.5 mg BD); ondansetron 0.15 mg/kg (max 4 mg); salbutamol MDI 2–4 puffs via spacer	As needed
Albendazole / zinc / ORS	Albendazole 200 mg (1–2 y), 400 mg (>2 y); zinc 10 mg (<6 mo), 20 mg (>6 mo) × 14 days; ORS 50–100 ml (<2 y), 100–200 ml (2–10 y) per stool	As stated

REFER / RED FLAGS

- Infants <3 months — most prescribing needs specialist input
- Renal/hepatic impairment
- Severe illness needing IV therapy
- Uncertain dosing

GP PEARLS

★ *Write both the dose in mg and the volume in ml on the prescription, and show the parent the syringe mark.*

★ *Avoid OTC cough-cold combinations in children under 6 — risk without proven benefit.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (child)	15 mg/kg PO 6-hourly; max 60 mg/kg/day	15 mg/kg 6-hourly	*Use weight-based dose; avoid adult tablets*
Ibuprofen (child)	5–10 mg/kg PO 8-hourly after food	5–10 mg/kg 8-hourly	*Avoid in dehydration, dengue, asthma flares*
Amoxicillin (penicillin)	500 mg PO 8-hourly (child 15–25 mg/kg 8-hourly)	25–40 mg/kg/day (higher for AOM/pneumonia)	*Penicillin allergy; rash in EBV*
Azithromycin (macrolide)	500 mg PO once daily ×3 days (child 10 mg/kg)	10 mg/kg daily	*QT prolongation; avoid with other QT drugs*
Oral rehydration salts (low osmolarity)	200–400 ml after each loose stool; 75 ml/kg over 4 h for some dehydration	Weight-based volumes	*Use clean water; correct mixing*
Zinc sulphate (child diarrhoea)	20 mg daily ×14 days (10 mg <6 months)	Age-based dose	*Vomiting if taken empty stomach*

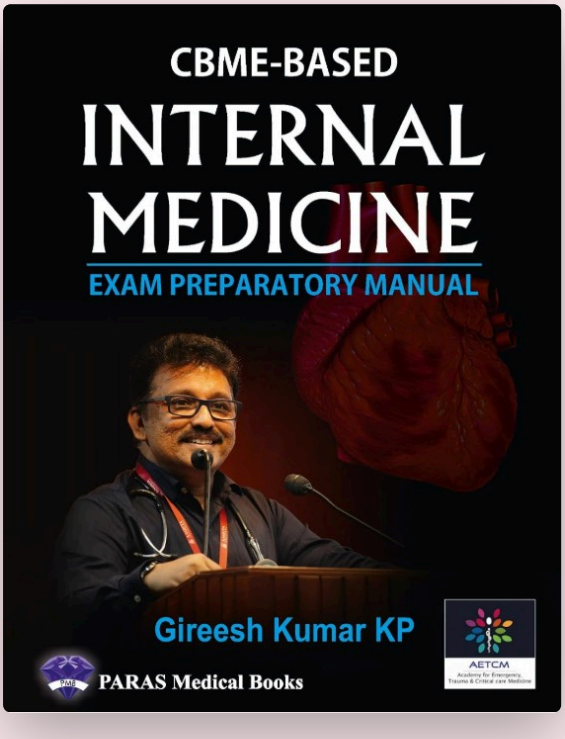
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DISEASE 249 OF 300 | HAEMATOLOGY

Anaemia — Approach

Classify by MCV — small, normal or large cells point to the cause.

DEFINITION

Haemoglobin below 13 g/dl in men, 12 g/dl in non-pregnant women and 11 g/dl in pregnancy. Microcytic (MCV <80 fl): iron deficiency, thalassaemia trait, anaemia of chronic disease. Normocytic: acute blood loss, chronic disease, CKD, haemolysis, marrow failure. Macrocytic (>100 fl): B12/folate deficiency, alcohol, liver disease, hypothyroidism, drugs, myelodysplasia.

SYMPTOMS

- Fatigue, weakness, breathlessness on exertion
- Palpitations, dizziness, headache
- Bleeding: heavy periods, melaena, haemorrhoids
- Diet (vegetarian), alcohol, drugs (NSAIDs, metformin, methotrexate)
- Weight loss, fever, bone pain (malignancy)

SIGNS

- Pallor of conjunctiva, palms, nail beds
- Koilonychia, glossitis, angular cheilitis
- Jaundice, splenomegaly (haemolysis)
- Lymphadenopathy, hepatosplenomegaly, bruising (malignancy)
- Tachycardia, flow murmur, heart failure (severe)

DIAGNOSTIC TESTS

Test	Finding / purpose
CBC with indices, RDW, reticulocyte count	MCV classification; reticulocytes — marrow response
Peripheral smear	Target cells, hypersegmented neutrophils, blasts, spherocytes
Ferritin, B12, folate	Deficiencies
Creatinine, LFT, TSH	CKD, liver disease, hypothyroidism
Stool occult blood, endoscopy	GI loss in men and postmenopausal women
LDH, bilirubin, DCT; HPLC	Haemolysis; haemoglobinopathy

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Iron deficiency	See Iron deficiency anaemia	3 months beyond normal Hb
B12/folate deficiency	See Megaloblastic anaemia	—
Treat cause	Stop bleeding source, treat worms, malaria, hypothyroidism	—
Anaemia of CKD	Iron + erythropoiesis-stimulating agent (nephrologist)	Long term
Transfusion	Only if Hb <7 g/dl (or <8 with cardiac disease) or symptomatic; avoid in chronic well-compensated anaemia	As needed
Avoid	Multi-ingredient "haematinic tonics" without a diagnosis	—

REFER / RED FLAGS

- Hb <7 g/dl or symptomatic
- Iron deficiency in men or postmenopausal women (GI evaluation)
- Pancytopenia, blasts, lymphadenopathy, splenomegaly
- Haemolysis

GP PEARLS

★ *Iron deficiency in an adult man is GI blood loss until proven otherwise — scope him.*

★ *Do not give iron empirically to everyone with microcytosis — check ferritin to avoid missing thalassaemia trait.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ferrous sulphate/ascorbate (oral iron)	60–100 mg elemental iron daily or alternate days	Iron deficiency	*Black stools, constipation*
Folic acid	5 mg PO daily (400 µg periconception)	Folate deficiency	*Exclude B12 deficiency first*
Vitamin B12 (cyanocobalamin/methylcobalamin)	1000 µg IM alternate days ×5, then monthly	B12 deficiency	*Hypokalaemia early in treatment*
Albendazole (anthelmintic)	400 mg PO single dose (200 mg if 1–2 years)	Deworming	*Avoid in 1st trimester*
Ferric carboxymaltose (IV iron)	15–20 mg/kg (max 1 g) IV single dose	Severe/intolerant	*Hypophosphataemia; anaphylaxis rare*

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DISEASE 250 OF 300 | HAEMATOLOGY

Iron Deficiency Anaemia

Low ferritin — oral iron once daily or alternate days; find the cause.

DEFINITION

Anaemia from depleted iron stores, the most common anaemia worldwide and in India. Causes: inadequate intake (vegetarian diets, tea with meals), increased needs (pregnancy, growth), blood loss (menstrual, GI — ulcers, NSAIDs, cancer, hookworm), malabsorption (coeliac, H. pylori). Ferritin <30 ng/ml confirms (may be falsely normal in inflammation).

SYMPTOMS

- Fatigue, breathlessness, poor concentration
- Hair fall, brittle nails
- Pica (ice, mud), restless legs
- Heavy periods
- Change in bowel habit, melaena (GI loss)

SIGNS

- Pallor
- Koilonychia
- Angular cheilitis, atrophic glossitis
- Tachycardia
- Rectal exam (bleeding source)

DIAGNOSTIC TESTS

Test	Finding / purpose
CBC	Low Hb, MCV, MCH; high RDW
Ferritin	<30 ng/ml (<100 in CKD/inflammation)
Stool for occult blood and ova	GI loss, hookworm
Upper and lower GI endoscopy	Men, postmenopausal women, GI symptoms
tTG-IgA	Coeliac disease (unexplained, refractory)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Oral iron (first line)	Ferrous sulphate 200 mg (65 mg elemental) or ferrous ascorbate 100 mg elemental OD (or alternate days — better absorbed, fewer side effects), empty stomach with vitamin C	3 months after Hb normalises
GI side effects	Take with food or reduce to alternate days; switch salt	—
IV iron (intolerance, malabsorption, severe, late pregnancy, CKD)	Ferric carboxymaltose 1000 mg IV over 15 min (max 20 mg/kg; repeat after 1 week if needed) or iron sucrose 200 mg IV × 5 doses	As per deficit
Treat cause	Deworm (albendazole 400 mg), treat menorrhagia, H. pylori, stop NSAIDs	—
Diet	Green leafy vegetables, legumes, jaggery, meat; avoid tea/coffee 1 h around meals	Ongoing
Monitor	Hb at 2–4 weeks (rise ≥1–2 g/dl); ferritin at 3 months	—

REFER / RED FLAGS

- Men and postmenopausal women (GI investigation)
- No response to oral iron in 4 weeks
- Hb <7 g/dl, symptomatic
- Recurrent IDA without cause

GP PEARLS

★ *Once-daily or alternate-day iron is as effective as TDS dosing and better tolerated (hepcidin effect).*

★ *Rising reticulocytes within 7–10 days confirm the diagnosis and adherence.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ferrous sulphate/ascorbate (oral iron)	60–100 mg elemental iron daily or alternate days	Oral iron first-line	*Black stools, constipation*
Ferric carboxymaltose (IV iron)	15–20 mg/kg (max 1 g) IV single dose	Intolerance/severe/pregnancy	*Hypophosphataemia; anaphylaxis rare*
Albendazole (anthelmintic)	400 mg PO single dose (200 mg if 1–2 years)	Deworming	*Avoid in 1st trimester*
Folic acid	5 mg PO daily (400 µg periconception)	Coexisting folate deficiency	*Exclude B12 deficiency first*

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DISEASE 251 OF 300 | HAEMATOLOGY

Megaloblastic Anaemia (B12 & Folate)

Large red cells with neurological symptoms — B12 injections; never folate alone.

DEFINITION

Anaemia from impaired DNA synthesis due to vitamin B12 or folate deficiency. B12 deficiency is common in India in vegetarians, with metformin or PPI use, pernicious anaemia, gastrectomy and ileal disease; it causes neuropathy, subacute combined degeneration and cognitive change. Folate deficiency follows poor diet, alcohol, pregnancy, haemolysis, methotrexate or phenytoin.

SYMPTOMS

- Fatigue, breathlessness
- Tingling, numbness of feet, unsteady gait (B12)
- Memory loss, depression, irritability
- Sore tongue, mouth ulcers
- Diarrhoea, weight loss

SIGNS

- Pallor with mild jaundice (lemon-yellow)
- Glossitis, angular cheilitis
- Knuckle hyperpigmentation
- Loss of vibration/joint position sense, absent ankle jerks, upgoing plantars (SACD)
- Mild splenomegaly

DIAGNOSTIC TESTS

Test	Finding / purpose
CBC	High MCV (>100), may have pancytopenia
Peripheral smear	Macro-ovalocytes, hypersegmented neutrophils
Serum B12, folate	Low
LDH, bilirubin	Raised (ineffective erythropoiesis)
Anti-intrinsic factor antibodies	Pernicious anaemia

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
B12 — with neurological signs	Hydroxocobalamin or cyanocobalamin 1000 µg IM alternate days until no further improvement (up to 3 weeks), then every 2 months	Lifelong if malabsorption
B12 — without neurology	Cyanocobalamin/methylcobalamin 1000 µg IM 3 times a week × 2 weeks, then monthly (or 1000–2000 µg orally daily in dietary deficiency)	3 months, then maintenance
Folate deficiency	Folic acid 5 mg OD (only after B12 is replaced or confirmed normal)	4 months
Hypokalaemia risk	Monitor K^+ in severe anaemia during first week of therapy	1 week
Diet	Dairy, eggs, fortified foods (vegetarians); green vegetables for folate	Ongoing
Metformin users	Check B12 yearly; supplement if low	Ongoing

REFER / RED FLAGS

- Neurological deficit (SACD)
- Pancytopenia, Hb <7
- Suspected malabsorption or pernicious anaemia
- No response to replacement

GP PEARLS

★ *Giving folate alone to a B12-deficient patient can precipitate subacute combined degeneration of the cord.*

★ *Pancytopenia from B12 deficiency can mimic leukaemia — check B12 before a bone marrow.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Vitamin B12 (cyanocobalamin/methylcobalamin)	1000 µg IM alternate days ×5, then monthly	IM loading then maintenance	*Hypokalaemia early in treatment*
Folic acid	5 mg PO daily (400 µg periconception)	After B12 replacement	*Exclude B12 deficiency first*
Ferrous sulphate/ascorbate (oral iron)	60–100 mg elemental iron daily or alternate days	Combined deficiency	*Black stools, constipation*
Multivitamin–mineral supplement	1 tablet PO daily	Diet support	*Not a substitute for diet*

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DISEASE 252 OF 300 | HAEMATOLOGY

Thalassaemia Trait & Sickle Cell Disease

Microcytosis with normal ferritin — check HPLC; counsel couples before pregnancy.

DEFINITION

Beta-thalassaemia trait (carrier rate 3–4% in India, higher in some communities) causes mild microcytic anaemia with normal ferritin; two carrier parents have a 25% chance of a child with thalassaemia major. Sickle cell disease is prevalent among tribal populations of central and western India (National Sickle Cell Anaemia Elimination Mission); it causes painful crises, infections, stroke and chronic organ damage.

SYMPTOMS

- Trait: usually none or mild fatigue
- Sickle cell: recurrent bone/joint/abdominal pain crises
- Fever, infections (functional asplenia)
- Jaundice, gallstones
- Breathlessness, chest pain (acute chest syndrome)

SIGNS

- Trait: mild pallor, otherwise normal
- Sickle cell: pallor, jaundice
- Splenomegaly (children) or autosplenectomy (adults)
- Leg ulcers
- Painful swollen fingers in infants (dactylitis)

DIAGNOSTIC TESTS

Test	Finding / purpose
CBC	Trait: Hb mildly low, MCV <75, RBC count high; Mentzer index (MCV/RBC) <13
Ferritin	Normal in trait
HPLC / Hb electrophoresis	HbA2 >3.5% (beta-thal trait); HbS (sickle)
Sickling (solubility) test	Screening for HbS
Partner screening	Before or early in pregnancy

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Thalassaemia trait	No treatment; avoid unnecessary iron; folic acid 5 mg OD in pregnancy	—
Genetic counselling	Partner testing; prenatal diagnosis (CVS at 10–12 weeks) if both carriers	—
Sickle cell — disease-modifying	Hydroxyurea 10–15 mg/kg/day → up to 35 mg/kg/day (specialist; free under national mission)	Long term
Sickle cell — prophylaxis	Folic acid 5 mg OD; penicillin V 125 mg BD (<3 y), 250 mg BD (3–5 y); pneumococcal, Hib, meningococcal vaccines	Long term
Painful crisis	Fluids, warmth, paracetamol + ibuprofen; tramadol/morphine for severe pain; refer if fever, chest pain	As needed
Avoid in sickle cell	Dehydration, cold exposure, high altitude	—

REFER / RED FLAGS

- Sickle cell with fever, chest pain, stroke signs, priapism, severe anaemia
- Both partners carriers (prenatal diagnosis)
- Thalassaemia intermedia/major
- Pregnancy in sickle cell disease

GP PEARLS

★ *Iron for thalassaemia trait is useless and harmful long-term — check ferritin first.*

★ *Fever in a child with sickle cell disease is an emergency (functional asplenia).*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Folic acid	5 mg PO daily (400 µg periconception)	Sickle cell/thalassaemia	*Exclude B12 deficiency first*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain crisis	*Hepatotoxic in overdose; check combination products*
Tramadol (weak opioid)	50–100 mg PO 6–8-hourly; max 400 mg/day	Moderate pain crisis	*Seizures, serotonin syndrome; dependence*
Phenoxymethylpenicillin (penicillin V)	250–500 mg PO 6-hourly ×10 days	Sickle cell prophylaxis (children)	*Compliance for full 10 days*
Oral rehydration salts (low osmolarity)	200–400 ml after each loose stool; 75 ml/kg over 4 h for some dehydration	Hydration in crisis	*Use clean water; correct mixing*

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DISEASE 253 OF 300 | HAEMATOLOGY

Thrombocytopenia & ITP

Low platelets — exclude dengue, drugs, pseudo-thrombocytopenia; bleed risk rises below 20,000.

DEFINITION

Platelet count <150,000/µl. Causes: infections (dengue, malaria, scrub typhus, HIV, HCV), drugs (heparin, valproate, quinine, linezolid), immune thrombocytopenia (ITP — isolated low platelets; acute post-viral in children, chronic in adults), hypersplenism (cirrhosis), marrow failure, B12 deficiency, DIC, pregnancy (gestational), and EDTA pseudo-thrombocytopenia.

SYMPTOMS

- Petechiae, easy bruising
- Gum bleeding, nosebleeds, heavy periods
- Recent viral illness (childhood ITP)
- Fever (infection)
- Drug history

SIGNS

- Petechiae, purpura, mucosal bleeding (wet purpura — severe)
- Splenomegaly (suggests other cause)
- Lymphadenopathy, hepatomegaly
- Fundal haemorrhages
- Signs of liver disease

DIAGNOSTIC TESTS

Test	Finding / purpose
CBC with peripheral smear	Confirm (clumps = pseudo), other cell lines, blasts
Repeat in citrate tube	EDTA pseudo-thrombocytopenia
Dengue, malaria tests	Febrile patients
HIV, HCV, HBsAg, B12, LFT, TSH	Secondary causes
PT, aPTT, fibrinogen	DIC
Bone marrow	Atypical, other cytopenias, age >60

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Treat cause / stop drug	As indicated	—
General	Avoid NSAIDs, aspirin, IM injections, contact sports; soft toothbrush	Until recovered
Childhood ITP, mild bleeding	Observation — most resolve within 6 months	—
Adult ITP with platelets <30,000 or bleeding (specialist)	Prednisolone 1 mg/kg OD (max 80 mg) for 2–3 weeks, then taper; or dexamethasone 40 mg OD × 4 days	4–6 weeks
Severe bleeding	IVIG 1 g/kg × 1–2 days; platelet transfusion; tranexamic acid	Emergency
Menorrhagia	Tranexamic acid 1 g TDS during menses	As needed

REFER / RED FLAGS

- Platelets <20,000 or any mucosal/internal bleeding
- Other cytopenias, blasts, splenomegaly
- Pregnancy with low platelets
- Persistent thrombocytopenia >3 months

GP PEARLS

★ *Platelet clumps on the smear mean the low count is spurious — repeat in citrate.*

★ *Isolated thrombocytopenia in a well child after a viral illness is usually ITP and self-limiting.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	ITP with bleeding (specialist)	*Hyperglycaemia; taper if >3 weeks*
Tranexamic acid (antifibrinolytic)	500–1000 mg PO 8-hourly (HMB); 1 g IV in trauma	Mucosal bleeding	*Avoid in active thrombosis*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain (avoid NSAIDs)	*Hepatotoxic in overdose; check combination products*
IV immunoglobulin	2 g/kg IV over 10–12 h (Kawasaki)	Severe bleeding (hospital)	*Specialist/hospital use; anaphylaxis rare*
Pneumococcal vaccine (PCV13 / PPSV23)	0.5 ml IM as per schedule	Before splenectomy	*Mild local reactions*

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DISEASE 254 OF 300 | HAEMATOLOGY

Bleeding & Bruising — Approach

Platelet-type (skin, mucosa) or clotting-factor-type (joints, muscles) bleeding?

DEFINITION

Abnormal bleeding may be due to platelet disorders (thrombocytopenia, antiplatelet drugs, von Willebrand disease — mucocutaneous bleeding, petechiae, menorrhagia), coagulation factor deficiencies (haemophilia A/B, liver disease, vitamin K deficiency, anticoagulants — deep bleeds, haemarthroses, delayed bleeding), or vascular causes (senile purpura, steroids, scurvy, vasculitis).

SYMPTOMS

- Site: skin, gums, nose, periods, joints, muscles
- Bleeding after dental extraction, surgery, childbirth
- Family history (male relatives — haemophilia)
- Drugs: aspirin, clopidogrel, warfarin, DOACs, NSAIDs, steroids, SSRIs
- Liver disease, malabsorption, poor diet (scurvy)

SIGNS

- Petechiae, purpura, ecchymoses
- Haemarthrosis, muscle haematoma
- Palpable purpura on legs (vasculitis)
- Perifollicular haemorrhages, gum swelling (scurvy)
- Hepatosplenomegaly, lymphadenopathy

DIAGNOSTIC TESTS

Test	Finding / purpose
CBC, peripheral smear	Platelet count, other cytopenias
PT/INR, aPTT	Coagulation pathways
Fibrinogen, LFT	Liver disease, DIC
Factor VIII/IX, vWF studies	Prolonged aPTT, family history, menorrhagia
Urine routine, creatinine	Vasculitis

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Drug-related	Review need for antiplatelets/anticoagulants; INR check and dose adjustment	—
Warfarin over-anticoagulation (INR >9, no bleed)	Hold warfarin; vitamin K 2–5 mg orally	Until INR therapeutic
Vitamin K deficiency	Vitamin K 10 mg IV/SC	Single, repeat as needed
Mucosal bleeding	Tranexamic acid 1 g TDS (or mouthwash for dental bleeding)	3–5 days
Haemophilia	Factor replacement (haemophilia treatment centre); avoid IM injections and NSAIDs	As needed
Scurvy	Vitamin C 250–500 mg BD	1 month

REFER / RED FLAGS

- Active major bleeding
- Abnormal coagulation tests, low platelets
- Haemarthrosis or family history (haemophilia)
- Unexplained bruising in a child (consider non-accidental injury)

GP PEARLS

★ *Easy bruising with menorrhagia since menarche — test for von Willebrand disease.*

★ *Bruises of different ages in unusual sites in a child need safeguarding assessment.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Tranexamic acid (antifibrinolytic)	500–1000 mg PO 8-hourly (HMB); 1 g IV in trauma	Mucosal bleeding	*Avoid in active thrombosis*
Vitamin K (phytomenadione)	10 mg slow IV (warfarin reversal per INR)	Warfarin/vitamin K deficiency	*Anaphylactoid reactions with fast IV*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain (avoid NSAIDs)	*Hepatotoxic in overdose; check combination products*
Ferrous sulphate/ascorbate (oral iron)	60–100 mg elemental iron daily or alternate days	Blood-loss anaemia	*Black stools, constipation*
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Haemodynamic support	*Fluid overload in HF/CKD*

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DISEASE 255 OF 300 | HAEMATOLOGY

Lymphadenopathy

Most nodes are reactive — be concerned by size >2 cm, hard, fixed, supraclavicular or persistent >4 weeks.

DEFINITION

Enlarged lymph nodes (>1 cm; >1.5 cm inguinal). Localised: reactive to local infection, tuberculous lymphadenitis (commonest cause of chronic cervical nodes in India), metastatic cancer. Generalised: viral infections (EBV, HIV), TB, lymphoma, leukaemia, SLE, drugs (phenytoin). Supraclavicular nodes are always significant.

SYMPTOMS

- Duration, pain, growth
- Local infection (throat, teeth, skin, genital)
- Fever, night sweats, weight loss (TB, lymphoma)
- Cough, haemoptysis
- Risk factors: HIV, smoking (head & neck cancer)

SIGNS

- Site: cervical, supraclavicular, axillary, inguinal; localised vs generalised
- Size, consistency (rubbery — lymphoma; hard — cancer; matted — TB)
- Tenderness, fluctuation, sinus (TB)
- Hepatosplenomegaly
- Primary site: oral cavity, thyroid, breast, skin

DIAGNOSTIC TESTS

Test	Finding / purpose
CBC, ESR, smear	Infection, leukaemia
Chest X-ray	TB, mediastinal nodes
FNAC (± CBNAAT on aspirate)	TB, metastasis, lymphoma suspicion
Excision biopsy	Suspected lymphoma (FNAC insufficient)
HIV, EBV serology, USG neck/abdomen	As indicated

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Reactive (small, tender, obvious infection)	Treat the infection; review in 2–4 weeks	2–4 weeks
Bacterial lymphadenitis	Amoxicillin-clavulanate 625 mg TDS or cephalexin 500 mg QID (child 25 mg/kg/dose BD)	7–10 days
Tuberculous lymphadenitis	NTEP regimen HRZE 2 months + HRE 4 months (may extend); nodes may enlarge transiently (paradoxical)	6 months
Avoid	Empirical ATT or steroids without tissue diagnosis	—
Malignancy	Refer to oncology/ENT	—

REFER / RED FLAGS

- Supraclavicular node at any size
- Node >2 cm, hard, fixed, or growing
- Persistent >4–6 weeks without cause
- Systemic symptoms, hepatosplenomegaly, abnormal CBC

GP PEARLS

★ *Steroids before biopsy can mask lymphoma — avoid them.*

★ *A hard neck node in a smoker or tobacco chewer: examine the mouth and throat for the primary.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Amoxicillin (penicillin)	500 mg PO 8-hourly (child 15–25 mg/kg 8-hourly)	Reactive bacterial nodes	*Penicillin allergy; rash in EBV*
Cephalexin (1st-gen cephalosporin)	500 mg PO 6–8-hourly	Skin-source adenitis	*Penicillin cross-allergy (low)*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
HRZE fixed-dose combination (anti-TB)	Weight-band FDC tablets daily (NTEP)	TB lymphadenitis (confirmed)	*Hepatotoxicity; red urine; visual checks*
Azithromycin (macrolide)	500 mg PO once daily ×3 days (child 10 mg/kg)	Cat scratch/atypical	*QT prolongation; avoid with other QT drugs*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*

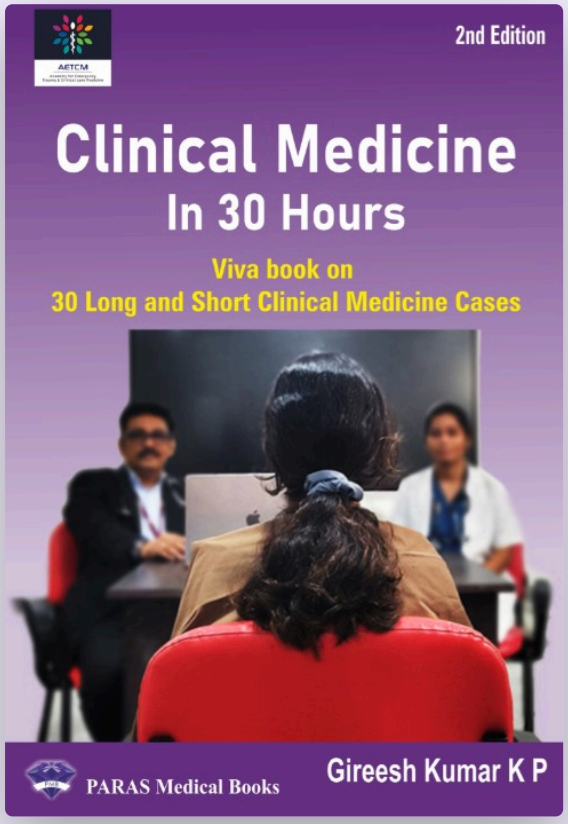
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DISEASE 256 OF 300 | PSYCHIATRY & SUBSTANCE USE

Depression

Low mood or loss of interest for 2 weeks — screen with PHQ-9, start an SSRI, ask about suicide.

DEFINITION

Major depressive disorder: ≥2 weeks of low mood or loss of interest/pleasure with other symptoms (sleep, appetite, energy, concentration, guilt, psychomotor change, suicidal thoughts) causing functional impairment. In Indian primary care, depression often presents with somatic complaints — fatigue, aches, "weakness", sleep problems.

SYMPTOMS

- Persistent sadness, loss of interest
- Poor sleep (early waking) or excess sleep
- Fatigue, multiple aches and pains
- Poor appetite, weight change, poor concentration
- Hopelessness, guilt, thoughts of death or self-harm

SIGNS

- Sad affect, poor eye contact
- Psychomotor slowing or agitation
- Self-neglect
- Weight loss
- Exclude hypothyroidism, anaemia

DIAGNOSTIC TESTS

Test	Finding / purpose
PHQ-9	5–9 mild, 10–14 moderate, 15–19 moderately severe, ≥20 severe
Suicide risk assessment	Thoughts, plans, means, previous attempts
CBC, TSH, glucose, B12	Medical contributors
Screen for bipolar history	Previous elevated mood (avoid antidepressant monotherapy)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Mild	Psychoeducation, problem-solving, activity scheduling, exercise, sleep hygiene; review in 2–4 weeks	—
Moderate–severe — SSRI	Sertraline 50 mg OD → 100–150 mg, or escitalopram 10 mg OD → 20 mg, or fluoxetine 20 mg OD	6–12 months after remission
Insomnia with depression	Mirtazapine 7.5–15 mg HS → 30 mg (weight gain)	As above
Short-term anxiety/insomnia at start	Clonazepam 0.25–0.5 mg HS	≤2 weeks
Psychotherapy	CBT, interpersonal therapy, counselling	8–16 sessions
Follow-up	Review at 2 weeks (side effects, suicidality), then every 2–4 weeks; full effect 4–6 weeks	—

REFER / RED FLAGS

- Active suicidal intent or plan — urgent
- Psychotic features, severe depression not eating
- Bipolar history
- No response to 2 adequate antidepressant trials

GP PEARLS

★ *Asking about suicide does not plant the idea — it opens the door to help (Tele-MANAS 14416).*

★ *Warn that side effects come before benefits — most stop SSRIs in week 1 for nausea or jitteriness.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Escitalopram (SSRI)	5–10 mg PO daily (max 20 mg)	First-line SSRI	*Nausea, QT; activation early; hyponatraemia*
Sertraline (SSRI)	25–50 mg PO daily (max 200 mg)	First-line SSRI (cardiac safe)	*GI upset; safer in IHD*
Fluoxetine (SSRI)	20 mg PO daily (max 60 mg)	Alternative SSRI	*Long half-life; interactions*
Mirtazapine (NaSSA)	7.5–15 mg PO at night	Insomnia/poor appetite	*Sedation, weight gain*
Clonazepam (benzodiazepine)	0.25–0.5 mg PO at night/12-hourly	Short-term anxiety bridge	*Dependence; falls in elderly*
Amitriptyline (TCA)	10–25 mg PO at night	Avoid in overdose risk	*Anticholinergic; avoid in elderly, IHD*

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DISEASE 257 OF 300 | PSYCHIATRY & SUBSTANCE USE

Generalised Anxiety Disorder

Excessive worry about everything for 6 months — CBT and an SSRI, not long-term benzodiazepines.

DEFINITION

Persistent, excessive, difficult-to-control worry about multiple everyday matters for ≥6 months, with restlessness, fatigue, poor concentration, irritability, muscle tension and sleep disturbance. Often comorbid with depression, panic and substance use. Exclude hyperthyroidism, caffeine excess, drugs and cardiac arrhythmias.

SYMPTOMS

- Constant worrying about health, family, money, work
- Restlessness, feeling on edge
- Muscle tension, headaches
- Poor sleep, fatigue
- Palpitations, sweating, GI upset

SIGNS

- Anxious, restless
- Tachycardia, tremor
- Exclude thyroid signs
- Normal physical exam otherwise

DIAGNOSTIC TESTS

Test	Finding / purpose
GAD-7	≥10 suggests clinically significant anxiety
TSH, CBC, glucose	Medical causes
ECG	Palpitations
Substance and caffeine history	—

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Psychoeducation & self-help	Explain anxiety cycle; breathing exercises, progressive muscle relaxation, yoga, reduce caffeine	Ongoing
CBT	Structured psychological therapy	8–12 sessions
SSRI (first line drug)	Escitalopram 5 mg OD → 10–20 mg or sertraline 25 mg OD → 50–150 mg (start low)	≥12 months
Alternative	Venlafaxine XR 37.5 → 75–150 mg OD; duloxetine 30–60 mg OD	≥12 months
Short-term relief	Clonazepam 0.25–0.5 mg BD or propranolol 10–20 mg TDS (somatic symptoms)	≤2–4 weeks
Avoid	Long-term benzodiazepines (dependence)	—

REFER / RED FLAGS

- Severe functional impairment
- Comorbid depression with suicidal thoughts
- Substance misuse
- No response to 2 treatments

GP PEARLS

★ *Start SSRIs at half dose in anxiety — initial jitteriness is common.*

★ *A benzodiazepine prescribed "just for sleep" often becomes a 10-year habit.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Escitalopram (SSRI)	5–10 mg PO daily (max 20 mg)	First-line	*Nausea, QT; activation early; hyponatraemia*
Sertraline (SSRI)	25–50 mg PO daily (max 200 mg)	First-line	*GI upset; safer in IHD*
Propranolol (non-selective β-blocker)	10–40 mg PO 8–12-hourly	Physical symptoms (performance)	*Avoid in asthma; masks hypoglycaemia*
Clonazepam (benzodiazepine)	0.25–0.5 mg PO at night/12-hourly	Short-term bridge	*Dependence; falls in elderly*
Duloxetine (SNRI)	30–60 mg PO daily	Alternative	*Nausea; avoid in liver disease*
Hydroxyzine (antihistamine)	10–25 mg PO at night or 8-hourly	Short-term anxiety	*Sedation; QT prolongation*

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DISEASE 258 OF 300 | PSYCHIATRY & SUBSTANCE USE

Panic Attacks & Panic Disorder

Sudden terror with palpitations and breathlessness — exclude the heart, then explain.

DEFINITION

Panic attacks are sudden surges of intense fear peaking within minutes with palpitations, sweating, trembling, breathlessness, choking, chest pain, dizziness, numbness and fear of dying. Panic disorder is recurrent unexpected attacks with persistent worry about further attacks and avoidance (often agoraphobia). Patients often present repeatedly to casualty.

SYMPTOMS

- Sudden intense fear, "going to die or go mad"
- Palpitations, chest pain, breathlessness
- Tingling hands and around mouth
- Dizziness, sweating, trembling
- Avoidance of crowds, travel

SIGNS

- Tachycardia, tachypnoea during attack
- Carpopedal spasm (hyperventilation)
- Normal examination between attacks
- SpO_2 normal

DIAGNOSTIC TESTS

Test	Finding / purpose
ECG, glucose, SpO_2	Exclude cardiac/metabolic causes on first presentation
TSH	Hyperthyroidism
Holter	If arrhythmia suspected

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
During attack	Calm reassurance; slow breathing (in 4 s, hold 4 s, out 6 s); grounding techniques	Immediate
Psychoeducation	Explain the fight-or-flight response; symptoms are not dangerous	—
CBT	Interoceptive exposure, cognitive restructuring	8–12 sessions
SSRI	Sertraline 25 mg OD → 50–150 mg or escitalopram 5 mg → 10–20 mg OD	≥12 months
Short-term (severe)	Clonazepam 0.25–0.5 mg BD	2–4 weeks, then taper
Avoid	Repeated injections or IV "drips" for attacks; caffeine, alcohol	—

REFER / RED FLAGS

- Diagnostic doubt (cardiac, endocrine)
- Severe agoraphobia
- Comorbid depression, substance use
- Suicidal thoughts

GP PEARLS

★ *Rebreathing into a paper bag is no longer advised — slow breathing is safer.*

★ *Repeated ECGs and investigations reinforce health anxiety — explain once, clearly.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Sertraline (SSRI)	25–50 mg PO daily (max 200 mg)	Long-term prevention	*GI upset; safer in IHD*
Escitalopram (SSRI)	5–10 mg PO daily (max 20 mg)	Alternative SSRI	*Nausea, QT; activation early; hyponatraemia*
Clonazepam (benzodiazepine)	0.25–0.5 mg PO at night/12-hourly	Short-term bridge	*Dependence; falls in elderly*
Alprazolam (benzodiazepine)	0.25–0.5 mg PO 8–12-hourly short-term	Short-term only	*Dependence; rebound anxiety*
Propranolol (non-selective β-blocker)	10–40 mg PO 8–12-hourly	Somatic symptoms	*Avoid in asthma; masks hypoglycaemia*

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DISEASE 259 OF 300 | PSYCHIATRY & SUBSTANCE USE

Obsessive-Compulsive Disorder

Intrusive thoughts and repetitive rituals — high-dose SSRI and exposure therapy.

DEFINITION

Recurrent intrusive, distressing thoughts, images or urges (obsessions — contamination, harm, doubt, symmetry, religious/sexual) and repetitive behaviours or mental acts (compulsions — washing, checking, counting, ordering) performed to reduce anxiety, consuming >1 h/day or causing impairment. Insight usually preserved. Onset often in adolescence.

SYMPTOMS

- Repeated hand washing, cleaning
- Checking locks, gas, switches repeatedly
- Unwanted intrusive thoughts, recognised as own
- Counting, arranging, need for symmetry
- Avoidance, time consumed, family accommodation

SIGNS

- Chapped, raw hands (washing)
- Anxiety
- Depressive features
- Tics (comorbid)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis (Y-BOCS severity)	—
Screen for depression, suicidal ideation	Common comorbidity

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Psychoeducation	Explain OCD; involve family; reduce reassurance-giving	—
CBT with exposure and response prevention (ERP)	Gradual exposure to triggers without performing rituals	12–20 sessions
SSRI (higher doses than depression)	Fluoxetine 20 mg → 40–60 mg OD or sertraline 50 → 200 mg OD or fluvoxamine 50 → 300 mg/day	≥12 months after response
Response time	Allow 8–12 weeks at adequate dose before switching	—
Refractory (specialist)	Clomipramine 25 → 150–250 mg; augmentation with low-dose risperidone/aripiprazole	As advised

REFER / RED FLAGS

- Severe OCD, poor insight
- Suicidal ideation, severe depression
- Failure of SSRI + CBT
- Onset after streptococcal infection in a child (PANDAS)

GP PEARLS

★ *Family reassurance and participating in rituals maintains OCD — guide relatives to reduce it gently.*

★ *OCD needs higher SSRI doses and longer trials than depression.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Fluoxetine (SSRI)	20 mg PO daily (max 60 mg)	SSRI higher dose	*Long half-life; interactions*
Fluvoxamine (SSRI)	50 mg at night, titrate to 100–300 mg/day	SSRI	*Interactions (CYP1A2)*
Sertraline (SSRI)	25–50 mg PO daily (max 200 mg)	SSRI	*GI upset; safer in IHD*
Escitalopram (SSRI)	5–10 mg PO daily (max 20 mg)	SSRI	*Nausea, QT; activation early; hyponatraemia*
Clonazepam (benzodiazepine)	0.25–0.5 mg PO at night/12-hourly	Short-term anxiety	*Dependence; falls in elderly*
Risperidone (atypical antipsychotic)	1–2 mg PO 12-hourly	Augmentation (specialist)	*Hyperprolactinaemia; EPS*

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DISEASE 260 OF 300 | PSYCHIATRY & SUBSTANCE USE

Insomnia

Sleep hygiene and CBT-I first; hypnotics for short courses only.

DEFINITION

Difficulty initiating or maintaining sleep, or early waking, with daytime impairment, at least 3 nights a week. Short-term insomnia follows stress; chronic insomnia lasts ≥3 months. Look for causes: depression, anxiety, pain, nocturia, sleep apnoea, restless legs, caffeine, alcohol, screen use, shift work and drugs (steroids, beta-agonists, SSRIs, decongestants).

SYMPTOMS

- Difficulty falling or staying asleep
- Early morning waking (depression)
- Daytime fatigue, irritability, poor concentration
- Snoring, witnessed apnoeas (OSA)
- Restless legs at night

SIGNS

- Usually normal
- BMI, neck circumference (OSA)
- Signs of thyroid disease
- Mood assessment

DIAGNOSTIC TESTS

Test	Finding / purpose
Sleep diary (2 weeks)	Pattern
PHQ-9, GAD-7	Depression, anxiety
TSH, ferritin	Hyperthyroidism, restless legs
Sleep study	Suspected sleep apnoea

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Sleep hygiene	Fixed wake time, no daytime naps, bed only for sleep, no screens 1 h before bed, avoid caffeine after noon, alcohol, heavy meals late	Ongoing
CBT-I (first line for chronic)	Stimulus control, sleep restriction, relaxation, cognitive therapy	4–8 weeks
Short-term hypnotic	Zolpidem 5 mg (elderly) – 10 mg HS or clonazepam 0.25–0.5 mg HS	≤2–4 weeks
Elderly / long-term	Melatonin 2 mg prolonged-release HS	≤13 weeks
With depression or anxiety	Mirtazapine 7.5–15 mg HS or trazodone 25–50 mg HS	As per condition
Avoid	Long-term benzodiazepines, antihistamines in elderly (falls, confusion)	—

REFER / RED FLAGS

- Suspected sleep apnoea, narcolepsy
- Depression with suicidal thoughts
- Chronic hypnotic dependence
- Parasomnias with injury

GP PEARLS

★ *Lying awake in bed for hours trains the brain to stay awake — get up after 20 minutes.*

★ *Benzodiazepines in the elderly cause falls and hip fractures.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Melatonin	2–3 mg PO 1–2 h before bedtime	Older adults/jet lag	*Daytime drowsiness*
Zolpidem (Z-drug hypnotic)	5–10 mg PO at bedtime ≤2–4 weeks	Short-term ≤2 weeks	*Complex sleep behaviours; falls*
Mirtazapine (NaSSA)	7.5–15 mg PO at night	Comorbid depression	*Sedation, weight gain*
Clonazepam (benzodiazepine)	0.25–0.5 mg PO at night/12-hourly	Short-term	*Dependence; falls in elderly*
Hydroxyzine (antihistamine)	10–25 mg PO at night or 8-hourly	Alternative	*Sedation; QT prolongation*

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DISEASE 261 OF 300 | PSYCHIATRY & SUBSTANCE USE

Bipolar Disorder

Episodes of elevated mood — mood stabiliser, never antidepressant alone.

DEFINITION

Recurrent episodes of mania/hypomania (elevated or irritable mood, increased energy, decreased need for sleep, grandiosity, pressured speech, risky behaviour) and depression. Bipolar I has full manic episodes; bipolar II has hypomania with depression. Antidepressants alone can precipitate mania. Lithium reduces suicide risk.

SYMPTOMS

- Decreased need for sleep, excess energy
- Talkative, racing thoughts, distractibility
- Grandiose ideas, overspending, risky sex
- Irritability, aggression
- Previous episodes of depression

SIGNS

- Elated or irritable affect
- Pressured speech, flight of ideas
- Overactivity, disinhibition
- Psychotic features (delusions) in severe mania
- Poor self-care

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis; collateral history	—
TSH, glucose, CBC, LFT, creatinine	Baseline before mood stabiliser
Urine drug screen	Substance-induced mania
Pregnancy test, ECG	Before valproate/lithium

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Acute mania (refer)	Olanzapine 10–20 mg OD or risperidone 2–6 mg/day; ± lorazepam 2 mg for agitation	Until settled
Mood stabiliser — lithium	Lithium carbonate 300 mg BD → target level 0.6–1.0 mmol/l (12 h post-dose)	Long term
Alternative	Sodium valproate 500 mg BD → 1000–2000 mg/day (avoid in women of childbearing potential)	Long term
Bipolar depression	Quetiapine 50 → 300 mg HS or lamotrigine (slow titration); antidepressant only with a mood stabiliser	As advised
Lithium monitoring	Level, creatinine, TSH, calcium every 6 months; avoid NSAIDs, ACEi, diuretics	Ongoing
Psychosocial	Psychoeducation, sleep regularity, early warning signs plan, family involvement	Ongoing

REFER / RED FLAGS

- All suspected mania — psychiatric referral
- Risk to self or others
- Lithium toxicity: vomiting, diarrhoea, coarse tremor, ataxia, confusion
- Pregnancy

GP PEARLS

★ *Ask every patient with depression about past "highs" before starting an antidepressant.*

★ *Dehydration, NSAIDs and diuretics raise lithium levels — warn about toxicity.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Lithium carbonate (mood stabiliser)	300–400 mg PO 12-hourly (level 0.6–1.0)	Mood stabiliser (levels)	*Toxicity with NSAIDs, diuretics, dehydration*
Sodium valproate (anticonvulsant)	200–500 mg PO 12-hourly (20 mg/kg/day)	Mania (not in women of child-bearing age)	*Teratogenic; hepatotoxic; weight gain*
Olanzapine (atypical antipsychotic)	5–10 mg PO/IM daily	Acute mania	*Weight gain, diabetes, sedation*
Quetiapine (atypical antipsychotic)	25–50 mg at night (delirium/sleep); 300–800 mg/day psychosis	Bipolar depression	*Sedation, hypotension, weight gain*
Lorazepam (benzodiazepine)	2–4 mg IV (0.1 mg/kg); 1–2 mg PO	Acute agitation	*Respiratory depression*
Risperidone (atypical antipsychotic)	1–2 mg PO 12-hourly	Mania	*Hyperprolactinaemia; EPS*

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DISEASE 262 OF 300 | PSYCHIATRY & SUBSTANCE USE

Acute Psychosis & Schizophrenia

Hallucinations, delusions, disorganisation — exclude organic causes, start an antipsychotic.

DEFINITION

Psychosis is loss of contact with reality: hallucinations (commonly auditory), delusions (persecutory, reference), disorganised speech/behaviour. Schizophrenia: psychotic symptoms ≥1 month with functional decline. Organic causes must be excluded: delirium, substance use (cannabis, alcohol withdrawal), epilepsy, CNS infection, thyroid, steroids, postpartum psychosis.

SYMPTOMS

- Hearing voices others cannot hear
- Suspiciousness, fixed false beliefs
- Talking/laughing to self
- Withdrawal, poor self-care, decline in work
- Aggression, sleep disturbance

SIGNS

- Disorganised speech, thought disorder
- Inappropriate affect
- Lack of insight
- Orientation intact (impaired → organic/delirium)
- Fever, focal signs, intoxication (organic)

DIAGNOSTIC TESTS

Test	Finding / purpose
Glucose, electrolytes, CBC, LFT, RFT, TSH	Organic causes; baseline
Urine drug screen	Substance-induced
HIV, VDRL	Selected
CT/MRI, EEG	First episode with atypical features, neurological signs
Weight, lipids, HbA1c	Before antipsychotics (metabolic risk)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Antipsychotic (first episode, start low)	Risperidone 1–2 mg/day → 2–6 mg/day or olanzapine 5–10 mg HS → 10–20 mg; aripiprazole 10–15 mg OD (less weight gain)	≥1–2 years after first episode
Acute agitation	See Agitated patient	—
Extrapyramidal side effects	Trihexyphenidyl 2 mg BD (short term); reduce dose	As needed
Non-adherence	Long-acting injectables (fluphenazine decanoate 25 mg IM every 2–4 weeks, paliperidone palmitate) — specialist	Long term
Psychosocial	Family psychoeducation, rehabilitation, DMHP support, disability benefits	Ongoing
Monitoring	Weight, BP, glucose, lipids at 3 months then yearly; prolactin if symptoms	—

REFER / RED FLAGS

- All first-episode psychosis
- Risk of harm to self or others
- Postpartum psychosis (emergency)
- Treatment resistance (clozapine)

GP PEARLS

★ *Check glucose and orientation before labelling new psychosis — delirium and hypoglycaemia mimic it.*

★ *Cannabis use precipitates and worsens psychosis in vulnerable young people.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Olanzapine (atypical antipsychotic)	5–10 mg PO/IM daily	Acute psychosis	*Weight gain, diabetes, sedation*
Risperidone (atypical antipsychotic)	1–2 mg PO 12-hourly	Alternative	*Hyperprolactinaemia; EPS*
Haloperidol (typical antipsychotic)	0.5–5 mg PO/IM; 5 mg IM in agitation	Acute agitation IM	*Dystonia, QT, NMS*
Lorazepam (benzodiazepine)	2–4 mg IV (0.1 mg/kg); 1–2 mg PO	Agitation with antipsychotic	*Respiratory depression*
Trihexyphenidyl (anticholinergic)	1–2 mg PO 8–12-hourly	EPS	*Confusion in elderly; urinary retention*
Promethazine (sedating antihistamine)	25–50 mg IM/PO	With haloperidol IM	*Respiratory depression in children <2 years*

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DISEASE 263 OF 300 | PSYCHIATRY & SUBSTANCE USE

The Agitated or Violent Patient

Safety first, talk down, then medicate — and look for a medical cause.

DEFINITION

Acute agitation may result from psychiatric illness (mania, psychosis), substance intoxication or withdrawal, delirium (infection, hypoglycaemia, hypoxia, head injury), dementia, or situational distress. The priority is safety of patient and staff, then identification of treatable medical causes.

SYMPTOMS

- Shouting, threatening, pacing
- Recent drug/alcohol use or abstinence
- Known psychiatric illness, non-adherence
- Fever, headache, head injury
- Confusion

SIGNS

- Vital signs, glucose, SpO_2 (when safe)
- Signs of intoxication, withdrawal tremor
- Head injury, focal neurology
- Disorientation (delirium)
- Pupil size (drugs)

DIAGNOSTIC TESTS

Test	Finding / purpose
Capillary glucose, SpO_2	Once safe
Electrolytes, CBC, infection screen	Delirium causes
CT head	Head injury, focal signs
Toxicology	Suspected ingestion

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Environment & de-escalation	Quiet space, calm voice, keep safe distance and exit route, enough staff, remove dangerous objects; listen and offer choices	First
Oral (cooperative)	Lorazepam 1–2 mg or olanzapine 10 mg (or risperidone 2 mg) orally	Stat; may repeat after 1 h
IM (uncooperative)	Haloperidol 5 mg + promethazine 25–50 mg IM, or lorazepam 2 mg IM, or olanzapine 10 mg IM (not with IM benzodiazepine)	Stat; reassess at 30–60 min
Alcohol withdrawal	Lorazepam/diazepam + thiamine (avoid haloperidol alone)	—
Elderly / delirium	Treat cause; haloperidol 0.5–1 mg; avoid benzodiazepines	—
After sedation	Monitor pulse, BP, RR, SpO_2, consciousness every 15 min for 1 h	—

REFER / RED FLAGS

- Medical cause suspected (delirium, head injury, toxicity)
- Psychiatric emergency needing admission (Mental Healthcare Act 2017)
- Excess sedation, dystonia, respiratory depression
- Risk to others

GP PEARLS

★ *Haloperidol alone causes acute dystonia in young men — combine with promethazine.*

★ *Hypoglycaemia makes people aggressive — check sugar before sedating.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Lorazepam (benzodiazepine)	2–4 mg IV (0.1 mg/kg); 1–2 mg PO	Oral/IM sedation	*Respiratory depression*
Midazolam (benzodiazepine)	10 mg buccal/IM (0.2–0.3 mg/kg child)	IM sedation	*Respiratory depression*
Haloperidol (typical antipsychotic)	0.5–5 mg PO/IM; 5 mg IM in agitation	IM with promethazine	*Dystonia, QT, NMS*
Olanzapine (atypical antipsychotic)	5–10 mg PO/IM daily	IM/oral alternative	*Weight gain, diabetes, sedation*
Promethazine (sedating antihistamine)	25–50 mg IM/PO	With haloperidol	*Respiratory depression in children <2 years*
Dextrose 25%/50% IV	25% dextrose 100 ml IV (child 2–5 ml/kg 10%)	Exclude hypoglycaemia	*Thrombophlebitis; recheck glucose 15 min*

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DISEASE 264 OF 300 | PSYCHIATRY & SUBSTANCE USE

Alcohol Use Disorder

Screen with AUDIT, brief intervention, and offer anti-craving medicine.

DEFINITION

A pattern of alcohol use causing harm or dependence (craving, tolerance, withdrawal, loss of control, continued use despite harm). Common in Indian men, contributing to liver disease, accidents, violence, depression and financial ruin. Brief intervention by a GP reduces drinking; pharmacotherapy improves abstinence.

SYMPTOMS

- Quantity, frequency, type of drink
- Morning drinking, tremors, sweating (dependence)
- Missing work, family conflict, accidents
- Failed attempts to stop
- Depression, anxiety, insomnia

SIGNS

- Alcohol on breath, tremor
- Hepatomegaly, signs of liver disease
- Hypertension
- Peripheral neuropathy, ataxia
- Injuries

DIAGNOSTIC TESTS

Test	Finding / purpose
AUDIT (or AUDIT-C)	≥8 hazardous; ≥20 likely dependence
LFT (GGT, AST:ALT >2), CBC (MCV)	Liver injury, macrocytosis
Glucose, lipids, uric acid, amylase	Complications
USG abdomen	Fatty liver, cirrhosis

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Brief intervention (FRAMES)	Feedback, Responsibility, Advice, Menu of options, Empathy, Self-efficacy	5–10 min, each visit
Detoxification	See Alcohol withdrawal	5–7 days
Anti-craving — naltrexone	Naltrexone 50 mg OD (not in liver failure or opioid use)	3–12 months
Acamprosate	666 mg TDS (>60 kg); reduce in renal impairment	3–12 months
Baclofen (with liver disease)	10 mg TDS → up to 20 mg TDS	3–12 months
Disulfiram (supervised, motivated, no heart/liver disease)	250 mg OD — warn about severe reaction with any alcohol	Supervised
Supplements & support	Thiamine 100 mg TDS, B-complex; AA meetings, family counselling, de-addiction centre	Ongoing

REFER / RED FLAGS

- Severe dependence, previous withdrawal seizures or DTs
- Liver disease, pancreatitis
- Comorbid depression with suicidal thoughts
- Polysubstance use

GP PEARLS

★ *Disulfiram without the patient's knowledge (added by family to food) is unethical and dangerous.*

★ *Ask about alcohol in every patient with hypertension, gastritis, injuries or insomnia.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Naltrexone (opioid antagonist)	50 mg PO daily (alcohol dependence)	Reduce craving	*Avoid in liver failure, opioid users*
Acamprosate (anti-craving)	666 mg PO 8-hourly	Maintain abstinence	*Diarrhoea; renal dosing*
Baclofen (GABA-B agonist)	5–10 mg PO 8-hourly	Liver disease	*Sedation; withdrawal seizures if stopped*
Thiamine (vitamin B1)	100 mg PO/IV daily (200–500 mg IV 8-hourly if Wernicke)	All patients	*Give before glucose in alcohol users*
Multivitamin–mineral supplement	1 tablet PO daily	Nutrition	*Not a substitute for diet*

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DISEASE 265 OF 300 | PSYCHIATRY & SUBSTANCE USE

Alcohol Withdrawal

Benzodiazepine taper plus thiamine — prevent seizures and delirium tremens.

DEFINITION

Occurs 6–24 h after the last drink in dependent drinkers: tremor, sweating, anxiety, tachycardia, insomnia. Withdrawal seizures (12–48 h) and delirium tremens (48–96 h: confusion, hallucinations, autonomic instability — 5% mortality untreated). Wernicke's encephalopathy (confusion, ataxia, ophthalmoplegia) results from thiamine deficiency.

SYMPTOMS

- Shaking hands, sweating, nausea
- Anxiety, insomnia, irritability
- Seeing insects or animals (hallucinations)
- Seizure
- Confusion, disorientation (DTs)

SIGNS

- Tremor, tachycardia, hypertension, fever
- Sweating, dilated pupils
- Disorientation, agitation (DTs)
- Nystagmus, ataxia, ophthalmoplegia (Wernicke's)
- Signs of liver disease, head injury

DIAGNOSTIC TESTS

Test	Finding / purpose
CIWA-Ar score	<10 mild; 10–18 moderate; >18 severe
Glucose, electrolytes (Na, K, Mg), LFT	Metabolic disturbances
CBC, infection screen	Pneumonia, sepsis
CT head	Seizures with head injury, focal signs

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Thiamine (all, before glucose)	Thiamine 100 mg TDS orally; 200–500 mg IV TDS if Wernicke's suspected or malnourished	5–7 days, then oral
Benzodiazepine — fixed taper (outpatient mild–moderate)	Chlordiazepoxide 20–25 mg QID day 1–2, 15 mg QID day 3, 10 mg QID day 4, 5 mg QID day 5, stop day 6–7 (or diazepam 10 mg QID tapering)	5–7 days
Liver disease / elderly	Lorazepam 1–2 mg TDS–QID tapering	5–7 days
Severe / DTs (hospital)	Diazepam 10–20 mg IV/PO every 1–2 h until calm (symptom-triggered)	As needed
Supportive	Fluids, nutrition, correct K^+ and Mg^{2+}, B-complex	—
Outpatient criteria	Mild withdrawal, no seizures/DTs history, responsible carer, daily review	—

REFER / RED FLAGS

- Seizures, hallucinations, confusion (DTs)
- CIWA >18, previous DTs
- Wernicke's features
- Serious medical illness, no carer

GP PEARLS

★ *Give thiamine before any glucose in an alcoholic — glucose first can precipitate Wernicke's.*

★ *Do not prescribe a benzodiazepine taper for more than 7 days — it creates a new dependence.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Chlordiazepoxide (benzodiazepine)	10–25 mg PO 6-hourly, taper (withdrawal)	Symptom-triggered	*Accumulates in liver disease*
Lorazepam (benzodiazepine)	2–4 mg IV (0.1 mg/kg); 1–2 mg PO	Liver disease/elderly	*Respiratory depression*
Diazepam (benzodiazepine)	5–10 mg PO/IV; rectal 0.5 mg/kg child	Alternative	*Sedation, dependence*
Thiamine (vitamin B1)	100 mg PO/IV daily (200–500 mg IV 8-hourly if Wernicke)	Before glucose	*Give before glucose in alcohol users*
Multivitamin–mineral supplement	1 tablet PO daily	Nutrition	*Not a substitute for diet*
Haloperidol (typical antipsychotic)	0.5–5 mg PO/IM; 5 mg IM in agitation	Hallucinations (with benzodiazepine)	*Dystonia, QT, NMS*

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DISEASE 266 OF 300 | PSYCHIATRY & SUBSTANCE USE

Acute Alcohol Intoxication

A "drunk" patient may be hypoglycaemic, head-injured or poisoned.

DEFINITION

Acute central nervous system depression from alcohol. Most need only observation, but it masks and accompanies dangerous conditions: head injury (subdural haematoma), hypoglycaemia, aspiration, hypothermia, methanol poisoning (illicit liquor — blurred vision, severe acidosis), mixed overdose and trauma.

SYMPTOMS

- Recent heavy drinking
- Slurred speech, unsteady gait
- Vomiting
- Drowsiness
- Blurred vision, abdominal pain hours later (methanol)

SIGNS

- Smell of alcohol, nystagmus, ataxia
- GCS, airway, vomiting
- Head injury signs: scalp wound, unequal pupils
- Hypothermia
- Rapid deep breathing (acidosis — methanol)

DIAGNOSTIC TESTS

Test	Finding / purpose
Capillary glucose	Always
GCS monitoring	Every 30–60 min
CT head	Head injury, GCS not improving, focal signs
ABG, electrolytes	Suspected methanol (high anion gap acidosis)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Airway & position	Recovery position, protect airway, suction vomit	Until awake
Glucose	If <70 mg/dl: thiamine 100 mg IV then 25% dextrose 100 ml IV	Stat
Fluids	IV NS/RL if dehydrated or vomiting (does not speed alcohol clearance)	As needed
Vomiting	Ondansetron 4 mg IV	SOS
Observe	Until sober and able to walk safely; discharge to responsible adult	—
Methanol suspected	Refer urgently: fomepizole/ethanol, bicarbonate, haemodialysis	Emergency

REFER / RED FLAGS

- GCS ≤8, unable to protect airway
- Head injury, focal signs, deterioration
- Suspected methanol or mixed overdose
- Hypothermia, seizures

GP PEARLS

★ *Never attribute coma to alcohol until glucose and head injury have been excluded.*

★ *Clusters of blurred vision and acidosis after a party suggest methanol (hooch) — alert authorities.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Thiamine (vitamin B1)	100 mg PO/IV daily (200–500 mg IV 8-hourly if Wernicke)	Before glucose	*Give before glucose in alcohol users*
Dextrose 25%/50% IV	25% dextrose 100 ml IV (child 2–5 ml/kg 10%)	Hypoglycaemia	*Thrombophlebitis; recheck glucose 15 min*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Vomiting	*QT; constipation*
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Dehydration	*Fluid overload in HF/CKD*
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	Airway protection	*Avoid hyperoxia in COPD CO2 retainers*
Naloxone (opioid antagonist)	0.4 mg IV/IM, repeat every 2–3 min	If opioids co-ingested	*Short-acting — re-sedation; withdrawal*

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DISEASE 267 OF 300 | PSYCHIATRY & SUBSTANCE USE

Self-Harm & Suicide Risk

Ask directly, assess risk, restrict means, follow up closely.

DEFINITION

Self-harm is intentional self-injury or self-poisoning regardless of intent; it greatly increases the risk of later suicide. India has a high burden of suicide, especially among young adults, farmers and students; pesticide ingestion is a common method. Risk factors: previous attempts, depression, substance use, chronic illness, social isolation, recent loss, access to means.

SYMPTOMS

- Thoughts of death or ending life
- Plans, preparations, method
- Hopelessness, feeling a burden
- Recent loss, conflict, debt, exam failure
- Previous attempts, family history

SIGNS

- Low mood, agitation
- Evidence of self-injury
- Intoxication
- Signs of poisoning
- Collateral history from family

DIAGNOSTIC TESTS

Test	Finding / purpose
Direct questions	"Have you had thoughts of ending your life? Do you have a plan?"
Risk assessment	Intent, plan, means, protective factors
Medical assessment after self-harm	Toxicology, paracetamol level, wound care

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Immediate safety	Do not leave a high-risk person alone; remove means (pesticides, medicines, ropes)	Immediate
Medical treatment	Treat poisoning or injuries first	—
Safety plan	Warning signs, coping strategies, people to contact, crisis lines (Tele-MANAS 14416 / 1-800-891-4416)	Written
Treat underlying condition	Depression, substance use, psychosis	Ongoing
Prescribing	Limited quantities; avoid TCAs; involve family to supervise medicines	—
Follow-up	Within 48–72 h and regularly; involve family with consent	—

REFER / RED FLAGS

- Active intent or plan, recent serious attempt — emergency psychiatric referral
- Psychosis, severe depression
- Ongoing self-harm
- Minors (involve guardians, child services)

GP PEARLS

★ *Asking about suicide reduces, not increases, risk.*

★ *Attempted suicide is decriminalised under the Mental Healthcare Act 2017 — treat it as a health need.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Escitalopram (SSRI)	5–10 mg PO daily (max 20 mg)	Depression (limit supply)	*Nausea, QT; activation early; hyponatraemia*
Sertraline (SSRI)	25–50 mg PO daily (max 200 mg)	Alternative	*GI upset; safer in IHD*
Mirtazapine (NaSSA)	7.5–15 mg PO at night	Insomnia	*Sedation, weight gain*
Clonazepam (benzodiazepine)	0.25–0.5 mg PO at night/12-hourly	Short-term (small supply)	*Dependence; falls in elderly*
Lithium carbonate (mood stabiliser)	300–400 mg PO 12-hourly (level 0.6–1.0)	Specialist (anti-suicidal)	*Toxicity with NSAIDs, diuretics, dehydration*
Activated charcoal (adsorbent)	1 g/kg (max 50 g) PO within 1 h of ingestion	Recent overdose	*Not for hydrocarbons, iron, alcohol, corrosives*

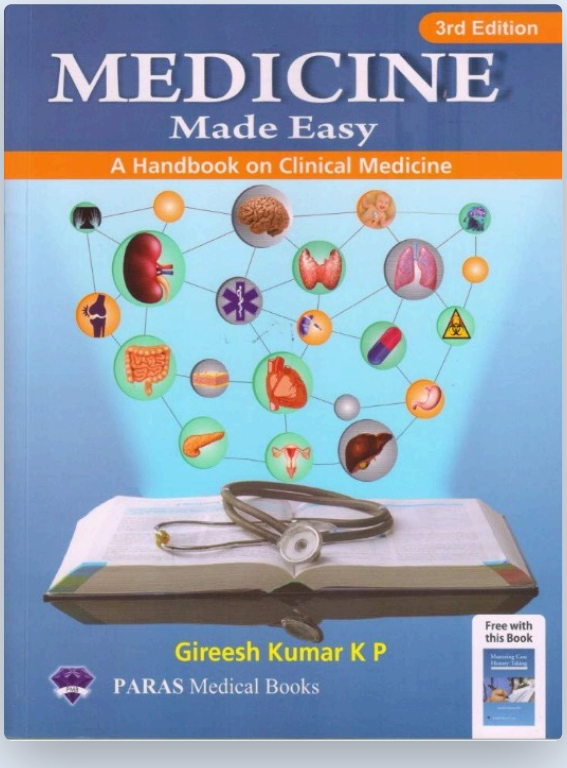
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DISEASE 268 OF 300 | EMERGENCIES & INJURIES

Anaphylaxis

Adrenaline IM into the thigh — immediately, and again in 5 minutes if needed.

DEFINITION

Severe, life-threatening systemic hypersensitivity reaction with rapid onset of airway, breathing or circulation problems, usually with skin/mucosal changes. Triggers: drugs (antibiotics, NSAIDs, contrast), injections, foods (peanuts, seafood), insect stings, latex. Biphasic reactions can recur within 72 h.

SYMPTOMS

- Sudden onset within minutes of exposure
- Throat tightness, hoarse voice, difficulty swallowing
- Breathlessness, wheeze
- Dizziness, collapse
- Itching, flushing, abdominal pain, vomiting

SIGNS

- Urticaria, angioedema of lips, tongue, eyes
- Stridor, wheeze
- Tachycardia, hypotension
- Cyanosis, altered consciousness
- Skin changes may be absent (10–20%)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis — do not delay treatment	—
Serum tryptase (1–2 h after onset)	Supports diagnosis later
Allergy referral	Identify trigger

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Adrenaline IM (first and most important)	Adrenaline 1:1000 (1 mg/ml) 0.5 ml IM anterolateral thigh (adult); child 0.01 ml/kg (6–12 y 0.3 ml; <6 y 0.15 ml)	Repeat every 5 min if no improvement
Position	Lie flat with legs raised (sit up if breathless; left lateral if pregnant); do not stand up	Immediate
Oxygen & airway	High-flow oxygen; call for help	Immediate
Fluids	NS/RL 500–1000 ml IV bolus (child 10–20 ml/kg)	Repeat as needed
Wheeze	Salbutamol 5 mg nebulised	SOS
After stabilisation (adjuncts)	Cetirizine 10 mg or chlorpheniramine 10 mg IV; hydrocortisone 200 mg IV (child 50–100 mg) — not substitutes for adrenaline	Single doses

REFER / RED FLAGS

- All anaphylaxis — observe ≥6–12 h in hospital
- Refractory (2 doses of IM adrenaline) — adrenaline infusion
- Airway compromise
- Allergy clinic referral and adrenaline auto-injector

GP PEARLS

★ *Keep an anaphylaxis kit with adrenaline in every clinic where injections are given.*

★ *Antihistamines and steroids do not treat anaphylaxis — delayed adrenaline is the main cause of death.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Adrenaline (sympathomimetic)	0.5 mg IM (0.5 ml of 1:1000) into thigh; repeat in 5 min	0.5 mg IM, repeat 5 min	*Never IV bolus 1:1000 outside arrest*
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Fluid bolus	*Fluid overload in HF/CKD*
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	After adrenaline (skin)	*Mild sedation; reduce dose in CKD*
Hydrocortisone (corticosteroid)	100–200 mg IV stat, then as needed	Adjunct after adrenaline	*Hyperglycaemia; fluid retention*
Salbutamol (SABA)	MDI 100 µg 2–4 puffs; neb 2.5–5 mg	Bronchospasm	*Tremor, hypokalaemia, tachycardia*
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	High-flow oxygen	*Avoid hyperoxia in COPD CO2 retainers*

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DISEASE 269 OF 300 | EMERGENCIES & INJURIES

Acute Breathlessness — Approach

Oxygen, sit up, and think: airway, lungs, heart, blood, metabolic.

DEFINITION

Sudden or worsening shortness of breath. Causes: airway (anaphylaxis, foreign body), lungs (asthma, COPD exacerbation, pneumonia, pneumothorax, pulmonary embolism, effusion), heart (pulmonary oedema, ACS, arrhythmia, tamponade), metabolic acidosis (DKA, sepsis, poisoning), anaemia and anxiety (diagnosis of exclusion).

SYMPTOMS

- Onset: sudden (PE, pneumothorax), hours–days (pneumonia, heart failure)
- Chest pain, cough, fever, wheeze
- Orthopnoea, leg swelling
- Known asthma, COPD, heart disease, diabetes
- Recent immobility, travel, surgery

SIGNS

- RR, SpO_2, HR, BP, temperature, GCS
- Ability to speak in sentences
- Wheeze, crepitations, reduced breath sounds, tracheal shift
- Raised JVP, oedema, murmurs
- Kussmaul breathing, calf swelling

DIAGNOSTIC TESTS

Test	Finding / purpose
SpO_2, capillary glucose	Immediately
ECG	ACS, arrhythmia, PE strain
Chest X-ray	Pneumonia, pneumothorax, oedema, effusion
ABG/VBG	Hypercapnia, acidosis
CBC, troponin, BNP, D-dimer, ketones	As indicated

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Oxygen	Target SpO_2 94–98% (88–92% in COPD)	Continuous
Position	Sit upright (except hypotension)	—
Wheeze (asthma/COPD)	Salbutamol 5 mg + ipratropium 500 µg nebulised; prednisolone 40 mg	As per page
Pulmonary oedema	Furosemide 40–80 mg IV; nitroglycerin SL if SBP >100	As per page
Tension pneumothorax	Needle decompression	Immediate
Anaphylaxis	Adrenaline 0.5 mg IM	Immediate

REFER / RED FLAGS

- SpO_2 <92% despite oxygen, RR >30, exhaustion
- Altered sensorium, hypotension
- Chest pain with ECG changes
- Suspected PE, pneumothorax

GP PEARLS

★ *A normal SpO_2 does not exclude serious illness — a high respiratory rate is the warning.*

★ *Anxiety is a diagnosis of exclusion after examining the patient and checking SpO_2, ECG and glucose.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	Titrated oxygen	*Avoid hyperoxia in COPD CO2 retainers*
Salbutamol (SABA)	MDI 100 µg 2–4 puffs; neb 2.5–5 mg	Wheeze	*Tremor, hypokalaemia, tachycardia*
Furosemide (loop diuretic)	20–40 mg PO daily; 40–80 mg IV in LVF	Pulmonary oedema	*Hypokalaemia, dehydration, gout*
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	Asthma/COPD	*Hyperglycaemia; taper if >3 weeks*
Adrenaline (sympathomimetic)	0.5 mg IM (0.5 ml of 1:1000) into thigh; repeat in 5 min	Anaphylaxis	*Never IV bolus 1:1000 outside arrest*
Enoxaparin (LMWH)	1 mg/kg SC 12-hourly (treatment); 40 mg daily prophylaxis	Suspected PE (pending imaging)	*Bleeding; adjust in CKD*

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DISEASE 270 OF 300 | EMERGENCIES & INJURIES

Shock & Hypotension

Cold, clammy, confused, fast pulse — fluids first, find the cause.

DEFINITION

Inadequate tissue perfusion. Types: hypovolaemic (haemorrhage, diarrhoea, burns), distributive (sepsis, anaphylaxis), cardiogenic (MI, arrhythmia), obstructive (tension pneumothorax, tamponade, massive PE). Systolic BP <90 mmHg or MAP <65, but early shock may have a normal BP with tachycardia and poor perfusion.

SYMPTOMS

- Dizziness, fainting
- Thirst, reduced urine
- Breathlessness, chest pain
- Bleeding, vomiting, diarrhoea
- Fever, rash, recent exposure (anaphylaxis)

SIGNS

- Tachycardia, low BP, narrow pulse pressure
- Cold clammy skin, capillary refill >3 s (warm in early sepsis)
- Altered sensorium
- Raised JVP (cardiogenic/obstructive) or flat (hypovolaemic)
- Source: bleeding, abdominal signs, rash

DIAGNOSTIC TESTS

Test	Finding / purpose
Capillary glucose, ECG	Immediately
CBC, cross-match, lactate	Bleeding, perfusion
Electrolytes, RFT, blood culture	Sepsis, AKI
Bedside USG (if available)	IVC, cardiac function, free fluid, pneumothorax

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Position & oxygen	Lie flat with legs raised; high-flow oxygen; two large-bore IV cannulae	Immediate
Fluids	RL/NS 500 ml bolus over 15 min (child 10–20 ml/kg), reassess; repeat up to 30 ml/kg (not in cardiogenic shock)	First hour
Haemorrhage	Control bleeding with direct pressure; tranexamic acid 1 g IV within 3 h of trauma; blood transfusion	Immediate
Sepsis	Ceftriaxone 2 g IV first dose	Within 1 hour
Anaphylaxis	Adrenaline 0.5 mg IM	Immediate
Transfer	To hospital with ICU; vasopressors (noradrenaline) there	Urgent

REFER / RED FLAGS

- All shock — urgent transfer after initial resuscitation
- Persistent hypotension after 2 boluses
- Cardiogenic shock
- Active bleeding

GP PEARLS

★ *Tachycardia is the earliest sign of shock; hypotension is late.*

★ *Beta-blockers mask tachycardia — do not be reassured by a normal pulse in these patients.*

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DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	20–30 ml/kg bolus	*Fluid overload in HF/CKD*
Adrenaline (sympathomimetic)	0.5 mg IM (0.5 ml of 1:1000) into thigh; repeat in 5 min	Anaphylactic shock	*Never IV bolus 1:1000 outside arrest*
Noradrenaline (vasopressor)	0.05–0.5 µg/kg/min IV infusion	Septic shock (hospital)	*Central line preferred; extravasation*
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	Sepsis first dose	*Biliary sludge; not with calcium IV in neonates*
Dopamine (inotrope)	5–20 µg/kg/min IV infusion	Cardiogenic (hospital)	*Arrhythmias; extravasation*
Dextrose 25%/50% IV	25% dextrose 100 ml IV (child 2–5 ml/kg 10%)	Hypoglycaemia	*Thrombophlebitis; recheck glucose 15 min*

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DISEASE 271 OF 300 | EMERGENCIES & INJURIES

The Unconscious Patient

ABC, glucose, GCS, pupils — then look for the cause.

DEFINITION

Reduced level of consciousness, assessed by Glasgow Coma Scale (GCS 3–15; ≤8 = coma, airway at risk). Causes ("AEIOU TIPS"): Alcohol, Epilepsy/electrolytes/encephalopathy, Insulin (hypo/hyperglycaemia), Overdose/oxygen deficiency, Uraemia; Trauma, Infection (meningitis, malaria), Psychiatric, Stroke/shock.

SYMPTOMS

- Witness history: onset, trauma, seizure
- Drugs, alcohol, poison container
- Diabetes, epilepsy, liver/kidney disease
- Fever, headache preceding
- Travel/endemic area (cerebral malaria)

SIGNS

- Airway, breathing pattern, SpO_2, BP, pulse, temperature
- GCS: eyes 4, verbal 5, motor 6
- Pupils: pinpoint (opioids, OP, pontine), unequal (herniation)
- Neck stiffness, rash, injuries
- Breath smell (alcohol, ketones, OP)

DIAGNOSTIC TESTS

Test	Finding / purpose
Capillary glucose	Immediately
Electrolytes, RFT, LFT, ABG, CBC	Metabolic causes
Malaria test, blood culture	Infection
CT head	Trauma, focal signs, unexplained
Toxicology, ECG	Overdose

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Airway	Recovery position (if no spinal injury), suction, airway adjunct; intubation if GCS ≤8 (hospital)	Immediate
Oxygen, IV access	SpO_2 ≥94%	Immediate
Hypoglycaemia	Thiamine 100 mg IV (alcoholics/malnourished) then 25% dextrose 100 ml IV	Stat
Opioid overdose (pinpoint pupils, slow breathing)	Naloxone 0.4 mg IV/IM, repeat every 2–3 min (max 10 mg)	Stat
Seizures	Lorazepam 4 mg IV / midazolam 10 mg IM	Stat
Cervical spine	Immobilise if trauma suspected	—

REFER / RED FLAGS

- All unconscious patients — after stabilisation
- GCS ≤8
- Head injury, focal signs, unequal pupils
- Fever with coma (meningitis, cerebral malaria)

GP PEARLS

★ *Check glucose in every unconscious patient within the first minute.*

★ *Document GCS components (e.g. E2V3M5) rather than a total — it tracks change better.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Dextrose 25%/50% IV	25% dextrose 100 ml IV (child 2–5 ml/kg 10%)	Hypoglycaemia	*Thrombophlebitis; recheck glucose 15 min*
Thiamine (vitamin B1)	100 mg PO/IV daily (200–500 mg IV 8-hourly if Wernicke)	Before glucose	*Give before glucose in alcohol users*
Naloxone (opioid antagonist)	0.4 mg IV/IM, repeat every 2–3 min	Opioid toxidrome	*Short-acting — re-sedation; withdrawal*
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	Hypoxia	*Avoid hyperoxia in COPD CO2 retainers*
Midazolam (benzodiazepine)	10 mg buccal/IM (0.2–0.3 mg/kg child)	Seizures	*Respiratory depression*
Mannitol (osmotic diuretic)	0.5–1 g/kg IV over 20 min (raised ICP)	Raised ICP (specialist)	*Hypotension; specialist advice*

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DISEASE 272 OF 300 | EMERGENCIES & INJURIES

Cardiac Arrest & CPR

Push hard, push fast, minimise interruptions — shock early.

DEFINITION

Cessation of effective cardiac output: unresponsive, not breathing normally (gasping), no pulse. Shockable rhythms: ventricular fibrillation (VF) and pulseless VT; non-shockable: asystole and PEA. Survival depends on immediate high-quality CPR and early defibrillation. Reversible causes: 4 Hs (hypoxia, hypovolaemia, hypo/hyperkalaemia, hypothermia) and 4 Ts (tension pneumothorax, tamponade, toxins, thrombosis).

SYMPTOMS

- Sudden collapse
- Unresponsive
- Absent or abnormal (gasping) breathing
- Preceding chest pain, breathlessness, palpitations

SIGNS

- No response to voice or shaking
- No normal breathing
- No carotid pulse (check ≤10 s)
- Rhythm on monitor/AED
- Cyanosis, dilated pupils

DIAGNOSTIC TESTS

Test	Finding / purpose
Rhythm check	Every 2 minutes
Capillary glucose, K^+ (if possible)	Reversible causes
End-tidal CO_2	CPR quality, ROSC (hospital)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Call for help & AED	Shout for help, call 108/112, get AED	Immediate
Chest compressions	Centre of chest, 5–6 cm deep, 100–120/min, full recoil; 30:2 with breaths (child 15:2 with 2 rescuers)	Continuous; swap every 2 min
Defibrillation (VF/pVT)	Shock 150–200 J biphasic as soon as available; resume CPR immediately for 2 min	Every 2 min if shockable
Adrenaline	1 mg IV/IO (child 10 µg/kg) — immediately in non-shockable; after 3rd shock in shockable	Every 3–5 min
Amiodarone (shockable)	300 mg IV after 3rd shock, 150 mg after 5th (child 5 mg/kg)	As stated
After ROSC	Oxygen SpO_2 94–98%, SBP >100, 12-lead ECG, glucose; transfer to ICU	—

REFER / RED FLAGS

- All cardiac arrests — call emergency services immediately
- ROSC — transfer for post-resuscitation care
- Suspected STEMI after ROSC (PCI)
- —

GP PEARLS

★ *Compression-only CPR by a bystander is far better than no CPR.*

★ *Every clinic should have an AED and staff trained in BLS — practise annually.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Adrenaline (arrest dose)	1 mg IV (10 ml of 1:10,000) every 3–5 min	1 mg every 3–5 min	*Give early in non-shockable rhythms*
Amiodarone (arrest dose)	300 mg IV after 3rd shock, then 150 mg	VF/pVT after 3rd shock	*Hypotension; use in VF/pulseless VT*
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	High-flow oxygen	*Avoid hyperoxia in COPD CO2 retainers*
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Hypovolaemia	*Fluid overload in HF/CKD*
Calcium gluconate 10%	10 ml IV over 10 min (hyperkalaemia, cardiac protection)	Hyperkalaemia	*Not with ceftriaxone in neonates; extravasation*
Dextrose 25%/50% IV	25% dextrose 100 ml IV (child 2–5 ml/kg 10%)	Post-ROSC hypoglycaemia	*Thrombophlebitis; recheck glucose 15 min*

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DISEASE 273 OF 300 | EMERGENCIES & INJURIES

Snake Bite

Reassure, immobilise, no tourniquet — and get to anti-snake venom.

DEFINITION

India has the highest snakebite mortality in the world. The "big four": Russell's viper and saw-scaled viper (haemotoxic — bleeding, AKI) and cobra and common krait (neurotoxic — ptosis, paralysis, respiratory failure; krait bites are often painless at night). Polyvalent anti-snake venom (ASV) covers all four.

SYMPTOMS

- Bite, time, snake description (do not kill or chase)
- Local pain, swelling (vipers, cobra)
- Bleeding gums, haematuria, blood in vomit (viper)
- Drooping eyelids, double vision, difficulty swallowing/breathing (neurotoxic)
- Abdominal pain at night, sleeping on floor (krait)

SIGNS

- Fang marks, local swelling, blisters, necrosis
- Bleeding from bite site, gums, venepuncture sites
- Ptosis, ophthalmoplegia, bulbar palsy, neck flexor weakness
- Hypotension, oliguria
- Respiratory distress

DIAGNOSTIC TESTS

Test	Finding / purpose
20-minute whole blood clotting test (20WBCT)	Non-clotting = coagulopathy (viper) → give ASV
CBC, PT/INR, creatinine, urine	Haemolysis, AKI, haematuria
Single-breath count, SpO_2	Neurotoxicity monitoring
ECG	Hyperkalaemia, myocarditis

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
First aid	Reassure, immobilise limb (splint), remove rings; no tourniquet, cutting, sucking, ice or herbal remedies; transport to ASV-capable facility	Immediate
ASV (systemic envenomation)	Polyvalent ASV 10 vials (100 ml) IV infusion over 1 h (same dose for children); low dose 8–10 vials per national protocol	Repeat per 20WBCT every 6 h / neuro status at 1–2 h
Anaphylactic reaction to ASV	Stop infusion, adrenaline 0.5 mg IM; restart slowly when settled	As needed
Neurotoxic	Neostigmine 0.5 mg IV every 30 min (with atropine 0.6 mg) for cobra; airway support/ventilation	As needed
Tetanus, analgesia	Td 0.5 ml IM; paracetamol (avoid NSAIDs, IM injections)	—
Avoid	Prophylactic ASV without signs, prophylactic antibiotics routinely	—

REFER / RED FLAGS

- All snake bites — observe at least 24 h in a facility with ASV
- Signs of envenomation (coagulopathy, neurotoxicity)
- Respiratory weakness (ventilation)
- AKI (dialysis)

GP PEARLS

★ *A painless "bite" at night with ptosis and abdominal pain the next morning is a krait bite.*

★ *Repeat 20WBCT every 6 hours — normal at first does not exclude viper envenomation.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Anti-snake venom (polyvalent)	10 vials IV (high dose 10–20) for systemic envenomation	Systemic envenomation	*Anaphylaxis — keep adrenaline ready*
Neostigmine (anticholinesterase)	0.5 mg IV/SC every 30 min with atropine (neuroparalytic)	Neuroparalytic (with atropine)	*Give atropine first; bradycardia*
Atropine (antimuscarinic)	1.8–3 mg IV, double every 5 min to atropinisation	Before neostigmine	*Monitor for toxicity; target dry chest*
Adrenaline (sympathomimetic)	0.5 mg IM (0.5 ml of 1:1000) into thigh; repeat in 5 min	ASV reaction	*Never IV bolus 1:1000 outside arrest*
Tetanus–diphtheria (Td) vaccine	0.5 ml IM	Tetanus prophylaxis	*Booster if last dose >5 y (dirty wound) or >10 y (clean)*

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DISEASE 274 OF 300 | EMERGENCIES & INJURIES

Scorpion Sting

Severe local pain in most; prazosin saves lives in autonomic storm.

DEFINITION

The Indian red scorpion (Hottentotta tamulus) causes potentially fatal envenomation, especially in children, through massive catecholamine release ("autonomic storm"): hypertension, myocarditis, pulmonary oedema and shock. Prazosin, an alpha-1 blocker, is the life-saving treatment. Scorpion antivenom is an adjunct.

SYMPTOMS

- Intense burning pain at sting site radiating up the limb
- Sweating, salivation, vomiting
- Restlessness, priapism
- Palpitations, breathlessness
- Cold extremities

SIGNS

- Local pain without much swelling
- Profuse sweating, cold extremities ("mango-like" limbs)
- Tachycardia, hypertension then hypotension
- Crepitations (pulmonary oedema)
- Priapism, mydriasis

DIAGNOSTIC TESTS

Test	Finding / purpose
Vital signs, SpO_2 every 30 min	Grading
ECG	Arrhythmia, ischaemia
Echo, troponin, CXR	Myocarditis, pulmonary oedema (hospital)
Blood sugar	Hyperglycaemia

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Local pain only	Lignocaine 2% local infiltration (digital block) or ice packs; paracetamol	As needed
Autonomic storm (sweating, cold extremities, hypertension)	Prazosin 30 µg/kg orally (adult 1 mg; child 250–500 µg), first dose immediately	Repeat every 3 h until extremities warm
Scorpion antivenom (where available)	As per product (with prazosin)	As needed
Pulmonary oedema	Oxygen, nitroglycerin infusion, dobutamine (hospital); avoid excess fluids	Hospital
Avoid	Atropine, steroids, antihistamines, nifedipine	—
Observation	All children ≥6–12 h	—

REFER / RED FLAGS

- Signs of autonomic storm (start prazosin first)
- Breathlessness, hypotension, ECG changes
- Children <5 years
- Priapism

GP PEARLS

★ *Give prazosin early — before pulmonary oedema develops — and watch for first-dose hypotension.*

★ *Atropine worsens scorpion envenomation — sweating is not an indication.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Prazosin (scorpion sting)	500 µg PO (child 30 µg/kg) 3–6-hourly	Autonomic storm	*First-dose hypotension; monitor BP*
Lidocaine 2% (local anaesthetic) for procedures	Max 3 mg/kg (7 mg/kg with adrenaline)	Local pain infiltration	*No adrenaline on digits as per local practice*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	Pulmonary oedema	*Avoid hyperoxia in COPD CO2 retainers*

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DISEASE 275 OF 300 | EMERGENCIES & INJURIES

Bee & Wasp Stings

Scrape out the sting, treat local reaction — watch for anaphylaxis and mass envenomation.

DEFINITION

Hymenoptera stings cause local pain and swelling; large local reactions (>10 cm) last days. Systemic allergic reactions range from urticaria to anaphylaxis. Multiple stings (>50–100, swarm attacks) cause toxic envenomation: haemolysis, rhabdomyolysis, AKI, myocarditis.

SYMPTOMS

- Sharp pain, swelling, redness
- Itching spreading beyond site
- Throat tightness, breathlessness, dizziness (anaphylaxis)
- Dark urine, vomiting (multiple stings)
- Previous reactions

SIGNS

- Sting with venom sac (bee)
- Local erythema and oedema
- Urticaria, angioedema, wheeze, hypotension
- Number of stings
- Jaundice, oliguria (toxic)

DIAGNOSTIC TESTS

Test	Finding / purpose
None for local reaction	—
CBC, creatinine, CPK, urine (myoglobin)	Multiple stings
LFT, ECG	Systemic toxicity

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Remove sting	Scrape out with fingernail or card edge (do not squeeze sac)	Immediate
Local	Wash, cold compress, elevation; hydrocortisone 1% or mometasone cream	2–3 days
Itch / urticaria	Cetirizine 10 mg OD (child 0.25 mg/kg)	3–5 days
Large local reaction	Prednisolone 0.5–1 mg/kg (max 40 mg)	3–5 days
Pain	Paracetamol or ibuprofen	As needed
Anaphylaxis	Adrenaline 0.5 mg IM (see Anaphylaxis)	Immediate

REFER / RED FLAGS

- Any systemic reaction
- Multiple stings (>20 in child, >50 in adult) — observe for haemolysis, AKI
- Stings in mouth/throat
- History of anaphylaxis (allergy clinic, venom immunotherapy)

GP PEARLS

★ *Stings inside the mouth can obstruct the airway — refer immediately.*

★ *Swelling of the whole limb is a large local reaction, not cellulitis — antibiotics are rarely needed.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Cetirizine (2nd-gen antihistamine)	10 mg PO once daily (5 mg child 2–6 y)	Local reactions	*Mild sedation; reduce dose in CKD*
Adrenaline (sympathomimetic)	0.5 mg IM (0.5 ml of 1:1000) into thigh; repeat in 5 min	Anaphylaxis	*Never IV bolus 1:1000 outside arrest*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Hydrocortisone (corticosteroid)	100–200 mg IV stat, then as needed	Severe systemic reaction	*Hyperglycaemia; fluid retention*
Calamine lotion (antipruritic)	Apply 8-hourly to itchy areas	Local itching	*Drying; soothing only*
Prednisolone (oral corticosteroid)	40 mg PO daily ×5 days (1 mg/kg child) in acute exacerbation	Large local reactions	*Hyperglycaemia; taper if >3 weeks*

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DISEASE 276 OF 300 | EMERGENCIES & INJURIES

Poisoning — General Approach

Resuscitate, identify, decontaminate, antidote, refer — and keep the container.

DEFINITION

Poisoning in India is commonly intentional self-poisoning with pesticides (organophosphates, aluminium phosphide, paraquat), rodenticides, medicines (paracetamol, benzodiazepines, TCAs), kerosene in children, plant toxins (yellow oleander, Odollam/Cerbera — "suicide tree" in Kerala), corrosives and alcohol. Every case is a medico-legal case.

SYMPTOMS

- What, how much, when, how (ingestion, inhalation, skin)
- Bring the container/strip/plant
- Vomiting, abdominal pain, altered sensorium
- Intent: accidental or self-harm
- Co-ingestion of alcohol

SIGNS

- ABC, GCS, pupils, temperature
- Toxidromes: cholinergic (OP), anticholinergic, opioid, sympathomimetic, sedative
- Smell: garlic/kerosene (OP), rotten fish (phosphide)
- Bradycardia/arrhythmia (oleander, Cerbera, beta-blockers)
- Oral burns (corrosives)

DIAGNOSTIC TESTS

Test	Finding / purpose
Capillary glucose, ECG	All
Electrolytes, RFT, LFT, ABG	Organ toxicity, acidosis
Specific levels	Paracetamol (4 h), serum cholinesterase
Gastric aspirate/vomitus	Keep for forensic analysis

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Resuscitation	Airway, oxygen, IV access, treat seizures and hypotension	Immediate
Decontamination — skin/eyes	Remove clothes, wash skin with soap and water; irrigate eyes	Immediate
Activated charcoal	50 g (child 1 g/kg) orally within 1 h of most ingestions, if airway protected (not for corrosives, hydrocarbons, alcohols, metals)	Single
Avoid	Induced vomiting (salt water, emetics); gastric lavage in kerosene/corrosives	—
Specific antidotes	OP: atropine + oximes; paracetamol: NAC; opioids: naloxone; benzodiazepines: supportive (flumazenil rarely); oleander/Cerbera: atropine, digoxin-Fab where available	As indicated
Medico-legal & psychiatric	Inform police (MLC), document; psychiatric assessment after recovery	—

REFER / RED FLAGS

- All significant poisoning — after initial stabilisation
- Altered sensorium, seizures, arrhythmia, hypotension
- Aluminium phosphide, paraquat, Cerbera, OP
- Intentional self-poisoning (psychiatric follow-up)

GP PEARLS

★ *Ask the family to bring the container — the label changes treatment.*

★ *Odollam (Cerbera) seed poisoning causes bradycardia and heart block like digoxin — get an ECG and refer early.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Activated charcoal (adsorbent)	1 g/kg (max 50 g) PO within 1 h of ingestion	Within 1 h if appropriate	*Not for hydrocarbons, iron, alcohol, corrosives*
Naloxone (opioid antagonist)	0.4 mg IV/IM, repeat every 2–3 min	Opioid poisoning	*Short-acting — re-sedation; withdrawal*
Atropine (antimuscarinic)	1.8–3 mg IV, double every 5 min to atropinisation	Cholinergic poisoning	*Monitor for toxicity; target dry chest*
N-acetylcysteine (antidote)	150 mg/kg IV over 1 h, 50 mg/kg over 4 h, 100 mg/kg over 16 h	Paracetamol	*Anaphylactoid reactions; continue if late*
Dextrose 25%/50% IV	25% dextrose 100 ml IV (child 2–5 ml/kg 10%)	Hypoglycaemia	*Thrombophlebitis; recheck glucose 15 min*
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	Hypoxia	*Avoid hyperoxia in COPD CO2 retainers*

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DISEASE 277 OF 300 | EMERGENCIES & INJURIES

Organophosphate Poisoning

Wet, small-pupilled, slow-pulsed patient — atropine until the chest is dry.

DEFINITION

Poisoning by organophosphate or carbamate insecticides inhibiting acetylcholinesterase, causing cholinergic crisis: muscarinic (bronchorrhoea, bradycardia, miosis, salivation, vomiting, diarrhoea), nicotinic (fasciculations, weakness, paralysis) and CNS effects. Intermediate syndrome (proximal and respiratory weakness) occurs at 24–96 h. Respiratory failure is the main cause of death.

SYMPTOMS

- Ingestion of pesticide
- Vomiting, abdominal cramps, diarrhoea
- Excessive sweating, salivation, lacrimation
- Breathlessness
- Muscle twitching, weakness, drowsiness

SIGNS

- Pinpoint pupils
- Bradycardia (or tachycardia), hypotension
- Bronchorrhoea, crepitations, wheeze
- Fasciculations
- Kerosene-like smell, altered GCS

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis — do not wait for tests	—
Serum/RBC cholinesterase	Confirm, monitor
ABG, electrolytes, RFT, CBC, ECG	Respiratory failure, QT prolongation
Single-breath count, neck flexion strength	Intermediate syndrome

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Airway & decontamination	Clear secretions, oxygen, left lateral position; remove clothes, wash skin; staff wear gloves	Immediate
Atropine — loading	Atropine 1.8–3 mg IV bolus; double the dose every 5 min until atropinised: clear chest, HR >80, SBP >80, dry axillae, pupils no longer pinpoint	Until atropinised
Atropine — maintenance	Infusion of 10–20% of loading dose per hour; titrate to avoid toxicity (delirium, hyperthermia, ileus)	Days
Pralidoxime (if available; per protocol)	30 mg/kg IV over 30 min, then 8 mg/kg/h infusion	Until atropine not needed
Seizures/agitation	Diazepam 10 mg IV or midazolam	SOS
Avoid	Gastric lavage after 1 h, succinylcholine, morphine, theophylline	—

REFER / RED FLAGS

- All OP poisoning — ICU-capable centre after atropinisation begins
- Respiratory failure, GCS ≤8
- Intermediate syndrome
- Medico-legal reporting

GP PEARLS

★ *Pupil size is not the end-point — a dry chest is.*

★ *Start atropine before transfer: delays in atropinisation kill patients.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Atropine (antimuscarinic)	1.8–3 mg IV, double every 5 min to atropinisation	Atropinise to dry chest	*Monitor for toxicity; target dry chest*
Pralidoxime (oxime)	30 mg/kg IV over 30 min, then 8 mg/kg/h	Early in severe (selected)	*Use early; weak evidence*
Midazolam (benzodiazepine)	10 mg buccal/IM (0.2–0.3 mg/kg child)	Seizures/agitation	*Respiratory depression*
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	Oxygen	*Avoid hyperoxia in COPD CO2 retainers*
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Hypotension	*Fluid overload in HF/CKD*

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DISEASE 278 OF 300 | EMERGENCIES & INJURIES

Paracetamol Overdose

Looks well at first — the liver fails on day 3. Give N-acetylcysteine.

DEFINITION

Paracetamol overdose causes hepatotoxicity through accumulation of NAPQI when glutathione is depleted. Toxic dose ≥150 mg/kg (≥75 mg/kg in high-risk: chronic alcohol, malnutrition, enzyme inducers). Early symptoms are minimal; liver injury peaks at 72–96 h. N-acetylcysteine (NAC) is nearly 100% protective within 8 h.

SYMPTOMS

- Ingestion — number and strength of tablets, time
- Often asymptomatic first 24 h
- Nausea, vomiting, malaise
- Right upper quadrant pain (24–72 h)
- Confusion, jaundice (liver failure)

SIGNS

- Often normal early
- RUQ tenderness, jaundice
- Encephalopathy (late)
- Bleeding
- Signs of co-ingestion

DIAGNOSTIC TESTS

Test	Finding / purpose
Paracetamol level at 4 h (or later)	Plot on nomogram (treatment line 100–150 mg/l at 4 h)
LFT, INR, creatinine, glucose	Baseline and at 24 h
ABG/lactate	Severity

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Activated charcoal	50 g within 1 h of ingestion	Single
NAC (above nomogram line, >150 mg/kg, unknown time, or raised ALT)	IV acetylcysteine — SNAP/2-bag: 100 mg/kg in 200 ml 5% dextrose over 2 h, then 200 mg/kg in 1 l over 10 h (or 3-bag 150/50/100 mg/kg over 21 h)	12–21 h; continue if LFT abnormal
Oral NAC (if IV unavailable)	140 mg/kg loading, then 70 mg/kg every 4 h × 17 doses	72 h
NAC reaction	Pause, give antihistamine, restart at slower rate	—
Do not wait for level if >8 h since ingestion	Start NAC immediately	—
Psychiatric	Assessment before discharge	—

REFER / RED FLAGS

- All significant overdoses
- INR >2, encephalopathy, acidosis (liver unit)
- Staggered or unknown-time overdose
- Intentional overdose

GP PEARLS

★ *A patient who "feels fine" after paracetamol overdose is still at risk — measure the level and treat.*

★ *NAC given within 8 hours is almost fully protective — do not delay for results if late.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
N-acetylcysteine (antidote)	150 mg/kg IV over 1 h, 50 mg/kg over 4 h, 100 mg/kg over 16 h	Above treatment line/late	*Anaphylactoid reactions; continue if late*
Activated charcoal (adsorbent)	1 g/kg (max 50 g) PO within 1 h of ingestion	Within 1 h	*Not for hydrocarbons, iron, alcohol, corrosives*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Vomiting	*QT; constipation*
Dextrose 25%/50% IV	25% dextrose 100 ml IV (child 2–5 ml/kg 10%)	Hypoglycaemia	*Thrombophlebitis; recheck glucose 15 min*

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DISEASE 279 OF 300 | EMERGENCIES & INJURIES

Rodenticide Poisoning (Phosphide & Yellow Phosphorus)

Celphos is lethal — rapid shock; Ratol paste kills the liver days later.

DEFINITION

Aluminium/zinc phosphide ("Celphos" tablets, grain fumigant) releases phosphine gas causing refractory shock, myocarditis, metabolic acidosis — mortality 50–70%. Yellow phosphorus (rat-killer paste) causes delayed acute liver failure after an asymptomatic phase of 24–72 h. Superwarfarin rodenticides cause delayed coagulopathy. There is no specific antidote for phosphides or yellow phosphorus.

SYMPTOMS

- Ingestion of tablet or paste
- Vomiting, epigastric pain
- Breathlessness, collapse (phosphide)
- Garlic/rotten-fish odour
- Jaundice, bleeding, confusion after 2–3 days (yellow phosphorus)

SIGNS

- Hypotension, tachycardia, arrhythmia (phosphide)
- Cold peripheries, acidotic breathing
- Luminescent vomitus, garlic smell (phosphorus)
- Tender hepatomegaly, jaundice (late)
- Bleeding (superwarfarin)

DIAGNOSTIC TESTS

Test	Finding / purpose
ECG, ABG, electrolytes, glucose	Arrhythmia, acidosis, hypo/hyperglycaemia
LFT, INR serially (daily × 5 days)	Yellow phosphorus, superwarfarin
Silver nitrate paper test	Phosphine in gastric aspirate/breath
Echo, Mg^{2+}	Myocardial depression

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Immediate referral to ICU	All cases — even if asymptomatic	Urgent
Phosphide — decontamination	Gastric lavage with potassium permanganate 1:10,000 or coconut oil/liquid paraffin (limits phosphine release) — per local protocol; activated charcoal	Early
Phosphide — supportive	Fluids cautiously, noradrenaline, magnesium sulphate 3 g IV then 6 g over 24 h (protocols vary), sodium bicarbonate for acidosis	ICU
Yellow phosphorus	NAC infusion (as for paracetamol), vitamin K, FFP; liver transplant evaluation	Hospital
Superwarfarin	Vitamin K 10–25 mg IV/oral; long oral course	Weeks–months
Staff safety	Ventilated room — phosphine is toxic to carers	—

REFER / RED FLAGS

- Every rodenticide ingestion — urgent
- Shock, acidosis, arrhythmia
- Rising INR or bilirubin
- Medico-legal reporting

GP PEARLS

★ *A well-looking patient after rat-killer paste may die of liver failure on day 3 — admit and monitor LFT/INR.*

★ *Do not give water by mouth after phosphide ingestion — it accelerates phosphine release.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
N-acetylcysteine (antidote)	150 mg/kg IV over 1 h, 50 mg/kg over 4 h, 100 mg/kg over 16 h	Yellow phosphorus/aluminium phosphide (adjunct)	*Anaphylactoid reactions; continue if late*
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Hypotension	*Fluid overload in HF/CKD*
Magnesium sulphate	4 g IV over 15–20 min loading (eclampsia)	Phosphide arrhythmias (adjunct)	*Monitor reflexes, RR, urine; antidote calcium gluconate*
Vitamin K (phytomenadione)	10 mg slow IV (warfarin reversal per INR)	Coagulopathy	*Anaphylactoid reactions with fast IV*
Dextrose 25%/50% IV	25% dextrose 100 ml IV (child 2–5 ml/kg 10%)	Hypoglycaemia	*Thrombophlebitis; recheck glucose 15 min*
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	Hypoxia	*Avoid hyperoxia in COPD CO2 retainers*

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DISEASE 280 OF 300 | EMERGENCIES & INJURIES

Kerosene & Hydrocarbon Ingestion

Danger is in the lungs, not the stomach — never induce vomiting.

DEFINITION

Accidental ingestion of kerosene, petrol, turpentine or lamp oil, common in toddlers when fuels are stored in drink bottles. Low viscosity allows aspiration causing chemical pneumonitis within hours. CNS depression and fever may occur. Gastric lavage and emesis increase aspiration risk and are contraindicated.

SYMPTOMS

- Child drank from a bottle of kerosene
- Coughing, choking, gagging at the time
- Breathlessness, fever (pneumonitis)
- Vomiting
- Drowsiness

SIGNS

- Kerosene smell on breath
- Tachypnoea, grunting, chest retractions
- Crepitations, wheeze
- Fever
- Altered sensorium

DIAGNOSTIC TESTS

Test	Finding / purpose
SpO_2	Hypoxia
Chest X-ray (at 6 h or earlier if symptomatic)	Pneumonitis (may lag clinical signs)
CBC, glucose	Leucocytosis

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Do not	Induce vomiting, gastric lavage, give oil/milk to drink, activated charcoal	—
Decontamination	Remove soaked clothes, wash skin	Immediate
Observation	Asymptomatic children: observe 6 h; discharge if normal SpO_2 and chest	6 h
Respiratory symptoms	Oxygen; refer for admission; bronchodilator if wheeze	As needed
Antibiotics & steroids	Not routinely (fever is chemical); antibiotics only for secondary infection	—
Prevention	Store fuels in labelled containers out of reach; never in drink bottles	—

REFER / RED FLAGS

- Any respiratory symptom, SpO_2 <94%
- Drowsiness, seizures
- Large or intentional ingestion
- Abnormal chest X-ray

GP PEARLS

★ *The initial coughing episode predicts pneumonitis — ask about it.*

★ *Fever after kerosene ingestion is usually chemical pneumonitis, not infection.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	Hypoxia	*Avoid hyperoxia in COPD CO2 retainers*
Salbutamol (SABA)	MDI 100 µg 2–4 puffs; neb 2.5–5 mg	Bronchospasm	*Tremor, hypokalaemia, tachycardia*
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Hydration	*Fluid overload in HF/CKD*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Fever (chemical pneumonitis)	*Hepatotoxic in overdose; check combination products*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Vomiting	*QT; constipation*
Amoxicillin (penicillin)	500 mg PO 8-hourly (child 15–25 mg/kg 8-hourly)	Only if secondary infection	*Penicillin allergy; rash in EBV*

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DISEASE 281 OF 300 | EMERGENCIES & INJURIES

Burns

Cool with running water for 20 minutes — then estimate TBSA and fluids.

DEFINITION

Thermal (flame, scald), chemical and electrical injuries to skin. Depth: superficial (epidermal — red, painful), superficial partial-thickness (blisters, very painful), deep partial and full-thickness (white/leathery, painless). Total body surface area (TBSA) by rule of nines or palm (1%). Adults >15% / children >10% need IV fluids and referral.

SYMPTOMS

- Mechanism, time, agent
- Enclosed space (inhalation injury)
- Pain
- Hoarse voice, cough, soot in sputum
- Associated injuries; intent (child, dowry, self-harm)

SIGNS

- Area (rule of nines; palm = 1%)
- Depth: blisters, colour, capillary refill, sensation
- Facial burns, singed nasal hair, stridor (airway burn)
- Circumferential burns (limb ischaemia, chest restriction)
- Signs of shock

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical assessment	TBSA, depth, special areas
CBC, electrolytes, RFT	Major burns
Carboxyhaemoglobin, ABG	Inhalation injury
ECG, CPK	Electrical burns

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
First aid	Stop burning; cool with cool running water 20 min (within 3 h); remove jewellery; cover with cling film/clean cloth; keep patient warm	Immediate
Fluids (>15% adult, >10% child)	Parkland: RL 2–4 ml × kg × %TBSA in 24 h; half in first 8 h from time of burn; plus maintenance in children; urine output 0.5 ml/kg/h (1 ml/kg in children)	24 h
Analgesia	Paracetamol + ibuprofen (minor); morphine 0.1 mg/kg IV (major)	As needed
Minor burn dressing	Clean, leave small blisters intact; silver sulfadiazine 1% (not face) or paraffin gauze/non-adherent dressing; review in 48 h	Until healed
Tetanus	As per prophylaxis	—
Avoid	Ice, toothpaste, ink, butter, oil; routine prophylactic antibiotics	—

REFER / RED FLAGS

- >15% TBSA adults, >10% children, >5% full-thickness
- Face, hands, feet, genitals, perineum, major joints, circumferential
- Inhalation, electrical, chemical burns
- Suspected abuse, elderly, comorbidity

GP PEARLS

★ *Cool the burn, warm the patient — hypothermia worsens outcomes.*

★ *Dowry deaths and self-immolation are medico-legal — record a careful history and inform police.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ringer's lactate (burns resuscitation)	4 ml × kg × %TBSA over 24 h (half in 8 h)	Parkland resuscitation	*Monitor urine output 0.5 ml/kg/h*
Silver sulfadiazine 1% cream	Apply to burn once/twice daily	Dressing (not face)	*Avoid in sulfa allergy, near term, neonates*
Morphine (strong opioid)	IR 5–10 mg PO 4-hourly; 2–5 mg IV titrated	Severe pain	*Respiratory depression; give laxative; NDPS record*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Mild pain	*Hepatotoxic in overdose; check combination products*
Tetanus–diphtheria (Td) vaccine	0.5 ml IM	Tetanus prophylaxis	*Booster if last dose >5 y (dirty wound) or >10 y (clean)*

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DISEASE 282 OF 300 | EMERGENCIES & INJURIES

Electrical Injury

Small skin wounds can hide deep damage — ECG for everyone.

DEFINITION

Injury from passage of electric current: low voltage (<1000 V, household) causes arrhythmias (VF), local burns, tetanic muscle contraction; high voltage and lightning cause deep tissue necrosis, compartment syndrome, rhabdomyolysis, fractures, falls and cardiac arrest. Entry and exit wounds underestimate internal damage.

SYMPTOMS

- Source, voltage, duration of contact
- Loss of consciousness
- Palpitations, chest pain
- Muscle pain, weakness
- Fall from height

SIGNS

- Entry/exit burns (hands, feet)
- Arrhythmia, cardiac arrest
- Tense swollen limb (compartment syndrome)
- Dark urine (myoglobinuria)
- Fractures, spinal injury, tympanic rupture (lightning)

DIAGNOSTIC TESTS

Test	Finding / purpose
12-lead ECG	Arrhythmias, ischaemia
CPK, urine myoglobin, creatinine, K^+	Rhabdomyolysis
Troponin	Myocardial injury
X-rays	Fractures, dislocations (posterior shoulder)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Scene safety	Switch off power before touching the victim; use non-conducting object	First
CPR	Immediate CPR and defibrillation for cardiac arrest (lightning victims: treat the apparently dead first)	Immediate
Spine	Immobilise if fall or high-voltage injury	—
Fluids (high voltage, myoglobinuria)	RL to maintain urine output 1–1.5 ml/kg/h	Until urine clear
Burns	Cool, dress; tetanus prophylaxis	—
Low-voltage, asymptomatic, normal ECG	Can be discharged after assessment	—

REFER / RED FLAGS

- High-voltage or lightning injury
- Loss of consciousness, abnormal ECG, chest pain
- Deep burns, compartment syndrome, myoglobinuria
- Pregnancy (fetal monitoring)

GP PEARLS

★ *Always do an ECG after electric shock, even if the patient feels fine.*

★ *Look for posterior shoulder dislocation after tetanic contractions.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Fluids for muscle injury	*Fluid overload in HF/CKD*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Morphine (strong opioid)	IR 5–10 mg PO 4-hourly; 2–5 mg IV titrated	Severe pain	*Respiratory depression; give laxative; NDPS record*
Silver sulfadiazine 1% cream	Apply to burn once/twice daily	Skin burns	*Avoid in sulfa allergy, near term, neonates*
Tetanus–diphtheria (Td) vaccine	0.5 ml IM	Tetanus	*Booster if last dose >5 y (dirty wound) or >10 y (clean)*
Adrenaline (arrest dose)	1 mg IV (10 ml of 1:10,000) every 3–5 min	Cardiac arrest	*Give early in non-shockable rhythms*

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DISEASE 283 OF 300 | EMERGENCIES & INJURIES

Drowning

Hypoxia is the problem — start with 5 rescue breaths.

DEFINITION

Respiratory impairment from submersion/immersion in liquid. Hypoxia causes cardiac arrest; aspiration leads to pneumonitis and ARDS which may develop hours later. Common in children near ponds, wells and buckets, and in floods. Associated hypothermia, cervical spine injury (diving) and alcohol.

SYMPTOMS

- Duration of submersion
- Diving or fall (spinal injury)
- Cough, breathlessness
- Vomiting
- Confusion

SIGNS

- Breathing, SpO_2, crepitations
- GCS
- Temperature (hypothermia)
- Injuries, neck tenderness
- Pulse, rhythm

DIAGNOSTIC TESTS

Test	Finding / purpose
SpO_2, ABG	Hypoxia
Chest X-ray	Aspiration, pulmonary oedema
Glucose, electrolytes, ECG	Arrhythmia
CT spine	Diving injury

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Rescue & CPR	Start with 5 rescue breaths, then 30:2 CPR; do not attempt to drain water from lungs (no abdominal thrusts)	Immediate
Oxygen	High-flow oxygen; CPAP/ventilation in hospital	As needed
Hypothermia	Remove wet clothes, warm blankets, warm IV fluids	Until normothermic
Spine	Immobilise if diving or trauma	—
Observation	Even if well after resuscitation: observe ≥6–8 h (delayed pulmonary oedema)	6–8 h
Avoid	Routine antibiotics and steroids	—

REFER / RED FLAGS

- Any loss of consciousness, CPR required
- Cough, breathlessness, SpO_2 <95%, abnormal CXR
- Hypothermia
- Spinal injury

GP PEARLS

★ *Do not stop resuscitation early in cold-water drowning — "not dead until warm and dead".*

★ *Children can drown in a few centimetres of water — counsel families to cover buckets and wells.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	High-flow oxygen	*Avoid hyperoxia in COPD CO2 retainers*
Salbutamol (SABA)	MDI 100 µg 2–4 puffs; neb 2.5–5 mg	Bronchospasm	*Tremor, hypokalaemia, tachycardia*
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Hypotension	*Fluid overload in HF/CKD*
Dextrose 25%/50% IV	25% dextrose 100 ml IV (child 2–5 ml/kg 10%)	Hypoglycaemia	*Thrombophlebitis; recheck glucose 15 min*
Adrenaline (arrest dose)	1 mg IV (10 ml of 1:10,000) every 3–5 min	Cardiac arrest	*Give early in non-shockable rhythms*
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	Aspiration/sepsis	*Biliary sludge; not with calcium IV in neonates*

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DISEASE 284 OF 300 | EMERGENCIES & INJURIES

Heat Illness (Heat Exhaustion & Heat Stroke)

Hot, confused patient in summer — cool first, transport second.

DEFINITION

Heat exhaustion: dehydration and salt loss with weakness, headache, nausea, temperature <40 °C, normal mentation. Heat stroke: core temperature >40 °C with CNS dysfunction (confusion, seizures, coma) — a medical emergency with multiorgan failure. Risk: outdoor labourers, elderly, children, athletes, anticholinergic and diuretic drugs, during Indian heat waves.

SYMPTOMS

- Exposure to heat, exertion
- Headache, dizziness, nausea, cramps
- Heavy sweating (exhaustion) or hot dry skin (classic stroke)
- Confusion, seizures, collapse
- Reduced urine output

SIGNS

- Temperature (rectal if possible)
- Tachycardia, hypotension
- Altered GCS (heat stroke)
- Dehydration
- Bleeding (DIC), dark urine

DIAGNOSTIC TESTS

Test	Finding / purpose
Core temperature, glucose	Immediately
Electrolytes, RFT, LFT, CPK	AKI, rhabdomyolysis, liver injury
CBC, coagulation	DIC
Malaria test, blood culture	Exclude infection

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Move to shade/cool area	Remove clothing	Immediate
Rapid cooling (heat stroke)	Cold-water immersion (best) or spray tepid water + fan; ice packs to neck, axillae, groin; stop at 38.5–39 °C	Within 30 min
Fluids	Heat exhaustion: ORS/salted lemon water; IV NS 1–2 l if unable to drink or hypotensive	As needed
Seizures/shivering	Diazepam 5–10 mg IV or lorazepam	SOS
Avoid	Paracetamol and NSAIDs (ineffective, harmful)	—
Prevention	Hydration, light clothing, avoid outdoor work 12–4 pm in heat waves, check on elderly	—

REFER / RED FLAGS

- Heat stroke (any altered mental status) — after cooling begins
- Temperature not falling
- AKI, rhabdomyolysis, bleeding
- Elderly, infants, comorbidities

GP PEARLS

★ *Antipyretics do not work in heat stroke — physical cooling does.*

★ *"Cool first, transport second" — every minute above 40 °C damages organs.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Oral rehydration salts (low osmolarity)	200–400 ml after each loose stool; 75 ml/kg over 4 h for some dehydration	Heat exhaustion	*Use clean water; correct mixing*
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Cool IV fluids	*Fluid overload in HF/CKD*
Midazolam (benzodiazepine)	10 mg buccal/IM (0.2–0.3 mg/kg child)	Shivering/seizures	*Respiratory depression*
Dextrose 25%/50% IV	25% dextrose 100 ml IV (child 2–5 ml/kg 10%)	Hypoglycaemia	*Thrombophlebitis; recheck glucose 15 min*
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	Oxygen	*Avoid hyperoxia in COPD CO2 retainers*

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DISEASE 285 OF 300 | EMERGENCIES & INJURIES

Head Injury

GCS, pupils, red flags for CT — and clear advice to the family.

DEFINITION

Traumatic brain injury graded by GCS: mild 13–15, moderate 9–12, severe ≤8. Road traffic accidents and falls are the leading causes in India. Intracranial haematomas (extradural — lucid interval; subdural — elderly, alcoholics, anticoagulated) may present late. Cervical spine injury accompanies significant head injury.

SYMPTOMS

- Mechanism (RTA, fall height), helmet use
- Loss of consciousness, amnesia
- Headache, vomiting
- Seizure
- Anticoagulant/antiplatelet use, alcohol

SIGNS

- GCS, pupils (size, reaction, asymmetry)
- Scalp lacerations, haematoma, depressed fracture
- Basal skull fracture: raccoon eyes, Battle's sign, CSF rhinorrhoea/otorrhoea
- Focal neurological deficit
- Neck tenderness

DIAGNOSTIC TESTS

Test	Finding / purpose
CT head (urgent) if	GCS <13 at any time or <15 at 2 h, suspected open/depressed/basal fracture, seizure, focal deficit, >1 vomit, anticoagulation, age ≥65 with LOC/amnesia, dangerous mechanism
CT cervical spine	Neck pain, tenderness, dangerous mechanism, GCS <15
Glucose, alcohol	Confounders

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
ABC with C-spine protection	Oxygen, IV access, avoid hypotension and hypoxia	Immediate
Scalp wound	Pressure to stop bleeding; clean and suture	—
Analgesia (mild)	Paracetamol 1 g QID; avoid sedatives	2–3 days
Vomiting	Ondansetron 4 mg	SOS
Seizures	Lorazepam 4 mg IV; levetiracetam 20 mg/kg IV (hospital)	As needed
Discharge (mild, normal CT or no CT needed)	Responsible adult for 24 h; written advice — return if drowsy, vomiting, severe headache, confusion, weakness, fits, clear nasal fluid	—

REFER / RED FLAGS

- GCS <15, focal deficit, seizures, unequal pupils
- Skull fracture signs
- Anticoagulated or elderly with any head injury
- Persistent vomiting, worsening headache

GP PEARLS

★ *An elderly person on aspirin or warfarin with a "minor" fall needs a CT — subdurals present late.*

★ *Alcohol does not explain a low GCS until head injury is excluded.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Mild head injury pain	*Hepatotoxic in overdose; check combination products*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Vomiting	*QT; constipation*
Midazolam (benzodiazepine)	10 mg buccal/IM (0.2–0.3 mg/kg child)	Seizures	*Respiratory depression*
Levetiracetam (anticonvulsant)	500 mg PO 12-hourly (up to 1.5 g 12-hourly)	Seizure prophylaxis (specialist)	*Mood change, irritability*
Mannitol (osmotic diuretic)	0.5–1 g/kg IV over 20 min (raised ICP)	Raised ICP (specialist)	*Hypotension; specialist advice*
Tetanus–diphtheria (Td) vaccine	0.5 ml IM	Scalp wounds	*Booster if last dose >5 y (dirty wound) or >10 y (clean)*

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DISEASE 286 OF 300 | EMERGENCIES & INJURIES

Polytrauma — Primary Survey

ABCDE — treat the greatest threat to life first.

DEFINITION

Systematic approach to the injured patient (ATLS): primary survey — Airway with cervical spine control, Breathing, Circulation with haemorrhage control, Disability, Exposure — with simultaneous resuscitation; then secondary survey (head-to-toe). Road traffic injuries are a leading cause of death in young Indians; the first hour is critical.

SYMPTOMS

- Mechanism: speed, ejection, fall height, helmet/seatbelt (AMPLE history)
- Allergies, Medications, Past history, Last meal, Events
- Pain sites
- Breathlessness
- Loss of consciousness

SIGNS

- A: voice, obstruction, stridor; C-spine
- B: RR, SpO_2, chest movement, breath sounds, tracheal shift, flail segment
- C: pulse, BP, capillary refill, external bleeding, abdomen, pelvis, long bones
- D: GCS, pupils, glucose
- E: full exposure, log roll, prevent hypothermia

DIAGNOSTIC TESTS

Test	Finding / purpose
FAST USG	Free fluid, pericardial blood
X-ray chest and pelvis (AP)	Pneumothorax, haemothorax, pelvic fracture
Hb, cross-match, glucose	Haemorrhage
CT (stable patients)	Head, C-spine, chest, abdomen

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Airway	Jaw thrust, suction, airway adjunct; manual in-line stabilisation/collar	Immediate
Breathing	High-flow oxygen; needle decompression for tension pneumothorax; seal open chest wound on 3 sides	Immediate
Circulation	Direct pressure, tourniquet for life-threatening limb bleeding; pelvic binder; 2 large-bore IVs; RL 1 l (permissive SBP 80–90 if no head injury); blood early	Immediate
Tranexamic acid	1 g IV over 10 min, then 1 g over 8 h — within 3 h of injury	As stated
Analgesia	Morphine 2.5–5 mg IV titrated or fentanyl 1 µg/kg	As needed
Transfer	Call ahead to trauma centre; splint fractures; keep warm; document	Urgent

REFER / RED FLAGS

- All major trauma — nearest trauma centre
- Airway compromise, shock, GCS <13
- Penetrating injuries
- Pregnant trauma patients

GP PEARLS

★ *Treat as you find: fix A before B before C — do not get distracted by a dramatic fracture.*

★ *Hypothermia, acidosis and coagulopathy form the lethal triad — keep the patient warm.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Oxygen therapy	Titrate to SpO2 94–98% (88–92% in COPD)	High-flow oxygen	*Avoid hyperoxia in COPD CO2 retainers*
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Haemorrhagic shock (warm, limited)	*Fluid overload in HF/CKD*
Tranexamic acid (antifibrinolytic)	500–1000 mg PO 8-hourly (HMB); 1 g IV in trauma	1 g IV within 3 h	*Avoid in active thrombosis*
Morphine (strong opioid)	IR 5–10 mg PO 4-hourly; 2–5 mg IV titrated	Analgesia titrated	*Respiratory depression; give laxative; NDPS record*
Tetanus–diphtheria (Td) vaccine	0.5 ml IM	Wounds	*Booster if last dose >5 y (dirty wound) or >10 y (clean)*
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	Open fractures	*Biliary sludge; not with calcium IV in neonates*

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DISEASE 287 OF 300 | EMERGENCIES & INJURIES

Lacerations & Wound Care

Clean thoroughly, close within 6–8 hours, protect against tetanus.

DEFINITION

Skin wounds from blunt or sharp trauma. Most clean wounds <6–8 h old (up to 24 h on face/scalp) can be closed primarily. Contaminated, bite and old wounds are left open or closed by delayed primary closure. Check for tendon, nerve and vessel injury and foreign bodies.

SYMPTOMS

- Mechanism, time of injury
- Contamination (soil, glass, bites)
- Tetanus status
- Diabetes, steroids (poor healing)
- Numbness, weakness distal to wound

SIGNS

- Length, depth, edges, contamination
- Distal circulation, sensation, tendon function
- Foreign body
- Signs of infection
- Flap viability

DIAGNOSTIC TESTS

Test	Finding / purpose
X-ray	Glass or metal foreign body
Blood sugar	Diabetics, poor healing

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Cleaning	Irrigate with copious saline/clean tap water; remove debris; debride dead tissue	Before closure
Anaesthesia	Lignocaine 1–2% (max 3 mg/kg; 7 mg/kg with adrenaline — avoid adrenaline in digits, penis, nose tip, ear)	—
Closure	Sutures: face 5-0/6-0 non-absorbable; scalp, trunk, limbs 3-0/4-0; or tissue glue/strips for small low-tension wounds	—
Suture removal	Face 5 days; scalp 7–10; trunk, arms 7–10; legs, feet, over joints 10–14 days	As stated
Antibiotic (bites, contaminated, hands, diabetics)	Amoxicillin-clavulanate 625 mg TDS (child 25 mg/kg/dose BD)	5 days
Tetanus & dressing	Td ± TIG as per status; keep dry 48 h then wash gently; review if redness/pus	—

REFER / RED FLAGS

- Tendon, nerve or vessel injury
- Facial wounds involving lip margin, eyelid, ear cartilage
- Heavily contaminated or crush wounds
- Hand wounds with deep structures exposed

GP PEARLS

★ *Irrigation volume matters more than antiseptic choice.*

★ *Abrasions with embedded road grit must be scrubbed clean within 24 h to prevent tattooing.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Lidocaine 2% (local anaesthetic) for procedures	Max 3 mg/kg (7 mg/kg with adrenaline)	Local anaesthesia	*No adrenaline on digits as per local practice*
Povidone-iodine (antiseptic)	5–10% solution/ointment for wound cleaning	Wound cleaning	*Avoid large areas in thyroid disease*
Tetanus–diphtheria (Td) vaccine	0.5 ml IM	Tetanus prophylaxis	*Booster if last dose >5 y (dirty wound) or >10 y (clean)*
Amoxicillin–clavulanate (penicillin + β-lactamase inhibitor)	625 mg PO 8-hourly (child 25–45 mg/kg/day amox)	Bites/contaminated	*Diarrhoea, cholestatic jaundice*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Mupirocin 2% ointment (topical antibiotic)	Apply 8-hourly ×5–7 days	Superficial infection	*Resistance with long use*

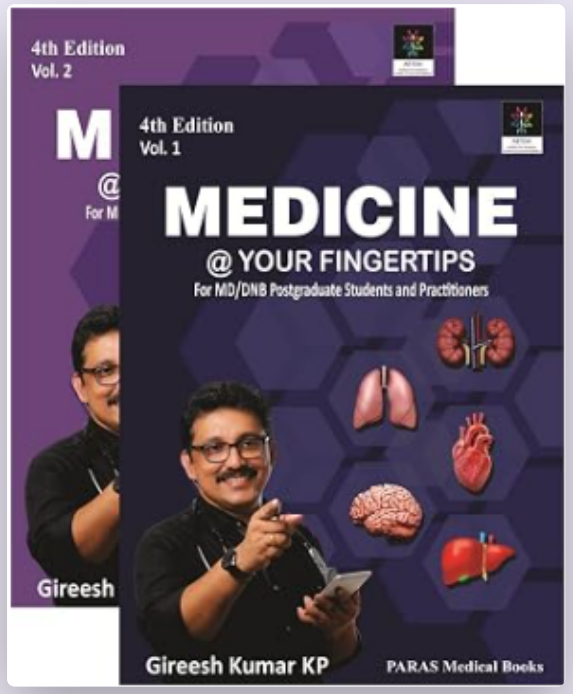
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DISEASE 288 OF 300 | SURGICAL PROBLEMS IN THE CLINIC

Acute Abdomen — Approach

Location, peritonism, vital signs — and never forget pregnancy, MI and DKA.

DEFINITION

Acute abdominal pain of <1 week that may need urgent surgery. Surgical causes: appendicitis, cholecystitis, perforated ulcer, obstruction, pancreatitis, mesenteric ischaemia, ruptured AAA, ectopic pregnancy, ovarian torsion, testicular torsion. Medical mimics: MI, DKA, pneumonia, gastroenteritis, renal colic, UTI, sickle crisis, lead or OP poisoning, porphyria.

SYMPTOMS

- Site, onset (sudden — perforation, rupture, torsion), character
- Radiation (back — pancreatitis, AAA; shoulder — diaphragmatic irritation)
- Vomiting (bilious, faeculent), bowel habit, flatus
- Fever, urinary symptoms
- LMP, contraception (ectopic)

SIGNS

- Vital signs — tachycardia, hypotension, fever
- Distension, visible peristalsis, scars
- Tenderness, guarding, rigidity, rebound
- Bowel sounds; hernial orifices; DRE
- Pulsatile mass (AAA), testes

DIAGNOSTIC TESTS

Test	Finding / purpose
Urine pregnancy test (women 12–55)	Always
CBC, CRP, electrolytes, RFT, LFT, lipase, glucose	Inflammation, pancreatitis, DKA
Urine routine	UTI, haematuria (stones)
ECG	Upper abdominal pain in adults >40
Erect CXR, X-ray abdomen, USG	Free gas, obstruction, gallstones, free fluid
CT abdomen	Diagnostic uncertainty (hospital)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Resuscitate	IV access, RL/NS, nil by mouth, oxygen if needed	Immediate
Analgesia (does not mask signs)	Paracetamol 1 g IV + tramadol 50–100 mg IV or morphine 2–5 mg IV titrated	SOS
Antiemetic	Ondansetron 4 mg IV	SOS
Nasogastric tube	Vomiting with obstruction	—
Antibiotic (peritonitis, sepsis)	Ceftriaxone 2 g IV + metronidazole 500 mg IV	Stat, then hospital
Avoid	Antispasmodic "cocktail" and sending home without diagnosis in a toxic patient	—

REFER / RED FLAGS

- Peritonism, rigidity, shock
- Bilious vomiting, distension, absent flatus
- Positive pregnancy test with pain
- Elderly with pain out of proportion to signs (ischaemia, AAA)

GP PEARLS

★ *Analgesia does not mask surgical signs — never withhold it.*

★ *Elderly and diabetic patients may have minimal tenderness with serious pathology — keep a low threshold for imaging.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Morphine (strong opioid)	IR 5–10 mg PO 4-hourly; 2–5 mg IV titrated	Severe pain (does not mask diagnosis)	*Respiratory depression; give laxative; NDPS record*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Vomiting	*QT; constipation*
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Dehydration	*Fluid overload in HF/CKD*
Hyoscine butylbromide (antispasmodic)	10–20 mg PO/IV 8-hourly	Colic	*Tachycardia; glaucoma, urinary retention*

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DISEASE 289 OF 300 | SURGICAL PROBLEMS IN THE CLINIC

Acute Appendicitis

Periumbilical pain shifting to the right iliac fossa with anorexia.

DEFINITION

Acute inflammation of the vermiform appendix, the commonest surgical emergency, peaking in the second and third decades. Delayed diagnosis leads to perforation, abscess and peritonitis, especially in children, the elderly and pregnant women. The Alvarado score aids diagnosis.

SYMPTOMS

- Vague periumbilical pain migrating to right iliac fossa
- Anorexia (almost always)
- Nausea, vomiting after pain
- Low-grade fever
- Pain on walking, coughing, bumps in vehicle

SIGNS

- Tenderness at McBurney's point, guarding
- Rebound tenderness
- Rovsing's, psoas, obturator signs
- Low-grade fever, tachycardia
- Mass (appendicular lump) after 3–5 days

DIAGNOSTIC TESTS

Test	Finding / purpose
CBC, CRP	Leucocytosis with neutrophilia
Urine routine, pregnancy test	Exclude UTI, ectopic
USG abdomen	Non-compressible appendix >6 mm; children, women
CT abdomen	Adults with uncertain diagnosis
Alvarado score	≥7 high probability

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Refer to surgery	Same day	—
Nil by mouth, IV fluids	RL maintenance	Pre-operative
Analgesia	Paracetamol 1 g IV, tramadol/morphine	SOS
Antibiotic	Ceftriaxone 1–2 g IV + metronidazole 500 mg IV TDS (or cefuroxime + metronidazole)	Peri-operative; longer if perforated
Definitive	Laparoscopic/open appendicectomy	—
Appendicular lump	Conservative (Ochsner–Sherren): antibiotics, observation; interval appendicectomy	Specialist

REFER / RED FLAGS

- All suspected appendicitis
- Generalised peritonitis, sepsis
- Pregnancy with RIF pain
- Elderly with RIF pain

GP PEARLS

★ *A child with abdominal pain who is hungry rarely has appendicitis.*

★ *In pregnancy the appendix moves upward — pain may be in the right flank.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	IV fluids	*Fluid overload in HF/CKD*
Morphine (strong opioid)	IR 5–10 mg PO 4-hourly; 2–5 mg IV titrated	Analgesia	*Respiratory depression; give laxative; NDPS record*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Vomiting	*QT; constipation*
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	Pre-op antibiotic	*Biliary sludge; not with calcium IV in neonates*
Metronidazole (nitroimidazole)	400 mg PO 8-hourly (child 7.5 mg/kg)	Anaerobic cover	*No alcohol; metallic taste*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*

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DISEASE 290 OF 300 | SURGICAL PROBLEMS IN THE CLINIC

Intestinal Obstruction

Colicky pain, vomiting, distension, absolute constipation — drip and suck, then surgery.

DEFINITION

Mechanical obstruction of the small or large bowel. Small bowel: adhesions (previous surgery), hernias, intestinal TB (common in India), Ascaris (children), intussusception. Large bowel: colorectal cancer, sigmoid volvulus (common in elderly men in north India), faecal impaction. Strangulation (ischaemia) is the major danger.

SYMPTOMS

- Colicky central abdominal pain
- Vomiting (early and bilious in high SBO; late and faeculent in LBO)
- Abdominal distension
- Absolute constipation (no stool or flatus)
- Previous surgery, hernia, TB

SIGNS

- Distension, visible peristalsis
- Tinkling/hyperactive bowel sounds (silent if late)
- Tenderness, guarding (strangulation)
- Hernial orifices — irreducible tender lump
- Empty rectum or mass on DRE; dehydration

DIAGNOSTIC TESTS

Test	Finding / purpose
X-ray abdomen erect/supine	Dilated loops, air-fluid levels; coffee-bean sign (sigmoid volvulus)
CBC, electrolytes, creatinine, lactate	Dehydration, hypokalaemia, ischaemia
CT abdomen	Level and cause, strangulation
USG (children)	Intussusception (target sign)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
"Drip and suck"	Nil by mouth, IV RL/NS with potassium, nasogastric tube on free drainage	Until resolved
Monitoring	Urine output (catheter), vital signs, serial abdominal examination	Hourly
Analgesia, antiemetic	Paracetamol IV, tramadol; ondansetron	SOS
Adhesive SBO without strangulation	Conservative 48–72 h; oral contrast (gastrografin) challenge	As advised
Strangulation, closed loop, hernia, LBO	Urgent surgery	—
Sigmoid volvulus	Endoscopic decompression, then elective resection	—

REFER / RED FLAGS

- All suspected obstruction
- Signs of strangulation: constant pain, fever, tachycardia, tenderness
- Irreducible hernia
- Child with red-currant jelly stools (intussusception)

GP PEARLS

★ *Always examine the hernial orifices — a small femoral hernia in an elderly woman is easily missed.*

★ *Do not give laxatives or prokinetics to a patient with mechanical obstruction.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	IV fluids	*Fluid overload in HF/CKD*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Vomiting	*QT; constipation*
Morphine (strong opioid)	IR 5–10 mg PO 4-hourly; 2–5 mg IV titrated	Pain	*Respiratory depression; give laxative; NDPS record*
Potassium chloride (supplement)	Syrup 15–30 ml (20–40 mEq) PO 8–12-hourly	Hypokalaemia	*Never IV bolus; GI irritation*
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	Strangulation suspected	*Biliary sludge; not with calcium IV in neonates*

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DISEASE 291 OF 300 | SURGICAL PROBLEMS IN THE CLINIC

Perforation Peritonitis

Sudden severe pain with a board-like abdomen — erect chest X-ray and immediate referral.

DEFINITION

Perforation of a hollow viscus with generalised peritonitis. In India: perforated duodenal ulcer (NSAIDs, smoking, H. pylori), typhoid ileal perforation (third week), appendicular perforation, tuberculous perforation, and colonic perforation (diverticular, cancer). Mortality rises with delay, age, shock and comorbidity.

SYMPTOMS

- Sudden severe epigastric then generalised pain
- Pain worse on movement, lies still
- Shoulder-tip pain
- Vomiting
- History of ulcer, NSAIDs, typhoid fever

SIGNS

- Board-like rigidity, guarding, rebound
- Absent bowel sounds
- Obliterated liver dullness
- Tachycardia, fever, hypotension (late)
- Shallow breathing

DIAGNOSTIC TESTS

Test	Finding / purpose
Erect chest X-ray	Free gas under diaphragm (absent in ~20%)
CT abdomen	If X-ray negative and suspicion high
CBC, electrolytes, RFT, lactate, lipase	Sepsis, exclude pancreatitis
Blood group, cross-match	Surgery

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Resuscitation	IV RL/NS bolus, oxygen, urinary catheter	Immediate
Nasogastric tube	Free drainage	—
Antibiotic	Ceftriaxone 2 g IV + metronidazole 500 mg IV TDS (or piperacillin-tazobactam 4.5 g 8-hourly)	Peri-operative 4–7 days
PPI	Pantoprazole 80 mg IV then 40 mg BD	Peri-operative
Analgesia	Morphine/tramadol IV	SOS
Definitive	Emergency laparotomy/laparoscopy (omental patch, resection)	Urgent

REFER / RED FLAGS

- All suspected perforation — emergency
- Shock, sepsis
- Typhoid with sudden abdominal pain
- Elderly on steroids/NSAIDs (signs may be masked)

GP PEARLS

★ *Steroids and old age blunt peritoneal signs — rely on imaging.*

★ *After repair of a perforated ulcer, test and eradicate H. pylori and stop NSAIDs.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	Resuscitation	*Fluid overload in HF/CKD*
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	Broad-spectrum first dose	*Biliary sludge; not with calcium IV in neonates*
Metronidazole (nitroimidazole)	400 mg PO 8-hourly (child 7.5 mg/kg)	Anaerobic cover	*No alcohol; metallic taste*
Morphine (strong opioid)	IR 5–10 mg PO 4-hourly; 2–5 mg IV titrated	Pain	*Respiratory depression; give laxative; NDPS record*
Pantoprazole (PPI)	40 mg PO before breakfast; 40–80 mg IV	Perforated ulcer	*Long-term: B12, Mg deficiency, fractures*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Vomiting	*QT; constipation*

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DISEASE 292 OF 300 | SURGICAL PROBLEMS IN THE CLINIC

Acute Cholecystitis

Biliary pain lasting >6 hours with fever and a positive Murphy's sign.

DEFINITION

Acute inflammation of the gall bladder, usually due to a stone obstructing the cystic duct (acalculous in critically ill or diabetics). Complications: empyema, gangrene, perforation, cholangitis (Charcot's triad: fever, jaundice, RUQ pain). Early laparoscopic cholecystectomy (within 72 h–1 week) is preferred.

SYMPTOMS

- Constant RUQ pain >6 h, radiating to right shoulder
- Fever, chills
- Nausea, vomiting
- Previous biliary colic
- Jaundice (CBD stone, Mirizzi)

SIGNS

- RUQ tenderness, guarding
- Murphy's sign positive
- Palpable tender gall bladder mass
- Fever, tachycardia
- Jaundice, hypotension (cholangitis)

DIAGNOSTIC TESTS

Test	Finding / purpose
USG abdomen	Stones, thick wall >4 mm, pericholecystic fluid, sonographic Murphy's
CBC, CRP	Leucocytosis
LFT, lipase	CBD stone, pancreatitis
Blood culture	Fever, cholangitis
MRCP	Suspected CBD stones

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Refer to surgery	Admission	Same day
Supportive	Nil by mouth initially, IV fluids	24–48 h
Analgesia	Diclofenac 75 mg IM/IV or paracetamol 1 g IV; tramadol	SOS
Antibiotic	Ceftriaxone 1–2 g IV OD ± metronidazole 500 mg TDS (or amoxicillin-clavulanate 1.2 g IV TDS)	4–7 days
Definitive	Early laparoscopic cholecystectomy; percutaneous cholecystostomy if unfit	—
Cholangitis	Urgent ERCP drainage	Emergency

REFER / RED FLAGS

- All acute cholecystitis
- Jaundice + fever (cholangitis)
- Sepsis, diabetic or elderly patient
- Gangrene/perforation suspected

GP PEARLS

★ *Diabetics may have gangrenous cholecystitis with minimal pain — image early.*

★ *Persistent pain >6 h distinguishes cholecystitis from simple biliary colic.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ceftriaxone (3rd-gen cephalosporin)	1–2 g IV/IM once daily (child 50–80 mg/kg)	IV antibiotic	*Biliary sludge; not with calcium IV in neonates*
Metronidazole (nitroimidazole)	400 mg PO 8-hourly (child 7.5 mg/kg)	Anaerobic cover	*No alcohol; metallic taste*
Diclofenac (NSAID — acetic acid)	50 mg PO 8–12-hourly; 75 mg IM stat	Pain	*Higher CV risk; avoid in CKD, IHD, ulcer*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Ondansetron (5-HT3 antagonist)	4–8 mg PO/IV 8-hourly (0.15 mg/kg child)	Vomiting	*QT; constipation*
Normal saline 0.9% / Ringer's lactate	20–30 ml/kg IV bolus in shock, reassess	IV fluids	*Fluid overload in HF/CKD*

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DISEASE 293 OF 300 | SURGICAL PROBLEMS IN THE CLINIC

Hernia (Inguinal, Umbilical, Incisional)

A reducible lump with cough impulse — elective repair; irreducible and tender — emergency.

DEFINITION

Protrusion of a viscus through a defect in the abdominal wall. Inguinal hernias (commonest, mostly men; indirect in children), femoral (women, high strangulation risk), umbilical/paraumbilical (infants — usually close by 4–5 years; adults — obesity, multiparity), incisional (after surgery). Complications: irreducibility, obstruction, strangulation.

SYMPTOMS

- Groin or abdominal lump appearing on standing, coughing, straining
- Dragging discomfort
- Disappears on lying down
- Painful irreducible lump with vomiting (strangulation)
- Chronic cough, constipation, prostatism (precipitants)

SIGNS

- Lump with expansile cough impulse
- Reducibility
- Inguinal (above and medial to pubic tubercle) vs femoral (below and lateral)
- Tender, tense, irreducible lump, erythema (strangulation)
- Signs of obstruction

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis	—
USG	Uncertain diagnosis, occult hernia
Pre-operative tests	As per surgeon

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Elective repair (refer)	Mesh repair (open/laparoscopic) for symptomatic inguinal, all femoral, adult umbilical and incisional hernias	—
Children	Inguinal hernia — early herniotomy; umbilical — observe until 4–5 years	—
Interim advice	Avoid heavy lifting, treat cough and constipation, weight loss, stop smoking	—
Truss / binder	Only if unfit for surgery	—
Irreducible/ strangulated	Nil by mouth, IV fluids, analgesia, urgent surgery; do not force reduction	Emergency

REFER / RED FLAGS

- Irreducible, tender or obstructed hernia — emergency
- Femoral hernia (urgent elective)
- Inguinal hernia in infants (prompt surgery)
- Rapidly enlarging hernia

GP PEARLS

★ *Femoral hernias strangulate easily — refer all of them.*

★ *A tense tender groin lump with vomiting in an elderly woman is a strangulated femoral hernia until proven otherwise.*

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DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Lactulose (osmotic laxative)	15–30 ml PO at night (titrate to 2–3 stools in HE)	Avoid straining	*Bloating; dehydration if excessive*
Ispaghula husk (bulk laxative)	1–2 teaspoons in water at night	Constipation	*Drink adequate fluid*
Tramadol (weak opioid)	50–100 mg PO 6–8-hourly; max 400 mg/day	Strangulation pain pre-op	*Seizures, serotonin syndrome; dependence*
Dextromethorphan (cough suppressant)	10–20 mg PO 6–8-hourly	Chronic cough contributor	*Not for productive cough; not under 4 years*

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DISEASE 294 OF 300 | SURGICAL PROBLEMS IN THE CLINIC

Lumps & Bumps (Lipoma, Cysts)

Most skin lumps are benign — know the features that need a biopsy.

DEFINITION

Common subcutaneous swellings: lipoma (soft, lobulated, slip sign), epidermoid (sebaceous) cyst (punctum, tethered to skin, may infect), dermoid cyst (along embryonic lines — outer brow), ganglion (wrist), neurofibroma, lymph nodes. Red flags for sarcoma: >5 cm, deep to fascia, rapidly growing, painful, hard, recurrent.

SYMPTOMS

- Duration and growth rate
- Pain, discharge, infection episodes
- Multiple lumps (lipomatosis, neurofibromatosis)
- Cosmetic concern
- Systemic symptoms

SIGNS

- Site, size, shape, consistency, mobility
- Punctum (epidermoid cyst)
- Slip sign, lobulation (lipoma)
- Fluctuation, transillumination
- Deep fixation, hardness (red flag)

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical diagnosis for typical small lesions	—
USG	Uncertain nature, depth
FNAC / biopsy	Atypical, red flag features
MRI	Suspected sarcoma (before biopsy)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Asymptomatic lipoma/cyst	Reassurance and observation	—
Excision (local anaesthesia)	Symptomatic, cosmetic, recurrent infection — remove cyst completely with capsule	Minor procedure
Infected epidermoid cyst	Incision and drainage; antibiotics if cellulitis (cephalexin 500 mg QID); excise when settled	5–7 days; excision after 4–6 weeks
Ganglion	Observation (many resolve); aspiration; excision for symptomatic	—
Avoid	Excising lumps with red flags in the clinic (refer — unplanned excision of sarcoma compromises cure)	—

REFER / RED FLAGS

- Size >5 cm, deep, hard, fixed, rapidly growing, painful
- Recurrence after excision
- Lump with lymphadenopathy
- Lumps in breast, neck (thyroid, nodes), scrotum — separate pathway

GP PEARLS

★ *Remove the entire cyst wall — a remnant guarantees recurrence.*

★ *Never "shell out" a deep lump without imaging — it may be a sarcoma.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Lidocaine 2% (local anaesthetic) for procedures	Max 3 mg/kg (7 mg/kg with adrenaline)	Local anaesthesia for excision	*No adrenaline on digits as per local practice*
Cephalexin (1st-gen cephalosporin)	500 mg PO 6–8-hourly	Infected cyst	*Penicillin cross-allergy (low)*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Povidone-iodine (antiseptic)	5–10% solution/ointment for wound cleaning	Wound care	*Avoid large areas in thyroid disease*
Mupirocin 2% ointment (topical antibiotic)	Apply 8-hourly ×5–7 days	Superficial infection	*Resistance with long use*

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DISEASE 295 OF 300 | SURGICAL PROBLEMS IN THE CLINIC

Post-operative Problems Seen in the Clinic

Fever after surgery: Wind, Water, Wound, Walking, Wonder drugs.

DEFINITION

Patients often return to their GP after discharge. Common problems: surgical site infection (days 3–7), wound dehiscence, seroma, post-operative fever (atelectasis day 1–2, UTI day 3–5, wound day 5–7, DVT/PE day 5–10, drug fever), urinary retention, constipation, ileus, anastomotic leak (day 5–7 after bowel surgery) and pain.

SYMPTOMS

- Type and date of surgery
- Wound pain, redness, discharge
- Fever, breathlessness, calf pain
- Urinary symptoms, retention
- Vomiting, abdominal distension, no flatus

SIGNS

- Wound: erythema, swelling, pus, gaping
- Chest: reduced breath sounds, crepitations
- Calf swelling/tenderness
- Abdomen: distension, peritonism
- Vital signs, hydration

DIAGNOSTIC TESTS

Test	Finding / purpose
CBC, CRP	Infection, leak
Wound swab	Purulent discharge
Urine routine and culture	UTI
Chest X-ray, Doppler	Pneumonia, DVT
USG/CT	Collection, leak

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Superficial SSI	Open/drain the wound if pus, daily dressing; cephalexin 500 mg QID or amoxicillin-clavulanate 625 mg TDS if cellulitis	5–7 days
Seroma	Aspiration under aseptic precautions if large/symptomatic	As needed
Atelectasis	Chest physiotherapy, incentive spirometry, early mobilisation	—
Constipation	PEG 17 g OD or lactulose 15 ml BD	As needed
Pain	Paracetamol 1 g QID + ibuprofen 400 mg TDS; tramadol 50 mg SOS	5–7 days
Suture/staple removal	As per site (face 5 d, trunk 7–10 d, limbs 10–14 d)	—

REFER / RED FLAGS

- Signs of anastomotic leak or peritonitis
- Wound dehiscence, deep collection
- Suspected DVT/PE
- Sepsis

GP PEARLS

★ *A patient who is "not quite right" on day 5 after bowel surgery may have a leak — refer early.*

★ *Contact the operating surgeon — they know the procedure and want to hear about complications.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Cephalexin (1st-gen cephalosporin)	500 mg PO 6–8-hourly	Superficial wound infection	*Penicillin cross-allergy (low)*
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Pain	*Hepatotoxic in overdose; check combination products*
Ibuprofen (NSAID — propionic acid)	400 mg PO 8-hourly after food; max 1.2 g/day OTC	Pain	*Avoid in dengue, CKD, peptic ulcer, late pregnancy*
Lactulose (osmotic laxative)	15–30 ml PO at night (titrate to 2–3 stools in HE)	Post-op constipation	*Bloating; dehydration if excessive*
Enoxaparin (LMWH)	1 mg/kg SC 12-hourly (treatment); 40 mg daily prophylaxis	DVT prophylaxis (high risk)	*Bleeding; adjust in CKD*
Povidone-iodine (antiseptic)	5–10% solution/ointment for wound cleaning	Wound care	*Avoid large areas in thyroid disease*

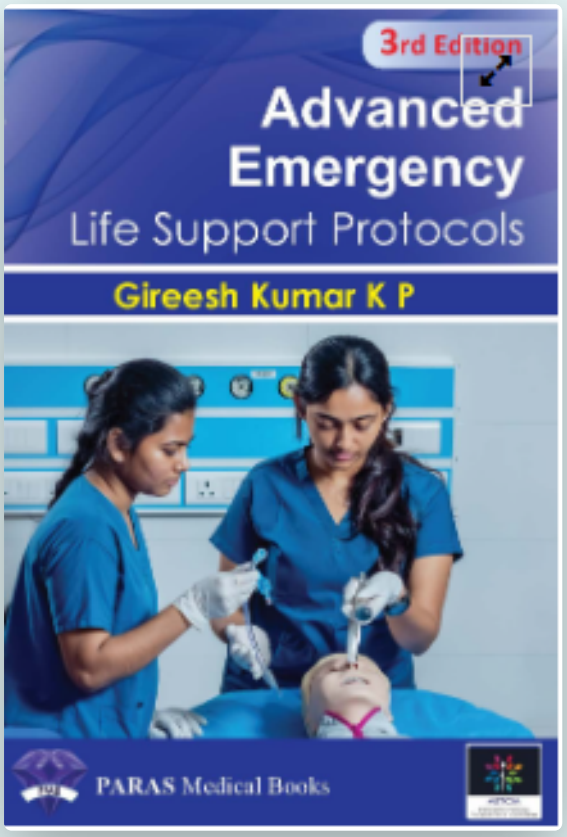
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DISEASE 296 OF 300 | GENERAL CARE & PREVENTION

Fatigue & Tiredness

Common and usually multifactorial — screen sensibly, look for depression and sleep problems.

DEFINITION

Persistent tiredness is one of the commonest GP complaints. Causes: anaemia, hypothyroidism, diabetes, vitamin D/B12 deficiency, depression and anxiety, sleep deprivation and sleep apnoea, post-viral fatigue (dengue, COVID), chronic infections (TB, HIV, hepatitis), CKD, liver disease, drugs (beta-blockers, antihistamines), pregnancy and, rarely, malignancy.

SYMPTOMS

- Duration, onset (after infection?)
- Sleep quantity and quality, snoring
- Mood, stress, loss of interest
- Weight loss, fever, night sweats (red flags)
- Breathlessness, polyuria, menorrhagia

SIGNS

- Pallor, jaundice, lymphadenopathy
- Thyroid, BMI
- Heart, lungs, abdomen (organomegaly)
- Neurological signs (myasthenia)
- Usually normal

DIAGNOSTIC TESTS

Test	Finding / purpose
CBC, ESR/CRP	Anaemia, inflammation
Glucose/HbA1c, TSH, creatinine, LFT	Common medical causes
Ferritin, vitamin D, B12	Deficiencies
Urine routine	Glycosuria, proteinuria
HIV, CXR, pregnancy test	As indicated

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Treat cause	Iron, thyroxine, vitamin D, B12, glycaemic control	As per cause
Sleep	Regular sleep 7–8 h, sleep hygiene; evaluate snoring	Ongoing
Activity	Graded exercise, daily walk	Ongoing
Mood	Screen PHQ-9; treat depression	—
Post-viral fatigue	Reassurance, pacing, gradual return to activity	Weeks–months
Avoid	"Tonics", multivitamin injections, steroids without diagnosis	—

REFER / RED FLAGS

- Weight loss, fever, night sweats, lymphadenopathy
- Abnormal blood tests
- Muscle weakness (not fatigue)
- Severe depression

GP PEARLS

★ *A normal set of baseline blood tests is itself therapeutic — explain the results.*

★ *Ask about sleep and mood before ordering a long list of tests.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Ferrous sulphate/ascorbate (oral iron)	60–100 mg elemental iron daily or alternate days	Iron deficiency	*Black stools, constipation*
Levothyroxine (thyroid hormone)	25–100 µg PO empty stomach (1.6 µg/kg/day)	Hypothyroidism	*Start low in elderly/IHD; separate from iron/calcium*
Cholecalciferol (vitamin D3)	60,000 IU weekly ×8 weeks, then monthly	Deficiency	*Hypercalcaemia if overused*
Vitamin B12 (cyanocobalamin/methylcobalamin)	1000 µg IM alternate days ×5, then monthly	B12 deficiency	*Hypokalaemia early in treatment*
Escitalopram (SSRI)	5–10 mg PO daily (max 20 mg)	Depression	*Nausea, QT; activation early; hyponatraemia*
Metformin (biguanide)	500 mg daily–1 g 12-hourly with meals	Newly diagnosed diabetes	*GI upset; stop if eGFR <30, contrast, sepsis*

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DISEASE 297 OF 300 | GENERAL CARE & PREVENTION

Unintentional Weight Loss

Loss of >5% in 6–12 months needs a cause — TB, diabetes, thyroid, cancer, depression.

DEFINITION

Involuntary loss of >5% of body weight over 6–12 months. Causes: malignancy (GI, lung, haematological), tuberculosis, uncontrolled diabetes, hyperthyroidism, HIV, malabsorption, chronic organ disease (heart, lung, kidney, liver), depression, dementia, dental problems, poor social circumstances and drugs.

SYMPTOMS

- Amount and duration of weight loss (verify with records)
- Appetite: increased (thyrotoxicosis, diabetes) or reduced
- Fever, cough, night sweats (TB)
- Dysphagia, change in bowel habit, GI bleeding
- Mood, memory, social situation

SIGNS

- Weight, BMI, muscle wasting
- Lymphadenopathy, hepatosplenomegaly, masses
- Thyroid, oral cavity, dentition
- Chest signs
- Rectal and breast examination

DIAGNOSTIC TESTS

Test	Finding / purpose
CBC, ESR, CRP	Anaemia, inflammation
Glucose/HbA1c, TSH, LFT, RFT, albumin	Metabolic causes
HIV, sputum NAAT	Infection
Chest X-ray, USG abdomen	Occult disease
Stool occult blood, endoscopy	GI symptoms, anaemia, age >50

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Treat cause	ATT, glycaemic control, antithyroid drugs	As per cause
Nutrition	Energy-dense, high-protein small frequent meals; oral nutritional supplements	Ongoing
Dental review	Dentures, oral pain	—
Depression	Mirtazapine 7.5–15 mg HS (aids appetite and sleep)	As advised
Monitor	Weigh monthly	—
Avoid	Appetite stimulants (cyproheptadine, steroids) before a diagnosis	—

REFER / RED FLAGS

- Weight loss with dysphagia, GI bleeding, mass, lymphadenopathy
- Suspected malignancy
- Weight loss >10%
- No cause found after initial work-up

GP PEARLS

★ *TB and diabetes together explain a large share of weight loss in Indian practice — test for both.*

★ *Elderly patients living alone may simply not be eating — ask who cooks.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Multivitamin–mineral supplement	1 tablet PO daily	Nutritional support	*Not a substitute for diet*
Protein–energy supplement	As per dietitian (e.g., 1–2 servings/day)	Calorie supplement	*Diabetes-appropriate formula when needed*
Escitalopram (SSRI)	5–10 mg PO daily (max 20 mg)	Depression	*Nausea, QT; activation early; hyponatraemia*
Levothyroxine (thyroid hormone)	25–100 µg PO empty stomach (1.6 µg/kg/day)	Hypothyroidism (if low appetite not cause)	*Start low in elderly/IHD; separate from iron/calcium*
HRZE fixed-dose combination (anti-TB)	Weight-band FDC tablets daily (NTEP)	TB (confirmed)	*Hepatotoxicity; red urine; visual checks*
Mirtazapine (NaSSA)	7.5–15 mg PO at night	Appetite in elderly depression	*Sedation, weight gain*

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DISEASE 298 OF 300 | GENERAL CARE & PREVENTION

Adult Immunisation

Vaccines are not just for children — Td, influenza, pneumococcal, hepatitis B, zoster, HPV.

DEFINITION

Adults remain at risk of vaccine-preventable diseases, especially the elderly, those with diabetes, heart, lung, kidney or liver disease, health workers and travellers. Recommendations below follow common Indian adult immunisation guidance (API); check current schedules and individual indications.

SYMPTOMS

- Age and medical conditions
- Previous vaccines and reactions
- Occupation (health worker), travel
- Pregnancy or planning
- Immunosuppression (avoid live vaccines)

SIGNS

- Vaccination card / records
- Acute moderate–severe febrile illness (defer)
- Asplenia, CKD, liver disease (extra vaccines)
- Pregnancy status
- Immunosuppression (avoid live vaccines)

DIAGNOSTIC TESTS

Test	Finding / purpose
Anti-HBs	Health workers after hepatitis B series
Pregnancy test	Before live vaccines in women

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Td	Td 0.5 ml IM every 10 years; 3-dose primary series if never vaccinated	Every 10 years
Influenza	Inactivated influenza vaccine 0.5 ml IM yearly (≥50 y, chronic disease, pregnancy, health workers)	Yearly
Pneumococcal	PCV13/15/20 0.5 ml IM, then PPSV23 after ≥1 year if PCV13/15 used (≥65 y or chronic disease, smokers)	As stated
Hepatitis B	1 ml (20 µg) IM at 0, 1, 6 months (health workers, CKD, diabetes, HIV, high-risk)	3 doses
Zoster (≥50 y)	Recombinant zoster vaccine 0.5 ml IM, 2 doses 2–6 months apart	2 doses
HPV / others	HPV up to 26 y (2–3 doses); typhoid conjugate; hepatitis A; varicella (non-immune); rabies PrEP for high-risk	As indicated

REFER / RED FLAGS

- Immunocompromised patients (vaccine choice and timing)
- Previous serious reaction
- Pregnancy (choose safe vaccines)
- Travel to yellow fever zones

GP PEARLS

★ *Every diabetic over 50 should be offered influenza and pneumococcal vaccines.*

★ *Use the influenza season (pre-monsoon and winter) to catch up all adult vaccines at once.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Influenza vaccine (inactivated)	0.5 ml IM annually	Annual influenza	*Egg allergy no longer a contraindication*
Pneumococcal vaccine (PCV13 / PPSV23)	0.5 ml IM as per schedule	Pneumococcal (≥65 y, risk groups)	*Mild local reactions*
Hepatitis B vaccine	20 µg IM at 0, 1, 6 months (adult)	Hepatitis B	*Check anti-HBs in healthcare workers*
Tetanus–diphtheria (Td) vaccine	0.5 ml IM	Td every 10 years	*Booster if last dose >5 y (dirty wound) or >10 y (clean)*
HPV vaccine	2 doses (9–14 y) or 3 doses IM	HPV (girls/young women)	*Syncope after injection — observe 15 min*
Typhoid conjugate vaccine (TCV)	0.5 ml IM single dose	Typhoid conjugate (travel/risk)	*Mild local reactions*

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DISEASE 299 OF 300 | GENERAL CARE & PREVENTION

Care of the Elderly & Polypharmacy

Fewer drugs, fewer falls — review every prescription at every visit.

DEFINITION

Older adults often have multiple conditions and take ≥5 drugs (polypharmacy), increasing adverse effects, interactions, falls, confusion and hospital admission. Inappropriate drugs (Beers/STOPP criteria) include long-acting benzodiazepines, anticholinergics, sedating antihistamines, glibenclamide, long-term NSAIDs and PPIs without indication. Falls, frailty, incontinence and cognitive decline are the "geriatric giants".

SYMPTOMS

- Complete medication list (including OTC, ayurvedic)
- Falls, dizziness, confusion
- Constipation, urinary retention, dry mouth (anticholinergics)
- Memory, mood, sleep
- Who manages the medicines?

SIGNS

- Lying and standing BP
- Gait (timed up-and-go >12 s = fall risk)
- Vision, hearing
- Cognition (Mini-Cog)
- Weight, nutrition, pressure areas

DIAGNOSTIC TESTS

Test	Finding / purpose
Creatinine/eGFR	Dose adjustment
Electrolytes (Na, K)	Diuretics, SSRIs
Hb, TSH, B12, vitamin D	Contributors to falls and confusion
ECG	Bradycardia, QT drugs

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Medication review	Brown-bag review: indication, dose, duration for each drug; stop what is not needed	Every 6–12 months
Deprescribe	Taper benzodiazepines; stop sedating antihistamines, unnecessary PPIs; replace glibenclamide with gliclazide/DPP-4i	Gradual
Simplify	Once-daily regimens, pill organisers, written schedule, involve caregiver	—
Fall prevention	Exercise/balance training, home safety, vision correction, vitamin D, treat postural hypotension	Ongoing
Targets	Relax HbA1c (<8%) and BP targets in frail elderly to avoid hypoglycaemia/falls	—
Pain	Paracetamol first; topical NSAIDs; avoid long-term oral NSAIDs	—

REFER / RED FLAGS

- Recurrent falls, fractures
- Rapid cognitive or functional decline
- Delirium
- Carer stress, elder abuse concerns

GP PEARLS

★ *"Start low, go slow" — elderly patients need lower starting doses.*

★ *Any new symptom in an elderly patient: first ask "could this be a drug side effect?"*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Safest analgesic	*Hepatotoxic in overdose; check combination products*
Atorvastatin (statin)	10–80 mg PO daily (80 mg in ACS)	Review benefit in frail	*Myalgia; check LFT; CYP3A4 interactions*
Metformin (biguanide)	500 mg daily–1 g 12-hourly with meals	Review renal function	*GI upset; stop if eGFR <30, contrast, sepsis*
Cholecalciferol (vitamin D3)	60,000 IU weekly ×8 weeks, then monthly	Falls/fracture prevention	*Hypercalcaemia if overused*
Calcium carbonate (supplement)	500–1000 mg elemental calcium daily in divided doses	Bone health	*Constipation; separate from iron/thyroxine*

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DISEASE 300 OF 300 | GENERAL CARE & PREVENTION

Palliative Pain Management

By the mouth, by the clock, by the ladder — and treat the side effects.

DEFINITION

Pain in advanced illness (cancer, end-stage organ disease) should be assessed fully and treated regularly. The WHO analgesic ladder: non-opioids → weak opioids → strong opioids, with adjuvants for neuropathic or bone pain. Oral morphine is on the essential medicines list and available through the NDPS (Amendment) Act 2014 via recognised medical institutions. Kerala's community palliative care model is a national example.

SYMPTOMS

- Site, character, severity (0–10), timing
- Breakthrough and incident pain
- Neuropathic features (burning, shooting)
- Bone pain, worse at night
- Constipation, nausea, drowsiness

SIGNS

- Tenderness, bony metastases
- Neurological deficit (cord compression — emergency)
- Signs of opioid toxicity: pinpoint pupils, myoclonus, drowsiness
- Hydration, pressure areas
- Mood

DIAGNOSTIC TESTS

Test	Finding / purpose
Clinical assessment	Pain scale
Creatinine	Opioid accumulation in renal failure
Calcium	Hypercalcaemia of malignancy
MRI spine	Back pain with neurological signs (cord compression)

TREATMENT

Step / indication	Drug, dose & route (adult unless stated)	Duration
Step 1	Paracetamol 1 g QID ± ibuprofen 400 mg TDS / naproxen 500 mg BD (with PPI)	Regular
Step 2	Tramadol 50–100 mg QID (max 400 mg/day) + step 1	Regular
Step 3 — strong opioid	Oral morphine 5–10 mg every 4 h (2.5–5 mg in elderly/renal) + same dose SOS for breakthrough; titrate daily; convert to sustained-release BD	Regular
With every opioid	Laxative: senna 15 mg HS + PEG/lactulose; antiemetic first week: haloperidol 1.5 mg HS or metoclopramide 10 mg TDS	As long as opioid
Adjuvants	Neuropathic: amitriptyline 10–25 mg HS / pregabalin 75 mg BD; bone: NSAID, dexamethasone 4–8 mg OD, radiotherapy	As needed
Support	Psychosocial, spiritual care, family meetings, home care team	Ongoing

REFER / RED FLAGS

- Uncontrolled pain despite step 3
- Spinal cord compression (back pain + neurological signs) — emergency
- Hypercalcaemia, opioid toxicity
- Complex symptoms — palliative care team

GP PEARLS

★ *Opioid addiction is rare in cancer pain — under-treatment is the real problem.*

★ *Prescribe a laxative with every opioid; constipation does not improve with tolerance.*

DRUG CHART — COMMON DRUGS USED BY GPs IN INDIA

Drug (class)	Adult dose (usual)	Indication here	Key caution
Paracetamol (analgesic-antipyretic)	500–1000 mg PO 6-hourly; max 4 g/day (3 g in liver disease/alcohol)	Step 1	*Hepatotoxic in overdose; check combination products*
Tramadol (weak opioid)	50–100 mg PO 6–8-hourly; max 400 mg/day	Step 2	*Seizures, serotonin syndrome; dependence*
Morphine (strong opioid)	IR 5–10 mg PO 4-hourly; 2–5 mg IV titrated	Step 3 (oral)	*Respiratory depression; give laxative; NDPS record*
Lactulose + senna (opioid constipation)	Lactulose 15 ml + senna 15 mg at night	Laxative with every opioid	*Prophylaxis with every opioid*
Dexamethasone (palliative)	4–8 mg PO in the morning (appetite, nerve pain, ICP)	Nerve pain, appetite	*Insomnia, hyperglycaemia*
Haloperidol (palliative antiemetic)	0.5–1.5 mg PO/SC at night	Opioid-induced nausea	*EPS; QT*

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APPENDIX

Normal Laboratory Values (Adults)

HAEMATOLOGY

Test	Reference range
Haemoglobin	Men 13–17 g/dl; women 12–15 g/dl; pregnancy ≥11 g/dl
Total leucocyte count	4,000–11,000/µl (neutrophils 40–75%, lymphocytes 20–45%, eosinophils 1–6%)
Platelets	1,50,000–4,50,000/µl
MCV / MCH	80–100 fl / 27–32 pg
ESR (Westergren)	Men <15 mm/h; women <20 mm/h (rises with age)
Reticulocytes	0.5–2.5%
PT / INR; aPTT	INR 0.9–1.1 (therapeutic on warfarin 2–3); aPTT 25–35 s

BIOCHEMISTRY

Test	Reference range
Fasting plasma glucose	70–99 mg/dl (100–125 prediabetes; ≥126 diabetes)
HbA1c	<5.7% (5.7–6.4 prediabetes; ≥6.5 diabetes)
Urea / creatinine	Urea 15–40 mg/dl; creatinine men 0.7–1.3, women 0.6–1.1 mg/dl
Sodium / potassium / chloride / bicarbonate	135–145 / 3.5–5.0 / 98–107 / 22–28 mmol/l
Calcium / phosphate / magnesium	8.5–10.5 / 2.5–4.5 / 1.7–2.4 mg/dl
Uric acid	Men 3.5–7.2; women 2.6–6.0 mg/dl
Bilirubin total / direct	0.3–1.2 / <0.3 mg/dl
ALT / AST / ALP / GGT	ALT <40, AST <40, ALP 40–130, GGT <50 IU/l
Albumin / total protein	3.5–5.0 / 6.0–8.0 g/dl
Lipids	TC <200; LDL <100 (target by risk); HDL >40 (men) >50 (women); TG <150 mg/dl
TSH / free T4	0.4–4.5 mIU/l / 0.8–1.8 ng/dl
Ferritin / vitamin B12 / 25-OH vitamin D	30–300 ng/ml / 200–900 pg/ml / 30–100 ng/ml
CRP / troponin (hs)	CRP <5 mg/l; troponin above assay 99th centile = myocardial injury

URINE, CSF AND ARTERIAL BLOOD GAS

Test	Reference range
Urine routine	No protein, glucose or nitrite; pus cells <5/hpf; RBC <3/hpf
Urine albumin-creatinine ratio	<30 mg/g (30–300 moderately increased; >300 severely)
CSF	Cells <5/µl (lymphocytes); protein 15–45 mg/dl; glucose ≥60% of blood glucose
ABG	pH 7.35–7.45; $PaCO_2$ 35–45 mmHg; PaO_2 80–100 mmHg; HCO_3 22–26 mmol/l; anion gap 8–12

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APPENDIX

Emergency Drug Tray for the GP Clinic

ESSENTIAL DRUGS (CHECK EXPIRY MONTHLY)

Drug	Strength	Use and adult dose
Adrenaline	1 mg/ml (1:1000) ampoule	Anaphylaxis 0.5 mg IM thigh (child 0.01 mg/kg); cardiac arrest 1 mg IV (dilute)
Hydrocortisone	100 mg vial	Anaphylaxis adjunct, asthma, adrenal crisis 100–200 mg IV
Chlorpheniramine	10 mg/ml ampoule	Allergy 10 mg IV/IM
Salbutamol	MDI 100 µg + spacer; respules 2.5/5 mg	Asthma 4–10 puffs or 5 mg nebulised
Ipratropium	Respules 500 µg	Severe asthma/COPD with salbutamol
Aspirin + clopidogrel + atorvastatin	325 mg; 75 mg (×4); 80 mg	Suspected ACS: 325 mg chewed + clopidogrel 300 mg + atorvastatin 80 mg
Nitroglycerin / isosorbide dinitrate	0.4 mg SL / 5 mg SL	Angina, pulmonary oedema (SBP >100)
Furosemide	20 mg/2 ml ampoule	Pulmonary oedema 40–80 mg IV
Dextrose	25% and 50% (and 10% for children)	Hypoglycaemia 25% 100 ml IV (child 10% 2–5 ml/kg)
Glucagon	1 mg vial	Hypoglycaemia without IV access 1 mg IM
Midazolam / diazepam / lorazepam	5 mg/ml; 10 mg/2 ml; 2 mg/ml	Seizures: midazolam 10 mg IM/buccal; diazepam 10 mg IV/PR
Magnesium sulphate	50% 2 ml (1 g) ampoules	Eclampsia 4 g IV + 10 g IM; severe asthma 2 g IV
Ondansetron / metoclopramide / promethazine	2 mg/ml; 5 mg/ml; 25 mg/ml	Vomiting; vertigo; dystonia (promethazine)
Paracetamol / diclofenac / tramadol	1 g IV; 75 mg/3 ml; 50 mg/ml	Fever and pain
Atropine	0.6 mg/ml	Bradycardia 0.6 mg IV; OP poisoning 1.8–3 mg IV, double every 5 min
Naloxone	0.4 mg/ml	Opioid overdose 0.4 mg IV/IM, repeat
Ceftriaxone	1 g vial	Sepsis, meningitis — first dose 2 g IV/IM before referral
Tranexamic acid	500 mg/5 ml	Bleeding, trauma 1 g IV over 10 min
Tetanus (Td) & TIG	0.5 ml; 250 IU	Wound prophylaxis
Lignocaine	1% and 2% (plain); 2% jelly	Local anaesthesia (max 3 mg/kg)

FLUIDS AND EQUIPMENT

Item	Details
IV fluids	Normal saline, Ringer lactate (500 ml), 5% and 10% dextrose; ORS sachets
Airway & oxygen	Oxygen cylinder with flowmeter, masks (adult/child), nasal prongs, Venturi mask, oropharyngeal airways, bag-valve-mask (adult and paediatric), suction
Monitoring	BP apparatus (adult/child cuffs), pulse oximeter, glucometer, thermometer, ECG machine, AED
Access & procedures	IV cannulae (14–24G), IO needle, syringes, giving sets, urinary catheters, nasogastric tubes, suture set, splints, cervical collar

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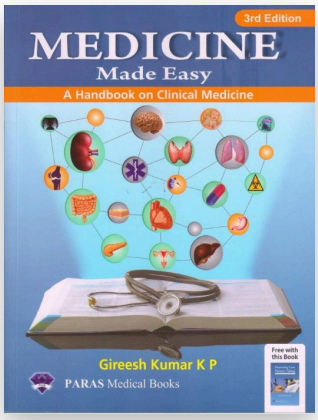
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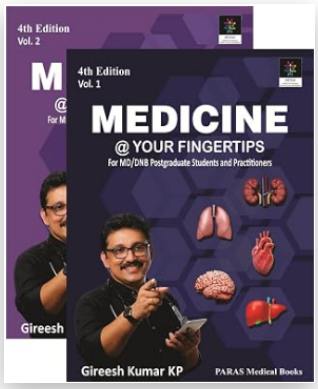
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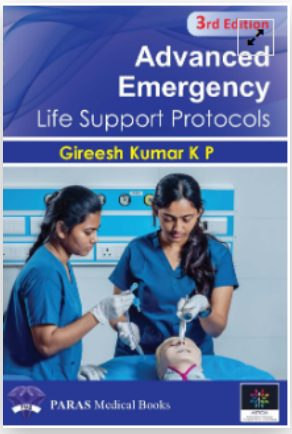
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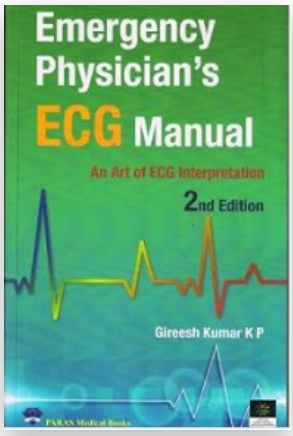
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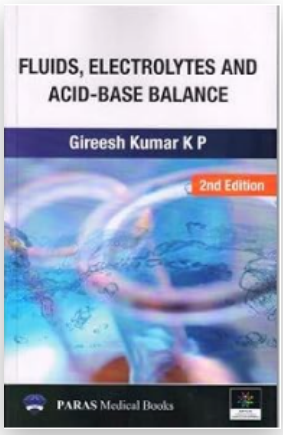
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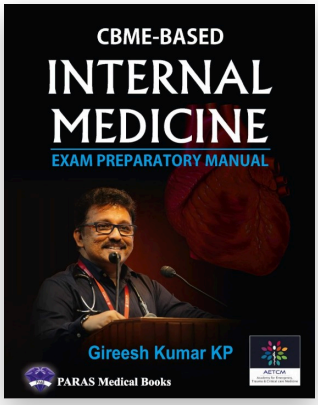
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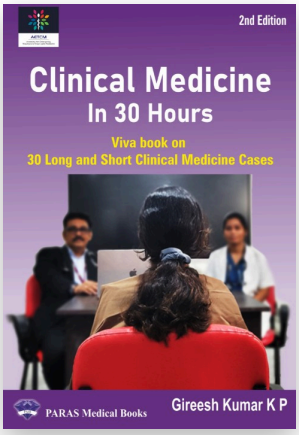
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