# Dr. Kulkarni's Patient & Caregiver Medical Encyclopedia

*Original reference material written by a practising doctor for Indian patients and their caregivers. Phase 1: 20 topics, English master text (to be translated into Marathi and Hindi, then other Indian languages).*

## About this Encyclopedia

This Encyclopedia explains common and serious illnesses in plain language, from the point of view of the patient and the family caregiver. It is original work, not a copy of any textbook or website. It is meant to support, never replace, the advice of your own treating doctor.

**Every article follows the same 16-part structure:**

1. What is it?
2. Why does it happen?
3. Who is more likely to get it?
4. Early symptoms
5. Serious (red-flag) symptoms
6. Useful tests
7. How to understand your reports
8. Main types of treatment
9. Care at home
10. Diet and lifestyle
11. Medicine precautions
12. When to see the doctor
13. When to go to Emergency
14. Frequently asked questions
15. Patient checklist
16. References and revision date

**Phase 1 topics:** Diabetes Mellitus, Hypertension, Coronary Artery Disease, Heart Failure, Stroke, COPD, Asthma, CKD, Acute Kidney Injury, Liver Cirrhosis, Chronic Hepatitis, Anaemia, Cancer Care, Palliative Care, Dementia, Parkinson's Disease, Osteoporosis, Frailty, Falls in the Elderly, Polypharmacy.

**Important note:** Numbers and targets in this Encyclopedia are general guidance for adults. Your own doctor may set different targets for you. In an emergency, call 112 or go to the nearest hospital without waiting.

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# 1. Diabetes Mellitus

## 1. What is it?

Diabetes mellitus is a lifelong condition in which the level of sugar (glucose) in the blood stays higher than normal because the body either does not make enough insulin or cannot use insulin properly. Insulin is the hormone, made by the pancreas, that moves sugar from the blood into the body's cells to be used as energy. The main types are Type 1 (the body makes almost no insulin), Type 2 (the most common, where the body resists insulin and gradually makes too little), gestational diabetes (first detected in pregnancy) and other less common types.

## 2. Why does it happen?

- **Type 1:** the immune system damages the insulin-making cells of the pancreas. It is not caused by sugar intake or lifestyle.
- **Type 2:** a mix of inherited tendency and lifestyle factors, mainly extra fat around the abdomen, low physical activity and poor-quality diet. Indians tend to develop diabetes at a lower body weight and at a younger age than many other populations, so waist size matters more than weight on the scale.
- **Gestational:** pregnancy hormones make the body more resistant to insulin.
- Some medicines (for example long-term steroids) and diseases of the pancreas can also raise blood sugar.

## 3. Who is more likely to get it?

- Anyone with a parent, brother or sister with diabetes
- People above 30 to 35 years of age, or younger if overweight
- Large waist (above about 90 cm in men and 80 cm in women in Indians)
- High blood pressure, high cholesterol or fatty liver
- Women who had gestational diabetes or delivered a baby above 3.5 kg
- Women with polycystic ovary syndrome (PCOS)
- Sedentary work and long sitting hours

## 4. Early symptoms

- Passing urine more often, especially at night
- Excess thirst and dry mouth
- Increased hunger with weight loss
- Tiredness and weakness
- Blurred vision that comes and goes
- Slow healing of cuts, repeated skin, gum or urine infections
- Tingling or burning in the feet
- Many people with Type 2 diabetes have no symptoms at all, so screening matters.

## 5. Serious (red-flag) symptoms

- Very high sugar with vomiting, abdominal pain, fast deep breathing, fruity breath, drowsiness (diabetic ketoacidosis, mostly Type 1)
- Extreme thirst, confusion and drowsiness with very high sugar (hyperosmolar state, mostly older Type 2)
- Low sugar (hypoglycaemia): sweating, shaking, palpitations, hunger, confusion, fits or fainting
- A foot wound that is black, foul-smelling, swollen or not healing
- Sudden loss of vision, chest pain, weakness of one side of the body

## 6. Useful tests

- **Fasting plasma glucose** (after at least 8 hours without food)
- **Post-meal (2-hour) glucose** or 75 g oral glucose tolerance test (OGTT)
- **HbA1c** (average sugar of the last 2 to 3 months)
- Kidney tests: serum creatinine, eGFR and urine albumin-creatinine ratio
- Lipid profile, liver tests
- Dilated eye examination, foot and nerve examination
- Urine or blood ketones when sugar is very high or the person is unwell

## 7. How to understand your reports

| Test | Usually normal | Prediabetes | Diabetes |
|---|---|---|---|
| Fasting glucose | below 100 mg/dL | 100 to 125 mg/dL | 126 mg/dL or more |
| 2-hour glucose (OGTT) | below 140 mg/dL | 140 to 199 mg/dL | 200 mg/dL or more |

| Test | Usually normal | Prediabetes | Diabetes |
|---|---|---|---|
| HbA1c | below 5.7% | 5.7% to 6.4% | 6.5% or more |

- One abnormal result without symptoms is usually confirmed by a repeat test.
- Many adults with diabetes are advised an HbA1c target of about 7%, but your doctor may set a looser target (for example in frail older people) or a tighter one (for example in younger, healthy people).
- HbA1c can be unreliable in anaemia, recent blood loss or transfusion, and some haemoglobin disorders; your doctor will then rely on other tests.
- A normal urine sugar does not exclude diabetes, and a positive urine sugar is not enough to diagnose it.

## 8. Main types of treatment

- **Lifestyle:** healthy eating, regular exercise and weight reduction are the base of all treatment.
- **Tablets:** metformin is usually the first choice. Others include sulfonylureas, DPP-4 inhibitors, SGLT2 inhibitors, pioglitazone and others, chosen according to the heart, kidney and weight of the patient.
- **Injectables:** insulin (essential in Type 1, often needed in Type 2 over time) and GLP-1 receptor agonist injections.
- Treatment of related risks: blood pressure control, cholesterol-lowering medicine, and aspirin only where the doctor advises.
- Needing insulin is not a failure; it is a medicine that protects organs.

## 9. Care at home

- Check blood sugar with a glucometer as advised (fasting and 2 hours after a meal, more often when unwell or when medicines change). Keep a written log.
- Check both feet every day: look between the toes for cracks, blisters, redness or wounds.
- Never walk barefoot; wear well-fitting footwear and clean cotton socks.
- Store insulin correctly (unopened in the refrigerator; the vial or pen in use at room temperature away from heat, as per the label). Rotate injection sites.
- Keep a quick source of sugar (glucose tablets, sugar, or fruit juice) handy for low sugar.
- Carry a card stating that you have diabetes and the medicines you take.
- Sick-day rule: keep drinking fluids and do not stop insulin on your own; call your doctor if you cannot eat or you are vomiting.

## 10. Diet and lifestyle

- Fill half the plate with vegetables, a quarter with protein (dal, pulses, egg, fish, paneer, sprouts) and a quarter with whole grains.
- Prefer whole grains and millets (jowar, bajra, ragi), brown or parboiled rice in small portions, and whole wheat.
- Reduce white rice, maida, sugar, sweets, sweetened drinks, fruit juices, fried snacks and bakery items.
- Whole fruit in measured portions is allowed; avoid juice.
- Do not skip meals, especially if you take insulin or sulfonylureas.
- At least 150 minutes of brisk walking or similar activity per week (for example 30 minutes, 5 days), plus muscle-strengthening exercise twice a week, if your doctor permits.
- Stop tobacco in all forms and limit alcohol.
- Sleep 7 to 8 hours and manage stress; both affect sugar.

## 11. Medicine precautions

- Never stop or change doses on your own because sugar looks normal; the sugar is normal because of the medicine.
- **Hypoglycaemia** is the main danger with insulin and sulfonylureas. Treat low sugar (below 70 mg/dL or symptoms) with about 15 g fast sugar, recheck in 15 minutes, then eat a snack or meal.
- Metformin may upset the stomach; take it with food. Your doctor will review it if kidney function falls.
- SGLT2 inhibitors increase genital infections and can cause dehydration; stop them and call your doctor during vomiting, diarrhoea or severe illness.
- Do not take herbal or "sugar-curing" products without telling your doctor; some contain hidden steroids or sulfonylureas.
- Alert your doctor before surgery, fasting or travel.

## 12. When to see the doctor

- Repeated fasting sugars above the target, or repeated low sugars
- New numbness, burning pain, or any foot wound or blister
- Blurring of vision, or no eye check in the last year
- Frothy urine or leg swelling
- Once every 3 months for HbA1c review, and yearly for eyes, kidneys, feet, heart and cholesterol checks

- Planning pregnancy or becoming pregnant

## 13. When to go to Emergency

- Vomiting with fast breathing, abdominal pain and drowsiness
- Low sugar that does not improve after treatment, or a person who is unconscious or having a fit (do not put food or liquid in the mouth of an unconscious person)
- Sugar persistently above 300 mg/dL with illness, extreme thirst or confusion
- Chest pain, sudden weakness of one side, facial drooping or speech difficulty
- A rapidly spreading, black or foul-smelling foot infection with fever

## 14. Frequently asked questions

**Is diabetes curable?** Type 2 diabetes can sometimes go into remission with major weight loss, but it can return, so regular follow-up continues. Type 1 needs insulin for life.

**Can I eat sweets occasionally?** A small portion as part of a planned meal is usually acceptable if sugars are controlled; discuss with your doctor.

**Does bitter gourd or fenugreek cure diabetes?** They may help slightly as part of a healthy diet but cannot replace medicines.

**Is insulin addictive?** No. It is the same hormone your body normally makes.

**Can I fast during religious fasting days?** Many people can, but medicines and doses may need adjustment. Speak to your doctor in advance.

## 15. Patient checklist

- [ ] HbA1c checked every 3 months
- [ ] Blood sugar log maintained
- [ ] Feet examined daily
- [ ] Yearly dilated eye examination
- [ ] Yearly kidney (urine and blood) tests
- [ ] Blood pressure and cholesterol under control
- [ ] Vaccinations up to date as advised (influenza, pneumococcal, others)
- [ ] Glucose tablets or sugar always at hand
- [ ] 150 minutes of activity per week
- [ ] No tobacco

### 16. References and revision date

- General guidance drawn from the ADA Standards of Care in Diabetes, the RSSDI-ESI clinical practice recommendations for India, ICMR guidelines for management of Type 2 diabetes, and WHO classification and diagnostic criteria.
- Clinical review by Dr Kulkarni: pending.
- Revision date: 2 November 2026.

## 2. Hypertension

### 1. What is it?

Hypertension (high blood pressure) means the force of blood against the walls of the arteries stays too high for too long. It is called the "silent killer" because it usually causes no symptoms while it slowly damages the heart, brain, kidneys, eyes and blood vessels. Blood pressure is written as two numbers: the upper (systolic) pressure when the heart squeezes, and the lower (diastolic) pressure when it relaxes.

### 2. Why does it happen?

- **Primary (essential) hypertension (about 90%):** no single cause; a mix of age, family tendency, excess salt, weight gain, inactivity, stress and alcohol.
- **Secondary hypertension:** caused by another problem, such as kidney disease, hormonal disorders (thyroid, adrenal), sleep apnoea, narrowing of the kidney artery, pregnancy, or medicines (steroids, NSAID painkillers, decongestants, oral contraceptives).
- Secondary causes should be suspected when hypertension starts young (below 30 to 40 years), is very severe, or does not respond to several medicines.

### 3. Who is more likely to get it?

- Adults above 40, and risk rises steadily with age
- Family history of hypertension, stroke or heart disease
- Overweight, large waist, diabetes, kidney disease
- High-salt eating habits (pickles, papad, chutneys, processed and packaged foods)
- Alcohol, tobacco, high stress, poor sleep or sleep apnoea (loud snoring with daytime sleepiness)
- Pregnancy-related high blood pressure in the past

## 4. Early symptoms

- Most people have **no symptoms**.
- Some have morning headaches at the back of the head, dizziness, tiredness or palpitations, but these are not reliable. The only way to know is to measure.

## 5. Serious (red-flag) symptoms

- Severe headache with confusion, vomiting or vision loss
- Chest pain, breathlessness
- Weakness or numbness of one side of the body, facial drooping, difficulty speaking
- Fits
- Blood pressure of 180/120 mmHg or above with any of these symptoms is an emergency.

## 6. Useful tests

- Repeated blood pressure measurements (clinic, home, or 24-hour ambulatory monitoring)
- Blood tests: blood sugar, cholesterol, kidney function, sodium and potassium, uric acid
- Urine routine and urine albumin
- ECG, and echocardiography if the heart is suspected to be affected
- Eye (retina) examination in selected patients
- Additional hormone or imaging tests only if a secondary cause is suspected

## 7. How to understand your reports

| Category (adults, general guide) | Blood pressure |
|---|---|
| Normal | below 120/80 mmHg |
| Elevated | 120 to 129 / below 80 mmHg |
| Stage 1 hypertension | 130 to 139 / 80 to 89 mmHg |
| Stage 2 hypertension | 140/90 mmHg or above |
| Dangerously high | 180/120 mmHg or above |

- The diagnosis is made on repeated readings on different days, not on one reading. Indian and other guidelines commonly use 140/90 mmHg as the treatment threshold, with lower targets for high-risk patients.

- A typical treatment target is below 130/80 mmHg for most adults who tolerate it; your doctor may individualise this, especially in the very old or frail.
- Home readings are usually slightly lower than clinic readings.
- "White-coat" hypertension (high only in the clinic) and "masked" hypertension (high only at home) are why home monitoring is valuable.

## 8. Main types of treatment

- **Lifestyle changes** for everyone: less salt, weight loss, exercise, less alcohol, no tobacco.
- **Medicines**, usually started when pressure remains high or risk is high: ACE inhibitors or ARBs, calcium channel blockers (amlodipine), thiazide-like diuretics (chlorthalidone, indapamide), and others such as beta-blockers in specific situations.
- Many patients need two or more medicines, often as a single combination tablet.
- Treatment of the cause in secondary hypertension.
- Treatment is usually lifelong; the goal is protection from stroke, heart attack, heart failure and kidney failure.

## 9. Care at home

- Use a validated upper-arm automatic blood pressure monitor with the correct cuff size.
- Sit quietly for 5 minutes, back supported, feet flat, arm at heart level, no talking, no caffeine or smoking for 30 minutes before.
- Take 2 readings one minute apart, in the morning (before medicines) and evening, for 7 days before each clinic visit; write them in a log.
- Take medicines at the same time every day; use a pill box.
- Rise slowly from bed or chair if you feel dizzy.

## 10. Diet and lifestyle

- Salt: aim for less than 5 g per day (about one level teaspoon) from all sources. Cut pickles, papad, namkeen, instant noodles, cheese, sauces and packaged foods.
- Eat plenty of fruits, vegetables, whole grains, pulses, nuts, and low-fat dairy (DASH-style eating).
- Potassium-rich foods (banana, coconut water, spinach) help, but avoid excess if you have kidney disease or take certain medicines; ask your doctor.
- Lose weight if overweight; even 5 kg lowers pressure.
- Brisk walking 30 minutes on most days.
- Alcohol: avoid or keep very low. Stop tobacco.

- Manage stress with yoga, breathing exercises, prayer or hobbies, and sleep 7 to 8 hours.

## 11. Medicine precautions

- Do not stop medicines because the pressure is normal; it is normal because of the medicine.
- Do not stop beta-blockers or clonidine suddenly.
- ACE inhibitors can cause a dry cough; ARBs are an alternative. Both can raise potassium and affect the kidneys, so periodic blood tests are needed, and they must not be used in pregnancy.
- Amlodipine may cause ankle swelling.
- Diuretics can cause low sodium or potassium; report weakness, cramps or confusion.
- Avoid NSAID painkillers (diclofenac, ibuprofen) and decongestant cold medicines unless advised; they raise pressure and harm kidneys.
- Avoid excess liquorice.

## 12. When to see the doctor

- Home readings repeatedly above 140/90 mmHg, or above the target your doctor set
- Dizziness, fainting, or readings below 90/60 with symptoms
- Side effects of medicines
- Routine review every 1 to 3 months until controlled, then every 3 to 6 months, with yearly blood and urine tests

## 13. When to go to Emergency

- BP of 180/120 or above with chest pain, breathlessness, severe headache, confusion, vision loss or weakness
- Any sign of stroke (face drooping, arm weakness, speech difficulty)
- Fits or loss of consciousness
- BP of 180/120 or above without symptoms: rest and recheck after 5 to 10 minutes and call your doctor the same day; do not take extra tablets on your own.

## 14. Frequently asked questions

**Can high blood pressure be cured?** Primary hypertension is usually controlled, not cured. Weight loss and salt reduction can lower the need for medicines.

**Can I stop tablets once BP is normal?** No. Stopping usually makes it rise again. Any change must be guided by your doctor.

**Does a normal reading at home mean I am fine?** It means your treatment is working; keep going.

**Is low salt tasteless?** Taste adapts in 2 to 4 weeks; use lemon, herbs, garlic, spices and coriander for flavour.

**Is it safe to exercise?** Yes, regular moderate exercise helps. Avoid heavy straining if BP is uncontrolled.

### 15. Patient checklist

- [ ] Home BP log kept
- [ ] Medicines taken daily at the same time
- [ ] Salt below 5 g per day
- [ ] Daily 30-minute walk
- [ ] Weight and waist checked monthly
- [ ] Blood sugar, cholesterol and kidney tests done yearly
- [ ] No tobacco, minimal alcohol
- [ ] Doctor review scheduled

### 16. References and revision date

- General guidance drawn from the ISH, ESC/ESH and ACC/AHA hypertension guidelines, the WHO guideline on hypertension treatment, and Indian guidelines of the Indian Society of Hypertension.
- Clinical review by Dr Kulkarni: pending.
- Revision date: 2 November 2026.

## 3. Coronary Artery Disease

### 1. What is it?

Coronary artery disease (CAD) is a condition in which the arteries that feed the heart muscle become narrowed or blocked by fatty deposits called plaque. When the heart muscle gets too little blood, it causes chest discomfort (angina). If a plaque suddenly ruptures and a clot blocks the artery, the result is a heart attack (myocardial infarction).

### 2. Why does it happen?

Plaque builds up slowly over years because of high LDL ("bad") cholesterol, high blood pressure, diabetes, tobacco, inflammation and a sedentary life. Indians tend to develop CAD earlier, often with low HDL, high triglycerides, abdominal obesity and a strong family

pattern.

## 3. Who is more likely to get it?

- Men above 45 and women after menopause
- Family history of heart attack (father or brother before 55, mother or sister before 65)
- Diabetes, hypertension, high cholesterol, chronic kidney disease
- Tobacco in any form (cigarettes, bidi, gutkha), heavy alcohol
- Obesity, inactivity, chronic stress, poor sleep
- Raised lipoprotein(a) (an inherited risk factor), which is more common in South Asians

## 4. Early symptoms

- Chest pressure, heaviness, tightness or burning, usually on exertion or emotional stress, relieved by rest within a few minutes
- Pain that may spread to the left arm, jaw, neck, back or upper abdomen
- Unusual breathlessness, fatigue or sweating on activity
- Women, older adults and people with diabetes may have only breathlessness, nausea, fatigue or "acidity" without clear chest pain

## 5. Serious (red-flag) symptoms

- Chest pain lasting more than 10 to 15 minutes, or occurring at rest
- Pain with sweating, vomiting, breathlessness, or a sense of doom
- Fainting, very slow or very fast heartbeat
- Pain that is new, worsening or happening with less and less effort (unstable angina)

## 6. Useful tests

- ECG at rest and during an attack
- Troponin blood test (essential in suspected heart attack)
- Echocardiography
- Treadmill test (TMT), stress echo or nuclear stress test
- CT coronary angiography; coronary angiography (the definitive test, usually followed by treatment if needed)
- Lipid profile, HbA1c, kidney function

## 7. How to understand your reports

- A normal ECG between attacks does not exclude CAD.

- A raised troponin means heart muscle injury; the doctor interprets it with symptoms and ECG.
- A positive TMT suggests reduced blood flow; the cardiologist decides on further tests.
- LDL targets are individual: for most patients with CAD, doctors aim for LDL below 70 mg/dL, and often below 55 mg/dL in very high-risk patients.
- A narrowing is described as a percentage; the decision to stent or operate depends on the location, number of vessels, symptoms and heart function, not only on one percentage.

## 8. Main types of treatment

- **Medicines:** antiplatelet (aspirin, clopidogrel or similar), statin (to lower cholesterol and stabilise plaque), beta-blocker, nitrates for angina, ACE inhibitor or ARB where needed, and medicines for diabetes and blood pressure.
- **Procedures:** angioplasty with stent (PCI) or bypass surgery (CABG), chosen by the heart team.
- **Cardiac rehabilitation:** supervised exercise, education and counselling after a heart attack or procedure.
- **Emergency treatment of heart attack:** clot-dissolving injection or primary angioplasty as early as possible.

## 9. Care at home

- Keep your doctor-prescribed sublingual nitrate with you if prescribed. At the first angina episode, stop and sit down; if the pain is not relieved in 5 minutes, use it as advised and call for help.
- Keep a copy of your latest ECG, discharge summary and medicine list in your wallet or phone.
- Take antiplatelet tablets and statin every day without gaps.
- Know your numbers: BP, sugar, cholesterol, weight.
- Learn warning signs and make sure family members know where the nearest hospital with a cardiac facility is.

## 10. Diet and lifestyle

- Stop all tobacco, today.
- Eat a plant-rich diet: vegetables, fruits, whole grains, pulses, nuts, fish; use small amounts of unsaturated oil (mustard, groundnut, rice-bran, olive) and rotate oils.

- Avoid trans fats (vanaspati, bakery items, deep-fried reheated food), excess ghee, butter, red meat fat and sweets.
- Salt under 5 g per day.
- Walk briskly for 30 minutes on most days, built up gradually as advised after a cardiac event.
- Maintain a healthy weight and waist; limit alcohol; manage stress; sleep well.

## 11. Medicine precautions

- Never stop aspirin, clopidogrel or similar tablets or a statin on your own, especially after a stent: stopping early can cause stent clotting and a heart attack.
- Tell every doctor and dentist that you take blood thinners before any procedure.
- Report black stools, vomiting of blood, or unusual bleeding.
- Statins: report severe muscle pain or dark urine.
- Never use nitrates together with sildenafil or similar erectile dysfunction medicines; the combination can cause a dangerous drop in blood pressure.
- Avoid NSAID painkillers (diclofenac, ibuprofen) unless the doctor agrees.

## 12. When to see the doctor

- Any new chest discomfort, even if mild or brief
- Angina occurring more easily, or the need for more nitrates
- Breathlessness, ankle swelling, palpitations, dizziness
- Routine review every 3 to 6 months, with a lipid profile, sugar, kidney function, and echo as advised

## 13. When to go to Emergency

- Chest pain or pressure lasting more than 10 to 15 minutes, or not relieved by rest and nitrate
- Chest pain with sweating, vomiting, breathlessness, fainting
- Sudden severe breathlessness
- **Call 112 immediately; do not drive yourself.** If advised by a doctor beforehand and not allergic, chewing one aspirin tablet while waiting for help can be life-saving. Early treatment saves heart muscle: every minute counts.

## 14. Frequently asked questions

**Is a stent a cure?** A stent opens one narrowing, but the disease continues in other arteries; medicines and lifestyle are still essential.

**Can I have a normal life after a heart attack?** Most people return to work and normal activity with cardiac rehabilitation and medicines.

**Is it safe to have sex after a heart attack?** Usually yes when you can climb two flights of stairs comfortably; discuss with your doctor.

**I have gas or acidity. Is it a heart problem?** Chest discomfort with exertion, sweating or breathlessness should always be checked with an ECG first.

**Do I need aspirin if I have no disease?** Not routinely; aspirin is for people with established disease or on a doctor's advice.

### 15. Patient checklist

- [ ] Antiplatelet and statin taken daily
- [ ] BP, sugar and LDL at target
- [ ] Tobacco-free
- [ ] 30-minute walk on most days
- [ ] Discharge papers and ECG copy kept ready
- [ ] Nearest cardiac hospital identified
- [ ] Family knows emergency steps and 112
- [ ] Follow-up booked

### 16. References and revision date

- General guidance drawn from ESC and ACC/AHA guidelines on chronic coronary syndromes and acute coronary syndromes, the Cardiological Society of India consensus statements, and the WHO cardiovascular risk guidance.
- Clinical review by Dr Kulkarni: pending.
- Revision date: 2 November 2026.

## 4. Heart Failure

### 1. What is it?

Heart failure does not mean the heart has stopped. It means the heart is too weak or too stiff to pump enough blood for the body's needs, so fluid backs up into the lungs, legs and abdomen and the body feels tired and breathless. It is a chronic condition that can be controlled with the right treatment. Doctors describe it by the pumping strength (ejection fraction, EF): reduced EF (below about 40%), mildly reduced EF, or preserved EF (about 50% or above).

## 2. Why does it happen?

- Previous heart attack or coronary artery disease (a leading cause in India)
- Long-standing high blood pressure
- Diseases of the heart muscle (cardiomyopathy), including alcohol-related and viral causes
- Heart valve disease, including rheumatic heart disease
- Rhythm problems such as atrial fibrillation or very fast heart rate
- Diabetes, anaemia, thyroid disease, kidney disease, some cancer medicines

## 3. Who is more likely to get it?

- People with prior heart attack, hypertension or diabetes
- Older adults
- People with obesity, sleep apnoea, heavy alcohol use or tobacco use
- People with a family history of cardiomyopathy
- Women in late pregnancy or soon after delivery (peripartum cardiomyopathy)

## 4. Early symptoms

- Breathlessness on exertion, climbing stairs or lying flat
- Needing extra pillows to sleep; waking at night breathless
- Ankle and leg swelling, weight gain over days
- Persistent tiredness, reduced ability to walk
- Dry cough, especially at night
- Poor appetite, bloating, passing less urine

## 5. Serious (red-flag) symptoms

- Breathlessness at rest or while talking
- Frothy pink sputum
- Chest pain, fainting, very fast or irregular heartbeat
- Rapid weight gain of more than 2 kg in 3 days
- Cold, clammy skin, confusion, very low urine output

## 6. Useful tests

- Echocardiogram (shows pumping strength and valves)
- ECG, chest X-ray
- NT-proBNP or BNP blood test

- Blood tests: haemoglobin, kidney function, sodium, potassium, thyroid, iron studies, sugar
- Angiography or other scans to find the cause
- Holter monitor for rhythm problems

## 7. How to understand your reports

- **EF** (ejection fraction): the percentage of blood pumped out with each beat. A normal EF is roughly 55% to 70%. A low EF can improve with treatment.
- **NT-proBNP** rises in heart failure; it also rises with age and kidney disease, so it is interpreted by the doctor.
- **Creatinine and potassium** are watched closely because heart failure medicines can change them.
- **Weight** is a report you create at home: sudden rises mean fluid is building up.
- Heart failure is also described by functional class (NYHA I to IV), which reflects how much activity causes symptoms.

## 8. Main types of treatment

- **Medicines for reduced EF (the "four pillars"):** ARNI or ACE inhibitor/ARB, beta-blocker (bisoprolol, carvedilol, metoprolol succinate), mineralocorticoid receptor antagonist (spironolactone, eplerenone) and an SGLT2 inhibitor (dapagliflozin, empagliflozin).
- **Diuretics** (furosemide, torsemide) to remove extra fluid.
- **Devices:** ICD or CRT in selected patients; valve repair or replacement; revascularisation if blocked arteries are the cause.
- **Cardiac rehabilitation** and treatment of anaemia, iron deficiency, sleep apnoea.
- Advanced options include heart transplant and mechanical assist devices in selected people.

## 9. Care at home

- Weigh yourself every morning after passing urine, before breakfast, on the same scale; record it.
- Contact your doctor if weight rises by more than 2 kg in 3 days or 2 to 3 kg in a week, or if swelling or breathlessness is worse.
- Check BP and pulse regularly.
- Sleep with the head raised if breathless.
- Elevate swollen legs when sitting.
- Keep an up-to-date list of medicines and doses.

## 10. Diet and lifestyle

- Salt: keep it low (often under 5 g per day, or lower as advised). Avoid pickles, papad, chips and packaged foods.
- Fluid: your doctor may limit fluids (for example 1.5 to 2 litres per day) if you have advanced failure or low sodium; follow the advice given to you.
- Stop tobacco and alcohol (alcohol is especially harmful if it caused the problem).
- Be active as advised: regular walking and cardiac rehabilitation improve strength and mood.
- Take vaccines as advised (influenza, pneumococcal, COVID-19).
- Maintain good sleep; manage stress and low mood.

## 11. Medicine precautions

- Take medicines exactly as prescribed; missing diuretics or salt excess are common triggers for hospital admission.
- Avoid NSAID painkillers (diclofenac, ibuprofen), certain herbal products and high-salt effervescent or antacid tablets.
- Do not take potassium supplements or salt substitutes (potassium chloride) unless advised.
- Blood tests for creatinine and potassium are needed after starting or changing medicines.
- Beta-blockers and sacubitril/valsartan may lower BP; rise slowly from sitting.
- Do not use ACE inhibitors and sacubitril/valsartan together; a specific gap is needed when switching.
- SGLT2 inhibitors: stop temporarily during vomiting, diarrhoea or severe illness, as your doctor advises.

## 12. When to see the doctor

- Weight gain, more swelling or breathlessness
- Dizziness, fainting, very slow pulse, low BP
- Reduced urine, vomiting or diarrhoea (risk of dehydration and kidney problems)
- Side effects of medicines
- Routine review every 1 to 3 months initially, and repeat echocardiography as advised

## 13. When to go to Emergency

- Breathlessness at rest, cannot lie flat or speak in full sentences
- Frothy pink sputum

- Chest pain, fainting, sustained fast or irregular heartbeat
- Confusion, cold clammy skin, no urine
- If an ICD gives a shock and you feel unwell, or you receive more than one shock

## 14. Frequently asked questions

**Can heart failure be cured?** It is usually a long-term condition, but treatment can greatly improve symptoms and survival, and in some causes the heart can recover.

**Can I travel?** Yes if stable. Carry medicines, reports and a doctor's letter; avoid high altitude if breathless.

**Can I drink tea or coffee?** Moderate amounts are usually fine within the fluid advice.

**Is bed rest advised?** No; regular gentle activity is better than prolonged rest.

**Why so many tablets?** Each class protects the heart in a different way; doses are increased slowly.

## 15. Patient checklist

- [ ] Daily morning weight recorded
- [ ] Salt and fluid limits followed
- [ ] All heart failure medicines taken without gaps
- [ ] Kidney function and potassium checked after medicine changes
- [ ] Swelling and breathlessness reviewed daily
- [ ] Vaccinations updated
- [ ] Emergency plan and 112 known to family
- [ ] Follow-up and echo booked

## 16. References and revision date

- General guidance drawn from ESC, ACC/AHA/HFSA heart failure guidelines and the Cardiological Society of India consensus statements.
- Clinical review by Dr Kulkarni: pending.
- Revision date: 2 November 2026.

# 5. Stroke

## 1. What is it?

A stroke (brain attack) happens when blood supply to part of the brain is suddenly cut off or when a brain blood vessel bursts. Brain cells begin to die within minutes, so a stroke is a medical emergency. About 85% of strokes are **ischaemic** (a clot or narrowing blocks an artery) and about 15% are **haemorrhagic** (a vessel bleeds into the brain). A **TIA** (transient ischaemic attack, or "mini-stroke") causes stroke-like symptoms that go away within minutes to hours; it is a serious warning.

## 2. Why does it happen?

- Hardening and narrowing of arteries (atherosclerosis)
- Clots from the heart, especially in atrial fibrillation or after heart attack, or from diseased heart valves
- Uncontrolled high blood pressure (the most important cause of both types)
- Diabetes, high cholesterol, tobacco, heavy alcohol
- Bleeding from a weak vessel (aneurysm) or abnormal vessels, or from blood thinners
- In younger people: clotting disorders, vessel tears (dissection), infections, pregnancy-related causes

## 3. Who is more likely to get it?

- Age above 55 (though many Indians have strokes earlier)
- Hypertension, diabetes, high cholesterol, atrial fibrillation
- Previous stroke or TIA, heart disease
- Tobacco, smokeless tobacco, alcohol excess
- Obesity, inactivity, sleep apnoea
- Family history

## 4. Early symptoms

Remember **BE FAST**:

- **B**alance: sudden loss of balance or dizziness
- **E**yes: sudden vision loss or double vision
- **F**ace: one side of the face drooping
- **A**rm: weakness or numbness of one arm or leg
- **S**peech: slurred, confused or lost speech

- **T**ime: note the time symptoms began and call for help immediately

## 5. Serious (red-flag) symptoms

- Sudden severe headache ("worst headache of life") with vomiting
- Drowsiness, confusion or loss of consciousness
- Fits
- Difficulty swallowing or breathing
- Symptoms that worsen over hours
- Even if symptoms disappear, a TIA still needs emergency evaluation the same day.

## 6. Useful tests

- **CT or MRI of the brain**, done urgently to separate clot from bleeding
- CT or MR angiography to see the vessels
- ECG and prolonged heart rhythm monitoring
- Echocardiography, carotid artery Doppler
- Blood tests: sugar, cholesterol, kidney function, clotting profile, blood counts
- Blood sugar must be checked immediately because low sugar can mimic a stroke

## 7. How to understand your reports

- A CT scan done in the first hours may look normal in an ischaemic stroke; MRI is more sensitive.
- The report names the area of the brain affected, which explains the symptoms (for example left side weakness from a right-brain stroke).
- "Haemorrhage" or "bleed" on CT means blood thinners and clot-busting drugs must be avoided.
- Carotid narrowing is reported as a percentage; the surgeon or neurologist decides on a procedure.
- LDL and BP targets are set after a stroke to prevent a second one.

## 8. Main types of treatment

- **Time-critical treatment for ischaemic stroke:** clot-dissolving injection (thrombolysis) within a few hours of onset, and clot removal (thrombectomy) for large vessel blockage in selected patients up to many hours later. This is why arrival at a stroke-ready hospital within the first hours matters.
- **Haemorrhagic stroke:** control of BP, reversal of blood thinners, and surgery in selected cases.

- **Prevention of another stroke:** antiplatelet or anticoagulant medicines, statins, BP and sugar control, carotid procedures where needed.
- **Rehabilitation:** physiotherapy, occupational therapy, speech and swallowing therapy, started early.

## 9. Care at home

- Follow the physiotherapist's exercises daily; encourage the patient to use the weak side safely.
- Change position every 2 hours in a bedridden patient to prevent pressure sores; support the weak arm.
- Prevent aspiration: seat upright for meals, thickened or soft food as advised by the speech therapist.
- Prevent falls: remove loose rugs, add grab bars, non-slip footwear, night light.
- Watch for low mood and depression; they are common after stroke.
- Check BP, sugar and take medicines on time.
- Bladder and bowel care; skin care; mouth care.

## 10. Diet and lifestyle

- Low salt (under 5 g per day), low saturated fat, more vegetables, fruits, whole grains, fish and pulses
- Control sugar and weight
- Stop tobacco in all forms; avoid alcohol
- Gradual increase in activity as advised
- Adequate sleep, stress management
- Soft or thickened diet if swallowing is impaired, only as advised

## 11. Medicine precautions

- Do not stop antiplatelets, statins or BP medicines on your own.
- **Anticoagulants** (warfarin, apixaban, rivaroxaban, dabigatran): follow dosing strictly; report bleeding, black stools or head injury; warfarin needs regular INR tests and has many food and drug interactions.
- Avoid NSAID painkillers unless advised.
- Aspirin and other blood thinners increase bleeding risk when combined; take only what is prescribed.
- Do not give food or tablets by mouth if the patient cannot swallow safely.

## 12. When to see the doctor

- Any new symptom, even brief
- Rising BP or sugar
- Falls, fits, worsening weakness, new difficulty swallowing
- Depression, memory problems or sleep difficulty
- Follow-up every 1 to 3 months initially, with a neurologist and rehabilitation team

## 13. When to go to Emergency

- Any BE FAST sign: **call 112 immediately** and go to the nearest hospital with a CT scan and stroke facility. Note the time symptoms started or when the person was last known to be well.
- Sudden severe headache, repeated vomiting, drowsiness
- Fits
- Do not give food, water or tablets, and do not wait to see if it improves.

## 14. Frequently asked questions

**Will the patient recover fully?** Recovery varies; most improvement occurs in the first 3 to 6 months, but gains can continue for longer with therapy.

**Can stroke happen again?** Yes, the risk is highest in the first weeks; prevention medicines and risk control reduce it a lot.

**Is a mini-stroke harmless?** No; it signals a high short-term risk of a major stroke.

**Should I massage or apply oil to the weak limb?** Gentle handling is fine, but therapy exercises are more effective; avoid vigorous manipulation.

**Can he or she drive again?** Only after the doctor's clearance.

## 15. Patient checklist

- [ ] BE FAST signs known to all family members
- [ ] BP, sugar and cholesterol at target
- [ ] Antiplatelet or anticoagulant taken regularly
- [ ] Daily rehabilitation exercises
- [ ] Swallowing safety followed
- [ ] Fall-proof home
- [ ] Tobacco and alcohol stopped
- [ ] Mood and sleep reviewed
- [ ] Follow-up booked

### 16. References and revision date

- General guidance drawn from AHA/ASA stroke guidelines, ESO guidelines, WHO stroke resources and the Indian Stroke Association guidance.
- Clinical review by Dr Kulkarni: pending.
- Revision date: 2 November 2026.

## 6. COPD (Chronic Obstructive Pulmonary Disease)

### 1. What is it?

COPD is a long-term lung disease in which the airways are narrowed and the tiny air sacs of the lungs are damaged, so air cannot flow out easily. It includes chronic bronchitis (long-term cough with phlegm) and emphysema (damaged air sacs). The damage is not fully reversible, but treatment and lifestyle change can slow it, reduce flare-ups and improve breathing. A sudden worsening is called an **exacerbation** (flare-up).

### 2. Why does it happen?

- **Tobacco smoking** (cigarettes, bidi, hookah, cigars) is the leading cause
- Smoke from biomass fuel (wood, cow-dung cakes, coal) used for cooking in poorly ventilated homes, a major cause in Indian women
- Occupational dust and fumes (mines, cotton and textile mills, construction, grain dust)
- Air pollution
- Repeated childhood lung infections or past tuberculosis damage
- Rarely, an inherited deficiency (alpha-1 antitrypsin)

### 3. Who is more likely to get it?

- Smokers and ex-smokers above 40 years
- Those exposed to chulha smoke for many years
- Workers in dusty industries
- People with past tuberculosis, asthma or frequent chest infections
- Elderly people living in highly polluted cities

### 4. Early symptoms

- Persistent cough, often called "smoker's cough", worse in the morning
- Sputum (phlegm) on most days

- Breathlessness on exertion, climbing stairs or walking fast
- Wheezing, chest tightness
- Frequent chest infections, especially in winter

## 5. Serious (red-flag) symptoms

- Severe breathlessness at rest or while speaking
- Blue lips or fingertips
- Increase in sputum with a change to yellow-green or blood-stained
- Confusion, drowsiness (can be a sign of high carbon dioxide)
- Ankle swelling (right heart strain), fever, chest pain

## 6. Useful tests

- **Spirometry** (breathing test, with and without a bronchodilator): the key test to confirm COPD
- Chest X-ray, CT chest in selected patients
- Pulse oximetry ($SpO_2$) and arterial blood gas if severe
- Complete blood count, ECG, echocardiography
- Sputum tests, and testing for tuberculosis when indicated
- Six-minute walk test

## 7. How to understand your reports

- COPD is confirmed when the post-bronchodilator **FEV1/FVC ratio is below 0.70**.
- FEV1 (percentage of predicted) shows severity: GOLD grades 1 (mild) to 4 (very severe). Your doctor combines this with symptoms and number of flare-ups to choose treatment.
- A resting $SpO_2$ below about 90% to 92% may need further assessment for oxygen therapy; use the manufacturer-recommended sensor and site, and interpret the reading with your symptoms and your usual baseline.
- Many COPD patients have a lower "normal" $SpO_2$ than healthy people; the doctor will set a target (often 88% to 92% in patients at risk of high carbon dioxide).
- A chest X-ray can look normal in early COPD.

## 8. Main types of treatment

- **Stopping smoking** is the single most effective treatment; medicines and counselling can help.

- **Inhalers:** long-acting bronchodilators (LAMA, LABA, or both), with inhaled steroids added in selected patients; short-acting reliever inhaler for sudden symptoms.
- Oral medicines in selected cases (roflumilast, azithromycin) and mucolytics.
- **Pulmonary rehabilitation:** supervised exercise, breathing techniques, education.
- **Vaccination:** influenza yearly, pneumococcal, COVID-19, and others as advised.
- **Long-term oxygen** for those with chronically low oxygen; non-invasive ventilation for selected patients.
- Lung volume reduction or transplant in very selected cases.

## 9. Care at home

- Learn the correct inhaler technique; ask the doctor or nurse to watch you use it. Use a spacer if advised and rinse your mouth after steroid inhalers.
- Learn pursed-lip breathing (breathe in through the nose, out slowly through pursed lips).
- Keep the home well ventilated; use a smokeless stove (LPG or electric) instead of biomass.
- Avoid dust, incense, mosquito coils and strong smells; wear a mask on high pollution days.
- Keep a written COPD action plan from your doctor for flare-ups.
- Oxygen at home: no smoking or open flame near the equipment.

## 10. Diet and lifestyle

- Eat small, frequent meals; large meals press on the diaphragm and increase breathlessness.
- Protein-rich food (dal, egg, milk, fish, chicken) to keep muscles strong; underweight patients may need extra calories.
- Overweight patients should reduce weight.
- Stay active with daily walking; build up gradually.
- Drink adequate water to keep phlegm thin unless fluid is restricted.
- Avoid alcohol and sedatives unless prescribed.

## 11. Medicine precautions

- Use your maintenance inhaler daily even when you feel well.
- Do not overuse the reliever inhaler; needing it more often means control is worsening, so see the doctor.

- Beta-blocker tablets or eye drops may worsen breathing in some patients; inform every doctor you have COPD.
- Antibiotics and oral steroids are used for flare-ups only on medical advice; do not start them on your own repeatedly.
- Do not take cough suppressants or sleeping pills without advice.
- Oxygen: use only the flow rate prescribed; too much oxygen can be harmful in some COPD patients.

## 12. When to see the doctor

- More breathlessness or cough than usual, or an increase in sputum
- Change in sputum colour
- Needing the reliever inhaler more often
- Fever or leg swelling
- Regular review every 3 to 6 months with spirometry once a year

## 13. When to go to Emergency

- Severe breathlessness not relieved by the reliever inhaler
- Inability to speak in sentences
- Blue lips, confusion or extreme drowsiness
- Chest pain, coughing blood
- Fast, laboured breathing with exhaustion

## 14. Frequently asked questions

**Is COPD curable?** No, but it can be well controlled and progression slowed, particularly by stopping smoking.

**Can non-smokers get COPD?** Yes, from biomass smoke, dust, pollution and past infections.

**Are inhalers addictive?** No. Inhalers deliver small doses straight to the lungs and are safer than tablets.

**Can I exercise?** Yes, regular exercise is part of the treatment.

**Is it infectious?** No.

## 15. Patient checklist

- [ ] Smoke-free, away from second-hand smoke
- [ ] Inhaler technique checked

- [ ] Daily maintenance inhaler taken
- [ ] Flu and pneumonia vaccines up to date
- [ ] Action plan available
- [ ] Daily walking or rehabilitation
- [ ] Clean-fuel cooking
- [ ] Yearly spirometry

### 16. References and revision date

- General guidance drawn from the GOLD report, ICS/NCCP (India) guidelines on COPD and the WHO COPD fact sheets.
- Clinical review by Dr Kulkarni: pending.
- Revision date: 2 November 2026.

## 7. Asthma

### 1. What is it?

Asthma is a long-term condition in which the airways of the lungs become inflamed and extra sensitive. When triggered, they tighten and swell and produce mucus, causing wheeze, cough, chest tightness and breathlessness. Symptoms come and go, are often worse at night or early morning, and are usually reversible with treatment. Asthma can start at any age.

### 2. Why does it happen?

Asthma comes from a mix of inherited tendency (often with allergies, eczema or hay fever) and environmental triggers.

- **Allergens:** house-dust mite, pollen, mould, cockroach, pets, feathers
- **Irritants:** smoke, incense, mosquito coils, strong perfumes, paint fumes, dust, air pollution, cold air
- **Infections:** colds and flu
- **Exercise**, strong emotion, laughing
- **Medicines:** aspirin and other NSAID painkillers, beta-blockers in some people
- **Reflux** and certain foods or additives in some patients

### 3. Who is more likely to get it?

- Children and young adults, but also adults

- Those with allergies, eczema or a family history of asthma
- People exposed to smoke, pollution or workplace dust and chemicals
- Obese individuals
- Babies born prematurely or with frequent chest infections

## 4. Early symptoms

- Recurrent wheezing (whistling sound when breathing out)
- Cough, especially at night, early morning, with exercise or in cold air
- Chest tightness
- Breathlessness
- Symptoms triggered by dust, smoke, weather change or infection

## 5. Serious (red-flag) symptoms

- Breathlessness at rest, unable to speak a full sentence
- Using neck and chest muscles to breathe, sucking in at the ribs or throat
- Reliever inhaler needed more often than every 4 hours, or not helping
- Blue lips, drowsiness or confusion
- A "silent chest" (very little wheeze despite great effort), a danger sign
- Peak flow below 50% of the personal best

## 6. Useful tests

- **Spirometry** with a reversibility test
- **Peak expiratory flow (PEF)** monitoring at home
- Chest X-ray in selected cases
- Allergy tests (skin prick or blood IgE) and blood eosinophil count
- FeNO (exhaled nitric oxide) where available

## 7. How to understand your reports

- Asthma is supported by an improvement in FEV1 of 12% and 200 mL or more after a bronchodilator, or by variation in peak flow of more than about 10% to 20% through the day.
- Normal spirometry between attacks does not exclude asthma.
- **Peak flow zones** (compared with your own best): green is 80% to 100% (well controlled), yellow is 50% to 80% (caution; follow the action plan), red is below 50% (emergency).

- High eosinophils or IgE point toward allergic asthma and may guide advanced treatment.

## 8. Main types of treatment

- **Reliever inhaler** (such as salbutamol, or a combination with formoterol as per guidelines) for quick relief.
- **Controller inhaler:** inhaled corticosteroid (ICS), alone or combined with a long-acting bronchodilator (LABA). Current guidelines advise against using a reliever alone without a controller in adults and adolescents.
- Add-on: montelukast, tiotropium, and biologic injections in severe allergic or eosinophilic asthma.
- Allergen avoidance and, in selected cases, immunotherapy.
- A written **asthma action plan** from your doctor.
- Short courses of oral steroids for flare-ups, on medical advice.

## 9. Care at home

- Learn the inhaler and spacer technique; ask your doctor or nurse to check it.
- Keep the reliever inhaler with you at all times, including when travelling or exercising.
- Record peak flow twice daily if advised.
- Reduce dust mites: wash bedding weekly in hot water, use mattress and pillow covers, avoid soft toys and carpets in the bedroom, and damp-dust rather than sweep.
- Keep pets out of the bedroom; control cockroaches and mould; keep the house smoke-free and incense-free.
- On high pollution days, limit outdoor exercise and consider a mask.

## 10. Diet and lifestyle

- Healthy balanced diet; maintain a normal weight
- Avoid only the foods that you have clearly noticed to trigger symptoms; unnecessary food restriction is not helpful
- Cold drinks or ice cream do not cause asthma, but some people notice symptoms with very cold air
- Stay active; swimming and walking are good. Warm up before exercise and use your inhaler as advised
- No tobacco
- Annual influenza vaccination and other vaccines as advised

## 11. Medicine precautions

- Do not stop the controller inhaler because you feel well; stopping can bring back severe attacks.
- Rinse the mouth after inhaled steroids to prevent oral thrush and hoarseness.
- Needing the reliever more than twice a week means asthma is not controlled; see the doctor.
- Avoid aspirin and NSAIDs if they have triggered attacks.
- Beta-blocker tablets and eye drops can cause severe attacks; inform every doctor.
- Inhaled steroids in recommended doses are safe; their dose is tiny compared with tablets.
- Frequent oral steroid courses need medical review.

## 12. When to see the doctor

- Night symptoms, or symptoms limiting activity
- Reliever use more than twice a week
- Any attack needing oral steroids or an emergency visit
- Review every 3 to 6 months once controlled, and yearly with spirometry

## 13. When to go to Emergency

- Severe breathlessness, unable to speak in full sentences
- No relief from 2 to 4 puffs of reliever repeated (as per your action plan) over 20 minutes
- Blue lips, extreme drowsiness, exhaustion
- Peak flow in the red zone
- While going, keep taking the reliever inhaler as per your doctor's plan.

## 14. Frequently asked questions

**Is asthma curable?** It cannot be cured but can be controlled so well that you live normally.

**Do children outgrow asthma?** Many improve, but it can return later.

**Are steroid inhalers harmful?** At the recommended dose they are safe and far safer than repeated tablets.

**Can I play sports?** Yes; many top athletes have asthma.

**Is asthma contagious?** No.

### 15. Patient checklist

- [ ] Written action plan in hand
- [ ] Reliever always with me
- [ ] Controller used daily as prescribed
- [ ] Inhaler technique checked
- [ ] Peak flow recorded if advised
- [ ] Triggers identified and reduced
- [ ] Yearly flu vaccine
- [ ] Review booked

### 16. References and revision date

- General guidance drawn from the GINA report, the ICS/NCCP (India) asthma guidelines and WHO asthma fact sheets.
- Clinical review by Dr Kulkarni: pending.
- Revision date: 2 November 2026.

## 8. Chronic Kidney Disease (CKD)

### 1. What is it?

Chronic kidney disease means that the kidneys have been damaged, or their filtering ability has been reduced, for three months or more. The kidneys clean the blood, remove extra water and waste, balance salts, control blood pressure and help make red blood cells and keep bones strong. In CKD this work slowly declines, often without symptoms until late. It is divided into stages 1 to 5; stage 5 is kidney failure, which needs dialysis or a kidney transplant.

### 2. Why does it happen?

- **Diabetes** and **high blood pressure** (the two commonest causes)
- Inflammation of the kidney filters (glomerulonephritis)
- Long-term use of painkillers (NSAIDs) and some herbal or "ayurvedic" preparations containing heavy metals
- Kidney stones, urinary blockage (for example enlarged prostate), repeated infections
- Polycystic kidney disease and other inherited conditions
- Unknown causes, including CKD of uncertain cause in farming regions

## 3. Who is more likely to get it?

- People with diabetes, hypertension or heart disease
- Age above 60
- Family history of kidney disease
- Long-term NSAID or unregulated medicine users
- People with a history of kidney stones, low birth weight, or acute kidney injury
- Obesity and tobacco use

## 4. Early symptoms

- Usually **none** in the early stages; the diagnosis is made by blood and urine tests
- Later: tiredness, poor appetite, nausea, itching
- Puffiness of the face and swelling of the feet
- Foamy urine, night-time urination
- Cramps and trouble sleeping

## 5. Serious (red-flag) symptoms

- Passing very little or no urine
- Breathlessness and swelling (fluid overload)
- Persistent vomiting, hiccups, confusion, drowsiness (uraemia)
- Very high potassium: muscle weakness, palpitations, slow heartbeat
- Chest pain, fits, very high blood pressure

## 6. Useful tests

- Serum creatinine and **eGFR**
- **Urine albumin-creatinine ratio (UACR)**, urine routine
- Blood urea, electrolytes (sodium, potassium, calcium, phosphate, bicarbonate)
- Haemoglobin, iron studies, PTH and vitamin D
- Ultrasound of the kidneys and bladder
- Kidney biopsy in selected patients

## 7. How to understand your reports

| CKD stage | eGFR (mL/min/1.73 m²) | Meaning |
|---|---|---|
| G1 | 90 or more | Normal filtration with damage markers |

| CKD stage | eGFR (mL/min/1.73 m²) | Meaning |
|---|---|---|
| G2 | 60 to 89 | Mildly reduced |
| G3a | 45 to 59 | Mild to moderate decrease |
| G3b | 30 to 44 | Moderate to severe decrease |
| G4 | 15 to 29 | Severe decrease |
| G5 | below 15 | Kidney failure |

- Protein in the urine (albuminuria) is graded A1 (normal to mild), A2 (moderate) and A3 (severe); more protein means higher risk.
- Creatinine alone can mislead in very muscular or very thin people; eGFR is a better guide.
- Treatment aims to keep BP below about 130/80 mmHg for most patients and sugar and HbA1c at the target set by your doctor.

## 8. Main types of treatment

- Treat the cause and slow progression: control of BP and sugar, stopping harmful drugs.
- **Medicines:** ACE inhibitor or ARB (to reduce protein leak and protect kidneys), SGLT2 inhibitors (dapagliflozin, empagliflozin), and in diabetic CKD finerenone or GLP-1 agonists in selected patients; statins.
- Treat complications: anaemia, bone and mineral problems (phosphate binders, calcium, vitamin D), acidosis, high potassium.
- **Kidney replacement therapy** for stage 5: haemodialysis, peritoneal dialysis or kidney transplantation (living or deceased donor).
- Conservative kidney care with symptom support in people who choose not to have dialysis.

## 9. Care at home

- Check BP daily and weight regularly; record urine output if advised.
- Look for new swelling and breathlessness.
- Protect veins in the non-dominant arm that may be needed for dialysis access; avoid repeated blood draws and IV lines there.
- Keep a list of all medicines and show it to every doctor; many drugs need dose changes in kidney disease.
- Take blood and urine tests on schedule.

- Stay hydrated during illness unless told to restrict fluid; if vomiting or having diarrhoea, call the doctor about holding some medicines (ACE inhibitors, ARBs, diuretics, SGLT2 inhibitors, metformin).

## 10. Diet and lifestyle

- **Salt:** under 5 g per day.
- **Protein:** avoid very high-protein diets and supplements; in non-dialysis CKD, moderate protein (often about 0.6 to 0.8 g per kg body weight per day) is advised, but individual advice from a renal dietitian is needed. Patients on dialysis need more protein.
- **Potassium and phosphorus:** restrict only if your blood levels are high; your dietitian will advise (for example limiting bananas, oranges, coconut water, potatoes, tomatoes, dry fruits, colas and processed foods).
- **Fluids:** restrict only if advised, based on urine output and swelling.
- Stay active, maintain a healthy weight, and stop tobacco.
- Avoid herbal tonics, kidney "cleansing" products, and body-building supplements.

## 11. Medicine precautions

- **Avoid NSAIDs** (diclofenac, ibuprofen, aceclofenac, nimesulide) and regular painkiller use; paracetamol in the usual dose is safer.
- Avoid herbal and "ayurvedic" products unless known to be safe.
- Contrast dye (for CT or angiography) can harm kidneys; tell the radiologist that you have CKD.
- Metformin, antibiotics, anticoagulants, gabapentin and many other drugs need dose adjustment.
- ACE inhibitors and ARBs need a blood test for potassium and creatinine 1 to 2 weeks after starting or increasing.
- Do not use potassium-containing salt substitutes.
- Do not take magnesium-containing antacids or laxatives without advice.

## 12. When to see the doctor

- New swelling, weight gain, or reduced urine
- Persistent tiredness, itching, nausea or poor appetite
- BP above target, or sugar uncontrolled
- Before starting any new medicine or supplement
- Regular review: every 3 to 12 months depending on the stage, with eGFR, UACR and haemoglobin

## 13. When to go to Emergency

- Very little or no urine for 12 hours or more
- Severe breathlessness or inability to lie flat
- Muscle weakness, palpitations, fainting (high potassium)
- Persistent vomiting, confusion, drowsiness, fits
- Chest pain
- For dialysis patients: missed dialysis with breathlessness, or fever and redness at the catheter or fistula site

## 14. Frequently asked questions

**Is CKD reversible?** Damage is usually not reversible, but progression can be slowed a lot, sometimes for decades.

**Will I surely need dialysis?** No. Many people with CKD never reach dialysis if the cause is controlled early.

**Can I eat normally?** Yes, with a few adjustments guided by your tests and dietitian.

**Is a kidney transplant better than dialysis?** For suitable patients, yes; it gives better quality and length of life.

**Can I take ayurvedic medicines?** Only after checking with your kidney doctor; some are harmful.

## 15. Patient checklist

- [ ] eGFR and urine albumin checked at least yearly
- [ ] BP below the target
- [ ] Sugar controlled
- [ ] No NSAIDs or unknown herbal medicines
- [ ] Salt restricted
- [ ] Anaemia and bone health reviewed
- [ ] Vaccines (hepatitis B, influenza, pneumococcal) as advised
- [ ] Kidney doctor consulted early

## 16. References and revision date

- General guidance drawn from the KDIGO CKD guidelines, the Indian Society of Nephrology and ICMR guidelines on CKD, and the WHO and ISN kidney health resources.
- Clinical review by Dr Kulkarni: pending.

- Revision date: 2 November 2026.

# 9. Acute Kidney Injury (AKI)

## 1. What is it?

Acute kidney injury is a sudden drop in kidney function over hours to days, so waste products and fluid build up in the body. It is often reversible if the cause is found and treated early, but it can be life-threatening and can leave lasting kidney damage. AKI is diagnosed by a rise in blood creatinine or a fall in urine output.

## 2. Why does it happen?

There are three broad groups of causes:

- **Pre-renal (poor blood flow to the kidneys):** dehydration from vomiting, diarrhoea, heat or poor intake; bleeding; low BP; severe infection (sepsis); heart failure; liver failure
- **Intrinsic (damage within the kidney):** prolonged low BP, toxins and drugs (NSAIDs, some antibiotics such as aminoglycosides, contrast dye, herbal products), snake bite, malaria, leptospirosis, muscle breakdown (rhabdomyolysis), inflammation of the filters
- **Post-renal (blockage to urine flow):** enlarged prostate, kidney stones, tumour, blocked catheter

## 3. Who is more likely to get it?

- Elderly, and anyone seriously ill or hospitalised
- Pre-existing CKD, diabetes, heart or liver disease
- Dehydrated people, e.g., during heatwaves, gastroenteritis or fasting with fluid loss
- People taking NSAIDs, ACE inhibitors, ARBs, diuretics together ("triple whammy")
- After major surgery, trauma or contrast scans
- Patients with infections such as malaria, dengue, leptospirosis, sepsis

## 4. Early symptoms

- Passing much less urine than usual
- Dark or tea-coloured urine
- Swelling of feet and face
- Nausea, vomiting, loss of appetite
- Unusual tiredness or drowsiness

- Sometimes **no symptoms**; only a blood test shows it

## 5. Serious (red-flag) symptoms

- No urine for 6 to 12 hours
- Breathlessness, because of fluid in the lungs
- Confusion, drowsiness, fits
- Palpitations or muscle weakness (high potassium)
- Chest pain, bleeding, very low BP

## 6. Useful tests

- Serum creatinine, urea, electrolytes (especially potassium), blood gas (acidosis)
- Urine routine and microscopy; urine output measurement
- Ultrasound of the kidneys and bladder to look for blockage
- Blood counts, infection tests, CPK in suspected muscle injury
- ECG if potassium is high
- Kidney biopsy in selected cases

## 7. How to understand your reports

- AKI is diagnosed if creatinine rises by 0.3 mg/dL or more within 48 hours, or rises to 1.5 times the baseline within 7 days, or urine output falls below about 0.5 mL/kg/hour for 6 hours.
- Stages 1 to 3 reflect severity; stage 3 includes a creatinine 3 times baseline or the need for dialysis.
- A normal baseline creatinine in the past helps doctors decide whether the problem is acute or chronic.
- Potassium above about 6.0 mmol/L is dangerous and needs urgent treatment.
- Creatinine may continue to rise for a few days even after the cause is corrected.

## 8. Main types of treatment

- Find and treat the cause: fluids for dehydration, treatment of infection, stopping harmful drugs, relieving obstruction (catheter, stent, nephrostomy).
- Careful fluid balance: avoid both too little and too much fluid.
- Treatment of high potassium and acidosis.
- **Dialysis** (temporary) if there is severe fluid overload, very high potassium, severe acidosis or uraemia not responding to treatment.
- Dose adjustment of medicines and avoidance of further kidney injury.

- Follow-up after recovery, as AKI raises the risk of CKD.

## 9. Care at home

- After discharge, follow the fluid and diet instructions given for recovery.
- Weigh daily and monitor urine output as advised.
- Take only the medicines on the discharge list; avoid NSAIDs.
- Restart ACE inhibitors, ARBs, diuretics and metformin only when your doctor says it is safe.
- Keep follow-up blood tests (usually creatinine in 1 to 2 weeks and again at 3 months).
- During gastroenteritis, fever or hot weather: drink oral rehydration solution (ORS) and seek help early.

## 10. Diet and lifestyle

- Follow the dietitian's advice during the illness: salt and potassium restriction is common while kidneys are recovering.
- Maintain adequate fluids unless restricted by your doctor.
- Avoid protein supplements, herbal tonics and body-building powders.
- Avoid heavy alcohol; stop tobacco.
- Return to normal activity gradually.
- Control BP, diabetes and weight to protect the kidneys in the long term.

## 11. Medicine precautions

- Avoid NSAIDs such as diclofenac, ibuprofen, aceclofenac; use paracetamol for pain unless advised.
- Tell every doctor that you have had AKI, so doses of antibiotics and other drugs are adjusted.
- Be cautious with contrast dye; ensure adequate hydration and notify the radiologist.
- Avoid herbal and "cleansing" preparations.
- Temporary "sick-day" holding of ACE inhibitors, ARBs, SGLT2 inhibitors, diuretics and metformin during vomiting or diarrhoea, as per your doctor's guidance.

## 12. When to see the doctor

- Vomiting, diarrhoea or poor intake for more than a day, especially in the elderly or diabetics
- Reduced urine or new swelling
- Difficulty passing urine, or lower abdominal pain

- After discharge: follow-up blood tests as advised
- Persistent high creatinine or protein in the urine after recovery

## 13. When to go to Emergency

- No urine for 12 hours, or very little urine with illness
- Breathlessness, chest pain, palpitations, muscle weakness
- Confusion, drowsiness, fits
- Black or bloody vomit, severe vomiting that does not stop
- Dark urine with severe muscle pain after heavy exertion or injury

## 14. Frequently asked questions

**Will my kidneys recover?** Many people recover fully or partly; some are left with CKD, so follow-up is important.

**Will I need lifelong dialysis?** Most dialysis in AKI is temporary.

**Can I drink a lot of water to flush my kidneys?** Normal fluid intake is enough; too much can be harmful if urine output is low.

**Is AKI contagious?** No, though some infections that cause it may be.

**Is it safe to take painkillers?** Paracetamol in the usual dose; avoid NSAIDs.

## 15. Patient checklist

- [ ] Cause of AKI understood
- [ ] NSAIDs and unknown medicines avoided
- [ ] Follow-up creatinine done as scheduled
- [ ] Sick-day rules known
- [ ] BP and sugar controlled
- [ ] Doctor told about AKI before any new medicine or scan
- [ ] Signs of low urine and swelling known

## 16. References and revision date

- General guidance drawn from the KDIGO AKI guideline, the Indian Society of Nephrology position statements and the WHO resources on acute kidney injury.
- Clinical review by Dr Kulkarni: pending.
- Revision date: 2 November 2026.

# 10. Liver Cirrhosis

## 1. What is it?

Cirrhosis is the late stage of long-term liver damage, in which healthy liver tissue is replaced by scar tissue and the liver becomes hard, shrunken or lumpy. The liver can no longer make proteins, store energy, clean toxins or help digestion properly, and blood has trouble flowing through it, which raises pressure in the portal vein (portal hypertension). **Compensated** cirrhosis causes few symptoms; **decompensated** cirrhosis causes complications such as fluid in the abdomen, jaundice, bleeding and confusion.

## 2. Why does it happen?

- Long-term **alcohol** use
- **Metabolic dysfunction-associated fatty liver disease (MASLD, previously NAFLD)**, linked to obesity, diabetes and high cholesterol, increasingly common in India
- **Chronic hepatitis B and C**
- Autoimmune liver disease, bile duct diseases (primary biliary cholangitis, primary sclerosing cholangitis)
- Inherited diseases such as Wilson's disease and haemochromatosis
- Certain drugs and toxins; long-standing blockage of hepatic veins or heart failure
- In some patients, no cause is found

## 3. Who is more likely to get it?

- Heavy or long-term drinkers
- People with diabetes, obesity and fatty liver
- Those with hepatitis B or C, especially if untreated
- People who received unsafe injections or transfusions in the past
- Family history of liver disease
- Persons with autoimmune conditions

## 4. Early symptoms

- Often none for many years
- Tiredness, weakness, reduced appetite and weight loss
- Nausea, mild upper abdominal discomfort
- Itching, easy bruising
- Spider-like veins on the skin, red palms
- Swelling of ankles

## 5. Serious (red-flag) symptoms

- Vomiting blood or passing black, tarry stools (bleeding from varices)
- Yellow eyes and skin (jaundice) that is increasing
- Swollen abdomen (ascites) that is growing, with fever or abdominal pain (infection)
- Confusion, day-night reversal, sleepiness, tremor (hepatic encephalopathy)
- Reduced urine, kidney failure
- Sudden worsening after infection, alcohol or a drug

## 6. Useful tests

- Liver function tests (bilirubin, AST, ALT, albumin, ALP), INR
- Complete blood count (platelets are often low)
- Ultrasound of the abdomen; FibroScan (liver stiffness) or CT/MRI
- Upper GI endoscopy to look for varices
- Viral markers (HBsAg, anti-HCV), autoimmune and metabolic tests
- Ascitic fluid analysis when fluid is present
- AFP and ultrasound every 6 months to look for liver cancer

## 7. How to understand your reports

- Low albumin, high bilirubin and prolonged INR show poorer liver function.
- **Child-Pugh** (A, B, C) and **MELD** scores estimate severity and help in transplant planning.
- A low platelet count suggests portal hypertension and a big spleen.
- AST and ALT can be normal or near normal in advanced cirrhosis; normal enzymes do not exclude cirrhosis.
- Ultrasound may show a coarse, nodular liver, ascites or an enlarged spleen.
- FibroScan values above about 12 to 15 kPa suggest advanced fibrosis or cirrhosis, interpreted by the doctor.

## 8. Main types of treatment

- **Treat the cause:** stop alcohol completely; control sugar and weight; antiviral treatment for hepatitis B or C; other specific therapies.
- **Prevent complications:** non-selective beta-blockers (carvedilol, propranolol) and endoscopic band ligation to prevent variceal bleeding; diuretics and salt restriction for ascites; lactulose and rifaximin for hepatic encephalopathy; antibiotics to prevent or treat infection.
- **Treat emergencies:** bleeding, infection, kidney failure.

- **Liver cancer surveillance** every 6 months.
- **Liver transplantation** for suitable patients with advanced disease.

## 9. Care at home

- Weigh yourself daily and measure abdominal girth if advised.
- Take diuretics as prescribed and report dizziness, cramps or low urine.
- Keep two to three soft stools a day with lactulose if prescribed; constipation can trigger confusion.
- Watch for sleep reversal, forgetfulness, tremor, which are early signs of encephalopathy.
- Look for black stools or blood in vomit.
- Prevent infections: good hygiene, vaccines.
- Skin care for itching; avoid scratching.

## 10. Diet and lifestyle

- **No alcohol at all.**
- Eat small frequent meals and a late-evening snack; do not fast for long.
- Adequate protein (about 1.2 to 1.5 g per kg per day) and calories; do not restrict protein unnecessarily, even in encephalopathy.
- Salt restriction (about 2 g sodium, roughly 5 g salt, per day) if ascites.
- Avoid raw or undercooked shellfish and unsafe water.
- Maintain a healthy weight; exercise gently to prevent muscle loss.
- Avoid herbal and "liver tonic" products.

## 11. Medicine precautions

- **Avoid NSAID painkillers** (they can cause bleeding and kidney failure).
- Paracetamol is generally safe in low doses (usually not more than 2 g per day) in cirrhosis; check with your doctor.
- Avoid sedatives, sleeping pills and opioids, which can trigger confusion.
- Avoid unprescribed herbal and ayurvedic remedies.
- Do not stop beta-blockers or lactulose without advice.
- Tell every doctor you have cirrhosis, since many drugs need dose changes.

## 12. When to see the doctor

- Increasing abdominal swelling or ankle swelling

- Weight gain, jaundice, itching
- Constipation, change in sleep, forgetfulness
- Fever or abdominal pain
- Regular review every 3 to 6 months, ultrasound and AFP every 6 months, and endoscopy as advised

## 13. When to go to Emergency

- Vomiting blood or black stools
- Drowsiness, confusion, unable to wake
- Fever with abdominal pain or a tense abdomen
- Very little urine
- Severe breathlessness

## 14. Frequently asked questions

**Can cirrhosis be reversed?** Established cirrhosis is usually not reversible, but stopping the cause can stabilise and sometimes improve the liver.

**Can I take a little alcohol occasionally?** No; any alcohol can worsen damage.

**Is it infectious?** Cirrhosis is not, but hepatitis B and C that cause it can be spread through blood and sexual contact.

**Should I avoid protein?** No; protein is necessary to prevent muscle loss.

**Do I need a transplant?** Only a few patients do; your liver specialist decides based on scores and complications.

## 15. Patient checklist

- [ ] Alcohol stopped completely
- [ ] Hepatitis A and B vaccines as advised
- [ ] Six-monthly ultrasound and AFP
- [ ] Endoscopy for varices done
- [ ] Salt restriction and daily weight if ascites
- [ ] Bowel movements 2 to 3 a day
- [ ] No NSAIDs or herbal products
- [ ] Emergency signs known to family

### 16. References and revision date

- General guidance drawn from the AASLD and EASL guidelines on cirrhosis and its complications, the Baveno consensus on portal hypertension, and the Indian National Association for the Study of the Liver (INASL) guidance.
- Clinical review by Dr Kulkarni: pending.
- Revision date: 2 November 2026.

## 11. Chronic Hepatitis

### 1. What is it?

Hepatitis means inflammation of the liver. It is called **chronic** when it lasts more than 6 months. Most chronic hepatitis is caused by hepatitis B or hepatitis C virus, but it can also be caused by alcohol, fatty liver disease, autoimmune disease, drugs, and rare inherited conditions. Over years, untreated chronic hepatitis can cause scarring (cirrhosis), liver failure and liver cancer. Hepatitis A and E cause acute hepatitis and generally do not become chronic (hepatitis E can persist in people with very weak immunity).

### 2. Why does it happen?

- **Hepatitis B:** spread by blood, unprotected sex, and from mother to baby at birth; many Indian patients are infected at birth or early childhood.
- **Hepatitis C:** spread mainly by blood (unsafe injections, unscreened transfusions, shared needles, unsterile tattoo or dental tools).
- **Hepatitis D** occurs only in people with hepatitis B.
- **Non-viral causes:** alcohol, MASLD (fatty liver), autoimmune hepatitis, Wilson's disease, drug-induced liver injury.
- Hepatitis B and C are not spread by hugging, sharing food or utensils, coughing or mosquito bites.

### 3. Who is more likely to get it?

- Babies born to mothers with hepatitis B
- Those who had transfusions or surgeries before blood screening became routine, or unsafe injections
- People who inject drugs, share razors or toothbrushes
- Healthcare workers exposed to blood
- Sexual partners and household contacts of infected persons
- Patients on dialysis

- People with HIV

## 4. Early symptoms

- Frequently **no symptoms** for years; found on routine blood tests, blood donation or pre-surgery screening
- Tiredness, poor appetite, vague abdominal discomfort
- Mild nausea, joint pains
- Yellow urine or eyes only when disease flares

## 5. Serious (red-flag) symptoms

- Jaundice that is deepening
- Swollen abdomen or legs
- Vomiting blood, black stools
- Confusion, drowsiness
- Easy bruising or bleeding
- Severe abdominal pain, fever

## 6. Useful tests

- Liver function tests (ALT, AST, bilirubin, albumin), INR, blood counts
- **Hepatitis B:** HBsAg, anti-HBc, anti-HBs, HBeAg, anti-HBe, HBV DNA (viral load)
- **Hepatitis C:** anti-HCV antibody, followed by HCV RNA if positive
- HIV and hepatitis A and D tests as advised
- Ultrasound, FibroScan or other fibrosis assessment
- Alpha-fetoprotein (AFP) for cancer surveillance
- Liver biopsy in selected cases

## 7. How to understand your reports

- **HBsAg positive** means current hepatitis B infection; persistence for more than 6 months means chronic infection.
- **Anti-HBs positive alone** usually means immunity (past vaccination or recovery).
- **HBV DNA** shows the viral load; it guides treatment, along with ALT and fibrosis.
- **Anti-HCV positive** means exposure; **HCV RNA positive** means active infection that needs treatment.
- Normal ALT does not always mean the liver is healthy; doctors consider viral load, fibrosis and age.

- A "sustained virological response" (SVR) after hepatitis C treatment means the virus is not detected 12 weeks after treatment, which is regarded as a cure.

## 8. Main types of treatment

- **Hepatitis C:** short courses (usually 8 to 12 weeks) of oral direct-acting antivirals such as sofosbuvir-based regimens cure more than 95% of patients; they are widely available in India at low cost under national programmes.
- **Hepatitis B:** antiviral tablets (tenofovir, entecavir) for those who need treatment; they control the virus and protect the liver but are often long-term. Some patients need only monitoring.
- **Others:** treatment of alcohol, fatty liver and autoimmune disease; stopping the offending drug.
- Screening for liver cancer and varices in those with advanced fibrosis or cirrhosis.
- Vaccination of contacts and prevention of mother-to-child spread.

## 9. Care at home

- Take antiviral tablets every day without gaps; do not stop hepatitis B medicines on your own, since stopping can cause a severe flare.
- Use separate razors, toothbrushes and nail clippers; cover cuts with a bandage.
- Clean blood spills with a bleach solution and gloves.
- Safe sex practices; screen and vaccinate partners and household members for hepatitis B.
- Pregnant women with hepatitis B should inform their obstetrician; newborns need hepatitis B vaccine and immunoglobulin within 12 hours of birth.
- Maintain regular monitoring visits.

## 10. Diet and lifestyle

- No alcohol.
- Normal balanced diet; no need for a special "liver diet" or fat-free diet in most patients.
- Maintain healthy weight; reduce sugar and fried foods to prevent fatty liver.
- Avoid herbal and "liver tonic" products, raw shellfish and street food in poor hygiene conditions.
- Regular exercise; stop tobacco.
- Having hepatitis B or C is not a reason to avoid school, work, or normal family life.

## 11. Medicine precautions

- Do not stop hepatitis B antivirals suddenly; this can cause liver failure.
- Tell your doctor about all medicines before starting hepatitis C therapy; some interact (for example amiodarone with sofosbuvir).
- Paracetamol is usually safe in modest doses (not more than 2 to 3 g per day) in chronic hepatitis; avoid alcohol with it.
- Some medicines (certain TB drugs, antiepileptics, methotrexate) can harm the liver; monitoring is needed.
- Patients taking chemotherapy or strong immunosuppressants must be screened and may need preventive antivirals, as hepatitis B can reactivate.
- Avoid unsupervised herbal remedies.

## 12. When to see the doctor

- Positive hepatitis B or C screening result
- Yellow urine or eyes, persistent fatigue
- Before starting steroids, chemotherapy or biologic treatment
- Planning pregnancy
- Routine monitoring every 3 to 12 months depending on the stage, including ultrasound and AFP every 6 months for high-risk patients

## 13. When to go to Emergency

- Vomiting blood or black stools
- Confusion or drowsiness
- Rapidly increasing jaundice with vomiting
- Marked abdominal swelling with fever or pain
- Bleeding that does not stop

## 14. Frequently asked questions

**Can I spread hepatitis B to my family?** Mainly through blood and body fluids; the family should be vaccinated, and ordinary contact is safe.

**Is hepatitis C curable?** Yes, in the great majority of patients with a short course of tablets.

**Is hepatitis B curable?** Usually it is controlled, not fully cured; some people clear it.

**Can I donate blood?** No, not with active hepatitis B or C infection.

**Can I have children?** Yes. With the right care, mother-to-child transmission of hepatitis B can be prevented in most cases.

### 15. Patient checklist

- [ ] Viral markers and viral load documented
- [ ] Liver stiffness and ultrasound done
- [ ] Antiviral taken daily if prescribed
- [ ] Family members tested and vaccinated against hepatitis B
- [ ] No alcohol
- [ ] Six-monthly ultrasound and AFP if advised
- [ ] Doctor informed before any immunosuppressive treatment
- [ ] Vaccines (hepatitis A, B) updated

### 16. References and revision date

- General guidance drawn from the WHO hepatitis B and C guidelines, AASLD, EASL and APASL guidelines, and the Indian National Viral Hepatitis Control Programme (NVHCP) guidance.
- Clinical review by Dr Kulkarni: pending.
- Revision date: 2 November 2026.

## 12. Anaemia

### 1. What is it?

Anaemia means that the blood has too few red blood cells or too little haemoglobin (Hb), the protein that carries oxygen. As a result, tissues receive less oxygen and the person feels weak and breathless. Anaemia is a sign of an underlying problem, not a diagnosis by itself, so the cause must always be found. India has one of the world's highest burdens of anaemia, especially among women, adolescents and children.

### 2. Why does it happen?

- **Iron deficiency (the most common cause in India):** poor dietary iron, increased needs (growth, pregnancy), and blood loss (heavy periods, piles, stomach ulcers, hookworm, long-term painkillers, stomach or colon cancers)
- **Vitamin B12 and folate deficiency**, common in vegetarians and in people with absorption problems
- **Chronic disease:** kidney disease, infections like tuberculosis, inflammatory disease, cancer
- **Haemolysis (red cells breaking early):** thalassaemia, sickle cell disease, G6PD deficiency, malaria, autoimmune haemolysis

- **Bone marrow problems:** aplastic anaemia, leukaemia, myelodysplasia, certain drugs
- Thyroid disease, alcohol, liver disease

## 3. Who is more likely to get it?

- Women with heavy periods; pregnant and breastfeeding women
- Adolescent girls and young children
- Vegetarians and vegans, those with poor diet
- Elderly people
- People with chronic kidney, liver or stomach disease, or after gastric surgery
- Those with worm infestation, piles or long-term aspirin or NSAID use
- People from communities with a high prevalence of thalassaemia or sickle cell trait

## 4. Early symptoms

- Tiredness, weakness, reduced work capacity
- Pale skin, pale inner eyelids, pale nail beds
- Headache, dizziness, poor concentration
- Breathlessness and palpitations on exertion
- Cravings to eat ice, mud or starch (pica), brittle nails, hair fall
- Tingling and numbness (B12 deficiency)

## 5. Serious (red-flag) symptoms

- Breathlessness at rest, chest pain, fainting
- Very fast heart rate
- Black stools or vomiting blood, heavy vaginal bleeding
- Yellow eyes with dark urine (haemolysis)
- Haemoglobin below about 7 g/dL, or lower than the person tolerates
- Unexplained weight loss, fever, night sweats, bruising or bleeding

## 6. Useful tests

- Complete blood count (Hb, MCV, MCH, RDW, platelets, white cells)
- Peripheral blood smear
- Reticulocyte count
- Serum ferritin, iron, TIBC, transferrin saturation
- Vitamin B12, folate
- Kidney, liver and thyroid tests

- Stool test for occult blood, worm tests; endoscopy or colonoscopy where indicated
- Haemoglobin electrophoresis (HPLC) for thalassaemia and sickle cell
- Bone marrow examination in selected cases

## 7. How to understand your reports

| Group | Anaemia is present if Hb is below |
|---|---|
| Adult men | 13 g/dL |
| Non-pregnant adult women | 12 g/dL |
| Pregnant women | 11 g/dL |
| Children 6 to 59 months | 11 g/dL |

- **Low MCV (small cells):** iron deficiency, thalassaemia trait. **High MCV:** B12 or folate deficiency, liver disease, alcohol, some drugs. **Normal MCV:** chronic disease, blood loss, kidney disease, mixed causes.
- **Ferritin** is the best marker of iron stores; a low ferritin confirms iron deficiency. Ferritin can be falsely normal or high during infection or inflammation.
- A low-normal MCV with a normal ferritin in a well person suggests thalassaemia trait.
- Iron deficiency in an adult man or a post-menopausal woman needs a search for gastrointestinal blood loss.

## 8. Main types of treatment

- **Treat the cause:** stop bleeding, treat worms, treat the underlying disease.
- **Iron replacement:** oral iron (ferrous salts, taken on an empty stomach or with vitamin C if tolerated, usually once daily or on alternate days) for 3 to 6 months, including 3 months after Hb normalises to build stores. Intravenous iron if oral iron is not tolerated, not absorbed, or rapid correction is needed.
- **Vitamin B12** (tablets or injections) and **folic acid**; folic acid alone should not be given when B12 deficiency is possible.
- **Blood transfusion** only for severe or symptomatic anaemia, or acute blood loss.
- Specific treatment for thalassaemia, sickle cell disease, aplastic anaemia and other conditions.

## 9. Care at home

- Take iron tablets regularly; expect dark stools, which are harmless.
- Keep iron medicine out of children's reach; an overdose is dangerous.

- Rest when tired, rise slowly to avoid dizziness.
- Watch for black tarry stools, heavy periods, or blood in stools.
- Have a repeat blood test as scheduled (Hb usually rises within 2 to 4 weeks of effective treatment).
- Deworming for children and adolescents as per the national programme.

## 10. Diet and lifestyle

- Iron-rich foods: green leafy vegetables, jaggery, dates, beetroot, pomegranate, ragi, sesame, chickpeas, rajma, lentils, liver, eggs, meat and fish.
- Add vitamin C (lemon, amla, guava, orange) with meals to improve iron absorption.
- Avoid tea, coffee and milk within 1 hour of iron-rich meals or iron tablets, since they block absorption.
- Cooking in iron utensils can add a little iron.
- Vitamin B12 comes from animal foods (milk, curd, eggs, fish, meat); strict vegetarians often need supplements.
- Folate comes from leafy vegetables, pulses and fruits.
- Maintain regular menstrual hygiene and a healthy diet in pregnancy with prescribed iron-folate tablets.

## 11. Medicine precautions

- Iron tablets can cause constipation, nausea or stomach upset; taking them with a small meal or on alternate days may help.
- Do not take iron with calcium, antacids, or thyroid tablets at the same time; keep a gap of at least 4 hours from thyroid tablets.
- Do not start iron for long periods without testing; excess iron can be harmful, especially in thalassaemia and haemochromatosis.
- Do not take B12 or iron injections without a doctor's advice.
- Long-term NSAID or aspirin use can cause hidden bleeding.
- Report any allergy-type reaction to injectable iron immediately.

## 12. When to see the doctor

- Persistent tiredness, pallor, hair fall
- Anaemia that does not improve after 4 to 6 weeks of treatment
- Heavy or prolonged periods
- Black stools or blood in stools
- Anaemia in a man or post-menopausal woman

- Pregnancy or planning pregnancy

## 13. When to go to Emergency

- Chest pain, severe breathlessness, fainting
- Vomiting blood or passing black or bloody stool
- Very heavy vaginal bleeding
- Yellow eyes with dark urine and severe weakness
- A child who is very pale, drowsy or breathing fast

## 14. Frequently asked questions

**Do I need a blood transfusion?** Only if anaemia is severe or you are unstable; most people recover with treatment of the cause and iron or vitamin supplements.

**Will my skin colour or hair improve?** Yes, as Hb recovers.

**Can I just eat more spinach?** Diet helps, but tablets are usually needed to correct established deficiency.

**Why are my stools black on iron?** This is an expected, harmless effect of iron; black tarry foul-smelling stool with weakness is different and needs checking.

**Is thalassaemia trait a disease?** Usually no; but couples where both carry the trait should get counselling before pregnancy.

## 15. Patient checklist

- [ ] Cause of anaemia identified
- [ ] Iron or vitamin tablets taken as advised
- [ ] Hb and ferritin rechecked after 4 to 8 weeks
- [ ] Iron-rich diet with vitamin C
- [ ] Tea or coffee kept apart from iron
- [ ] Bleeding (periods, stools) reviewed
- [ ] Deworming up to date
- [ ] Follow-up booked

## 16. References and revision date

- General guidance drawn from WHO haemoglobin thresholds, the Anaemia Mukt Bharat programme guidelines of the Government of India, ICMR guidance on anaemia, and British Society of Gastroenterology and ASH guidance on iron deficiency.
- Clinical review by Dr Kulkarni: pending.

- Revision date: 2 November 2026.

# 13. Cancer Care

## 1. What is it?

Cancer is a group of diseases in which some cells grow out of control, invade nearby tissues and may spread (metastasise) to other parts of the body. There are hundreds of types, named after the organ where they begin (breast, oral cavity, lung, cervix, colon, prostate, blood and others). Cancer care covers prevention, early detection, diagnosis, treatment, management of side effects, supportive care and survivorship. Many cancers are curable, especially when found early.

## 2. Why does it happen?

- Changes (mutations) in the genes that control cell growth, accumulating over time
- **Tobacco** in all forms (smoking and chewing: gutkha, khaini, betel quid with tobacco), the leading preventable cause in India
- Alcohol, obesity, inactivity, poor diet
- Infections: HPV (cervical cancer), hepatitis B and C (liver), Helicobacter pylori (stomach)
- Radiation, certain chemicals and air pollution
- Inherited gene changes (for example BRCA1 and BRCA2) in a small proportion
- Ageing

## 3. Who is more likely to get it?

- Tobacco and alcohol users
- Older adults
- People with a strong family history of cancer, or early-age cancers in the family
- Persons with persistent infections (HPV, hepatitis B or C)
- People with obesity and long-standing diabetes
- Those with prior radiation or chemotherapy
- Workers exposed to asbestos, dyes or certain chemicals

## 4. Early symptoms

No single symptom is specific, but these warning signs need medical evaluation if they last more than 2 to 3 weeks:

- A lump in the breast, neck, armpit or elsewhere

- Non-healing mouth ulcer, white or red patch in the mouth, difficulty opening the mouth or swallowing
- Persistent cough or hoarseness, coughing blood
- Change in bowel habits, blood in stools
- Unusual vaginal bleeding or discharge, bleeding after menopause or after intercourse
- Unexplained weight loss, fever, night sweats, extreme tiredness
- A mole or skin spot that changes

## 5. Serious (red-flag) symptoms

- Severe uncontrolled pain, new back pain with leg weakness or loss of bladder or bowel control (spinal cord compression)
- Breathlessness, chest pain, swollen face or arms
- Fever during chemotherapy
- Heavy bleeding, vomiting blood, black stools
- Confusion, severe headache, fits
- Inability to swallow, persistent vomiting, severe dehydration

## 6. Useful tests

- Clinical examination and imaging (ultrasound, X-ray, mammography, CT, MRI, PET-CT)
- **Biopsy** (tissue sample): essential to confirm cancer type
- Blood tests (counts, organ function, tumour markers in selected cases, not for screening)
- Genetic and molecular tests on the tumour
- Screening tests: mammography or clinical breast examination, Pap smear or HPV testing, oral visual examination, colonoscopy or stool tests, low-dose CT in selected high-risk smokers

## 7. How to understand your reports

- The **histopathology report** gives the type, grade (how abnormal the cells look) and margins after surgery.
- **Stage** (I to IV, or TNM) shows size, spread to lymph nodes and distant spread; it guides treatment and outlook.
- **Receptor and molecular tests** (for example ER, PR, HER2 in breast cancer; EGFR or ALK in lung cancer) determine whether targeted treatment can be used.
- A raised tumour marker alone does not prove cancer, and a normal marker does not exclude it.

- A CT or PET report using words like "suspicious" or "indeterminate" requires correlation by the oncologist.
- Ask the oncologist to explain stage, intent of treatment (curative or controlling) and expected side effects.

## 8. Main types of treatment

- **Surgery** to remove the tumour
- **Radiotherapy** to destroy cancer cells in a targeted area
- **Chemotherapy** drugs given by vein or mouth
- **Targeted therapy** and **immunotherapy** for suitable tumours
- **Hormonal therapy** (for example breast and prostate cancer)
- **Bone marrow or stem cell transplant** in some blood cancers
- **Supportive and palliative care** from the start for symptom relief
- Treatment is planned by a multidisciplinary tumour board; second opinions are reasonable.

## 9. Care at home

- Record temperature if on chemotherapy; know the 24-hour contact number of the cancer team.
- Maintain hand hygiene, oral care (soft brush, salt-water rinses), and avoid crowds when counts are low.
- Eat small, frequent meals; drink fluids; take antiemetics as prescribed.
- Care for the skin in the radiation area, and wear loose cotton clothing.
- Care for any central line, port or stoma as taught.
- Keep a diary of symptoms, medicines and appointments.
- Caregivers should look after their own rest and mental health too.

## 10. Diet and lifestyle

- Eat a balanced diet with enough protein and calories; do not fast or follow extreme diets during treatment.
- Fresh, well-cooked food and safe water; wash fruits and vegetables when counts are low.
- Avoid raw sprouts, unpasteurised milk and street food if immunity is low.
- Stay as active as you can; short walks help with fatigue.
- Stop all tobacco and alcohol.

- Be cautious with herbal products, antioxidant megadoses and "cancer diets", which may interfere with treatment; discuss with your oncologist.
- Seek counselling and support groups.

## 11. Medicine precautions

- Complete the planned cycles of treatment on schedule; avoid delays unless the oncologist advises.
- Do not take herbal, ayurvedic or homeopathic products during chemotherapy without discussing with your oncologist; some alter drug levels or harm the liver.
- Tell your doctors before any vaccine; live vaccines are avoided during chemotherapy.
- Use painkillers as prescribed; avoid NSAIDs when platelet counts are low or kidneys are affected.
- Oral anticancer medicines must be stored, handled and disposed of as instructed.
- Report side effects early; many are manageable with supportive medicines.

## 12. When to see the doctor

- Any warning sign lasting more than 2 to 3 weeks
- A new lump, bleeding or persistent change
- Mouth sores, diarrhoea, vomiting, or poor intake during treatment
- New pain, cough, or weight loss after treatment
- Scheduled screening: breast, cervix, oral and colon screening as per age and risk
- Follow-up visits as set by the oncologist

## 13. When to go to Emergency

- Fever of 38.0 °C (100.4 °F) or above during or soon after chemotherapy
- Uncontrolled bleeding, severe breathlessness, chest pain
- Persistent vomiting or diarrhoea with dehydration
- New weakness in legs or loss of bladder or bowel control
- Confusion, seizures, severe headache
- Swollen, painful, red leg or arm (possible clot)

## 14. Frequently asked questions

**Is cancer always fatal?** No. Many cancers are cured, and many others are controlled for years.

**Is cancer contagious?** No.

**Does a biopsy spread cancer?** No; it is a necessary and safe step.

**Can I continue working?** Many people can, with adjustments; discuss with your team.

**Should the patient be told the diagnosis?** Honest, compassionate communication usually helps decision-making and trust; the family may discuss how to share it with the oncologist.

### 15. Patient checklist

- [ ] Diagnosis, stage and treatment plan understood
- [ ] Copies of biopsy, scan and treatment records kept
- [ ] 24-hour emergency number of the cancer team saved
- [ ] Fever rule known (38.0 °C or above)
- [ ] Nutrition and weight monitored
- [ ] Tobacco and alcohol stopped
- [ ] Support person and counselling arranged
- [ ] Screening up to date for family members

### 16. References and revision date

- General guidance drawn from NCCN, ESMO and ASCO patient resources, WHO cancer fact sheets, ICMR National Cancer Registry Programme and the Indian National Cancer Grid.
- Clinical review by Dr Kulkarni: pending.
- Revision date: 2 November 2026.

## 14. Palliative Care

### 1. What is it?

Palliative care is specialised care for people living with a serious or life-limiting illness, such as advanced cancer, heart failure, COPD, kidney failure, dementia or stroke. Its goal is to relieve pain and other distressing symptoms and to support the patient and the family physically, emotionally, socially and spiritually. It can be given from the time of diagnosis, together with disease-directed treatment. **It is not the same as giving up, and it is not only for the last days of life.** End-of-life care is one part of palliative care.

### 2. Why does it happen?

Palliative care is needed because serious illnesses cause suffering that treatment of the disease alone does not remove:

- Pain, breathlessness, nausea, constipation, tiredness, poor appetite
- Anxiety, depression, fear, sleeplessness
- Strain on the family, financial worries, caregiver exhaustion
- Difficult decisions about hospital stays, ventilators, feeding tubes and resuscitation
- Spiritual and cultural questions about illness and death

## 3. Who is more likely to need it?

- Patients with advanced cancer
- Advanced heart, lung, liver or kidney failure
- Advanced dementia, Parkinson's disease, stroke with severe disability, motor neuron disease
- Frail elderly patients with repeated hospital admissions and declining function
- People with HIV or advanced tuberculosis in later stages
- Children with life-limiting conditions
- Anyone whose symptoms are difficult to control

## 4. Early symptoms (signs that palliative care can help)

- Symptoms that remain hard to control despite treatment (pain, breathlessness, vomiting)
- Frequent hospital admissions, or declining ability to do daily activities
- Weight loss, poor appetite, extreme tiredness
- Distress, low mood, anxiety or sleep problems in the patient or family
- Family uncertainty about the goals of treatment
- A doctor saying "we have limited options" or the patient wishing to stay at home

## 5. Serious (red-flag) symptoms

- Severe uncontrolled pain, breathlessness or agitation
- Repeated vomiting, inability to take medicines
- Sudden confusion or restlessness
- Fits, bleeding, choking
- Caregiver crisis: no one to care, or unsafe home situation
- Expressions of hopelessness or wish to end life (needs immediate, caring attention)

## 6. Useful assessments

- Symptom assessment using simple scales (pain score 0 to 10, breathlessness, nausea, tiredness, appetite)
- Functional status (for example, ability to walk, bathe, eat)
- Review of medicines and treatments that are no longer helping
- Assessment of mood, sleep and spiritual needs
- Caregiver and family assessment, including finances and home setup
- Review of the patient's wishes, values and understanding of illness

## 7. How to understand your plan

- A **goals-of-care discussion** records what matters most to the patient: for example staying at home, being pain-free, attending a family event, or continuing treatment as long as there is benefit.
- **Advance care planning** records who will make decisions if the patient cannot, and preferences about interventions.
- **"Do Not Attempt Resuscitation" (DNAR)** means no CPR if the heart stops; it does not mean stopping other care. In India, the Supreme Court has recognised living wills and passive euthanasia procedures, and a palliative care team or hospital can explain the local process.
- Medicines such as opioids are described in terms of dose, timing and rescue doses; written schedules help families.
- A good palliative care plan is reviewed regularly, as needs change.

## 8. Main types of treatment

- **Pain relief:** paracetamol, NSAIDs where suitable, and oral morphine or other opioids for moderate to severe pain, with medicines for constipation and nausea; nerve blocks and radiotherapy for selected pain.
- **Breathlessness:** treatment of the cause, a fan, positioning, oxygen if low oxygen, low-dose opioids and relaxation techniques.
- **Other symptoms:** antiemetics, laxatives, mouth care, medicines for anxiety, sleep and depression, steroids for appetite and swelling in selected cases.
- **Psychological, social and spiritual support** and counselling.
- **Care coordination:** home-based care, day-care, hospice and hospital teams.
- **End-of-life care** with comfort, dignity, family presence and rituals respected.

## 9. Care at home

- Give pain medicines **regularly by the clock** as prescribed, not only when pain is severe; keep the extra "rescue" dose available.
- Keep a symptom diary: pain score, bowel movements, sleep, appetite, breathlessness.
- Keep the room calm, clean and well ventilated; keep familiar people and objects nearby.
- Mouth care, skin care and repositioning every 2 hours for bed-bound patients.
- Offer small sips and soft favourite foods; do not force feed.
- Store opioid medicines safely under lock and key and follow the dose strictly.
- Keep important numbers and the patient's wishes where all family members can see them.
- Share caring duties; rest and ask for help.

## 10. Diet and lifestyle

- Eat what the patient enjoys, in small amounts, as often as wanted; appetite falls naturally in advanced illness.
- Thick or soft food if swallowing is difficult; sit upright for meals.
- Keep lips and mouth moist; offer ice chips or sips of water.
- Gentle activities, music, prayer, storytelling, short visits from loved ones and pets.
- Allow the patient to make as many choices as possible about the day.
- Caregivers should maintain their own meals, sleep and breaks.

## 11. Medicine precautions

- **Opioids** (morphine and others) are safe and effective when used as prescribed for pain and breathlessness; fear of addiction should not stop use in serious illness.
- Expect drowsiness at the start, which usually settles in a few days; constipation always needs a laxative alongside the opioid.
- Do not stop opioids suddenly after long use; the team will guide changes.
- Report excessive sleepiness, slow breathing, confusion or vomiting.
- Do not give extra doses of sedatives or painkillers without the team's advice.
- Keep medicines safely away from children and unauthorised persons; dispose of leftover opioids as the team advises.
- Check availability of opioids in advance, as supply can require licensed pharmacies and prescriptions.

## 12. When to see the doctor

- Any new or worsening symptom
- Pain not controlled by the current plan
- Constipation for more than 2 days, repeated vomiting, or poor sleep
- Low mood, anxiety or hopelessness
- Caregiver exhaustion or difficulty coping
- Whenever the patient's goals change, or before hospital admission, to revisit the plan

## 13. When to go to Emergency

First call the palliative care team or home-care doctor, if one is involved. Go to hospital or call 112 if:

- Severe uncontrolled pain, breathlessness or agitation not settling with the rescue plan
- Heavy bleeding, choking, or a fit that does not stop
- Sudden inability to wake the patient (check against the usual drowsiness pattern)
- The patient and family wish to be in the hospital for the final days and the plan supports it
- Carry the patient's wishes, DNAR or advance care documents, medicine list and doctor contact.

## 14. Frequently asked questions

**Does palliative care mean the doctor has given up?** No. It adds an extra layer of support and can be given with treatment.

**Will morphine shorten life or make the patient addicted?** When used properly for pain or breathlessness, it does not shorten life and addiction is not a concern.

**Is it wrong to stop forcing food and fluids in the last days?** The body's need falls at the end of life; comfort is the priority, and the care team can guide the family.

**Can the patient die at home?** Yes, many families prefer it and can be supported with home palliative care.

**How do we talk to the patient about the illness?** Gently, honestly, at the patient's pace, with the team's support.

## 15. Patient and family checklist

- [ ] Palliative care team contact saved
- [ ] Symptom diary kept

- [ ] Pain medicines by the clock, with rescue dose and laxative
- [ ] Goals of care and preferences discussed and written down
- [ ] Decision-maker identified
- [ ] Home equipment (bed, mattress, oxygen if needed) arranged
- [ ] Caregiver relief and support arranged
- [ ] Spiritual or cultural wishes noted

### 16. References and revision date

- General guidance drawn from the WHO definition of palliative care, the Indian Association of Palliative Care guidelines, the National Programme for Palliative Care (India), and the Lancet Commission on global access to palliative care.
- Clinical review by Dr Kulkarni: pending.
- Revision date: 2 November 2026.

## 15. Dementia

### 1. What is it?

Dementia is not a single disease. It is a group of conditions in which memory, thinking, language, judgement and behaviour decline enough to interfere with daily life. It is **not a normal part of ageing**: occasional forgetfulness is common, but dementia progressively affects the ability to manage money, cook, travel, dress or recognise people. The most common type is Alzheimer's disease; others include vascular dementia, Lewy body dementia and frontotemporal dementia.

### 2. Why does it happen?

- **Alzheimer's disease:** abnormal protein deposits (amyloid and tau) that damage brain cells
- **Vascular dementia:** after strokes or small-vessel disease from hypertension, diabetes and cholesterol
- **Lewy body dementia:** protein deposits causing fluctuating thinking, hallucinations and movement problems
- **Frontotemporal dementia:** changes in personality and language, often at a younger age
- **Treatable or reversible causes:** vitamin B12 deficiency, hypothyroidism, depression, normal pressure hydrocephalus, brain tumour, chronic infections, medicine side effects, alcohol, subdural haematoma

## 3. Who is more likely to get it?

- People above 65, risk increasing with age
- Family history of dementia
- Hypertension, diabetes, high cholesterol, obesity, tobacco, heavy alcohol
- Stroke, heart disease, atrial fibrillation
- Hearing loss, depression, social isolation, low education and physical inactivity
- Head injury
- Down syndrome

## 4. Early symptoms

- Forgetting recent events, repeating questions, misplacing things
- Difficulty finding words, following conversations or planning
- Getting lost in familiar places
- Trouble handling money, bills, medicines or cooking
- Mood changes: apathy, irritability, anxiety, depression
- Reduced interest in hobbies and social life
- Poor judgement, e.g., falling for scams

## 5. Serious (red-flag) symptoms

- **Sudden** confusion over hours to days (this is usually **delirium**, due to infection, dehydration, medicines or illness, and needs urgent care)
- Wandering and getting lost, unsafe use of gas, stove or medicines
- Aggression, hallucinations, paranoia
- Falls, difficulty swallowing, weight loss
- Rapid decline over weeks to months
- Sudden weakness, speech trouble, or severe headache
- Signs of abuse or neglect, or caregiver breakdown

## 6. Useful tests

- Detailed history from a family member
- Cognitive screening tests: MMSE, MoCA, or Indian-adapted tools such as the Hindi Mental State Examination or Addenbrooke's
- Blood tests: blood counts, sugar, kidney, liver, thyroid, vitamin B12, folate, calcium, sodium
- MRI or CT of the brain

- Hearing and vision checks, depression screen
- Occasionally: EEG, spinal fluid tests, amyloid or tau tests, PET scans
- Review of all medicines

## 7. How to understand your reports

- A cognitive score (for example MoCA below 26 out of 30) suggests impairment, but results depend on education, language and mood; the doctor interprets them.
- **Mild cognitive impairment (MCI)** means a noticeable decline that still allows independent living; some patients progress to dementia, others remain stable or improve.
- Brain scans may show shrinkage, small-vessel changes or old strokes; "age-related changes" in a report do not always mean dementia.
- Blood tests look for **treatable causes**; correcting them may improve thinking.
- Dementia is staged as mild, moderate and severe, depending on how much help is needed with daily life.

## 8. Main types of treatment

- There is currently **no cure**, but care can improve quality of life.
- **Medicines:** cholinesterase inhibitors (donepezil, rivastigmine, galantamine) and memantine can slow symptoms in some patients with Alzheimer's disease and related dementias; newer anti-amyloid antibody treatments exist for selected early patients, with specific risks and monitoring needs.
- Control of vascular risk factors (BP, sugar, cholesterol) and treatment of depression.
- **Non-drug care:** routine, cognitive stimulation, physical activity, music, reminiscence and occupational therapy.
- Behavioural symptoms are handled first by finding the trigger (pain, infection, noise, hunger, constipation) before using medicines.
- Support, respite and counselling for the caregiver.

## 9. Care at home

- Keep a **predictable daily routine** with regular meal, bath and sleep times.
- Use clocks, calendars, labelled cupboards and a notice board; keep things in the same place.
- Make the home safe: remove loose rugs, add grab bars, night lights, lock up medicines, knives and chemicals, use a gas auto-shutoff or stove timer.
- Prevent wandering: ID bracelet with name and phone, door alarms, recent photo; inform neighbours.

- Use simple words, one step at a time, calm voice and eye contact; do not argue or correct harshly.
- Supervise medicines using a pill box.
- Encourage walks, social contact and daytime light; limit afternoon naps.
- Watch for pain, constipation, urinary infection, poor sleep and low mood, which worsen confusion.

## 10. Diet and lifestyle

- Eat a heart-healthy diet with vegetables, fruits, pulses, whole grains, fish and nuts; limit salt, sugar and fried food.
- Keep BP, sugar and cholesterol controlled.
- 150 minutes of exercise a week, as ability allows.
- Stay mentally and socially active: conversation, puzzles, music, temple or community visits.
- Treat hearing loss and wear spectacles.
- No tobacco, minimal alcohol.
- Adequate fluids and finger foods in later stages when using utensils is difficult.

## 11. Medicine precautions

- Cholinesterase inhibitors may cause nausea, diarrhoea, weight loss and slow heartbeat; report fainting or very slow pulse.
- Memantine can cause dizziness or constipation.
- Avoid **anticholinergic and sedating medicines** where possible (some antihistamines such as chlorpheniramine, sleeping pills, benzodiazepines, bladder medicines, older antidepressants), because they worsen memory and confusion.
- Antipsychotics increase the risk of stroke and death in dementia; they are used only for severe, dangerous distress after other measures fail, at the lowest dose and for the shortest time.
- Keep a single updated list of medicines and review it with the doctor regularly.
- Do not stop medicines suddenly.

## 12. When to see the doctor

- Memory or behaviour changes that affect daily life
- Worsening confusion, agitation or hallucinations
- Falls, weight loss, poor intake or sleep reversal
- Caregiver stress, depression or burnout

- Planning legal and financial affairs while the patient can still take part
- Regular review every 3 to 6 months

## 13. When to go to Emergency

- Sudden confusion or drowsiness, fever or severe illness (possible delirium)
- Fall with head injury, or new weakness, speech difficulty or severe headache
- Refusal to eat or drink, with dehydration
- Dangerous behaviour: aggression with risk of harm, suicidal talk
- A person with dementia who is missing: call the police and 112 at once

## 14. Frequently asked questions

**Is forgetfulness a sign of dementia?** Not always; stress, poor sleep, depression, thyroid problems and B12 deficiency can also cause it. Get it checked.

**Can dementia be prevented?** Not always, but controlling BP, sugar, hearing and activity lowers the risk.

**Should we tell him he is wrong when he forgets?** Gently reassure and redirect rather than correct.

**Is it safe for the patient to live alone?** Usually not once safety is affected; supervised arrangements are needed.

**Should we move to a care home?** This is a personal decision; consider it when home care is no longer safe or sustainable.

## 15. Patient and caregiver checklist

- [ ] Diagnosis and cause reviewed
- [ ] Treatable causes tested (B12, thyroid)
- [ ] Daily routine and home safety arranged
- [ ] Medicines supervised
- [ ] ID bracelet and wandering plan
- [ ] Hearing, vision, mood, pain and bowel checks
- [ ] Power of attorney, will and finances arranged
- [ ] Caregiver support and respite plan

### 16. References and revision date

- General guidance drawn from WHO dementia fact sheets, the Lancet Commission on dementia prevention, NICE and AAN dementia guidelines, and the Alzheimer's and Related Disorders Society of India (ARDSI) resources.
- Clinical review by Dr Kulkarni: pending.
- Revision date: 2 November 2026.

## 16. Parkinson's Disease

### 1. What is it?

Parkinson's disease is a slowly progressive disorder of the brain in which the cells that make dopamine, a chemical that helps smooth, controlled movement, gradually die. It causes slowness of movement, stiffness, tremor and balance problems, along with many non-movement symptoms. It is different from **parkinsonism**, a broader term that includes similar symptoms from other causes such as medicines and strokes.

### 2. Why does it happen?

- In most people the exact cause is unknown: a mix of ageing, genetic susceptibility and environmental factors.
- A small proportion (about 10%) have a gene-related or inherited form, more often when it starts before age 50.
- Exposure to pesticides, certain chemicals and head injury may slightly raise the risk.
- **Drug-induced parkinsonism** can occur with medicines such as metoclopramide, haloperidol, prochlorperazine, some anti-nausea and anti-psychotic medicines, and cinnarizine or flunarizine; it often improves after stopping the drug.

### 3. Who is more likely to get it?

- Adults above 60, though about 1 in 10 are diagnosed before 50
- Men slightly more than women
- Family history of Parkinson's disease
- Rural pesticide exposure
- Those with REM sleep behaviour disorder (acting out dreams), loss of smell or long-standing constipation, which may precede the movement symptoms by years

### 4. Early symptoms

- A tremor of one hand at rest, often "pill-rolling", which lessens when the hand is used

- Slowness in daily tasks (buttoning, writing, walking); handwriting becoming small
- Stiffness of limbs, reduced arm swing on one side
- Soft, monotone voice; reduced facial expression ("masked face")
- Shuffling steps, stooped posture
- Loss of smell, constipation, poor sleep, low mood, anxiety

## 5. Serious (red-flag) symptoms

- Frequent falls or freezing of gait (feet feel "stuck")
- Difficulty swallowing, choking, drooling, weight loss
- Hallucinations, confusion or severe memory problems
- Fainting or dizziness on standing (low BP)
- Sudden stiffness, fever and confusion after stopping medicine (a dangerous withdrawal state)
- Severe depression or suicidal thoughts

## 6. Useful tests

- Diagnosis is mainly **clinical**, based on examination by a neurologist.
- MRI brain to exclude other causes
- Blood tests (including thyroid, B12, copper tests in young patients)
- DaT scan in uncertain cases
- Swallowing study, sleep study, cognitive screening as needed
- A trial of levodopa response can support the diagnosis
- Review of all current medicines to exclude drug-induced parkinsonism

## 7. How to understand your reports

- MRI is often **normal** in Parkinson's disease; it is done to exclude other conditions.
- A DaT scan shows reduced dopamine transporter activity in Parkinson's and similar disorders; it does not separate them from each other.
- The doctor may use stages (Hoehn and Yahr 1 to 5) or the UPDRS scale to describe severity.
- "On" time means medicines are working and "off" time means symptoms return; a diary of these periods helps your doctor adjust treatment.
- Improvement after levodopa supports the diagnosis.

## 8. Main types of treatment

- **Levodopa with carbidopa** is the most effective medicine for movement symptoms.
- Other medicines: dopamine agonists (pramipexole, ropinirole), MAO-B inhibitors (rasagiline, selegiline, safinamide), COMT inhibitors (entacapone), amantadine, and anticholinergics in selected younger patients.
- **Deep brain stimulation (DBS)** surgery for selected patients with troublesome fluctuations or tremor.
- **Physiotherapy** (balance, gait and strength, including LSVT BIG, Tai Chi, dance), **speech therapy** (LSVT LOUD), **occupational therapy** and swallowing therapy.
- Treatment of non-motor symptoms: constipation, mood, sleep, low BP, saliva, memory and hallucinations.
- Palliative support in advanced stages.

## 9. Care at home

- Take medicines **exactly on time**; set alarms. Delayed doses can cause sudden stiffness.
- Exercise daily: walking, stretching, balance practice, and supervised physiotherapy.
- Make the home safe: remove loose rugs, add grab rails and raised toilet seat, use non-slip footwear, bright lighting.
- Use visual or sound cues (counting, marching to music, floor tape lines) to overcome freezing.
- Rise slowly from lying or sitting; sit to dress.
- Practise speaking loudly and clearly; keep sentences short.
- Sit upright to eat, take small bites and chew slowly; tell the doctor about choking.
- Encourage independence while keeping safety.

## 10. Diet and lifestyle

- High-fibre diet (vegetables, fruits, whole grains), plenty of fluids and sometimes a stool softener for constipation.
- **Protein and levodopa:** high-protein meals can reduce levodopa absorption; take levodopa 30 to 60 minutes before meals if advised, and spread protein through the day. Do not cut protein altogether.
- Maintain weight; tremor and rigidity burn energy.
- Vitamin D and calcium for bone health; falls cause fractures.
- Avoid alcohol in excess, and avoid iron or multivitamin tablets at the same time as levodopa.

- Stay socially active; join a support group.

## 11. Medicine precautions

- Never stop levodopa or other Parkinson's medicines suddenly.
- Keep to the same brand and timing as far as possible.
- Levodopa can cause nausea, low BP, dyskinesia (involuntary movements) and, in some, vivid dreams or hallucinations.
- Dopamine agonists can cause sleep attacks, leg swelling and **impulse-control problems** (compulsive gambling, shopping, overeating, hypersexuality); tell the doctor early.
- **Avoid** metoclopramide, domperidone in high doses, prochlorperazine, haloperidol and similar medicines; they worsen Parkinson's. Safer alternatives exist.
- In hospital or before surgery, tell the staff that your medicines must be given on time.
- Do not take iron or high-protein supplements together with levodopa.

## 12. When to see the doctor

- New or worsening symptoms, wearing-off between doses, or involuntary movements
- Falls or near-falls
- Constipation, swallowing difficulty, drooling or weight loss
- Low mood, anxiety, hallucinations, sleep problems, memory problems
- Compulsive behaviours
- Review every 3 to 6 months with a neurologist

## 13. When to go to Emergency

- Fall with injury, head injury, or inability to get up
- Choking or breathing difficulty after food or drink
- Unable to swallow medicines for more than a few hours (inform the doctor about alternatives)
- High fever, severe stiffness and confusion after a missed or stopped dose
- Severe hallucinations, agitation, suicidal thoughts

## 14. Frequently asked questions

**Is Parkinson's curable?** No, but symptoms can be well controlled for many years.

**Is it hereditary?** Mostly not; only a minority have a family link.

**Will I lose the ability to walk?** Many people stay mobile for years with treatment and exercise; planning for later stages helps.

**Is levodopa dangerous or does it lose its effect?** It remains effective; fluctuations can be managed with adjustments.

**Can I drive?** Depends on symptoms such as sleepiness, slowness and vision; discuss with your doctor.

### 15. Patient and caregiver checklist

- [ ] Medicines given on time, alarms set
- [ ] Daily exercise and physiotherapy
- [ ] Home made fall-safe
- [ ] Swallowing and weight monitored
- [ ] Constipation controlled
- [ ] Avoided anti-nausea or anti-psychotic medicines unless approved
- [ ] Mood and sleep reviewed
- [ ] "On/off" diary kept
- [ ] Neurologist follow-up booked

### 16. References and revision date

- General guidance drawn from the International Parkinson and Movement Disorder Society (MDS) guidance, NICE Parkinson's disease guideline, the American Academy of Neurology and the Movement Disorder Society of India resources.
- Clinical review by Dr Kulkarni: pending.
- Revision date: 2 November 2026.

## 17. Osteoporosis

### 1. What is it?

Osteoporosis means "porous bone". The bones lose density and their internal structure weakens, so they break easily, often from a minor fall or even a cough, sneeze or lifting. Fractures of the hip, spine and wrist are the most common. It develops silently over years, and the first sign is often a fracture. Osteopenia is a milder stage of low bone density.

## 2. Why does it happen?

- Bone is constantly renewed; after about age 30 to 35, bone breakdown gradually exceeds bone formation.
- **Menopause:** the fall in oestrogen speeds up bone loss in women.
- In men, testosterone decline and ageing.
- **Vitamin D deficiency** and low calcium intake (very common in India, even with plenty of sunshine, because of skin covering, indoor work and dark skin)
- **Secondary causes:** long-term steroids, thyroid or parathyroid overactivity, diabetes, chronic kidney, liver or intestinal disease, rheumatoid arthritis, some epilepsy medicines, heavy alcohol, tobacco, low body weight, long immobility

## 3. Who is more likely to get it?

- Postmenopausal women (bone loss speeds up sharply in the first years after menopause)
- Men above 65 to 70
- Family history of hip fracture
- Previous fragility fracture
- Low body weight or very low calcium and vitamin D intake
- Long-term steroid users
- Smokers, heavy drinkers, sedentary people
- Early menopause or surgical removal of ovaries

## 4. Early symptoms

- Usually **none**, until a fracture occurs
- Loss of height by more than 3 to 4 cm
- Increasing stoop or rounded upper back (kyphosis)
- Chronic back pain
- Fractures from minor falls

## 5. Serious (red-flag) symptoms

- Sudden severe back pain after bending or lifting (possible spinal compression fracture)
- Pain in the hip or groin after a fall, inability to bear weight (possible hip fracture)
- Wrist or arm pain and deformity after a fall
- Back pain with leg weakness or loss of bladder or bowel control

- Fracture after trivial injury

## 6. Useful tests

- **DEXA scan** (bone density test) of the spine and hip
- Fracture risk calculator (FRAX)
- X-ray or MRI of the spine if fracture suspected
- Blood tests: calcium, phosphate, vitamin D (25-OH), PTH, kidney and liver function, thyroid function, testosterone in men
- Celiac disease and other tests when there are no obvious causes
- Bone turnover markers in selected cases

## 7. How to understand your reports

| DEXA T-score | Meaning |
|---|---|
| -1.0 or higher | Normal bone density |
| Between -1.0 and -2.5 | Osteopenia (low bone mass) |
| -2.5 or lower | Osteoporosis |
| -2.5 or lower with a fragility fracture | Severe osteoporosis |

- T-score compares you with a healthy young adult; **Z-score** compares you with people of your age and is used in younger people.
- Any **fragility fracture** of the hip or spine means osteoporosis even if the scan is not in the osteoporosis range.
- Vitamin D levels below 20 ng/mL are generally regarded as deficient; 30 ng/mL or higher is a common target.
- The scan should be repeated on the same machine for comparison, usually every 1 to 2 years if on treatment.
- Spine scans may overestimate bone density if there is arthritis or fractures.

## 8. Main types of treatment

- **Calcium and vitamin D** supplementation, if intake is inadequate.
- **Bisphosphonates** (alendronate, risedronate, zoledronic acid) are the most widely used first-line medicines.
- **Denosumab** injection every 6 months; it must not be stopped abruptly.
- **Anabolic medicines** (teriparatide, romosozumab) for very high-risk patients.

- **Hormonal options** (raloxifene, and menopausal hormone therapy in selected women).
- Treatment of the underlying cause (thyroid, parathyroid, vitamin D deficiency).
- Surgery for hip fractures, and vertebroplasty or kyphoplasty in selected spine fractures.
- Fall-prevention programmes and physiotherapy.

## 9. Care at home

- Fall-proof the home: remove loose rugs and wires, install grab bars, non-slip mats, night lights, sturdy handrails.
- Wear well-fitting shoes with non-slip soles; avoid walking in socks.
- Use a walking aid if recommended.
- Check vision and hearing, and review medicines that cause dizziness.
- Lift with the knees bent and back straight; avoid sudden twisting and forward bending, and heavy lifting.
- Take bone medicine exactly as instructed (for example, weekly alendronate on an empty stomach with a full glass of water, staying upright for 30 minutes).
- Get 15 to 30 minutes of sunlight on the arms and legs, around midday, a few days a week, where safe.

## 10. Diet and lifestyle

- **Calcium:** about 1000 to 1200 mg a day for adults, mostly from food: milk, curd, paneer, ragi, sesame, almonds, green leafy vegetables, small fish with bones, fortified foods. Supplements make up the difference.
- **Vitamin D:** about 600 to 800 IU per day is usual; more may be prescribed for deficiency.
- Adequate protein.
- Weight-bearing and strength exercises: walking, stair climbing, light weights, balance and Tai Chi or yoga as safe for the spine.
- Avoid tobacco; limit alcohol, and excess cola drinks, coffee and tea.
- Maintain healthy weight.

## 11. Medicine precautions

- **Oral bisphosphonates** can irritate the food pipe: take with plain water, stay upright, and report difficulty or pain on swallowing. Tell your dentist before dental extractions or implants.
- Rarely, long-term bisphosphonates cause jaw problems (osteonecrosis) or unusual thigh fractures; report new thigh, groin or jaw pain.

- **Denosumab:** do not miss or delay doses; stopping suddenly can cause multiple spine fractures.
- Calcium supplements may cause constipation and gas; avoid taking more than 500 to 600 mg at a time; excess calcium can cause kidney stones.
- Separate calcium from thyroid tablets and some antibiotics by at least 4 hours.
- Check kidney function and calcium before starting treatment.
- Do not use steroids, PPIs and certain other drugs longer than necessary without review.

## 12. When to see the doctor

- Women past menopause and men above 65 to 70, or younger with risk factors, for bone density testing
- Loss of height, stooped posture, new back pain
- Any fracture from a minor fall
- Starting long-term steroids
- Side effects of bone medicines or dental work planned
- Review every 6 to 12 months, and DEXA every 1 to 2 years

## 13. When to go to Emergency

- Fall followed by severe pain, deformity, or inability to stand or walk (suspected hip fracture)
- Sudden severe back pain with weakness or numbness in the legs
- Loss of bladder or bowel control
- Head injury, especially in those on blood thinners
- Difficulty or severe pain on swallowing, or chest pain while on a tablet bisphosphonate

## 14. Frequently asked questions

**Can bones become strong again?** Medicines and exercise can increase bone density and reduce fracture risk by 30% to 70%.

**Is osteoporosis just calcium deficiency?** No. Calcium, vitamin D, hormones, exercise and other factors all matter.

**Is sunlight enough for vitamin D?** Often not; many people still need supplements.

**Can men get osteoporosis?** Yes, though later in life.

**Should I avoid exercise for fear of fractures?** No; the right exercise is an essential part of treatment.

### 15. Patient checklist

- [ ] DEXA scan and vitamin D level known
- [ ] Calcium and vitamin D intake adequate
- [ ] Bone medicine taken as instructed
- [ ] Home fall-proofed
- [ ] Daily weight-bearing exercise
- [ ] Eyesight, hearing and medicines reviewed
- [ ] Tobacco stopped, alcohol limited
- [ ] Dentist told about bone medicines
- [ ] Follow-up and repeat DEXA booked

### 16. References and revision date

- General guidance drawn from the International Osteoporosis Foundation, the Endocrine Society and NOF/BHOF guidelines, the Indian Society for Bone and Mineral Research (ISBMR), and the WHO fracture risk assessment (FRAX).
- Clinical review by Dr Kulkarni: pending.
- Revision date: 2 November 2026.

## 18. Frailty

### 1. What is it?

Frailty is a state of reduced strength and reserve in older age, in which the body struggles to recover from even small stresses such as an infection, a minor fall, a new medicine or a hospital stay. A frail person may look "stable" but can deteriorate quickly. Frailty is **not the same as old age or disability**, and it is not a diagnosis of a single disease; it is a pattern that can often be slowed, and sometimes improved, with the right care.

### 2. Why does it happen?

- Natural ageing of muscles, nerves, hormones and immunity
- **Sarcopenia** (loss of muscle mass and strength)
- Poor nutrition and weight loss
- Several chronic diseases together: diabetes, heart, lung, kidney disease, arthritis, anaemia

- Low physical activity and prolonged bed rest
- Depression, loneliness, poor sleep, cognitive decline
- Many medicines (polypharmacy), poor vision or hearing
- Poverty and lack of support

## 3. Who is more likely to get it?

- Adults above 65, and the risk rises steeply after 80
- Women more than men
- Those with multiple chronic illnesses or recent hospital admissions
- People living alone or with little social support
- Those with poor diet, low protein intake or low vitamin D
- People with dementia, depression or recent falls
- Long-term tobacco or alcohol users

## 4. Early symptoms

A simple screen (the Fried phenotype) looks for these five features; having three or more means frailty, one or two means pre-frailty:

- Unintentional weight loss (about 4.5 kg or 5% in a year)
- Self-reported exhaustion
- Weak grip strength
- Slow walking speed
- Low physical activity

Other early signs: taking longer for daily tasks, needing a rest to climb stairs, recurrent small falls, reduced appetite.

## 5. Serious (red-flag) symptoms

- Recent fall, fracture or unable to get up
- New confusion or drowsiness (delirium) after an infection, medicine or surgery
- Rapid weight loss, refusal to eat or drink
- Pressure sores, incontinence, repeated infections
- Loss of ability to walk or care for self over days to weeks
- Signs of neglect, abuse or severe caregiver strain

## 6. Useful tests

- **Comprehensive geriatric assessment** (CGA): medical problems, medicines, mobility, thinking, mood, nutrition, vision, hearing, continence, home and social situation
- Frailty scores: Clinical Frailty Scale (1 to 9), Fried phenotype, FRAIL scale
- Simple measures: grip strength, 4-metre gait speed, Timed Up and Go, sit-to-stand test
- Blood tests: haemoglobin, kidney function, albumin, vitamin D, B12, thyroid, sugar
- Weight and BMI, mini nutritional assessment (MNA)
- Cognitive and depression screening; bone density if indicated

## 7. How to understand your reports

- On the **Clinical Frailty Scale**, 1 to 3 means fit to managing well, 4 means very mildly frail (vulnerable), 5 to 6 means mild to moderate frailty (needs help with some daily tasks), 7 to 9 means severe frailty to terminally ill.
- Gait speed below about 0.8 m per second, a grip strength below about 27 kg in men or 16 kg in women, or taking more than about 12 to 15 seconds in the Timed Up and Go test points toward weakness and a higher risk of falls.
- A low albumin or low BMI may indicate poor nutrition or illness.
- Frailty scores guide decisions about surgery, intensity of treatment and care planning; they are not a judgement of the person's worth.
- Scores can improve with exercise, nutrition and better medicine management.

## 8. Main types of treatment

- **Exercise programme:** progressive resistance (strength), balance, walking and flexibility training, ideally supervised by a physiotherapist
- **Nutrition:** adequate calories and protein, vitamin D and B12 correction, dental and swallowing care
- **Medication review** (deprescribing) to remove unnecessary or harmful medicines
- Treatment of chronic illnesses at realistic goals, avoiding over-treatment
- Correction of vision and hearing problems, mood treatment, pain control
- Fall prevention and home modification
- Social support, day-care, caregiver support
- Advance care planning and palliative care input when needed

## 9. Care at home

- Keep the person active: walking several times a day, standing up from a chair repeatedly, household tasks.
- Make the home safe and bright; remove clutter and trip hazards; use grab bars, raised toilet seat and a shower chair.
- Watch for small changes: appetite, weight, sleep, mood, walking speed, and new confusion.
- Use a pill organiser and keep a current medicine list.
- Stay hydrated; offer fluids regularly in hot weather.
- Keep social contacts: visits, phone calls, community centres, religious or social activities.
- Maintain vaccinations and regular health checks.
- Respect the person's preferences and dignity.

## 10. Diet and lifestyle

- Eat three meals plus snacks; do not diet to lose weight unless advised.
- **Protein** at each meal (about 1.0 to 1.2 g per kg per day, higher if advised): dal, pulses, milk, curd, paneer, eggs, fish, chicken, nuts, soy.
- Include fruits, vegetables, whole grains and healthy fats.
- Vitamin D, calcium and B12 as prescribed; sunlight exposure.
- Manage dental problems and dentures, which often limit eating.
- Regular exercise, at least 150 minutes per week of moderate activity plus strength and balance work 2 to 3 times a week, as tolerated.
- No tobacco, minimal alcohol; good sleep routine.

## 11. Medicine precautions

- Review all medicines at least yearly, or after every hospital admission.
- Be cautious with sleeping pills, anti-anxiety drugs (benzodiazepines), sedating antihistamines, older antidepressants and strong painkillers, which cause drowsiness and falls.
- Avoid over-tight control of sugar and BP, which can cause dizziness, hypoglycaemia and falls; targets should be individualised.
- Avoid NSAIDs; be careful with drugs that affect the kidneys.
- Take only prescribed herbal products, after discussion.
- Do not stop medicines suddenly; ask the doctor.

## 12. When to see the doctor

- Unintentional weight loss, reduced appetite or increasing tiredness
- Slower walking, new difficulty with daily tasks, or recurrent falls
- New confusion, mood change or social withdrawal
- Medicine side effects, dizziness or fainting
- Caregiver stress
- A comprehensive geriatric assessment every year, or after any major illness

## 13. When to go to Emergency

- Fall with injury, head strike, severe pain, or inability to stand
- Sudden confusion, drowsiness or change in behaviour
- Fever with poor intake or breathlessness
- Not eating or drinking for a day, very little urine
- Chest pain, fainting, sudden weakness

## 14. Frequently asked questions

**Is frailty reversible?** It can be slowed and partly reversed in early stages with exercise, nutrition and medicine review.

**Should a frail person rest more?** No; inactivity makes frailty worse. Safe, regular movement is treatment.

**Is surgery safe for a frail person?** It can be, with proper assessment and preparation; frailty raises risk and recovery time, so discuss it with the team.

**Do supplements and tonics cure frailty?** No. Food, exercise and addressing causes matter more.

**Is frailty the same as dementia?** No, but they often occur together.

## 15. Patient and caregiver checklist

- [ ] Weight and appetite tracked monthly
- [ ] Daily walking and strength exercises
- [ ] Protein at every meal
- [ ] Medicines reviewed by the doctor
- [ ] Vision, hearing and teeth checked
- [ ] Home made safe
- [ ] Vaccinations updated

- [ ] Mood and social contact reviewed
- [ ] Care preferences discussed with the family

### 16. References and revision date

- General guidance drawn from the Fried frailty phenotype, the Clinical Frailty Scale (Rockwood), WHO ICOPE guidance on integrated care for older people, the British Geriatrics Society and the Indian Association of Geriatrics guidance.
- Clinical review by Dr Kulkarni: pending.
- Revision date: 2 November 2026.

## 19. Falls in the Elderly

### 1. What is it?

A fall is an event in which a person unintentionally comes to rest on the ground or a lower level. Falls are one of the commonest reasons for injury, fracture, hospital admission and loss of independence in older adults. About one in three people above 65 falls at least once a year. Falls are **not a normal part of ageing**; there is almost always a reason, and many falls can be prevented. A fall can also cause a fear of falling that makes a person stop moving, which then increases weakness.

### 2. Why does it happen?

Falls usually result from several factors together:

- **Body factors:** weak muscles, poor balance, slow reflexes, arthritis, foot problems, poor vision or hearing, dizziness
- **Medical conditions:** low BP on standing (postural hypotension), heart rhythm problems, diabetes with low sugar, stroke, Parkinson's disease, dementia, neuropathy, anaemia, infections, dehydration, urinary urgency and night-time toilet visits
- **Medicines:** sleeping pills, anti-anxiety drugs, antidepressants, antipsychotics, blood pressure and diabetes medicines, diuretics, strong painkillers, and taking four or more medicines
- **Alcohol**
- **Environment:** slippery floors, loose rugs, poor lighting, stairs without railings, wet bathrooms, cluttered rooms, wires, pets, ill-fitting footwear

### 3. Who is more likely to fall?

- Adults above 65, and above 80 especially

- A person who has fallen before
- Those with frailty, weak legs, walking problems or a fear of falling
- People with dementia, stroke, Parkinson's disease or neuropathy
- Those taking multiple medicines, especially sedatives
- People with poor vision or hearing
- Those living alone or in unsafe housing

## 4. Early symptoms (warning signs)

- Near-falls or stumbling, holding on to furniture while walking
- Dizziness or light-headedness on standing
- Unsteady walking, shuffling, dragging feet
- Fear of falling and reduced outings
- Difficulty rising from a chair without using hands
- New leg weakness, numbness or confusion

## 5. Serious (red-flag) symptoms

- Pain in the hip, groin, back, wrist or head after a fall; inability to stand or bear weight
- Head injury, especially if the person is on blood thinners, or has headache, vomiting, drowsiness or confusion later
- Fainting or blackout before the fall
- Chest pain, palpitations or breathlessness with the fall
- Weakness, numbness or speech difficulty before or after the fall
- Lying on the floor for a long time (risk of pressure sores, dehydration, kidney injury)

## 6. Useful tests

- **Fall assessment** by a doctor: history of the fall, medicines, vision, hearing, feet
- Lying and standing BP (after 1 and 3 minutes)
- Gait and balance tests: Timed Up and Go, 30-second chair stand, 4-stage balance test
- Blood tests: haemoglobin, sugar, kidney function, electrolytes, vitamin D, B12, thyroid
- ECG and, if needed, Holter monitoring or echocardiography
- X-ray, CT or MRI if injury, stroke or other causes suspected
- Bone density (DEXA) test and a vision check

## 7. How to understand your reports

- A **drop of 20 mmHg or more in systolic BP** (or 10 mmHg in diastolic) within 3 minutes of standing means postural hypotension.
- A **Timed Up and Go** time above about 12 seconds suggests a higher risk of falls.
- Inability to rise five times from a chair in under about 15 seconds suggests leg weakness.
- Low vitamin D, anaemia, low sodium or abnormal sugar may point to treatable contributors.
- A normal ECG does not rule out a rhythm problem that comes and goes.
- A DEXA T-score of -2.5 or below means any fall carries a high fracture risk.

## 8. Main types of treatment

- **Exercise:** strength, balance and gait programmes, Tai Chi, yoga adapted for older adults, ideally group or physiotherapy supervised
- **Medicine review** and removal of unnecessary or sedating medicines
- Treatment of causes: postural hypotension, heart rhythm problems, anaemia, vision problems (cataract surgery, correct spectacles), foot care, urinary problems
- **Vitamin D and calcium**, and osteoporosis treatment where needed, to lower the chance of fractures
- **Home modification** by an occupational therapist
- Walking aids, hip protectors in selected cases, personal alarms
- Treatment of fractures and rehabilitation after injury

## 9. Care at home

- Improve lighting; use night lights between bedroom and toilet; keep a torch by the bed.
- Remove loose rugs, cords and clutter; fix uneven floor edges; use non-slip mats in the bathroom.
- Install grab bars near the toilet and shower, and handrails on both sides of stairs; use a shower chair and raised toilet seat.
- Keep frequently used items at waist height.
- Wear well-fitting, closed, non-slip footwear; avoid walking in socks or loose slippers.
- Get up slowly: sit on the bed edge for a minute before standing.
- Use the walking aid prescribed; keep a phone within reach.

- **If a fall occurs:** do not rush to lift. Check for pain, injury or head strike. If unhurt, help the person roll to the side, kneel, and then up on a sturdy chair. If injured or unable to get up, call for help and keep the person warm and still.

## 10. Diet and lifestyle

- Maintain adequate protein, calcium and vitamin D; drink enough water during the day, and less in the evening if night-time toilet visits cause risk.
- Exercise regularly: walking, sit-to-stand practice, heel and toe raises, balance practice while holding a support.
- Avoid alcohol.
- Have eyes tested yearly, and ears and feet checked.
- Reduce night-time toilet trips by treating urinary problems and constipation.
- Stay socially active, keep a regular sleep routine, and avoid rushing.

## 11. Medicine precautions

- Do not take sleeping pills, sedating antihistamines or anti-anxiety tablets unless clearly necessary and prescribed.
- BP and diabetes medicines can cause dizziness or low sugar; report dizziness, and do not adjust doses yourself.
- Take a full medicine list to every doctor visit for review.
- Alcohol and sedatives together are especially dangerous.
- Take a vitamin D or calcium supplement only as advised.
- Be cautious with eye drops and medicines that cause blurred vision or sleepiness.
- Tell your doctor if you are taking four or more medicines.

## 12. When to see the doctor

- Any fall, even without injury, especially if it is the second in a year
- Near-falls, unsteady walking, dizziness or fainting
- New fear of walking or going out
- Change in medicines or new sleepiness
- Eyesight or hearing changes
- Yearly falls-risk assessment after the age of 65

## 13. When to go to Emergency

- Severe pain or deformity in a limb, hip or back; unable to stand or walk

- Blow to the head with headache, vomiting, drowsiness, confusion, bleeding or on blood thinners
- Fainting, chest pain, palpitations, breathlessness
- Sudden weakness, face drooping or speech difficulty
- Cannot get up and has lain on the floor for long
- New incontinence or leg numbness after a fall

## 14. Frequently asked questions

**Are falls inevitable with age?** No. Exercise, medicine review and home changes lower the risk by around 20% to 30%.

**Should an elderly person stay in bed to avoid falling?** No; inactivity weakens muscles and raises risk.

**Should I lift a person who has fallen?** Not until you have checked for injury; unsafe lifting can worsen it.

**Do hip protectors help?** They may reduce hip fractures in nursing-home settings and selected people.

**Do I need a walking stick or walker?** If the doctor or physiotherapist recommends it, and with correct height and training.

## 15. Patient and caregiver checklist

- [ ] Number of falls in the last year noted
- [ ] Lying and standing BP checked
- [ ] Medicine list reviewed
- [ ] Eyes, ears and feet checked
- [ ] Home hazards removed, lighting improved
- [ ] Grab bars and handrails installed
- [ ] Daily strength and balance exercises
- [ ] Bone health (vitamin D, DEXA) reviewed
- [ ] Emergency plan and phone within reach

## 16. References and revision date

- General guidance drawn from the World Falls Guidelines (2022), the WHO Step Safely guidance on falls prevention, the CDC STEADI initiative, NICE falls guideline, and the Indian Association of Geriatrics resources.
- Clinical review by Dr Kulkarni: pending.

- Revision date: 2 November 2026.

# 20. Polypharmacy

## 1. What is it?

Polypharmacy means taking many medicines at the same time, commonly defined as five or more regular medicines (and "hyperpolypharmacy" as ten or more). Many of these medicines may be necessary, but with each added medicine the risk of side effects, drug interactions, mistakes and falls rises. The aim is not to remove all medicines but to make sure every medicine is **appropriate, needed, safe and being taken correctly**. This is called rational prescribing and **deprescribing** (the planned reduction of medicines that no longer help).

## 2. Why does it happen?

- Several long-term conditions (diabetes, hypertension, heart disease, arthritis, thyroid disease) each needing treatment
- Visits to many different specialists, each adding medicines without a full overview
- Side effects treated with more medicines ("prescribing cascade"): for example, a painkiller raises BP, then a BP tablet is added
- Medicines continued long after the original need ended (acid-reducing tablets, sleeping pills, antibiotics, vitamins)
- Self-medication, over-the-counter drugs, and herbal, ayurvedic or homeopathic products taken without telling the doctor
- Pressure from patients or families to "give something" for every symptom
- Buying medicines from different pharmacies without a single list

## 3. Who is more likely to be affected?

- Adults above 65, and especially above 80
- People with three or more chronic illnesses
- Patients recently discharged from hospital
- People seeing multiple doctors or using several pharmacies
- Those with kidney or liver disease, where medicines are cleared slowly
- People with dementia, depression, frailty, or poor vision, who may mis-take medicines
- Residents of care homes, and people using tonics, supplements and traditional remedies

## 4. Early symptoms (signs that medicines may be causing problems)

- New dizziness, unsteadiness, falls, or fainting
- Drowsiness, confusion, forgetfulness, or low mood
- Constipation, dry mouth, nausea, poor appetite
- Difficulty passing urine, or urinary leakage
- New rash, itching, bruising or bleeding
- Swelling of feet, palpitations
- Symptoms that began soon after a new medicine was started or a dose increased

## 5. Serious (red-flag) symptoms

- Fainting, falls, or head injury while on blood thinners
- Severe confusion, hallucinations, or sudden drowsiness
- Black stools, vomiting blood, or heavy bleeding
- Very low sugar (sweating, tremor, unconsciousness)
- Very slow or fast heartbeat
- Rapid breathing, severe vomiting or diarrhoea, very low urine
- Swelling of lips, tongue or throat, wheeze, or a spreading rash with blisters or fever (serious allergic reactions)

## 6. Useful assessments and tests

- A **complete medicine review** ("brown bag review"): bring every tablet, syrup, injection, drop, inhaler, supplement and herbal product to the doctor or pharmacist
- Blood tests: kidney function, liver function, electrolytes, sugar, blood counts
- Lying and standing BP, pulse and ECG as needed
- Screening tools: Beers criteria, STOPP/START criteria, and drug interaction checkers, used by doctors and pharmacists
- Review of how medicines are taken (adherence), including swallowing, vision and memory
- Bone density or falls assessments when sedatives or steroids are used

## 7. How to understand your medicine list

- For each medicine, you should be able to say: **What is it for? What is the dose and timing? How long should I take it? What side effects should I watch for?**
- A medicine without a clear reason (indication) is a candidate for review.

- Duplicate medicines (two brands with the same ingredient, for example two paracetamol products or two BP tablets with the same drug) increase risk.
- Kidney function (eGFR) decides doses of many drugs; an old creatinine report may no longer be valid.
- "Prescribing cascades" and long-term use of proton pump inhibitors, sedatives, anticholinergics, NSAIDs and steroids deserve special review.
- Changes should be made one at a time, with monitoring, never all together.

## 8. Main types of treatment (approach)

- **Structured medication review** at least once a year, and after every hospitalisation, by the doctor with a pharmacist if possible
- **Deprescribing**: slowly stopping or reducing medicines that are no longer needed or are likely to harm more than help, with a plan to watch for withdrawal or relapse
- **Simplifying** the schedule: once-daily forms, combination tablets where appropriate, aligning dosing times
- **Substituting** safer alternatives (for example paracetamol instead of NSAIDs)
- Using non-drug measures where suitable: exercise, diet, sleep hygiene, physiotherapy, counselling
- **One main coordinating doctor** and one pharmacy
- Medicine charts, pill organisers, reminders and caregiver supervision

## 9. Care at home

- Keep **one up-to-date written list** of all medicines (name, dose, time, purpose, prescriber) and carry it, along with a photo on the phone.
- Use a weekly pill organiser filled by one responsible person; set alarms.
- Store medicines in a cool, dry place away from sunlight, in original packs; check expiry dates monthly and discard expired medicines safely.
- Do not share medicines with others; do not use leftover medicines from past illnesses.
- Do not crush or break tablets unless the pharmacist says it is safe.
- Keep a diary of new symptoms and the date they began.
- Take all medicines to every appointment, and ask: "Do I still need each one?"

## 10. Diet and lifestyle

- Good diet, exercise, weight control and sleep reduce the need for many medicines (BP, sugar, cholesterol, joint pain, constipation, heartburn).

- Some foods interact with medicines: grapefruit with some statins and calcium channel blockers; leafy greens with warfarin (keep intake steady); dairy and iron or calcium with some antibiotics and thyroid tablets; alcohol with sedatives, paracetamol, metformin and many others.
- Stay hydrated, especially if on diuretics, ACE inhibitors, ARBs or SGLT2 inhibitors.
- Avoid tobacco and limit alcohol.
- Do not use tonics, "immunity boosters" and multi-supplements without a clear need.
- Manage pain and sleep with non-drug methods first where possible.

## 11. Medicine precautions

- Never stop prescribed medicines suddenly on your own: abrupt stopping of beta-blockers, steroids, antiepileptics, antidepressants, clonidine or benzodiazepines can be dangerous. Any reduction should be guided by the doctor.
- Avoid regular use of NSAIDs (diclofenac, ibuprofen), sedating antihistamines (chlorpheniramine), sleeping pills (benzodiazepines, zolpidem), and long-term acid blockers unless clearly needed.
- Tell every doctor and pharmacist about **all** medicines, including over-the-counter, herbal, and traditional products.
- Do not take two products with the same ingredient (for example cold remedies with paracetamol plus separate paracetamol tablets).
- Check kidney and liver function before and during long-term medicines.
- Report any new symptom after a medicine change; it may be a side effect, not a new disease.
- Keep high-risk medicines (insulin, blood thinners, opioids, digoxin) in a clearly labelled, controlled place.

## 12. When to see the doctor

- Taking five or more medicines, or more than one doctor prescribing
- New dizziness, falls, confusion, constipation, or loss of appetite
- Not sure what any medicine is for
- Difficulty swallowing, remembering or affording medicines
- After any hospital admission or discharge
- At least once a year for a full medicine review, and sooner when your health changes

## 13. When to go to Emergency

- Swelling of the face, lips or tongue, breathing difficulty, or a widespread blistering rash

- Fainting, chest pain, or a very slow or very fast heartbeat
- Vomiting blood, black stools, or bleeding that does not stop
- Very low sugar not improving, unconsciousness, or fits
- Severe confusion or drowsiness; suspected overdose or accidental double dosing of a high-risk medicine
- Bring all medicine packs and the medicine list to the hospital.

## 14. Frequently asked questions

**Is taking many medicines always bad?** No. Some people genuinely need many. The question is whether each is appropriate and monitored.

**Can I stop a medicine that I think is not needed?** Please do not stop it yourself; ask the doctor, who can reduce it safely.

**Are herbal and ayurvedic medicines safe with my tablets?** Not necessarily; some interact or harm the liver or kidneys. Tell your doctor.

**Can I switch to a cheaper brand?** Generic medicines with the same ingredient and strength are usually equivalent, but changes should be discussed to avoid duplication.

**Should I take vitamins and tonics every day?** Only if a deficiency or clear need is shown.

## 15. Patient and caregiver checklist

- [ ] One complete, current medicine list kept and carried
- [ ] Purpose of each medicine known
- [ ] One coordinating doctor and one pharmacy
- [ ] Yearly full medicine review
- [ ] Pill organiser and reminders in use
- [ ] Expired and unused medicines removed
- [ ] Over-the-counter and herbal products disclosed
- [ ] Kidney and liver tests up to date
- [ ] Side effects noted and reported
- [ ] Medicines reviewed after every hospital stay

## 16. References and revision date

- General guidance drawn from the WHO "Medication Without Harm" global patient safety challenge, the American Geriatrics Society Beers Criteria, the STOPP/START criteria, NICE guidance on medicines optimisation and the Indian Association of Geriatrics resources.

- Clinical review by Dr Kulkarni: pending.
- Revision date: 2 November 2026.