TOP 25 DRUGS COUNSELLING GUIDE

Top 25 Drugs Counselling Guide

01

Atorvastatin

HMG-CoA Reductase Inhibitor (Statin)

CARDIOVASCULAR

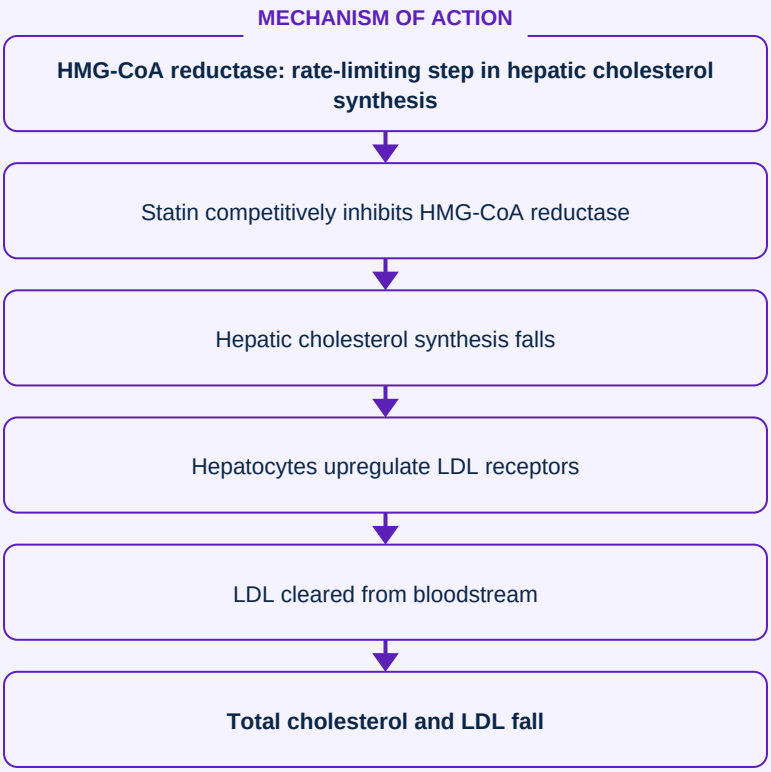
INDICATION
Primary and secondary prevention of cardiovascular events; hyperlipidaemia.

TYPICAL DOSE
10-80mg once daily at night. Typically 20-40mg for primary prevention; 80mg post-MI.

KEY COUNSELLING POINTS

- Take at any consistent time each day: atorvastatin's long half-life means timing is not critical.
- Report unexplained muscle pain, tenderness or weakness immediately: risk of myopathy.
- Avoid grapefruit juice: inhibits CYP3A4 and raises atorvastatin plasma levels.
- Annual monitoring: fasting lipid profile and liver function tests.
- Lifestyle changes remain essential alongside medication.
- Do not stop without speaking to your GP or pharmacist - stopping increases CV risk.
- Inform prescriber if starting any new medicines, especially antibiotics or antifungals.

MECHANISM OF ACTION



SIDE EFFECTS

- Myalgia: muscle ache or weakness in up to 10% of patients.
- Raised liver transaminases: usually mild and reversible.
- Gastrointestinal upset: nausea, flatulence, constipation or diarrhoea.
- Headache and dizziness: typically transient.
- Myopathy or rhabdomyolysis: rare but
- New-onset T2DM: small increased risk; monitor blood glucose regularly.

DRUG INTERACTIONS

- Ciclosporin, gemfibrozil, clarithromycin: raise statin levels, increasing myopathy risk.
- Colchicine: additive myopathy risk when combined.
- Warfarin: statins can enhance anticoagulant effect; monitor INR.
- Azole antifungals (e.g. fluconazole): CYP3A4 inhibition raises atorvastatin exposure.
- Digoxin: atorvastatin may increase its levels.

ADMINISTRATION & STORAGE

- Take once daily at any consistent time, preferably evening.
- Swallow whole with water; can be taken with or without food.
- Store below 25 degrees C, away from moisture.
- Available as 10mg, 20mg, 40mg and 80mg tablets.

02

Amlodipine

Dihydropyridine Calcium Channel Blocker

CARDIOVASCULAR

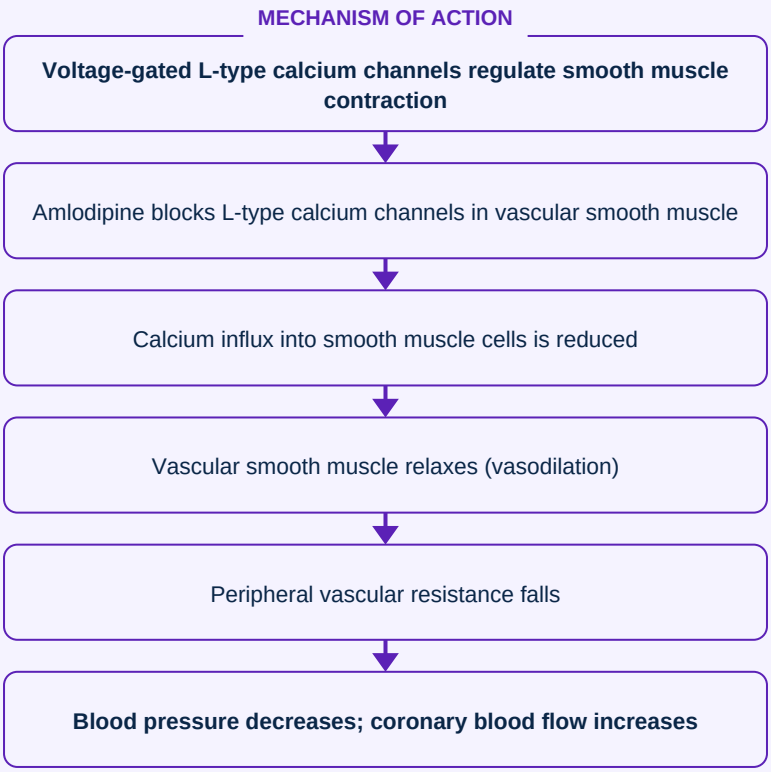
INDICATION
Hypertension; stable angina; vasospastic angina.

TYPICAL DOSE
5mg once daily initially; increase to 10mg if required after 4 weeks.

KEY COUNSELLING POINTS

- Take at the same time each day - consistency matters for blood pressure control.
- Ankle swelling (peripheral oedema) is common and dose-related; report if troublesome.
- Do not stop suddenly - blood pressure can rebound; always discuss first.
- Regular blood pressure monitoring: aim for the target set by your GP.
- Large amounts of grapefruit juice may slightly increase amlodipine levels.
- Dizziness on standing (postural hypotension) may occur initially; rise slowly.
- This treats high blood pressure but does not cure it - lifelong treatment is common.

MECHANISM OF ACTION



SIDE EFFECTS

- Peripheral oedema (ankle swelling): most common, affects up to 10% of patients.
- Flushing and headache: due to vasodilation, usually settles.
- Palpitations: from reflex tachycardia.
- Nausea and abdominal pain: gastrointestinal effects are generally mild.
- Gingival hyperplasia: gum overgrowth, reported with long-term use.
- Fatigue and dizziness: particularly at initiation or dose increase.

DRUG INTERACTIONS

- Simvastatin: amlodipine increases simvastatin exposure - limit simvastatin to 20mg/day.
- CYP3A4 inhibitors (e.g. clarithromycin, azole antifungals): increase amlodipine levels.
- Other antihypertensives: additive blood pressure lowering; monitor closely.
- Ciclosporin: amlodipine may increase ciclosporin levels.

ADMINISTRATION & STORAGE

- Take once daily, with or without food.
- If swallowing is difficult, use the licensed oral liquid formulation.
- Available as 5mg and 10mg tablets; also as oral solution.

Ramipril

03

Angiotensin-Converting Enzyme Inhibitor (ACE-I)

CARDIOVASCULAR

INDICATION
Hypertension; heart failure; post-MI cardioprotection; diabetic nephropathy.

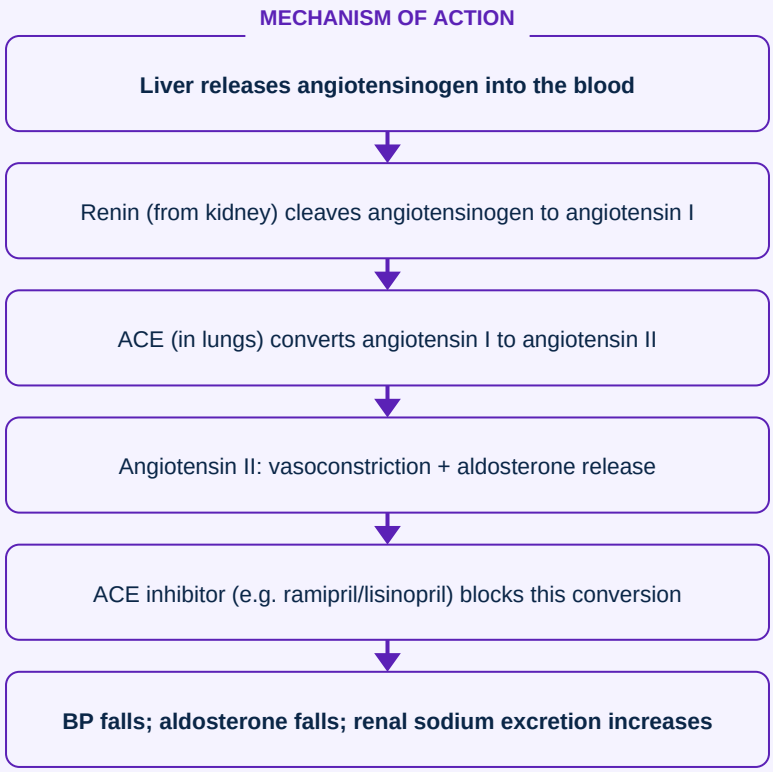
TYPICAL DOSE
1.25-2.5mg once daily initially; titrate up to 10mg daily over weeks.

KEY COUNSELLING POINTS

- A dry, persistent cough affects up to 15% of patients - report this as a switch to an ARB may be needed.
- Avoid NSAIDs (e.g. ibuprofen): they blunt the antihypertensive effect and increase kidney injury risk.
- Dizziness on standing is common at initiation; rise slowly from sitting or lying.
- Potassium levels may rise - avoid potassium supplements or salt substitutes unless advised.
- Report swelling of the face, lips or throat immediately: could be angioedema, a rare emergency.

  Avoid during pregnancy: seek urgent medical advice if pregnancy occurs.
- Kidney function and electrolytes should be checked before starting and after dose changes.

MECHANISM OF ACTION



SIDE EFFECTS

- Dry persistent cough: bradykinin accumulation; affects up to 15%, more common in women.
- Hypotension (first-dose effect): especially if dehydrated or on diuretics.
- Hyperkalaemia: potassium retention due to reduced aldosterone.
- Acute kidney injury: particularly in patients with renal artery stenosis.
- Angioedema: rare but potentially life-threatening swelling of lips, tongue,

DRUG INTERACTIONS

- NSAIDs: reduce antihypertensive effect; increase risk of acute kidney injury.
- Potassium-sparing diuretics (e.g. spironolactone): significant hyperkalaemia risk.
- Lithium: ACE inhibitors increase lithium levels; toxicity risk.
- Allopurinol: increased risk of leucopenia and Stevens-Johnson syndrome.
- Other antihypertensives: additive blood pressure lowering.

ADMINISTRATION & STORAGE

- Take once daily (or twice daily for some indications); timing consistent.
- Can be taken with or without food.

  If unable to swallow capsules, switch to a licensed liquid formulation.

04

Bisoprolol

Selective Beta-1 Adrenoreceptor Blocker

CARDIOVASCULAR

INDICATION

Hypertension; stable angina; heart failure; rate control in atrial fibrillation.

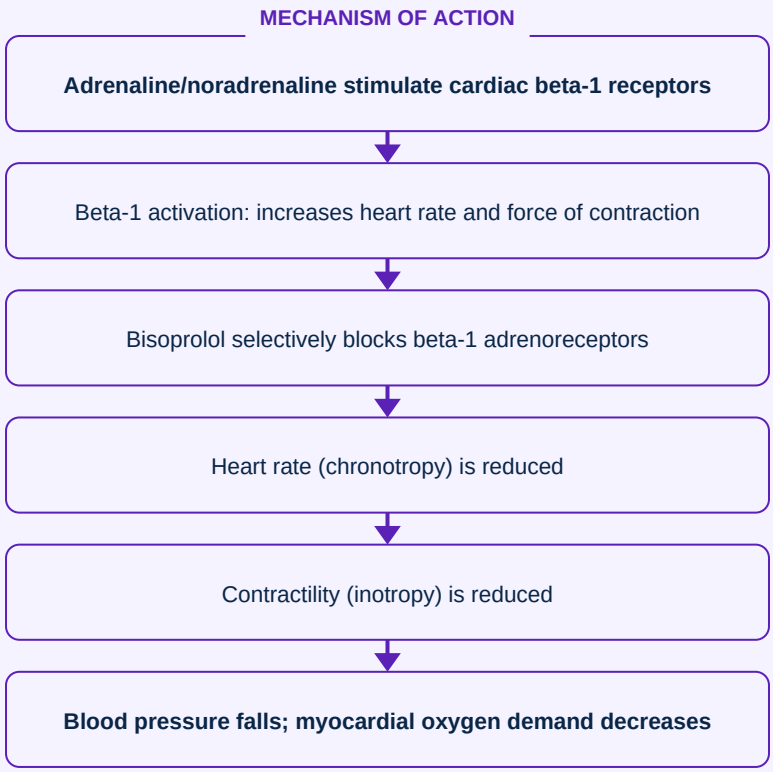
TYPICAL DOSE

Hypertension/angina: 5-10mg once daily. Heart failure: start 1.25mg, titrate slowly to 10mg.

KEY COUNSELLING POINTS

- Do not stop suddenly: abrupt withdrawal can cause rebound angina or precipitate MI.
- Report worsening breathlessness or leg swelling: may indicate fluid retention in heart failure.
- Dizziness and fatigue are common at initiation, especially when standing up quickly.
- May mask hypoglycaemia symptoms in diabetic patients - sweating is preserved but tachycardia is not.
- Cold hands and feet are common due to peripheral vasoconstriction.
- Take at the same time each day, preferably in the morning.
- Carry a medicines information card if you have heart failure or angina.

MECHANISM OF ACTION



SIDE EFFECTS

- Bradycardia: heart rate below 50bpm; reduce dose or stop if symptomatic.
- Fatigue and lethargy: very common at initiation.
- Cold extremities: peripheral vasoconstriction.
- Bronchospasm: rare with bisoprolol due to beta-1 selectivity, but caution in asthma.
- Sexual dysfunction: erectile dysfunction reported.

DRUG INTERACTIONS

- Verapamil or diltiazem: combination can cause severe bradycardia and heart block - avoid.
- Other antiarrhythmics (e.g. amiodarone): additive risk of bradycardia.
- NSAIDs: can blunt antihypertensive effect.
- Insulin and oral hypoglycaemics: masks hypoglycaemia symptoms.
- Clonidine: do not stop bisoprolol before clonidine - rebound hypertension risk.

ADMINISTRATION & STORAGE

- Take once daily in the morning, with or without food.
- Swallow whole with water - do not crush or chew.
- In heart failure: start at 1.25mg and double the dose every 2 weeks as tolerated.
- Available as 1.25mg, 2.5mg, 3.75mg, 5mg, 7.5mg, 10mg tablets.

05

Warfarin

Vitamin K Antagonist (Anticoagulant)

HAEMATOLOGY

INDICATION

Prevention and treatment of DVT/PE; stroke prevention in AF; mechanical heart valve anticoagulation.

TYPICAL DOSE

Individualised by INR. Typical maintenance 3-9mg daily. Target INR 2.0-3.0; 2.5-3.5 (high risk).

KEY COUNSELLING POINTS

- Regular INR monitoring is essential: frequent at initiation, then every 4-8 weeks when stable.
- Consistent vitamin K intake matters: sudden increases in green leafy vegetables (kale, spinach) raise vitamin K and lower INR.
- Report any unusual bleeding: gums, urine (pink/red), stools (black), prolonged cuts, or heavy periods.
- Many medicines interact with warfarin - always mention warfarin when collecting new prescriptions.
- Carry your yellow anticoagulant treatment booklet (ATC) at all times.
- Alcohol can significantly affect INR - keep intake within recommended limits.
- If you miss a dose, take it the same day. Do not double up the next day.
- Inform all healthcare professionals (dentist, surgeon) that you are on warfarin before procedures.

MECHANISM OF ACTION

INR TARGET RANGES

INR < 2.0
SUB-THERAPEUTIC
Clot risk - dose increase likely

INR 2.0-3.0

AF, DVT/PE; some mechanical heart valves

INR 2.5-3.5
THERAPEUTIC (high range)
Mechanical mitral valve, recurrent PE

INR > 4.0
SUPRATHERAPEUTIC
Bleeding risk - withhold and review

HOW IT WORKS

Warfarin inhibits Vitamin K Epoxide Reductase (VKOR), blocking recycling of Vitamin K. Active Vitamin K is required for hepatic synthesis of clotting factors II, VII, IX, X and proteins C and S. Reduced factor synthesis impairs coagulation, producing anticoagulation.

SIDE EFFECTS

- Bleeding: the primary risk, ranging from minor bruising to life-threatening haemorrhage.
- Skin necrosis: rare but serious; occurs early in treatment, especially in protein C deficiency.
- Purple toe syndrome: rare; caused by cholesterol microemboli.
- Nausea and gastrointestinal upset: occur occasionally.
- Alopecia: hair thinning with long-term use.

DRUG INTERACTIONS

- Antibiotics (e.g. metronidazole, fluconazole, trimethoprim): increase INR significantly.
- NSAIDs and aspirin: increased bleeding risk; GI ulceration risk.
- Amiodarone: markedly increases warfarin effect; dose reduction usually needed.
- St Johns Wort: induces CYP enzymes, reduces warfarin effect, lowers INR.
- Cranberry juice: can potentiate warfarin; limit intake.

ADMINISTRATION & STORAGE

- Take at the same time each day - typically evening to allow dose adjustment after morning INR.
- Dose varies by INR result; follow the anticoagulant clinic instructions.
- Store at room temperature, away from moisture.
- Available as 0.5mg (white), 1mg (brown), 3mg (blue), 5mg (pink) tablets.

Apixaban

06

Direct Oral Anticoagulant (Factor Xa Inhibitor)

HAEMATOLOGY

INDICATION

Stroke prevention in non-valvular AF; treatment and secondary prevention of DVT and PE; VTE prophylaxis

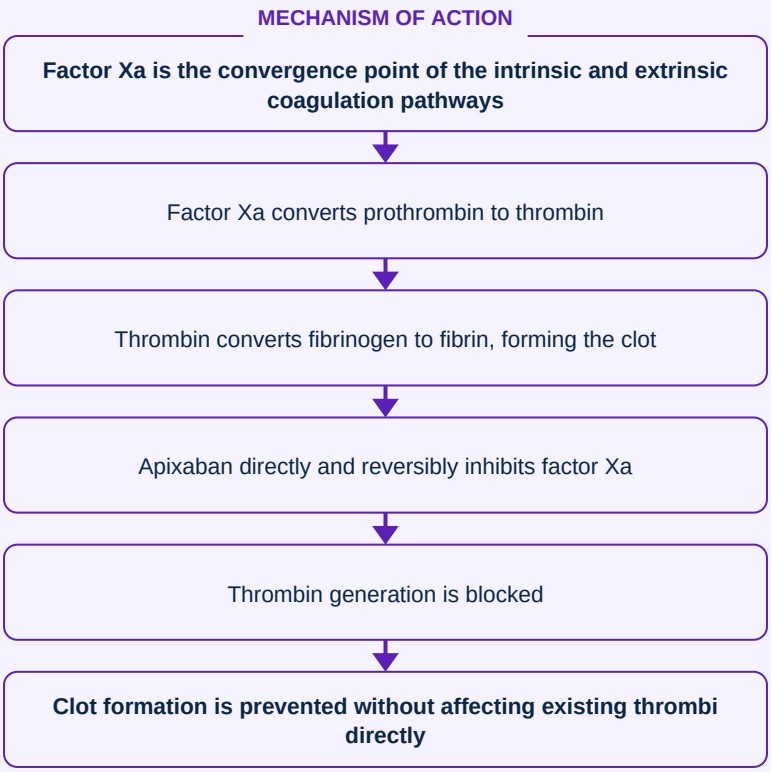
TYPICAL DOSE

AF: 5mg BD (2.5mg BD if 2 of: age >=80, wt <=60kg, SeCr >=133mcmol/L). DVT/PE: 10mg BD.

KEY COUNSELLING POINTS

- Routine INR monitoring is NOT required: unlike warfarin, apixaban has predictable pharmacokinetics.
- Take twice daily at the same times each day - consistent timing is important.
- If a dose is missed: take it as soon as remembered on the same day. Do not take two doses to make up.
- Report unusual bleeding: blood in urine, prolonged nosebleeds, blood in stools.
- Inform all healthcare professionals (dentist, surgeon) before procedures.
- No specific food restrictions - unlike warfarin, diet does not significantly affect levels.
- Do not stop without medical advice: stopping increases stroke or clot risk.
- Carry a DOAC patient alert card.

MECHANISM OF ACTION



SIDE EFFECTS

- Bleeding: major bleeding occurs in approximately 2% per year.
- Bruising: minor bruising is common.
- Anaemia: secondary to occult bleeding.
- Nausea and gastrointestinal symptoms: generally mild.
- Hypersensitivity reactions: rash, urticaria reported rarely.

DRUG INTERACTIONS

- Strong CYP3A4 and P-gp inhibitors (e.g. ketoconazole, ritonavir): increase apixaban exposure - avoid.
- Strong CYP3A4 and P-gp inducers (e.g. rifampicin, phenytoin, St Johns Wort): reduce apixaban effect.
- NSAIDs and antiplatelet agents: additive bleeding risk.
- Other anticoagulants: concurrent use significantly increases bleeding.

ADMINISTRATION & STORAGE

- Take twice daily, 12 hours apart, with or without food.
- Tablets can be crushed and dispersed in water for those unable to swallow.
- Store below 30 degrees C.
- Available as 2.5mg and 5mg tablets.

Metformin

07

Biguanide (Insulin Sensitiser)

ENDOCRINE

INDICATION

Type 2 diabetes mellitus, first-line in overweight or obese patients; polycystic ovary syndrome (off-label).

TYPICAL DOSE

500mg once or twice daily; increase by 500mg every 2 weeks to 1-2g BD. Maximum 3g daily.

KEY COUNSELLING POINTS

- Take with or just after food to minimise gastrointestinal side effects.
- GI side effects (nausea, diarrhoea) are common initially - usually improve over 2-4 weeks.
- Metformin alone does NOT cause hypoglycaemia; however, combined with other agents it can.
- Stop temporarily if unwell (vomiting, diarrhoea) or before contrast dye procedures: risk of lactic acidosis.
- Alcohol increases the risk of lactic acidosis - limit intake.
- Regular monitoring: HbA1c every 3-6 months initially, then 6-12 monthly.
- Vitamin B12 levels can fall with long-term use; report tingling or numbness in hands/feet.
- This is a long-term medication: do not stop without advice.

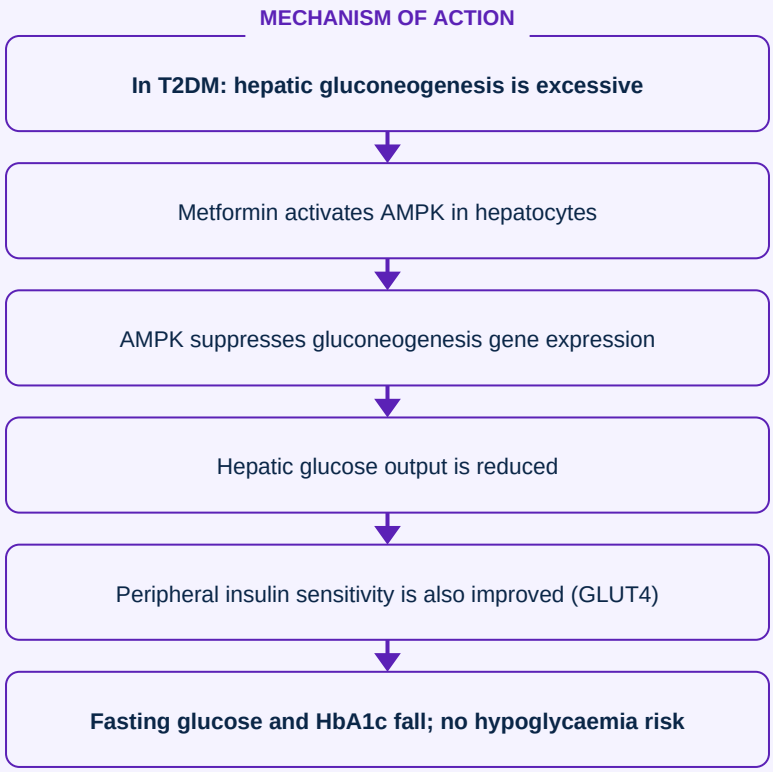
SIDE EFFECTS

- Gastrointestinal: nausea, diarrhoea, abdominal pain - affects up to 30% at initiation.
- Metallic taste: common and usually transient.
- Vitamin B12 deficiency: with long-term use, can cause peripheral neuropathy.
- Lactic acidosis: rare but potentially fatal; risk increases in renal impairment, alcohol excess.
- Weight neutral; no direct hypoglycaemia risk.

DRUG INTERACTIONS

- Contrast media (iodinated): withhold 48h before/after procedure; restart only when eGFR confirmed stable.
- Alcohol: increases risk of lactic acidosis.
- NSAIDs and ACE inhibitors: can reduce renal function; monitor metformin closely.

MECHANISM OF ACTION



ADMINISTRATION & STORAGE

- Take with meals to reduce GI side effects.
- Start low and titrate slowly.
- Modified-release (MR) formulations available: may cause fewer GI side effects.

Gliclazide

08

Sulphonylurea (Insulin Secretagogue)

ENDOCRINE

INDICATION

Type 2 diabetes mellitus when metformin is contraindicated, not tolerated or insufficient.

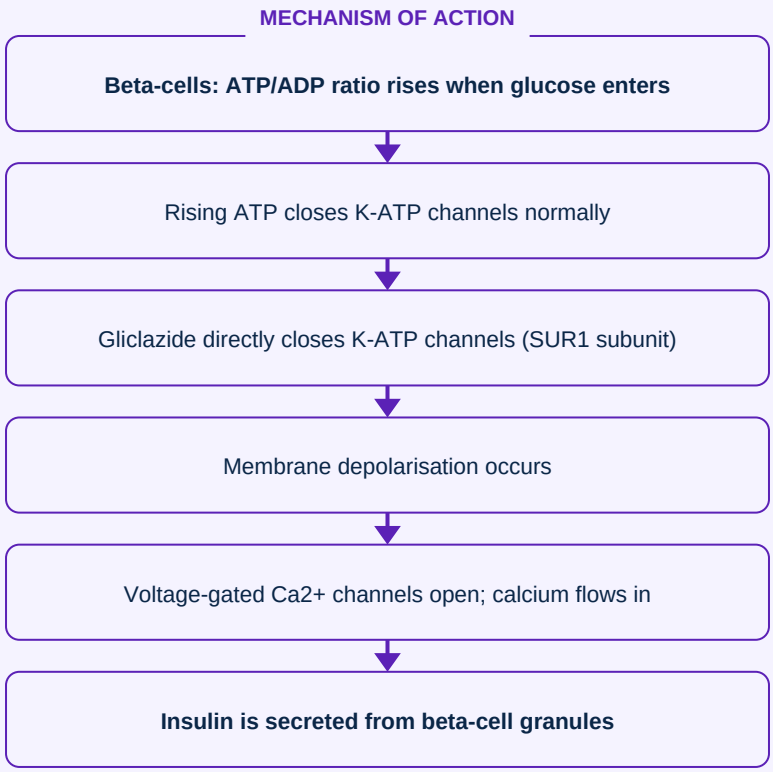
TYPICAL DOSE

Standard: 40-160mg daily (in divided doses).
Modified-release: 30-120mg once daily with breakfast.

KEY COUNSELLING POINTS

- Take with or just before meals to reduce hypoglycaemia risk.
- Hypoglycaemia is the key risk: symptoms include sweating, shaking, confusion, pallor.
- Always carry fast-acting glucose (glucose tablets, Lucozade) in case of hypoglycaemia.
- Skipping meals while taking gliclazide increases hypoglycaemia risk significantly.
- Alcohol increases hypoglycaemia risk and can mask symptoms.
- Driving: be aware of hypoglycaemia risk; check blood glucose before driving.
- HbA1c monitoring: every 3-6 months initially.
- If unwell (vomiting, not eating), follow sick day rules and seek advice.

MECHANISM OF ACTION



SIDE EFFECTS

- Hypoglycaemia: the most significant risk, especially in elderly or those with renal impairment.
- Weight gain: stimulating insulin secretion promotes fat storage.
- Nausea and gastrointestinal upset: generally mild.
- Skin reactions: rash, urticaria occasionally reported.
- Hepatic disorders: jaundice and elevated liver enzymes, rarely.

DRUG INTERACTIONS

- NSAIDs, fluconazole, clarithromycin: inhibit CYP2C9, increasing gliclazide levels and hypoglycaemia risk.
- Beta-blockers: mask hypoglycaemia symptoms (tachycardia and tremor blunted).
- Corticosteroids: antagonise hypoglycaemic effect, raising blood glucose.
- Alcohol: potentiates hypoglycaemia risk.
- Other antidiabetics: additive hypo risk.

ADMINISTRATION & STORAGE

- Standard tablets: take 30-60 minutes before meals.
- Modified-release tablets: take with breakfast once daily.
- Do not crush MR tablets.
- Dose adjustment required in hepatic or severe renal impairment.

Insulin Glargine

09

Long-Acting Basal Insulin Analogue

ENDOCRINE

INDICATION

Type 1 and type 2 diabetes mellitus requiring basal insulin replacement.

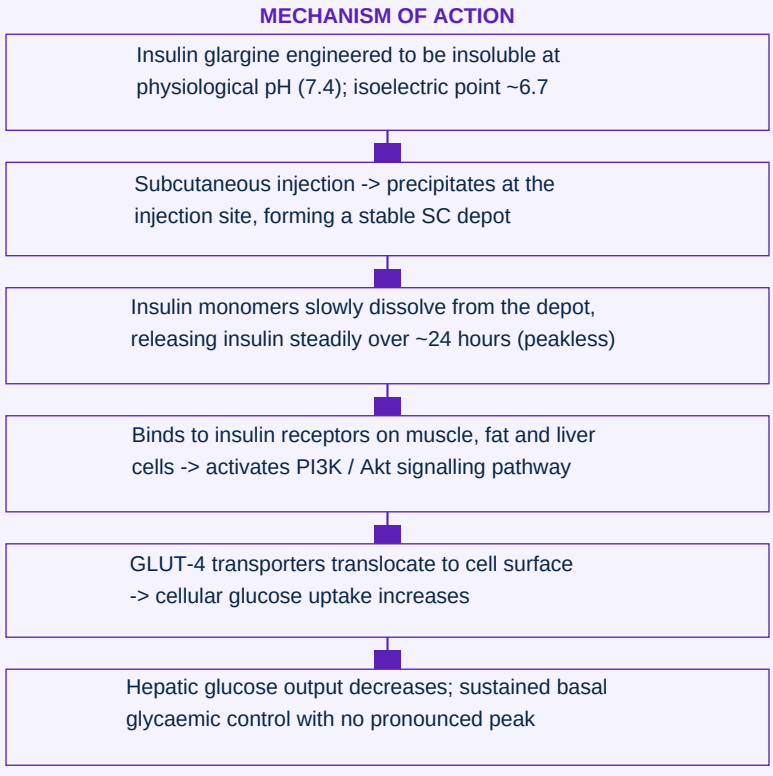
TYPICAL DOSE

Typically 10 units once daily (timing may vary);

KEY COUNSELLING POINTS

- Inject at the same time each day - consistency maintains stable blood glucose levels.
- Rotate injection sites systematically within the same region to prevent lipohypertrophy.
- Glargine (Lantus, Toujeo) is clear; never use if cloudy or contains particles.
- Never mix glargine with other insulins in the same syringe.
- Store unopened pens/cartridges in the fridge (2-8 degrees C); opened pens at room temperature for up to 28 days.
- Recognise hypoglycaemia: sweating, trembling, pallor, confusion. Treat with fast-acting glucose.
- Carry a medical alert identification and glucose source at all times.
- Sick day rules: do NOT stop insulin when unwell - glucose rises further during illness.

MECHANISM OF ACTION



SIDE EFFECTS

- Hypoglycaemia: most significant risk, particularly nocturnal.
- Lipohypertrophy: fatty lumps at injection sites from poor rotation.
- Injection site reactions: redness, swelling or itching at the site.
- Weight gain: insulin promotes anabolic (fat-storing) effects.
- Oedema: fluid retention at initiation of insulin therapy.

DRUG INTERACTIONS

- Alcohol: potentiates hypoglycaemia and may mask symptoms.
- Beta-blockers: mask tachycardia component of hypoglycaemia.
- Corticosteroids: antagonise insulin, significantly raising blood glucose.
- ACE inhibitors: may enhance hypoglycaemic effect.
- Thiazolidinediones: additive fluid retention risk.

ADMINISTRATION & STORAGE

- Subcutaneous injection only: abdomen, thigh, buttock or upper arm.
- Inject into a pinched fold of skin at 45-90 degrees.
- Allow the pen to reach room temperature before injecting.
- Discard sharps safely into an approved sharps container.
- Never share pens or needles.

10

Levothyroxine

Synthetic Thyroid Hormone (T4 Replacement)

THYROID

INDICATION

Hypothyroidism (primary, secondary or post-thyroidectomy); TSH suppression in differentiated

TYPICAL DOSE

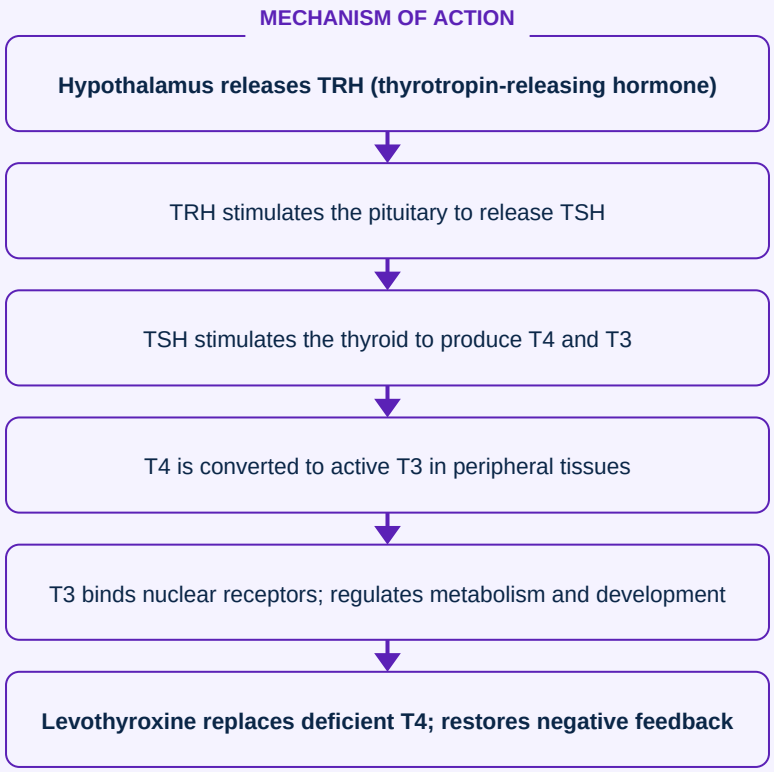
Adults: start 50-100mcg daily. Elderly or cardiac disease: start 25mcg; titrate slowly every 6-8 weeks.

KEY COUNSELLING POINTS

- Take on an empty stomach, 30-60 minutes before breakfast: food (especially calcium-rich foods) reduces absorption.
- Take at a consistent time each day to maintain stable thyroid levels.
- Certain medicines reduce absorption: calcium, iron, antacids. Take these at least 4 hours apart.

  Blood tests should be at a consistent time; some clinicians prefer tests before the dose.
- Symptoms of over-replacement: palpitations, weight loss, anxiety, sweating, diarrhoea.
- Symptoms of under-replacement: fatigue, weight gain, cold intolerance, constipation.
- Regular monitoring: TSH every 3 months until stable, then annually.
- Soya products and high-fibre foods can reduce absorption with long-term use.

MECHANISM OF ACTION



SIDE EFFECTS

- Symptoms of over-replacement (thyrotoxicosis): tachycardia, anxiety, heat intolerance, weight loss.
- Osteoporosis: with prolonged over-replacement and suppressed TSH.
- Atrial fibrillation: risk increased with excess thyroid hormone.
- Adrenal crisis: if hypothyroidism masks adrenal insufficiency, starting thyroxine can precipitate crisis.
- Insomnia and tremor: with higher doses.

DRUG INTERACTIONS

- Calcium carbonate, ferrous sulphate, antacids (aluminium/magnesium): reduce absorption - separate by 4 hours.
- Warfarin: levothyroxine enhances warfarin effect; monitor INR.
- Colestyramine and colestipol: bind thyroxine in the gut, reducing absorption.
- Soya: reduces absorption; separate by 4 hours.
- Amiodarone: contains iodine; can affect thyroid function significantly.

ADMINISTRATION & STORAGE

- Take on an empty stomach, 30-60 minutes before food or other medicines.
- Swallow with a full glass of water.
- Available as 25mcg, 50mcg and 100mcg tablets; also as oral solution.
- Do not switch brands without checking with prescriber - bioavailability varies slightly.

11 Salbutamol

Short-Acting Beta-2 Agonist (SABA)

RESPIRATORY

INDICATION

Acute relief of bronchospasm in asthma and COPD; exercise-induced bronchospasm.

TYPICAL DOSE

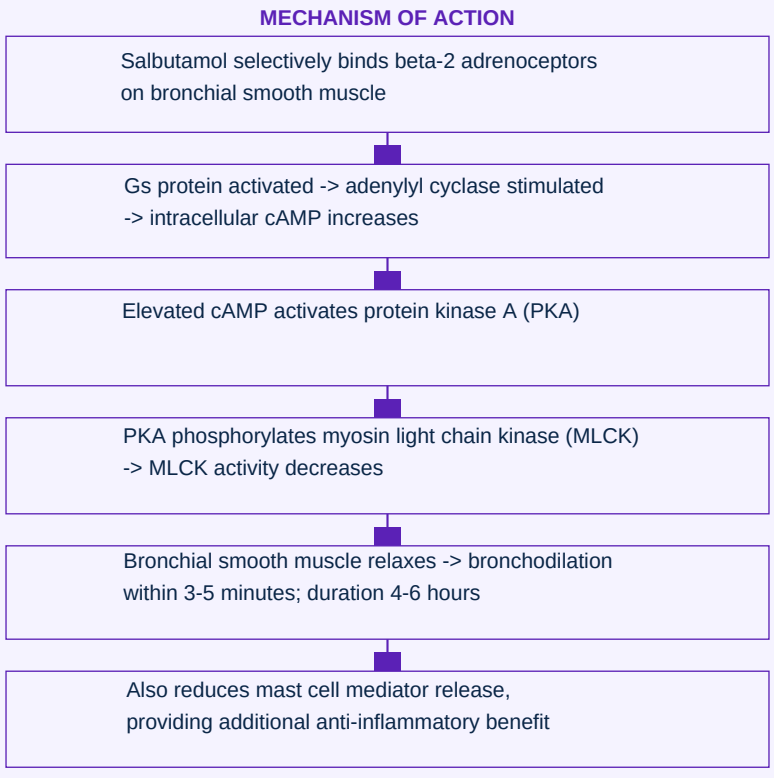
Inhaler: 1-2 puffs (100mcg) PRN up to 4x daily. Nebuliser: 2.5mg every 4-6h. IV for acute asthma.

KEY COUNSELLING POINTS

- Use as a reliever only, when you have symptoms - not regularly as a preventer.

  Regular reliever use (most days) or needing over 2 inhalers/year suggests poor control.
- Check inhaler technique regularly; incorrect technique is the most common cause of poor control.
- Shake well before each use; prime with 1-2 puffs if new or not used for 5 days.
- For spacer users: breathe in slowly after actuating the spacer.
- If using alongside a steroid inhaler, use your reliever first, then the steroid inhaler.
- Keep a reliever inhaler with you at all times for acute attacks.
- Report increasing frequency of use or waking at night with symptoms.

MECHANISM OF ACTION



SIDE EFFECTS

- Tremor: fine tremor of hands, dose-related and usually transient.
- Tachycardia and palpitations: beta-2 receptors also present in the heart.
- Hypokalaemia: with high doses or nebulised use; can be serious in acute asthma.
- Headache: mild and common.
- Paradoxical bronchospasm: rare; stop immediately and use alternative.
- Hyperglycaemia: high-dose nebulised use.

DRUG INTERACTIONS

- Non-selective beta-blockers (e.g. propranolol): block beta-2 receptors, antagonising salbutamol - avoid in asthma.
- Theophylline: additive hypokalaemia risk.
- Corticosteroids, diuretics: worsen hypokalaemia with high-dose salbutamol.
- MAOIs: potential cardiovascular effects with sympathomimetics.

ADMINISTRATION & STORAGE

- Inhaler: 100mcg per actuation (blue inhaler).
- Spacer device recommended if patient unable to coordinate inhale and press.
- Clean mouthpiece weekly with dry cloth; do not wash metal canister.
- Check expiry date and dose counter.

12

Fluticasone/Salmeterol

Inhaled Corticosteroid + Long-Acting Beta-2 Agonist (ICS/LABA)

RESPIRATORY

INDICATION

Asthma not controlled on ICS alone; COPD with frequent exacerbations (FEV1 < 60% predicted).

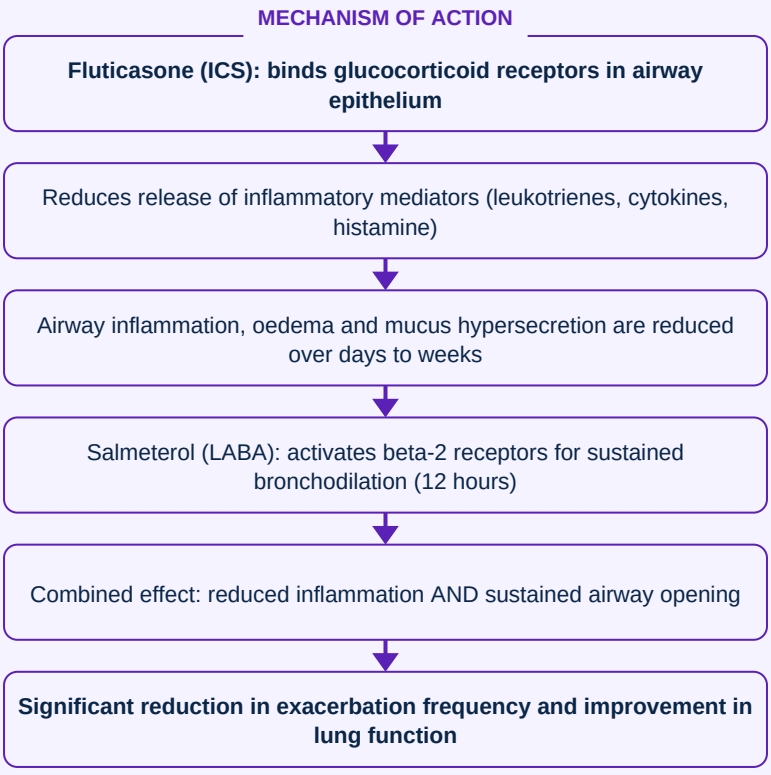
TYPICAL DOSE

Asthma: 100/50, 250/50 or 500/50 mcg (fluticasone/salmeterol) twice daily via Accuhaler.

KEY COUNSELLING POINTS

- This is a PREVENTER inhaler - it must be taken regularly every day, even when feeling well.
- Do not use for acute attacks: salbutamol (blue reliever) is for acute symptom relief.
- Rinse mouth and gargle with water after every use: prevents oral candidiasis and hoarseness from fluticasone.
- Correct inhaler technique is critical - request technique check at every review.
- For Accuhaler: slide lever, exhale away from device, inhale forcefully and hold for 10 seconds.
- Salmeterol should never be used alone in asthma without an ICS (increased mortality risk).
- Keep using even in summer when symptoms are absent.

MECHANISM OF ACTION



SIDE EFFECTS

- Oral candidiasis (thrush): fluticasone deposition in mouth/throat - prevented by rinsing.
- Dysphonia (hoarseness): ICS effect on laryngeal muscles.
- Adrenal suppression: with high doses of fluticasone; consider steroid card.
- Paradoxical bronchospasm: rare - stop and use reliever.
- Tremor, palpitations: salmeterol beta-2 effects.

DRUG INTERACTIONS

- Strong CYP3A4 inhibitors (e.g. ritonavir, ketoconazole): significantly increase fluticasone levels - risk of adrenal suppression.
- Non-selective beta-blockers: antagonise salmeterol.
- Loop diuretics: additive hypokalaemia.
- Theophylline: additive hypokalaemia risk.

ADMINISTRATION & STORAGE

- Take twice daily at regular intervals (e.g. morning and evening).
- ALWAYS rinse mouth after use.
- Accuhaler: stored upright, slide lever only when ready to inhale.
- MDI: shake before use; spacer recommended for optimal lung deposition.

13 Tiotropium

Long-Acting Muscarinic Antagonist (LAMA)

RESPIRATORY

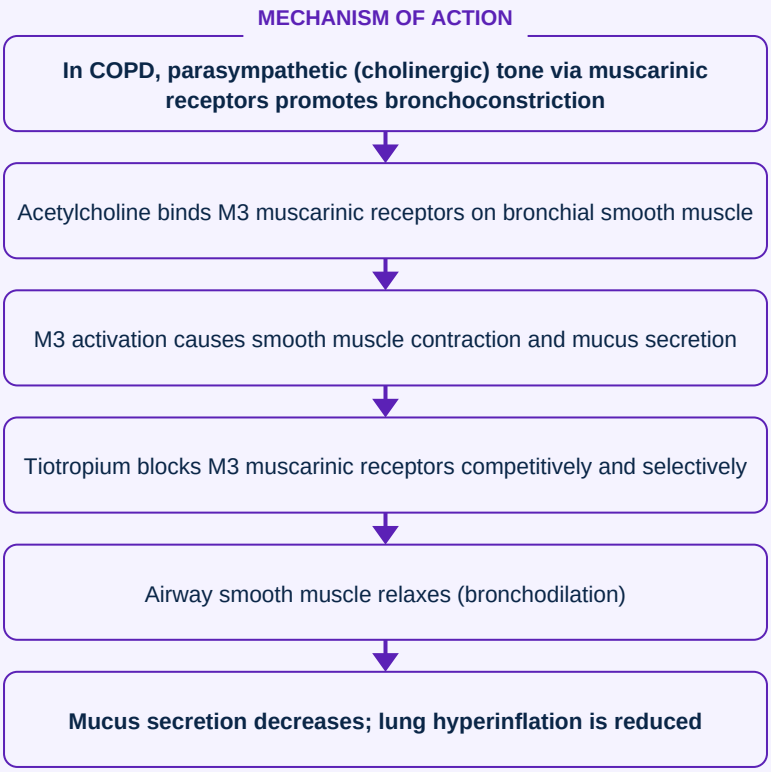
INDICATION
Maintenance treatment of COPD; reducing exacerbations and improving lung function.

TYPICAL DOSE
HandiHaler: 18mcg (one capsule) once daily. Respimat inhaler: 5mcg (2 puffs) once daily.

KEY COUNSELLING POINTS

- Take once daily at the same time each day for consistent 24-hour coverage.
- This is a maintenance inhaler - NOT for use during acute attacks.
- For HandiHaler: pierce the capsule inside the device; inhale deeply. Never swallow the capsule.
- For Respimat: prime the device before first use by actuating 3 times away from face.
- Rinse mouth after use to minimise dry mouth and throat irritation.
- Report blurred vision or eye pain immediately: rare risk of acute angle-closure glaucoma if powder enters eyes.
- Avoid contact with eyes when using the HandiHaler.

MECHANISM OF ACTION



SIDE EFFECTS

- Dry mouth: very common (anticholinergic effect); usually mild.
- Constipation: anticholinergic effect on gut motility.
- Urinary retention: particularly in men with benign prostatic hyperplasia.
- Blurred vision: if drug accidentally enters the eyes.
- Tachycardia and palpitations: occur occasionally.
- Paradoxical bronchospasm: rare.

DRUG INTERACTIONS

- Other anticholinergics (e.g. ipratropium, oxybutynin): additive anticholinergic effects.
- Concurrent use of both HandiHaler and Respimat formulations: not recommended.
- Tricyclic antidepressants, antihistamines: additive anticholinergic burden.

ADMINISTRATION & STORAGE

- HandiHaler: load capsule into chamber, pierce with button, inhale deeply through mouthpiece.
- Respimat: slow, steady inhalation over at least 5 seconds.
- Capsules for HandiHaler: store in blister until immediately before use.
- Once daily only - do not use extra doses for symptom relief.

Montelukast

14

Leukotriene Receptor Antagonist (LTRA)

RESPIRATORY

INDICATION

Add-on therapy in mild-to-moderate asthma; seasonal allergic rhinitis; exercise-induced bronchoconstriction.

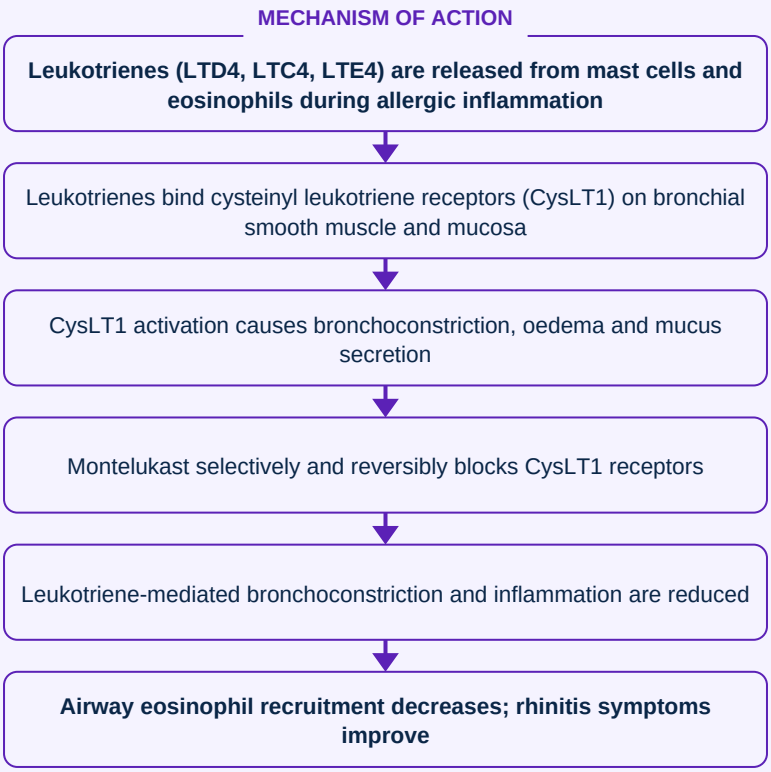
TYPICAL DOSE

Adults: 10mg once daily at night. Children 6-14 years: 5mg (chewable tablet). Under 6 years: 4mg granules.

KEY COUNSELLING POINTS

- Take in the evening for asthma: airway inflammation peaks at night.
- Results may take several weeks: not a quick-relief medication.
- Report mood changes, depression, suicidal thoughts or agitation: rare but serious neuropsychiatric adverse effects have been reported.
- Can be used alongside standard asthma inhalers.
- For allergic rhinitis: can be taken at any time of day.
- Chewable tablets contain phenylalanine: caution in phenylketonuria.

MECHANISM OF ACTION



SIDE EFFECTS

- Neuropsychiatric effects: mood changes, nightmares, insomnia, depression, suicidal ideation (rare but serious).
- Headache: most common reported side effect.
- Gastrointestinal upset: nausea, abdominal pain.
- Upper respiratory tract infection: reported in trials.
- Raised liver enzymes: rare.

DRUG INTERACTIONS

- Phenobarbitone, rifampicin: CYP enzyme inducers that may reduce montelukast plasma levels.
- Gemfibrozil: may increase montelukast levels (CYP2C8 inhibition).
- Generally well tolerated with few clinically significant interactions.

ADMINISTRATION & STORAGE

- Take once daily in the evening for asthma (morning is acceptable for rhinitis only).
- Granules: mix with a spoonful of cold or room-temperature soft food immediately before giving.
- Chewable tablets: chew thoroughly before swallowing.
- Can be taken with or without food.

Omeprazole

15

Proton Pump Inhibitor (PPI)

GASTROINTESTINAL

INDICATION

GORD; peptic ulcer disease; H. pylori eradication (triple therapy); prevention of NSAID-induced ulcers.

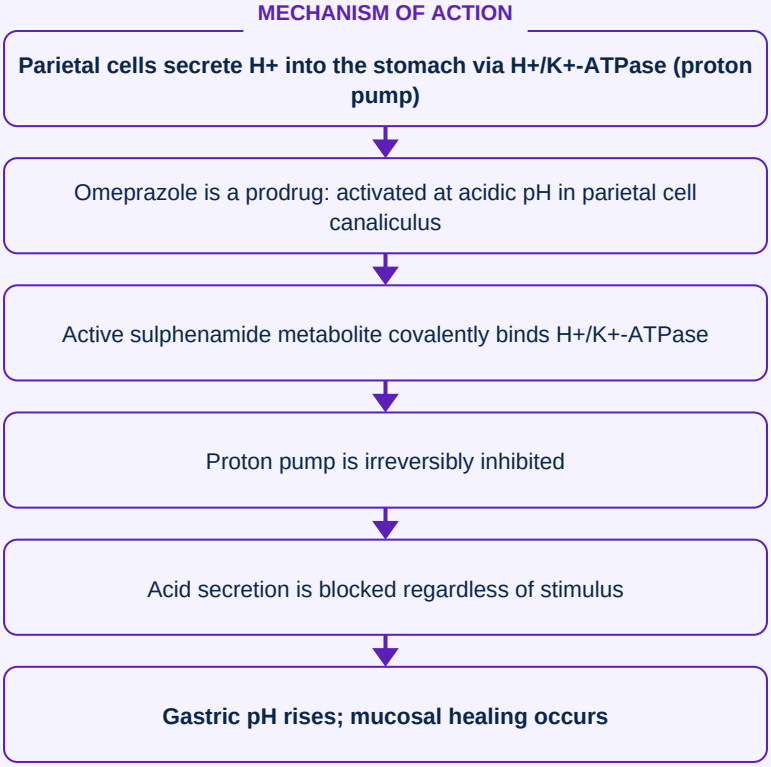
TYPICAL DOSE

Standard: 20mg OD before food (40mg for severe GORD/ulcer). H. pylori: 20mg BD + antibiotics.

KEY COUNSELLING POINTS

- Take 30 minutes before meals (especially breakfast): take before food for best effect.
- Long-term use requires a review: PPIs are often continued unnecessarily beyond 4-8 weeks.
- Long-term risks: magnesium deficiency, vitamin B12 and calcium malabsorption, increased fracture risk.
- Increased susceptibility to gastrointestinal infections (e.g. C. difficile, Salmonella) with long-term use.
- Capsules can be opened and sprinkled on soft food for those who cannot swallow whole.
- If taking clopidogrel: omeprazole is best avoided - use pantoprazole or lansoprazole instead.
- Do not stop abruptly after long-term use: rebound acid hypersecretion can occur.

MECHANISM OF ACTION



SIDE EFFECTS

- Headache and dizziness: common.
- Gastrointestinal: nausea, diarrhoea, constipation, flatulence.
- Hypomagnesaemia: with long-term use; can cause tetany, seizures.
- Hyponatraemia: reported rarely.
- Clostridium difficile infection: risk increased with prolonged use.
- Vitamin B12 and calcium malabsorption: long-term consequences.
- Osteoporotic fracture risk with prolonged use.

DRUG INTERACTIONS

- Clopidogrel: omeprazole inhibits CYP2C19, reducing clopidogrel activation - use pantoprazole instead.
- Methotrexate: PPIs may increase methotrexate toxicity by reducing renal elimination.
- Atazanavir, nelfinavir: absorption is pH-dependent - PPIs can reduce their efficacy.
- Digoxin: PPIs may increase digoxin levels slightly.

ADMINISTRATION & STORAGE

- Take 30-60 minutes before food, typically before breakfast.
- Swallow capsules whole; do not crush. Alternatively, open capsule and swallow granules with water or acidic juice.
- MUPS tablets can be dispersed in water.
- Available as 10mg, 20mg and 40mg capsules/tablets.

16

Metoclopramide

D2 Receptor Antagonist / Prokinetic

GASTROINTESTINAL

INDICATION

Nausea and vomiting (including chemotherapy-induced, postoperative, migraine); gastroparesis.

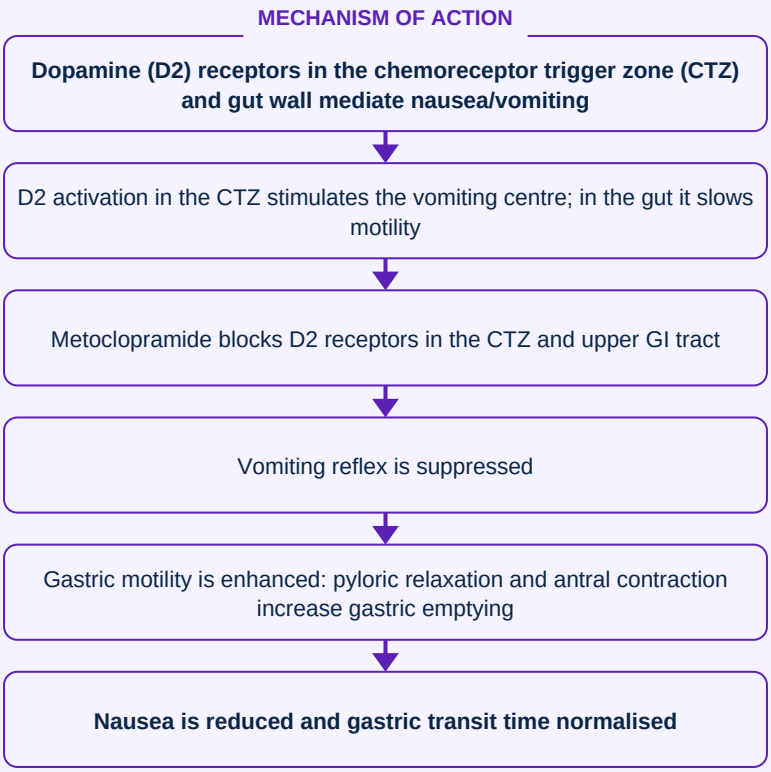
TYPICAL DOSE

10mg up to three times daily before meals. Max 5 days. Capped at 30mg/day (elderly: 20mg/day maximum).

KEY COUNSELLING POINTS

- Do not use for longer than 5 days: risk of serious neurological side effects increases with prolonged use.
- Report any involuntary facial movements, spasms or muscle stiffness immediately: acute dystonic reaction.
- Young adults (especially females) and the elderly are at highest risk of movement disorders.
- Drowsiness is common: avoid driving or operating machinery.
- Avoid alcohol: additive central sedation.
- Take 30 minutes before meals for best antiemetic and prokinetic effect.

MECHANISM OF ACTION



SIDE EFFECTS

- Acute dystonia: involuntary muscle contractions of face, tongue and neck - more common in young adults.
- Tardive dyskinesia: repetitive involuntary movements with prolonged use.
- Parkinsonism: tremor, rigidity - in elderly patients, especially.
- Hyperprolactinaemia: can cause galactorrhoea, menstrual irregularities.
- Drowsiness and fatigue.
- Akathisia: sense of inner agitation.

DRUG INTERACTIONS

- Antipsychotics, other D2 antagonists: additive extrapyramidal effects.
- Opioids: antagonise prokinetic effect (opioids slow gut motility).
- Alcohol: additive CNS depression.
- Ciclosporin: metoclopramide increases ciclosporin absorption.

ADMINISTRATION & STORAGE

- Take 30 minutes before meals.
- Strict 5-day maximum course.
- Available as tablets, oral solution and IV/IM injection.
- Reduce dose in renal impairment.

Lactulose

17

Osmotic Laxative (Disaccharide)

GASTROINTESTINAL

INDICATION

Constipation; hepatic encephalopathy (high doses).

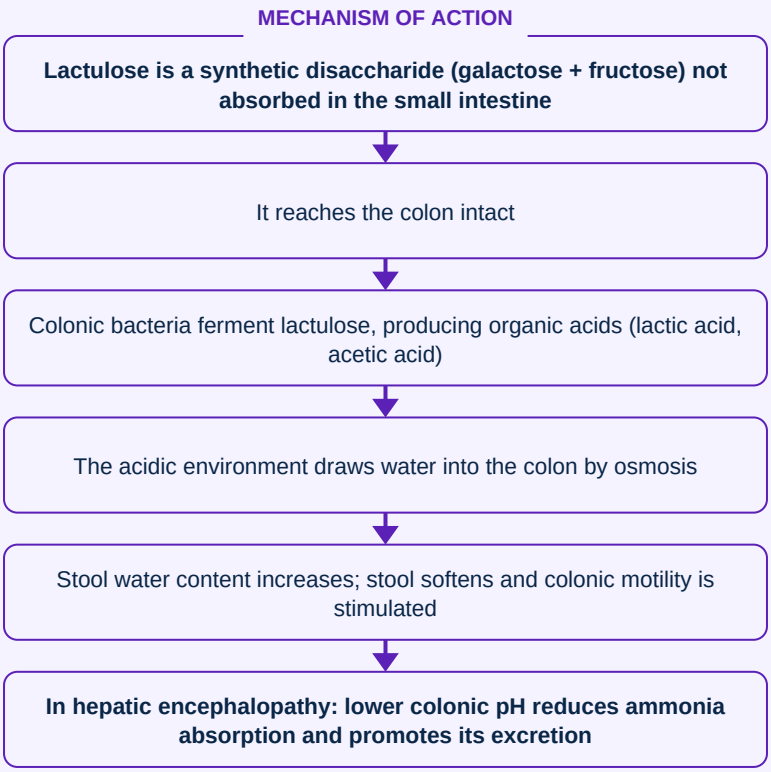
TYPICAL DOSE

Constipation: 15mL BD adjusted to response.
Hepatic encephalopathy: 30-50mL three times daily.

KEY COUNSELLING POINTS

- Lactulose takes 24-48 hours to work: do not expect immediate relief.
- Dose can be mixed with fruit juice, water or milk to improve palatability.
- Bloating and wind are common initially as colonic bacteria ferment the lactulose.
- Adjust the dose to achieve 1-2 comfortable stools per day - not to cause diarrhoea.
- Maintain adequate fluid intake (at least 6-8 glasses of water per day).
- For hepatic encephalopathy: high doses are used deliberately to produce 2-4 loose stools daily.
- Long-term use is generally safe but dietary modifications should also be considered.

MECHANISM OF ACTION



SIDE EFFECTS

- Flatulence and bloating: very common at initiation; usually settles.
- Abdominal cramps: dose-related.
- Nausea: particularly with high doses.
- Diarrhoea: with excessive dosing.
- Electrolyte disturbances: hypokalaemia and hypernatraemia with very high doses or prolonged use.

DRUG INTERACTIONS

- Mesalazine: lactulose lowers colonic pH which may degrade pH-dependent mesalazine coatings.
- Antacids: may interfere with bacterial fermentation at high pH.
- Generally few significant drug interactions.

ADMINISTRATION & STORAGE

- Can be taken at any time, with or without food.
- Mix with water, juice or other beverages to improve taste.
- Store at room temperature; do not freeze.
- Available as 3.1-3.7g/5mL oral solution.

18 Mesalazine

5-Aminosalicylic Acid (5-ASA)

GASTROINTESTINAL

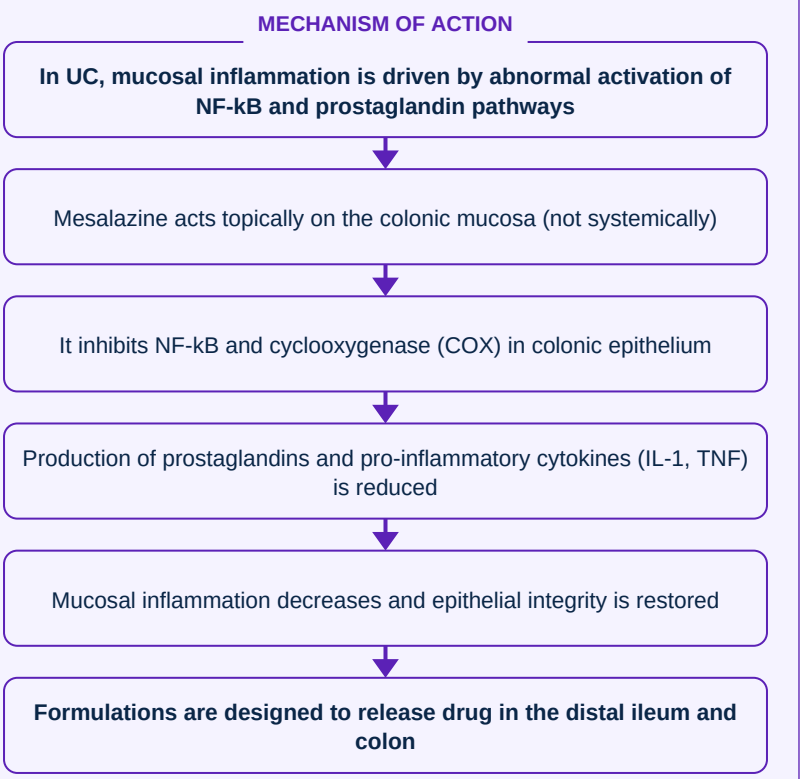
INDICATION
Mild to moderate ulcerative colitis (induction and maintenance of remission). Limited use in Crohn's.

TYPICAL DOSE
UC remission induction: 2.4-4.8g daily in divided doses. Maintenance: 1.2-2.4g daily. Suppositories/enemas for

KEY COUNSELLING POINTS

- Take regularly as prescribed even during remission - stopping increases relapse risk.
- Drink plenty of fluids: mesalazine can rarely cause kidney problems.
- Report any chest tightness, breathlessness or skin rash: rare hypersensitivity reactions.
- Blood tests (FBC, U&Es) are needed before starting and during treatment.
- Modified-release formulations must NOT be crushed: this destroys the enteric coating.
- Suppositories and enemas: use at bedtime for best mucosal contact time.
- Inform GP promptly if bloody stools worsen: this may indicate disease flare.

MECHANISM OF ACTION



SIDE EFFECTS

- Nausea, headache and abdominal pain: generally mild.
- Nephrotoxicity: interstitial nephritis - check U&Es periodically.
- Hypersensitivity reactions: rash, fever, acute intolerance syndrome (worsening colitis).
- Blood dyscrasias: leucopenia, agranulocytosis - rare.
- Pericarditis and myocarditis: very rare but serious.

DRUG INTERACTIONS

- Warfarin: mesalazine may have antiplatelet effects; monitor INR.
- Thiopurines (azathioprine, 6-MP): mesalazine inhibits TPMT enzyme, increasing thiopurine toxicity risk.
- Lactulose: lowered pH may affect pH-sensitive formulations.
- NSAIDs: potential additive renal toxicity.

ADMINISTRATION & STORAGE

- Swallow modified-release tablets whole - do NOT crush, break or chew.
- Granule sachets: pour directly on tongue and swallow with water, or mix with water.
- Suppositories: insert pointed end first; lie on left side for 15 minutes.
- Enemas: best administered at bedtime after emptying bowel.

Amoxicillin

19

Aminopenicillin (Beta-Lactam Antibiotic)

INFECTION

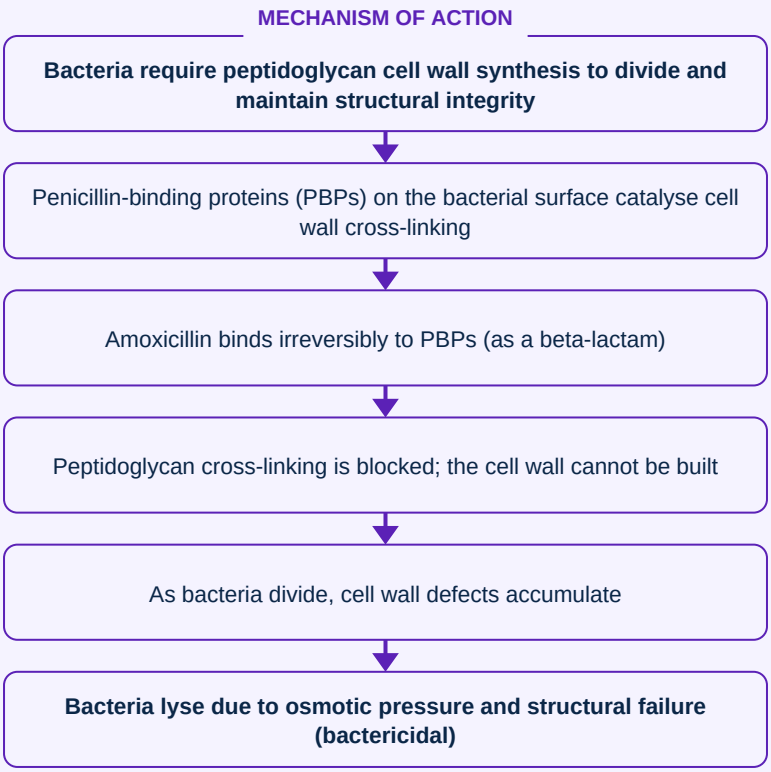
INDICATION
Community-acquired pneumonia; otitis media; tonsillitis; sinusitis; UTI; H. pylori eradication.

TYPICAL DOSE
Standard infections: 250-500mg three times daily. Severe infections: 500mg-1g three times daily. H.

KEY COUNSELLING POINTS

- Complete the full course even if you feel better: stopping early can allow resistant bacteria to survive.
- Can be taken with or without food, but food may reduce nausea.
- Report any skin rash immediately: rash can indicate allergy (morbilliform rash) or rare anaphylaxis.
- Diarrhoea is common: if severe or persistent (especially bloody), seek medical advice - risk of C. difficile.
- Tell the pharmacist about any previous penicillin
- Oral contraceptive pill: routine antibiotics do not reduce efficacy. Extra contraception only needed if vomiting/severe diarrhoea.

MECHANISM OF ACTION



SIDE EFFECTS

- Diarrhoea: the most common side effect.
- Nausea and vomiting: reduced by taking with food.
- Skin rash: morbilliform (non-allergic) rash in up to 10% especially in EBV infection.
- Hypersensitivity/anaphylaxis: IgE-mediated; potentially life-threatening.
- Clostridioides difficile-associated diarrhoea: disruption of bowel flora.
- Oral or vaginal candidiasis: disruption of normal flora.

DRUG INTERACTIONS

- Warfarin: antibiotics may alter gut flora affecting vitamin K production; monitor INR.
- Methotrexate: reduced renal excretion increases methotrexate toxicity risk.
- Probenecid: inhibits renal tubular secretion of amoxicillin, increasing its levels.
- Allopurinol: increased risk of rash when combined.

ADMINISTRATION & STORAGE

- Take three times daily at evenly spaced intervals (e.g. 8am, 2pm, 10pm).
- Can be taken with or without food.
- Capsules: swallow whole with water.
- Oral suspension: shake well before use; refrigerate and use within 7 days.

Co-amoxiclav

20

Penicillin + Beta-Lactamase Inhibitor

INFECTION

INDICATION

Skin and soft tissue infections; dental infections; bite wounds; exacerbations of chronic bronchitis; UTI

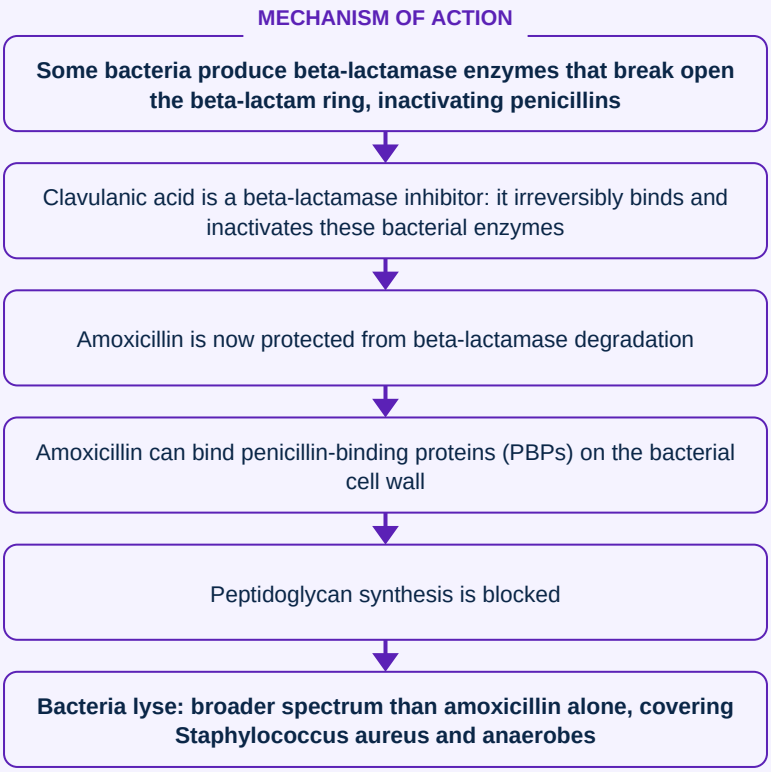
TYPICAL DOSE

625mg (500/125mg) three times daily. Dental infections: 375mg (250/125mg) three times daily.

KEY COUNSELLING POINTS

- Take with or just after food: clavulanic acid causes significant GI upset on an empty stomach.
- Complete the full course.
- Report any jaundice, dark urine or right upper quadrant pain: rare but serious hepatotoxicity.
- Cholestatic jaundice is more common with co-amoxiclav than plain amoxicillin.
- Contraindicated if previous co-amoxiclav-associated jaundice or hepatic impairment.
- Diarrhoea is common: maintain hydration; severe or bloody diarrhoea needs medical review.

MECHANISM OF ACTION



SIDE EFFECTS

- Gastrointestinal: nausea, diarrhoea, vomiting - common due to clavulanic acid.
- Cholestatic jaundice: more common than with plain amoxicillin; can be delayed (up to 6 weeks).
- Skin rash and urticaria: as with all penicillins.
- Hepatotoxicity: liver enzyme elevation.
- C. difficile colitis.
- Anaphylaxis: rare but possible.

DRUG INTERACTIONS

- Warfarin: monitor INR with antibiotic courses.
- Methotrexate: reduced renal clearance increases toxicity.

Oral contraceptives: no additional contraception routinely required.

ADMINISTRATION & STORAGE

- Take with or just after food (reduces GI side effects).
- Take three times daily at evenly spaced intervals.
- Disperse tablets can be dissolved in water.
- Oral suspension: shake well; refrigerate; use within 7 days.

Doxycycline

21

Tetracycline Antibiotic

INFECTION

INDICATION

Community-acquired pneumonia (atypicals); Lyme disease; chlamydia; rosacea; malaria prophylaxis;

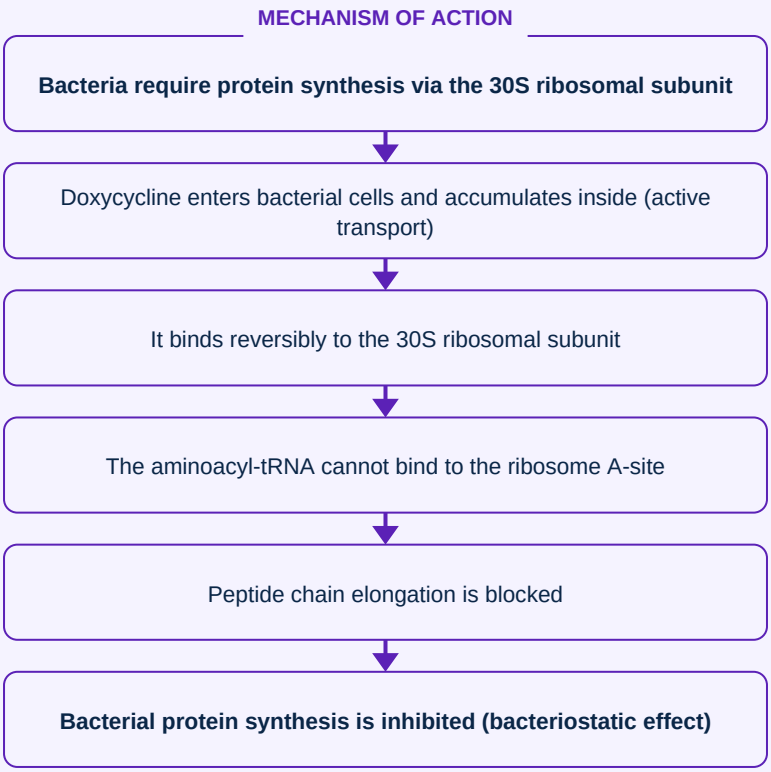
TYPICAL DOSE

Standard: 100-200mg daily. Malaria prophylaxis: 100mg daily from 1-2 days before travel; 4 wks after.

KEY COUNSELLING POINTS

- Take with a full glass of water and remain upright for at least 30 minutes: prevents oesophageal ulceration.
- Avoid taking with milk, antacids, iron or calcium supplements: chelation reduces absorption
- Take with food (avoid dairy: chelates doxycycline); food does not substantially impair absorption.
- Use sun protection (SPF 30+) and cover skin: photosensitivity reactions are common.
- Not suitable for children under 12 or pregnant/breastfeeding women: causes tooth discolouration and skeletal effects.
- For malaria prophylaxis: continue for 4 weeks after returning from endemic area.

MECHANISM OF ACTION



SIDE EFFECTS

- Photosensitivity: severe sunburn-like reactions; use sun protection throughout.
- Nausea and oesophageal irritation: reduced by taking with food and water.
- Oesophageal ulceration: if not taken with adequate water in upright position.
- Vaginal and oral candidiasis: disruption of normal flora.
- Benign intracranial hypertension: headache and visual changes; stop immediately.

DRUG INTERACTIONS

- Antacids, iron, calcium, dairy: chelation significantly reduces doxycycline absorption - separate by 2-3 hours.
- Warfarin: antibiotics may enhance anticoagulant effect; monitor INR.
- Retinoids (e.g. isotretinoin): combined risk of benign intracranial hypertension - avoid.

ADMINISTRATION & STORAGE

- Take with a full glass of water (200mL).
- Remain upright for at least 30 minutes after taking.
- Best taken with food to reduce nausea.
- Separate from antacids/iron/dairy by at least 2-3 hours.

Trimethoprim

22

Diaminopyrimidine (Folate Synthesis Inhibitor)

INFECTION

INDICATION

Uncomplicated lower urinary tract infection (UTI) in women; prophylaxis of recurrent UTI.

TYPICAL DOSE

Women (uncomplicated UTI): 200mg BD for 3 days; men/complicated: 7 days. Prophylaxis: 100mg ON.

KEY COUNSELLING POINTS

- Complete the full course even if symptoms resolve after 1-2 days.
- Drink plenty of fluids to flush the bladder and support antibiotic action.
- Symptoms should improve within 24-48 hours; if not, seek reassessment.
- Not recommended in first trimester of pregnancy: folate antagonism affects foetal development.
- Not suitable for complicated UTI (upper tract, structural abnormality or catheter-associated).
- Resistance to trimethoprim is increasing ; sensitivity testing may be needed if no improvement.

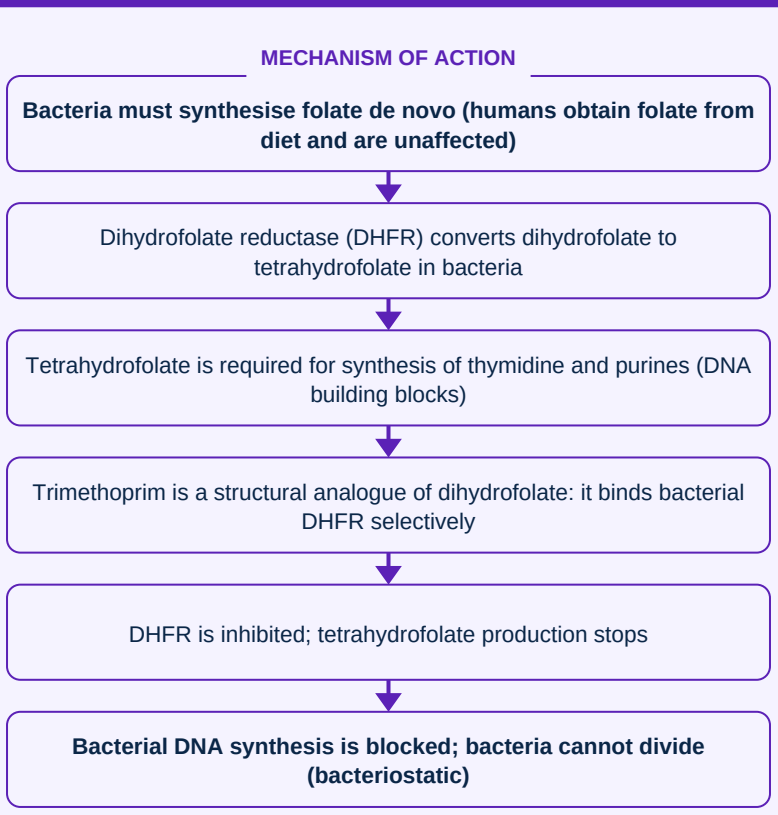
SIDE EFFECTS

- Nausea and vomiting.
- Rash: morbilliform or urticarial; stop if severe.
- Pruritus.
- Hyperkalaemia: particularly in elderly or those on potassium-sparing diuretics/ACE inhibitors.
- Blood dyscrasias: folate-related anaemia with prolonged use; rare with short courses.

DRUG INTERACTIONS

- ACE inhibitors, potassium-sparing diuretics: additive hyperkalaemia risk.
- Warfarin: may potentiate anticoagulant effect.
- Methotrexate: additive folate antagonism increases methotrexate toxicity.
- Phenytoin: trimethoprim may increase phenytoin levels.

MECHANISM OF ACTION



ADMINISTRATION & STORAGE

- Take twice daily (every 12 hours).
- Can be taken with or without food.
- Tablets and oral solution available.
- Adequate fluid intake should be maintained throughout treatment.

Nitrofurantoin

23

Nitrofuran Antibiotic (Urinary Antiseptic)

INFECTION

INDICATION

Uncomplicated lower UTI; prophylaxis of recurrent UTI in non-pregnant adults.

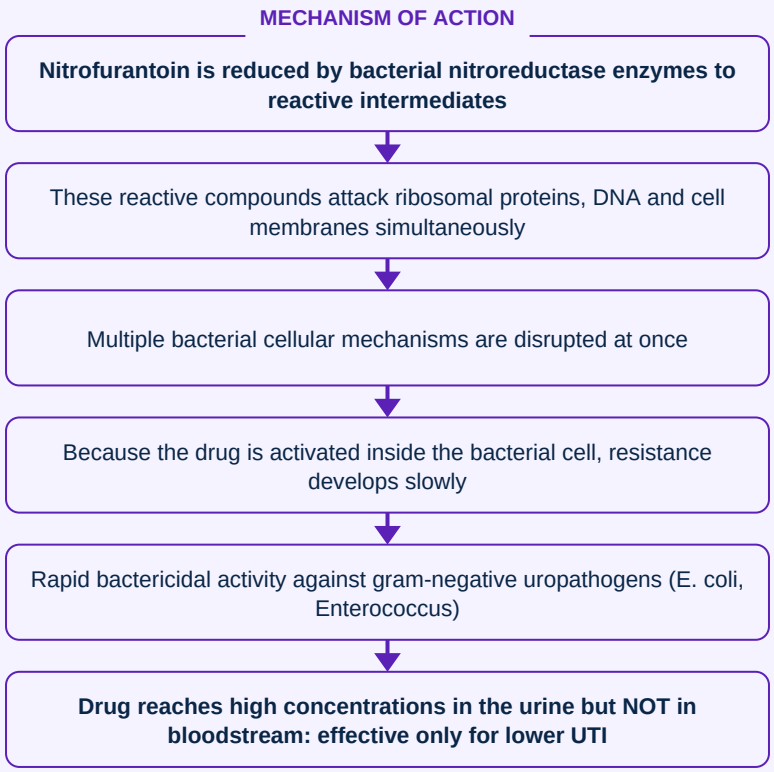
TYPICAL DOSE

Acute UTI: 100mg modified-release BD for 5 days (women) or 7 days (men). Prophylaxis: 50-100mg ON.

KEY COUNSELLING POINTS

- Take with food or milk to reduce nausea and improve absorption.
- Urine may turn brown, yellow or rust-coloured: this is harmless.
- Not suitable for upper UTI (pyelonephritis): insufficient tissue concentrations in kidney parenchyma.
- Do not use if eGFR below 30mL/min: drug fails to achieve therapeutic urinary concentrations AND accumulates.
- Report persistent cough or breathlessness: rare pulmonary toxicity (acute or chronic).
- Report liver symptoms: jaundice or abdominal pain.
- Modified-release formulation (Macrobid) preferred: fewer GI side effects and twice-daily dosing.

MECHANISM OF ACTION



SIDE EFFECTS

- Nausea, vomiting, anorexia: most common.
- Pulmonary toxicity: acute (fever, breathlessness, eosinophilia) or chronic fibrosis with prolonged prophylaxis.
- Hepatotoxicity: chronic active hepatitis with long-term use.
- Peripheral neuropathy: with long-term use, especially in renal impairment.
- Urine discolouration: brown/rust - harmless.

DRUG INTERACTIONS

- Antacids containing magnesium: reduce nitrofurantoin absorption.
- Probenecid and sulfinpyrazone: inhibit renal excretion, reducing urinary concentration and increasing toxicity.
- Quinolones: possible antagonism.

ADMINISTRATION & STORAGE

- Twice daily (MR): 5 days (women); 7 days (men) or as directed.
- Avoid if eGFR < 30mL/min.
- Prophylactic dose taken as a single dose at bedtime.

Fluconazole

24

Triazole Antifungal

INFECTION

INDICATION

Vaginal candidiasis; oropharyngeal candidiasis; tinea; prophylaxis in immunocompromised patients.

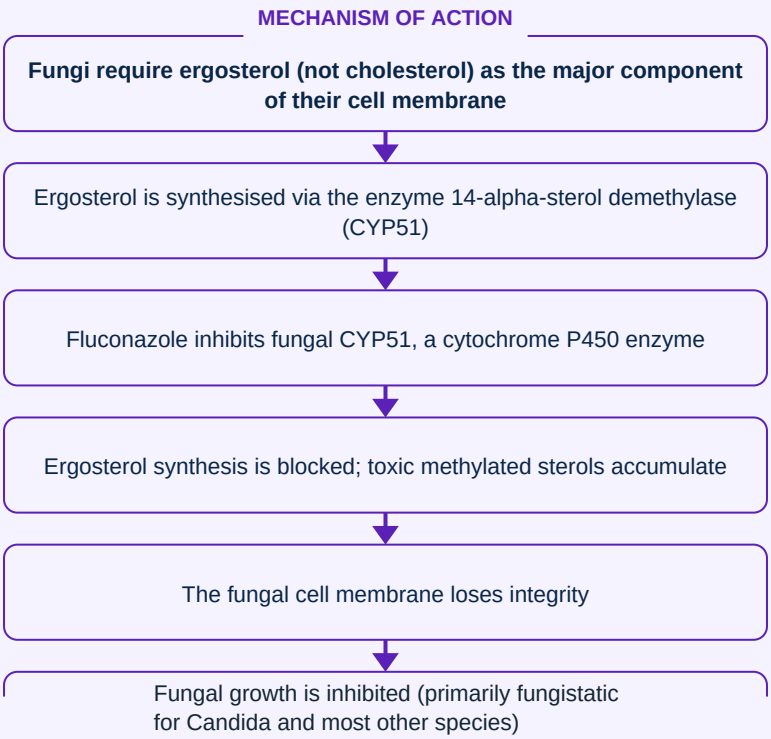
TYPICAL DOSE

Vaginal thrush: 150mg single dose. Oral candidiasis: 50-100mg daily x7-14 days. Systemic: 400mg then 200mg.

KEY COUNSELLING POINTS

- A single 150mg dose is sufficient for uncomplicated vaginal thrush.
- Do not take in pregnancy, especially in the first trimester: teratogenic risk at higher doses.
- Inform pharmacist of all other medicines: fluconazole has many significant drug interactions via CYP enzymes.
- If symptoms do not resolve within 7 days or recur within 2 months, seek review.
- Recurrent thrush (4 or more episodes per year) needs investigation for underlying cause.
- Can be taken with or without food.

MECHANISM OF ACTION



SIDE EFFECTS

- Nausea, abdominal pain, headache: common.
- Hepatotoxicity: liver enzyme elevation; rare serious liver damage.
- QT prolongation: at higher doses; avoid with other QT-prolonging drugs.
- Skin rash: occasional; stop if severe (SJS risk).
- Diarrhoea.

DRUG INTERACTIONS

- Warfarin: fluconazole markedly potentiates warfarin; INR can rise dramatically.
- Statins (simvastatin, atorvastatin): increased statin exposure; risk of myopathy.
- Midazolam and benzodiazepines: markedly increased CNS sedation.
- QT-prolonging drugs (amiodarone, antipsychotics): additive QT prolongation risk.

ADMINISTRATION & STORAGE

- Single dose (150mg) for vaginal candidiasis: taken as one capsule.
- Can be taken at any time, with or without food.
- Oral suspension available for those unable to swallow capsules.
- Available OTC as 150mg capsule for vaginal thrush in women aged 16-60.

Ibuprofen

25

Non-Steroidal Anti-Inflammatory Drug (NSAID)

PAIN

INDICATION

Mild to moderate pain; pyrexia; dysmenorrhoea; dental pain; musculoskeletal inflammation; arthritis.

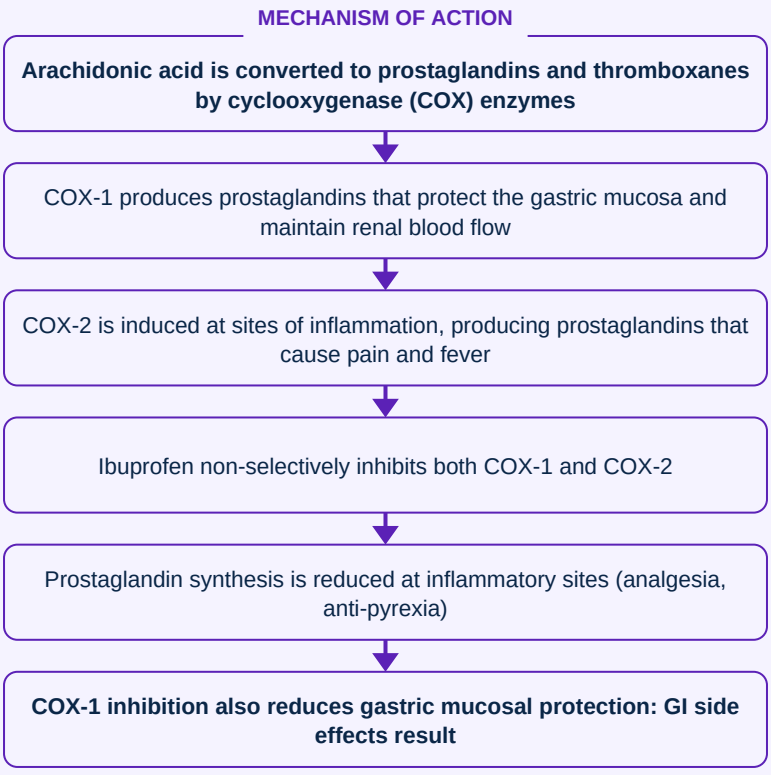
TYPICAL DOSE

Oral: 200-400mg three to four times daily with food. Maximum 2.4g daily (up to 3.2g under supervision).

KEY COUNSELLING POINTS

- Always take with food or milk to protect the stomach lining.
- Not for long-term use without medical supervision: increases risk of GI bleeding and cardiovascular events.
- Avoid if you have a history of peptic ulcer disease, gastric bleeding or severe renal impairment.
- Do not combine with other NSAIDs or aspirin without medical advice.
- Asthmatics: approximately 10% are NSAID-sensitive and may experience bronchospasm.
- Do not use in last trimester of pregnancy: risk of premature closure of ductus arteriosus.
- If prescribed for the elderly: review regularly and consider co-prescribing a PPI.

MECHANISM OF ACTION



SIDE EFFECTS

- GI irritation: nausea, dyspepsia, gastric ulceration, GI bleeding.
- Fluid retention and hypertension: prostaglandin-mediated renal effects.
- Cardiovascular: increased risk of MI and stroke with regular use, especially at higher doses.
- Acute kidney injury: particularly in dehydrated patients, elderly or those on ACE inhibitors/diuretics.
- Bronchospasm: aspirin-sensitive asthma.

DRUG INTERACTIONS

- ACE inhibitors, diuretics: increased risk of acute kidney injury ("triple whammy" with both).
- Warfarin and DOACs: additive bleeding risk; GI ulceration worsens haemorrhage.
- Lithium: NSAIDs raise lithium levels significantly.
- Methotrexate: NSAIDs reduce methotrexate excretion, increasing toxicity risk.
- SSRIs: additive GI bleeding risk.

ADMINISTRATION & STORAGE

- Take with food or milk to reduce GI side effects.
- Use the lowest effective dose for the shortest duration.
- Available as tablets (200mg, 400mg, 600mg), capsules, oral suspension, gel.
- For OTC use: maximum 1.2g daily; maximum 3 days for fever, 10 days for pain.