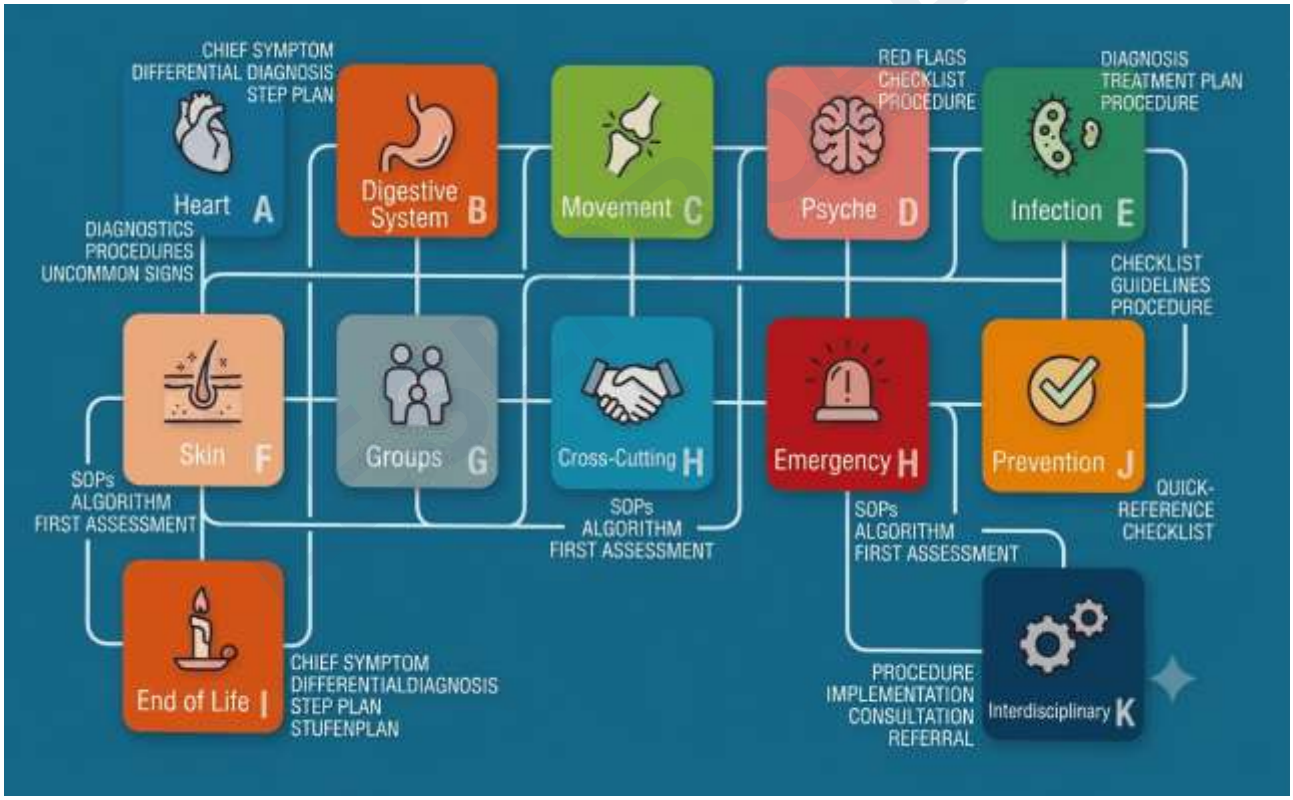
ClinicalOS – The clinical operating system for general practice

Volume 10

Clinical Keyword Compendium

GP Series · 28 chapters · 11 thematic sections



For medical students · Healthcare assistants (HCA) · GPs as a quick reference guide

About this sample

Volume 10 · Clinical Keyword Compendium

This curated sample has 23 pages from a 147-page volume (15% target; minimum 12 pages, including the notice and end page). The chapters listed below are included in full. Original page numbers are retained; gaps are intentional. This overview and the PDF bookmarks cover the included sections. Cross-references may refer to the full volume.

- **A1 Cardiology**
- **E1 Infectious Diseases / Antibiotic Therapy**
- **H1 Geriatrics / Rational pharmacology**
- **K3 Digitalisation / AI in GP practice**

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Block A Cardiovascular and Metabolic Medicine

A1 Cardiology · A2 Respiratory Medicine · A3 Cardiometabolic Risk Markers · A4 Endocrinology/Diabetology · A5 Urology/Nephrology

A1 Cardiology

Chapter objective

This chapter provides the basic framework for GPs to manage common reasons for cardiological consultations. The focus is on hypertension, CHD, heart failure, atrial fibrillation and peripheral arterial disease, as well as the safe initial assessment of potential emergencies. Medical students and healthcare assistants (HCA) learn to distinguish between stable chronic conditions and time-critical emergencies, to document cases in a structured manner, and to confidently take on delegated tasks.

Keywords

Key symptoms: Chest pain, exertional dyspnoea, palpitations, dizziness, syncope, ankle oedema, reduced exercise tolerance, intermittent claudication, blood pressure fluctuations, dyspnoea at rest, nocturia

Common diagnoses: Arterial hypertension, CHD, stable angina pectoris, heart failure (HFrEF/HFpEF), AFib, peripheral arterial disease (PAD), orthostatic hypotension, drug-induced hypotension

Potentially life-threatening differential diagnoses: ACS (STEMI/NSTEMI), pulmonary embolism, aortic dissection, hypertensive crisis, decompensated heart failure, significant arrhythmia, cardiac syncope

Diagnostics – Laboratory / Imaging: Standardised BP (both arms), ambulatory BP monitoring, 12-lead ECG, Holter monitoring, troponin (emergency), BNP/NT-proBNP (heart failure), creatinine, electrolytes, lipid profile, HbA1c, haemoglobin, ABI (ankle-brachial index if peripheral arterial disease is suspected), echocardiography (referral)

Scores / Classifications: CHA_2DS_2-VASc (stroke risk in AFib), HAS-BLED (bleeding risk), NYHA I–IV (severity of heart failure), TIMI / GRACE (ACS risk), ABI cut-off values (<0.9 = suspected PAD), SCORE2 (10-year cardiovascular risk)

Drug classes + key agents: ACE inhibitors: Ramipril 2.5–10 mg/day, Enalapril 5–20 mg/day · AT1 blockers: Candesartan 8–32 mg/day · Beta-blockers: Bisoprolol 2.5–10 mg/day, Metoprolol 50–200 mg/day · Calcium channel blockers: Amlodipine 5–10 mg/day, Verapamil 240–360 mg/day · Diuretics: HCT 12.5–25 mg/day, torasemide 5–20 mg/day, spironolactone 25–50 mg/day · Statins: atorvastatin 20–40 mg/day, rosuvastatin 5–20 mg/day · Antiplatelet therapy: aspirin 100 mg/day, clopidogrel 75 mg/day · DOACs: Apixaban 5 mg twice daily, Rivaroxaban 20 mg daily ·

SGLT2 inhibitors: Dapagliflozin 10 mg daily (heart failure + T2DM) · ARNI: Sacubitril/Valsartan (HFrEF) · Nitrates: Nitroglycerin 0.4 mg sublingually

Non-pharmacological therapy: weight reduction, exercise (cardiac rehabilitation group), sodium restriction <6 g/day, smoking cessation, Mediterranean diet, self-monitoring of BP (morning and evening before taking medication), fluid restriction 1.5–2 l/day (heart failure), daily weight monitoring (heart failure)

Monitoring / Progress: BP log, heart rate, oedema progression, weight, exercise tolerance, adherence; Laboratory tests: Creatinine/K^+ 7–14 days after starting an ACE inhibitor, then annually; statin-related transaminases once after 8–12 weeks; INR for oral anticoagulants; ABI progression for peripheral arterial disease

Referral / Escalation: Suspected ACS → emergency doctor immediately; newly diagnosed AFib + instability → hospital; decompensated heart failure → inpatient admission; peripheral arterial disease (PAD) Fontaine III/IV → vascular surgery; syncope of unknown cause → cardiology/neurology

Documentation terms: Cardiac status: compensated/suspected decompensation; no acute chest pain; rhythm: regular/irregular; no signs of congestion; ACS cannot be definitively ruled out; stable peripheral arterial disease; BP target achieved/not achieved

Healthcare assistant tasks: Measure BP standardised (both arms, 5 minutes' rest), record ECG, document weight and oedema, review medication bag (AMTS preparatory work), arrange follow-up for laboratory tests, check discharge letters for new OAC combinations

Didactic structural aids

OPQRST-A (chest pain): O=Onset · P=Provocation · Q=Quality (pressure/tightness/stabbing) · R=Radiation · S=Severity · T=Time · A=Associated symptoms (dyspnoea, nausea, cold sweats)

7 T's – Cardiology red flags: Chest pain >20 mins · Tachycardia >120/min · Elevated troponin · Signs of TIA/stroke · Temperature (infection + cardiac signs) · Trauma · Signs of tumour/compression

ABCD risk assessment: A = history-taking/family history · B = Blood pressure/blood glucose · C = Cholesterol · D = Doppler/peripheral arterial disease

Quadruple therapy for heart failure (HFrEF): ACE inhibitor/ARNI + beta-blocker + MRA (spironolactone) + SGLT2 inhibitor → proven reduction in mortality

RED FLAGS: Chest pain at rest >20 mins · Dyspnoea at rest · Syncope · New-onset tachyarrhythmia + instability · Neurological deficits · Cold sweats + pallor · BP difference between both arms >20 mmHg (aortic dissection!)

DO NOT: NSAIDs in heart failure or CKD (triple whammy!) · Combine citalopram with macrolides (QT interval!) · Exercise ECG in asymptomatic low-risk patients · Abruptly discontinue beta-blockers in CHD

Example patient cases

Case 1: Arterial hypertension detected during a check-up (52-year-old)

Initial situation: Repeatedly elevated blood pressure readings at the GP's surgery, no acute symptoms, BMI 31, family history of CHD.

History-taking: Occasional pressure in the head, lack of physical activity, has not yet stopped smoking.

Findings: BP 158/96 mmHg on repeated measurements; heart and lungs unremarkable; baseline laboratory tests: creatinine, blood glucose, lipids.

Assessment: Most likely arterial hypertension – to be confirmed by 24-hour BP monitoring/home BP monitoring, risk stratification.

Management: Prescribe long-term BP monitoring; lifestyle advice (weight, salt intake, smoking cessation); discuss treatment strategy; follow-up in 4 weeks.

> 💡 **Key learning point:** Hypertension is confirmed by home blood pressure monitoring – clinic readings alone are insufficient. The 80% rule applies: an ARB plus amlodipine as a single-pill regimen covers the majority of patients.

Case 2: New-onset AFib, haemodynamically stable (74-year-old)

Initial presentation: Palpitations and reduced exercise tolerance for the past 3 days, no syncope.

History-taking: Normotensive, no chest pain, mild exertional dyspnoea.

Findings: Pulse completely irregular; ECG: AFib; heart rate 88/min; SpO_2 97%; stable.

Assessment: Newly diagnosed AFib, haemodynamically stable – not an emergency, but requires a structured work-up.

Management: Calculate CHA_2DS_2-VASc + HAS-BLED scores; rate control (bisoprolol); discuss indication for anticoagulation; arrange referral to cardiology.

> 💡 **Key learning point:** AFib is almost never a trivial condition: stroke prevention is the top priority. CHA_2DS_2-VASc ≥2 (men)/≥3 (women) = anticoagulation.

Case 3: Intermittent claudication – leg pain when walking (67-year-old)

Initial presentation: Calf pain after walking approximately 150 m, relief when standing, smoker.

History-taking: Known hypertension, no diabetes mellitus, family history of CHD.

Findings: ABI right 0.72, left 0.80 – findings typical of Fontaine IIb peripheral arterial disease.

Assessment: Peripheral arterial disease (PAD) Fontaine class IIb – conservative management with walking training and optimisation of risk factors.

Management: Urgent cessation of smoking; aspirin 100 mg/day; statin; target BP <140/90; structured walking training; vascular surgery if condition worsens.

> 💡 **Key point:** pAVK is a cardiovascular risk marker: those affected have a threefold increased risk of heart attack and stroke.

Sample text modules

> **Initial diagnosis of hypertension:** *Repeatedly elevated BP readings; currently no warning symptoms of hypertension. Cardiovascular risk profile assessed; home/long-term BP monitoring recommended; treatment strategy discussed.*
>
> **Stable AFib:** *ECG showing AFib, patient haemodynamically stable. Risk of stroke and bleeding assessed using standardised scales (CHA_2DS_2-VASc X, HAS-BLED X); rate control and indication for anticoagulation discussed; referral to cardiology arranged.*
>
> **Heart failure follow-up:** *Known heart failure, currently no clinical evidence of decompensation. Weight stable, no oedema, exercise tolerance unchanged. Medication reviewed, follow-up in 4 weeks.*
>
> **Initial assessment of peripheral arterial disease (PAD):** *Left/right ABI measured; findings consistent with Fontaine IIb PAD. Optimisation of risk factors (smoking cessation, statins, TAH) and structured walking training recommended. Follow-up agreed.*
>
> **Safety-Net chest pain:** *In the event of worsening symptoms, shortness of breath, syncope, profuse sweating or chest pain at rest, seek immediate emergency re-assessment or call 999 (or 112).*

SOPs

SOP 1 – Chest pain – initial assessment by GP

Objective: To rapidly identify time-critical cardiac conditions.

Indication: New-onset or progressive chest pain.

Steps:

9. 1. Immediately assess vital signs and general condition (HCA: BP, heart rate, SpO_2)
10. 2. OPQRST-A history-taking: nature, duration, radiation, accompanying symptoms
11. 3. Systematically check for red flags (7 T's)
12. 4. Record an ECG – immediately (HCA task)
13. 5. Suspected ACS → do not wait and see; initiate the emergency pathway

Escalation: Instability, chest pain at rest >20 mins, ECG changes → call the emergency doctor/112 immediately

Documentation: nature of pain, duration, radiation, vital signs, ECG findings, decision, patient information

Follow-up: If the patient's condition is stable: review in 24–48 hours

SOP 2 – Hypertension – Initial diagnosis and management

Objective: To reliably diagnose hypertension and assess the risk profile.

Indication: Repeatedly elevated BP readings in the surgery or from home monitoring.

Steps:

14. 1. Measure BP using standardised methods: both arms, whilst seated, after 5 minutes' rest, 2 readings
15. 2. Prescribe home blood pressure monitoring or long-term BP monitoring for confirmation
16. 3. Baseline laboratory tests: creatinine, potassium, blood glucose/HbA1c, lipids, urine dipstick test
17. 4. Assess end-organ damage and risk factors
18. 5. Document lifestyle advice and treatment decision

Escalation: BP >180/120 + symptoms → hypertensive emergency, admission

Documentation: BP baseline readings, risk profile, treatment decision, target value, management plan

Follow-up: Review 4 weeks after start of treatment; laboratory tests: creatinine/K^+ after 1–2 weeks

Abbreviations

Abbreviation	Meaning
ABI	Ankle-brachial index (pAVK screening)
ACS	Acute Coronary Syndrome
ARNI	Angiotensin Receptor Neprilysin Inhibitor (sacubitril/valsartan)
BNP	Brain natriuretic peptide (marker of heart failure)
ECG	Electrocardiogram
HFpEF	Heart failure with preserved ejection fraction
HFrEF	Heart failure with reduced ejection fraction
CHD	Coronary heart disease
MRA	Mineralocorticoid receptor antagonist (spironolactone, eplerenone)
DOAC	New oral anticoagulants (apixaban, rivaroxaban, dabigatran, edoxaban)
NT-proBNP	N-terminal pro-BNP
NYHA	New York Heart Association (heart failure classification, grades I–IV)
pAVK	Peripheral arterial occlusive disease
SGLT2	Sodium-glucose cotransporter 2
AFib	Atrial fibrillation

Glossary

Term	Chapter-specific definition
Acute coronary syndrome	Umbrella term for STEMI, NSTEMI and unstable angina pectoris – always time-critical.
Angina pectoris	Exertion-induced sensation of chest pressure or tightness as a manifestation of myocardial ischaemia in CHD.
Intermittent claudication	Exercise-induced calf pain in peripheral arterial disease (PAD) caused by reduced arterial perfusion; improves at rest.
Decompensation	Worsening of previously compensated heart failure, with dyspnoea at rest, oedema and a decline in physical performance.
Quadruple therapy for heart failure	Four-pillar therapy for HFrEF: ACE inhibitor/ARNI + beta-blocker + MRA + SGLT2 inhibitor.
Hypertensive emergency	Severe BP derailment (usually >180/120) with acute end-organ damage: encephalopathy, myocardial infarction, aortic dissection.
Illness Script	A mental model of a disease based on typical symptoms, time course and findings – helps learners recognise diagnoses more quickly.
Safety Net	A clear agreement on which warning signs require the patient to contact their doctor immediately or dial the emergency number.
Triple Whammy	Dangerous combination: ACE inhibitor/ARB + diuretic + NSAID → increased risk of AKI.

Block E: Infection & Blood

Infectious diseases / Antibiotic therapy · E2 Haematology

E1 Infectious Diseases / Antibiotic Therapy

Chapter objective

This chapter equips readers to confidently assess common infections, make rational decisions regarding antibiotic use and recognise dangerous clinical courses at an early stage. Key message: Not every infection requires antibiotics – and every prescription for antibiotics requires a documented indication.

Keywords

Key symptoms: fever, cough, sore throat, dysuria, pollakiuria, flank pain, skin redness/overheating, diarrhoea/vomiting, purulent discharge, shortness of breath, general malaise/reduced general condition

Common infections: Acute viral bronchitis (no antibiotics!), viral upper respiratory tract infection, bacterial tonsillitis/streptococcal tonsillopharyngitis, acute rhinosinusitis (usually viral), UTI/cystitis, acute pyelonephritis, erysipelas/cellulitis, influenza, viral gastroenteritis, otitis media (usually viral)

Scores: CRB-65 (decision on admission for pneumonia), Centor/McIsaac/FeverPAIN (bacterial tonsillitis), qSOFA (sepsis screening: AF ≥ 22 + altered level of consciousness + BP ≤ 100 → suspected sepsis!)

Antibiotic principles (5 Rs): R1=Right indication · R2=Right active ingredient (narrow-spectrum before broad-spectrum!) · R3=Right dose · R4=Right duration (as short as possible) · R5=Right counselling (side effects, resistance, administration)

Key antibiotics: Bacterial tonsillitis: Penicillin V 3 × 1 million IU/day × 7 days (first-line!) · UTI: Fosfomycin 3 g single dose or Nitrofurantoin 100 mg once daily twice daily × 5 days · Mild pyelonephritis: Ciprofloxacin 500 mg twice daily × 7 days · Pneumonia: Amoxicillin 1 g three times daily × 5 days (outpatient, no risk) · Erysipelas: Penicillin V or amoxicillin · Caution: Do not use quinolones as first-line therapy for uncomplicated infections!

Non-antibiotic measures: Symptomatic treatment (ibuprofen/paracetamol), inhalation, adequate fluid intake, nasal irrigation, oral rehydration (gastroenteritis), cooling/elevation (erysipelas)

Back-up strategy: 'Delayed prescription': provide a prescription with instructions to collect the antibiotics only if the condition worsens after 48 hours → reduces antibiotic use without compromising outcomes

Healthcare assistant (HCA) tasks: Vital signs + temperature + SpO_2, prepare rapid CRP test, urine test strips, immediately escalate high-risk patients (dyspnoea, high fever, reduced general condition), provide patients with information on antibiotics

Didactic framework

5 Rs – Antibiotic decision-making: R1 Correct indication · R2 Correct active ingredient · R3 Correct dose · R4 Correct duration · R5 Correct patient information

ESSENCE (infection management): E=Spectrum of pathogens (viral/bacterial) · S=Severity · S=Duration of symptoms · E=Patient expectations · N=Avoid side effects · C=Compliance · E=Evidence-based

Sepsis – qSOFA (bedside screen): HR ≥22/min + altered level of consciousness + systolic BP ≤100 mmHg → ≥2 points = suspected sepsis → immediate admission!

Explaining antibiotic resistance: 'If we take antibiotics when they aren't necessary, the bacteria learn how to outwit them. Then, at some point, they will no longer work when we really need them.'

RED FLAGS: Shortness of breath/tachypnoea + infection (sepsis/pneumonia!) · qSOFA ≥2 → immediate admission · High fever + reduced general condition + hypotension · Flank pain + fever (pyelonephritis → risk of sepsis) · Rapidly spreading skin redness + systemic signs (necrotising fasciitis!) · Sore throat + stridor + shortness of breath (suspected epiglottitis!)

DO NOT: Prescribe antibiotics for viral bronchitis or cold-related rhinosinusitis lasting less than 7 days · Prescribe broad-spectrum antibiotics (quinolones, cefuroxime) as first-line treatment for uncomplicated infections · Fail to document the indication for antibiotics · Prescribe antibiotics at the patient's request without assessing the indication yourself

Example patient cases

Case 1: Viral bronchitis (38-year-old)

Initial presentation: Cough for 5 days, moderate malaise, no fever.

History-taking: No sputum, no shortness of breath, SpO_2 98%, no red flags.

Findings: Auscultation: vesicular breath sounds, no wheezing; CRP <10 mg/l.

Assessment: Acute viral bronchitis – no indication for antibiotics.

Management: Ibuprofen for symptom relief, adequate fluid intake; advice on the self-limiting nature of the condition; no antibiotics.

> 💡 **Key learning point:** CRP <20 mg/l + normal general condition = no antibiotics. Patient education is part of the treatment!

Case 2: Bacterial tonsillitis (22-year-old)

Initial presentation: Sore throat, difficulty swallowing, fever of 38.8°C for the past 2 days.

History-taking: No cough (important! – makes streptococci more likely).

Findings: Tonsils reddened and coated, cervical LNs swollen; McIsaac score 4.

Assessment: Bacterial tonsillitis (streptococci) highly likely.

Management: Penicillin V 1 million IU three times daily for 7 days; if allergic to penicillin: cefuroxime or clindamycin.

> 💡 **Key point:** No cough + exudate + fever + LN involvement = McIsaac score ≥4 → antibiotics indicated. Broad-spectrum antibiotics not necessary!

Case 3: Erysipelas of the lower leg (68-year-old)

Initial presentation: Redness of the left lower leg for 2 days, warmth, fever of 38.3°C.

History-taking: Diabetic, no lymphadenopathy, no blisters, clearly defined border of redness.

Findings: Typical erysipelas presentation; site of entry: interdigital mycosis; no signs of sepsis.

Assessment: Uncomplicated erysipelas – outpatient treatment possible.

Management: Penicillin V 3 × 1.5 million IU/day × 14 days; elevation of the affected limb; close monitoring of progress for 48 hours; antifungal treatment for the site of entry!

> 💡 **Key learning point:** Marking the border of the redness is essential – this enables assessment of the course of the condition. Treating the site of entry (mycosis!) prevents recurrence.

Sample text modules

> **No antibiotics indicated:** *Clinically viral infection, CRP X mg/l, no red flags, no evidence of bacterial complications. No antibiotics indicated. Symptomatic treatment and follow-up discussed. Return for review if condition worsens.*
>
> **Antibiotics indicated:** *Antibiotic indication based on: [severity / bacterial profile / score]. Prescription: X. Patient advised on dosage, side effects and the development of resistance. Follow-up in X days.*
>
> **Back-up prescription:** *Antibiotic prescription issued with instructions: To be dispensed only in the event of deterioration or lack of improvement after 48 hours. Patient informed.*
>
> **Safety net for infections:** *Immediate return visit/emergency call in the event of: shortness of breath, high fever with chills, altered consciousness, rapid spread of skin redness, sore throat with shortness of breath.*

SOPs

SOP 1 – Antibiotic Decision – Checklist

Objective: Every antibiotic prescription must be indication-based and documented.

Indication: Any infection consultation with a possible indication for antibiotics.

Steps:

111. 1. Go through the 5-R checklist: indication / active ingredient / dose / duration / patient information
112. 2. Classify as viral or bacterial (history-taking + clinical findings + CRP)
113. 3. Apply a scoring system: McIsaac (tonsillitis), CRB-65 (pneumonia), qSOFA (sepsis)
114. 4. Consider a backup strategy for moderate risk
115. 5. Document the indication!

Escalation: qSOFA ≥2, signs of sepsis → go straight to A&E

Documentation: indication, active ingredient, dose, duration, patient information, follow-up appointment

Follow-up: Review if no response after 48–72 hours

Abbreviations

Abbreviation	Meaning
AB	Antibiotic/antibiotics
general condition	General condition
CRB-65	Pneumonia Severity Score
CRP	C-reactive protein
McIsaac	Clinical score for bacterial tonsillitis (0–5 points)
qSOFA	Quick Sepsis-related Organ Failure Assessment
SIRS	Systemic Inflammatory Response Syndrome

Glossary

Term	Chapter-specific definition
The 5 Rs of antibiotic therapy	Correct indication + correct active ingredient + correct dose + correct duration + correct patient information – the guiding principle of rational antibiotic prescribing.
Antibiotic resistance	The ability of bacteria to render antibiotics ineffective – caused by unnecessary or incorrect prescribing of antibiotics.
Back-up strategy	An antibiotic prescription with instructions to collect it only if the patient's condition worsens – reduces antibiotic consumption without compromising clinical outcomes.
qSOFA	Bedside sepsis screening: AF ≥ 22 + altered level of consciousness + BP ≤ 100 → ≥ 2 points = suspected sepsis.
Narrow-spectrum antibiotic	Antibiotic with a narrow spectrum of activity (e.g. penicillin V) – minimises the development of resistance; should be first-line therapy.
Viral vs. bacterial	Viral infections: self-limiting, no antibiotics · Bacterial: signs of severe inflammation, positive score, poor prognosis.

Block H: Cross-disciplinary

H1 Geriatrics/Rational Pharmacology · H2 Emergency medicine in GP practice

H1 Geriatrics / Rational pharmacology

Chapter objective

This chapter covers the GP care of older, multimorbid patients. Key topics: Basic geriatric assessment, frailty, fall prevention, polypharmacy and rational medication adjustment in older people. Key message: Less is often more – structured medication reviews save lives.

Keywords

Presenting symptoms/reasons for consultation: Falls/fear of falling, unsteady gait, weakness/frailty, weight loss, confusion/suspected delirium, sleep disturbance, polypharmacy, medication errors, declining independence, need for care, family members feeling overwhelmed, home visits

Geriatric syndromes: Frailty, sarcopenia (muscle loss), malnutrition, susceptibility to falls, incontinence, delirium, cognitive impairment, depression in older people, social isolation

Basic geriatric diagnostics: Timed Up and Go (TUG) – risk of falling: >12 sec. = increased risk · Mini-Cog/Clock test – cognition · GDS-4 (4-question depression screening) · MNA short form – nutritional status · Barthel Index – independence · FRAIL scheme – frailty

Polypharmacy + rational pharmacology: Polypharmacy: ≥5 medicines taken simultaneously · PRISCUS list: medicines classified in Germany as potentially inappropriate for older people (e.g. benzodiazepines, tricyclic antidepressants, long-term use of NSAIDs) · FORTA classification: A=recommended / B=useful / C=questionable / D=avoid · START/STOP criteria (international) · Aim: Deprescribing – actively reducing medication!

Typical PIMs in older people (PRISCUS): benzodiazepines (risk of falls and delirium!), tricyclic antidepressants (anticholinergic), sedating antihistamines (diphenhydramine!), long-acting sulphonylureas (hypoglycaemia!), long-term use of NSAIDs (GI/kidney/heart), digoxin >0.125 mg/day, muscle relaxants

Fall prevention: strength and balance training (evidence-based!), remove hazards in the home, treat orthostatic hypotension, eye test, optimise footwear, medication review (benzodiazepines, BP medications!), vitamin D 800–2000 IU/day

Delirium recognition: Acute + fluctuating + impaired attention + impaired consciousness + disorientation = delirium → identify the cause! Common causes: infection, medication, dehydration, urinary retention, pain, sleep deprivation

Healthcare assistant (HCA) tasks: Perform the Timed Up and Go test, update the medication list, record the Barthel Index, note weight and fluid intake, document care level, organise a home visit

Didactic structural aid

PRISCUS – Rule of thumb for PIM: Benzodiazepines → Falls · Tricyclics → Delirium/anticholinergic effects · Long-acting sulphonylureas → Hypoglycaemia · Long-term NSAIDs → GI/renal issues · Diphenhydramine (over-the-counter sleep aid!) → Delirium/falls

Deprescribing – Procedure: 1. List all medicines (including OTC!) · 2. Check the indication for each medicine · 3. Identify PRISCUS/FORTA-D medicines · 4. Withdraw one at a time whilst monitoring · 5. Document

Delirium – THINK: T=Toxic (medicines) · H=Hypoxia/heart failure · I=Infection · N=Neurological · K=Potassium/electrolytes/dehydration

TUG test: Patient stands up (from a chair without armrests), walks 3 m, turns round, walks back, sits down. >12 seconds = increased risk of falling. A healthcare assistant (HCA) can carry out this test!

RED FLAGS: Acute confusion/delirium → investigate the cause, do not sedate! · Recurrent falls → urgent medication review · Rapid weight loss in older people → rule out malignancy + malnutrition · Unexplained sedation → PRISCUS medication? · Inadequate care at home + living alone → involve social services

DO NOT: Sedate delirium with benzodiazepines (exacerbates delirium!) · Accept falls in older people as 'always been like that' without a medication review · Recommend OTC sleep aids (diphenhydramine) for older people · Allow polypharmacy to continue without an annual review of indications

Example patient cases

Case 1: Polypharmacy review (79-year-old)

Initial situation: History of falls, currently taking 12 medicines, fatigue, dizziness.

History-taking: PRISCUS medications: diazepam 5 mg at night, amitriptyline 25 mg, diclofenac 50 mg twice daily.

Findings: TUG 16 seconds (increased risk of falling); standing BP 95/60; impaired kidney function.

Assessment: Polypharmacy with 3 PRISCUS medications + orthostatic hypotension as causes of falls.

Management: Tapering off diazepam (replacement: mirtazapine 7.5 mg), replacing amitriptyline, discontinuing diclofenac (NSAID + CKD!). Fall prevention (balance training, footwear, home modifications).

> 💡 **Key takeaway:** Medicines cause falls – deprescribing saves lives. Every fall in older people = mandatory review of medication!

Case 2: Acute delirium (84-year-old)

Initial presentation: Acute confusion since yesterday evening, agitated, daughter concerned.

History-taking: Previously cognitively intact; no new medication; has been drinking very little for the past 2 days.

Findings: Dehydrated, UTI (urine test positive); prescribed amlodipine + bisoprolol + diazepam + metoprolol (5 medicines).

Assessment: Delirium due to UTI + dehydration (THINK: I+K).

Management: Rehydration (oral + s.c. if necessary), antibiotics, discontinue diazepam, bright, quiet environment, no sedation!

> 💡 **Key learning point:** Delirium almost always has a treatable cause. Treat the cause = delirium resolves. Benzodiazepines make it worse!

Sample text modules

> **Polypharmacy review:** *Medication review for X medicines. PRISCUS medicines identified: X. Deprescribing plan: Discontinue/replace X. Follow-up in 4 weeks.*
>
> **Delirium documentation:** *Acute confusion with THINK causes: X. No benzodiazepines. Causal treatment initiated. Safety measures discussed. Follow-up in 24 hours.*
>
> **Fall prevention:** *Fall risk assessment: TUG X seconds. Risk factors: Medications/orthostatic hypotension/vision. Measures: Deprescribing/balance training/home modifications/footwear. Physiotherapy prescribed.*
>
> **Geriatric safety net:** *Immediate re-assessment required in the event of: increased confusion, a fall, pain, fever, refusal of food or fluids.*

SOPs

SOP 1 – Medication review for older people

Objective: To systematically reduce polypharmacy.

Indications: ≥5 medicines, risk of falls, confusion, suspected ADR.

Steps:

141. 1. Compile a complete list of medications (including OTC and self-medication)
142. 2. Identify PRISCUS/FORTA-D medicines
143. 3. Review the indication for each medication (is it still relevant?)
144. 4. Gradual withdrawal: one medication at a time
145. 5. Follow-up after 4 weeks

Escalation: delirium, severe orthostatic hypotension, hypoglycaemia → immediately

Documentation: Initial list, medicines discontinued/reduced, reason, management plan

Follow-up: check-up in 4 weeks; annual medication review

Abbreviations

Abbreviation	Meaning
FORTA	Fit for The Aged – Medication assessment in older people A–D
GDS-4	Geriatric Depression Scale (4 questions)
MNA	Mini Nutritional Assessment
PIM	Potentially Inappropriate Medication
PRISCUS	List of potentially inappropriate medicines for older patients in Germany
TUG	Timed Up and Go – fall risk test

Glossary

Term	Chapter-specific definition
Delirium	Acute, fluctuating disturbance of consciousness/awareness – always investigate for an organic cause; never sedate!
Deprescribing	The systematic withdrawal of medicines that are no longer indicated or are harmful in older people.
Frailty	Geriatric frailty syndrome characterised by increased vulnerability to stressful events – use the FRAIL scoring system for identification.
polypharmacy	≥5 concurrent medications – increases the risk of drug interactions, side effects and falls.
PRISCUS list	German list of medicines considered potentially inappropriate for older patients (risk of falls, delirium and gastrointestinal complications).

K3 Digitalisation / AI in GP practice

Chapter objective

This chapter demonstrates how digitalisation and AI can be used in GP practices in a meaningful, time-saving and patient-centred way. The focus is on practice-relevant applications – not on technology for its own sake.

Keywords

Basic digital tools: practice management system (PMS), e-prescription, electronic patient record (ePA), electronic medication plan (eMP), electronic doctor's letter (KIM), telemedicine/video consultations, recall system, laboratory results transmission, digital patient information

AI applications in practice: AI-assisted documentation (dictation → structured text), AI text modules, AI to support differential diagnosis, AI interaction check (medications), AI triage support, AI patient communication (chatbot), AI analysis of laboratory data

Benefits + limitations: Benefits: time savings, structuring, reminders, information consolidation · Limitations: AI hallucinations!, data protection (GDPR!), ultimate medical responsibility remains with the doctor!, bias in training data, errors in rare scenarios

ePA – key points: Opt-out (from 2025): Patients automatically have an ePA → may opt out · GP can upload medication list + test results · Advantages: Cross-sector availability · Caution: Data protection + acceptance

Video consultations: Indications: follow-up consultations, mental health conditions, monitoring, aftercare appointments · Not suitable: initial examinations involving physical findings, emergencies · Billable: EBM GOP 01439

Healthcare assistant (HCA) tasks: issuing e-prescriptions (as instructed by the doctor), maintaining the patient information system (PMS), managing the recall system, digital appointment booking, providing patients with information on the ePA, sending invitations for telemedicine consultations

Guidance on Structuring Teaching

Use of AI – Basic rules: AI is an assistant, not a doctor. Every AI output must be professionally reviewed. Hallucinations are possible (incorrect but plausible-sounding information). Ultimate medical responsibility cannot be delegated!

ePrescription workflow: Doctor signs digitally → KIM transmission or QR code → Patient redeems at the pharmacy. No printer required (but a printout is possible on request).

> ⃠ **DO NOT:** Accept AI diagnostic suggestions without your own review · Enter patient data into AI tools that do not comply with the GDPR · Upload ePA findings without checking for patient consent

Sample text modules

> **AI-assisted documentation:** *Consultation documented with AI support. The doctor reviews and confirms the AI-generated content. Final responsibility lies with the treating doctor.*
>
> **Video consultation:** *Video consultation with Patient X. Diagnosis/findings: X. Next steps: X. If new symptoms arise: in-person appointment.*

Abbreviations

Abbreviation	Meaning
ePA	Electronic patient record
eMP	Electronic medication plan
KIM	Communication in Healthcare (secure email service)
PMS	Practice management system
GDPR	General Data Protection Regulation

Glossary

Term	Chapter-specific definition
AI hallucination	AI systems can generate information that sounds plausible but is factually incorrect – always check!
ePA	Electronic Patient Record: opt-out for those insured under statutory health insurance (GKV) from 2025; cross-sector data availability.
Ultimate medical responsibility	Regardless of the use of digital or AI tools, the treating doctor bears full responsibility for diagnosis and treatment.

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