1. Scope and how to use this handbook

This handbook is the ambulatory reference for adult primary care and specialty clinic staff. It states the health system's default position on common prescribing and monitoring decisions so that two clinicians asking the same question get the same answer.

Scope: adults aged 18 and over, in the ambulatory setting only. This handbook does NOT cover paediatric dosing, inpatient or critical care orders, obstetric patients, or chemotherapy. A question outside that scope has no answer here, and the correct response is to escalate rather than to extrapolate from a neighbouring section.

Every recommendation carries a grade. Grade A means supported by randomised trial data and adopted system-wide. Grade B means supported by observational data or expert consensus. Grade C means practice varies and clinician judgement governs.

Before any dose decision, check two things: the patient's most recent eGFR, and their complete current medication list including over-the-counter products and supplements. Most of the errors this handbook exists to prevent come from skipping one of those two checks.

The Pharmacy and Therapeutics committee owns this document and revises it annually. Section owners are named at the foot of each section. Do not photocopy a single section for clinical use: the thresholds in one section frequently depend on definitions given in another.

2. Hypertension in adults

First-line agents are a thiazide-like diuretic, a dihydropyridine calcium channel blocker, or an ACE inhibitor. Usual starting points are chlorthalidone 12.5 mg daily, amlodipine 5 mg daily, or lisinopril 10 mg daily.

Target blood pressure is below 130 over 80 for most adults. Use a target below 140 over 90 instead when the patient has significant frailty, symptomatic orthostatic hypotension, or a limited life expectancy.

Add a second agent rather than maximising the first when the reading is 20 over 10 or more above target. Combination therapy reaches goal faster and causes fewer side effects than pushing one drug to its ceiling.

Never combine an ACE inhibitor with an angiotensin receptor blocker. The combination adds hyperkalaemia and acute kidney injury risk without adding cardiovascular benefit.

For Black adults without chronic kidney disease, start with a thiazide-like diuretic or a calcium channel blocker; ACE inhibitors are less effective as monotherapy in this group. Recheck the reading four weeks after any change, and confirm office readings against home readings before escalating a third time.

3. Type 2 diabetes - glycaemic targets and first-line therapy

Target A1c is below 7 percent for most non-pregnant adults. Use a target below 8 percent when the patient has a limited life expectancy, advanced complications, or a history of severe hypoglycaemia.

Metformin is first-line unless it is not tolerated or kidney function rules it out. Start 500 mg once daily taken WITH FOOD, then titrate upward by 500 mg each week as tolerated, to a maximum of 2000 mg per day in divided doses.

Taking metformin with food is not optional advice: it is the single most effective way to reduce the gastrointestinal upset that causes patients to stop the drug on their own. If upset persists at a given dose, hold that dose for a week before trying to advance again, or switch to the extended-release formulation.

When A1c remains above target after three months at the maximum tolerated metformin dose, add a GLP-1 receptor agonist or an SGLT2 inhibitor. Choose between them on the basis of established cardiovascular or kidney disease, not on cost alone, and see section 9 for the access pathway.

Sulfonylureas carry a meaningful hypoglycaemia risk and are generally avoided in adults over 75. See section 8 for recognition and treatment of hypoglycaemia.

4. Metformin dosing in reduced kidney function

Metformin is cleared by the kidney, and accumulation raises the risk of lactic acidosis. The dose ceiling therefore depends on eGFR, not on the patient's A1c and not on how well they tolerated the drug previously.

eGFR 45 or above: no dose adjustment is required. Continue up to the standard maximum of 2000 mg per day described in section 3.

eGFR 30 to 44: the maximum is 1000 mg per day, and metformin should NOT be initiated at this level. A patient already established on a higher dose should be reduced to 1000 mg per day, not stopped abruptly, and their A1c rechecked in three months so a replacement agent can be planned.

eGFR below 30: metformin is contraindicated. Stop it and substitute another agent.

Hold metformin on the day of any iodinated contrast study and for 48 hours after, and hold it during acute illness with vomiting, diarrhoea or reduced oral intake. Check vitamin B12 annually after three years of continuous therapy. Counsel patients to report unusual muscle pain, rapid breathing or profound fatigue, which are the early features of lactic acidosis.

5. Chronic kidney disease - staging, monitoring and nephrotoxins

Stage chronic kidney disease by eGFR. G1 is 90 or above, G2 is 60 to 89, G3a is 45 to 59, G3b is 30 to 44, G4 is 15 to 29, and G5 is below 15. Stage separately by albuminuria: A1 is below 30 mg per gram, A2 is 30 to 300, and A3 is above 300.

Monitoring frequency follows the stage. Check eGFR and potassium annually at G1 and G2, every six months at G3a, every three months at G3b, and every six to eight weeks at G4 or worse.

Avoid chronic NSAID use from stage G3 onward. The combination of an NSAID, an ACE inhibitor and a diuretic is the classic triple-whammy for acute kidney injury and should be actively deprescribed wherever it appears.

ACE inhibitors and angiotensin receptor blockers are preferred agents in proteinuric kidney disease. Expect the creatinine to rise by up to 30 percent after starting or increasing the dose; a rise within that range is expected and is not a reason to stop the drug. A rise beyond 30 percent is.

Refer to nephrology at stage G4, that is an eGFR below 30, or earlier if there is rapid progression, heavy albuminuria, resistant hypertension, or an unexplained fall in eGFR of more than 25 percent. Sick-day rules for intercurrent illness are listed in section 8.

6. Anticoagulation - choosing an agent and setting the INR target

For atrial fibrillation and for venous thromboembolism treated with warfarin, the target INR is 2.0 to 3.0. Time in therapeutic range should be at least 65 percent; below that, switching agents is usually safer than adjusting the dose.

For a patient with a MECHANICAL MITRAL VALVE the target INR is higher: 2.5 to 3.5. This is the target most often quoted incorrectly, because the atrial fibrillation range is far more common. Confirm the indication before you confirm the number.

For a mechanical aortic valve with no additional risk factors the target INR is 2.0 to 3.0. Add aspirin 81 mg only where there is a separate indication for it.

A direct oral anticoagulant is preferred over warfarin for non-valvular atrial fibrillation. A DOAC must NOT be used in a patient with a mechanical heart valve or with moderate to severe mitral stenosis; in those two situations warfarin is the only acceptable option.

Apixaban 5 mg twice daily is the usual dose. Reduce to 2.5 mg twice daily when two of the following three are present: age 80 or over, body weight 60 kg or less, and serum creatinine 1.5 mg per dL or above. Note that the rule is two of three, not any one of them.

7. Drug interactions seen most often in the ambulatory clinic

Warfarin with fluconazole: fluconazole inhibits CYP2C9, the INR RISES and bleeding risk increases. Reduce the warfarin dose by 25 to 50 percent and recheck the INR within three to five days. Do not wait for the next routine blood draw.

Warfarin with any NSAID: the bleeding risk is additive and largely independent of the INR. Avoid the combination and offer acetaminophen instead, at no more than 2 g per day on a regular basis.

Warfarin with St John's wort: this one runs the other way. St John's wort INDUCES CYP3A4 and CYP2C9, so warfarin is cleared faster, the INR FALLS, and the patient is at risk of clotting rather than bleeding. Advise against it, and offer an SSRI such as sertraline for low mood instead. Warn patients that herbal does not mean inert.

Metformin with iodinated contrast: hold metformin at the time of the study and for 48 hours after, and restart only once kidney function has been rechecked.

Simvastatin with clarithromycin: myopathy and rhabdomyolysis risk. Hold the simvastatin for the duration of the antibiotic course rather than reducing the dose. Escalate any question involving two or more interacting drugs to a pharmacist before the prescription is issued.

8. Hypoglycaemia - recognition, treatment and sick-day rules

A glucose below 70 mg per dL is hypoglycaemia and should be treated. Below 54 mg per dL is clinically significant hypoglycaemia and warrants a review of the regimen, not just a dose adjustment.

Treat a conscious patient with the 15-15 rule: 15 grams of fast-acting carbohydrate, recheck in 15 minutes, repeat if still below 70, then give a long-acting carbohydrate or a meal once the reading has recovered.

For severe hypoglycaemia with altered consciousness, give glucagon. Carers should be prescribed it and taught to use it; a glucagon prescription that nobody in the household knows how to give is not a treatment.

After any severe episode, identify and reduce the agent responsible. Reduce the sulfonylurea or the insulin. Metformin does not cause hypoglycaemia on its own and is usually not the drug to stop.

Sick-day rules: keep taking metformin unless there is vomiting, diarrhoea or reduced oral intake, in which case hold it. Hold SGLT2 inhibitors during acute illness because of the risk of euglycaemic ketoacidosis. Hold ACE inhibitors, ARBs and diuretics if the patient is volume depleted. Check glucose four times daily and ketones if the reading is above 250 mg per dL.

9. Access, cost and the prior-authorization workflow

The formulary has four tiers. Tier 1 is preferred generic, tier 2 is non-preferred generic, tier 3 is preferred brand, and tier 4 is non-preferred brand and specialty. Copays rise with the tier, and so does the chance that the patient simply does not fill the prescription.

Prior authorization is required for most tier 3 and tier 4 agents. Submit through the electronic pathway rather than fax: the median turnaround is two working days electronically against eight by fax. Attach the A1c, the current regimen and the agents already tried and failed.

Before starting any prior authorization, check two cheaper routes first. A 90-day mail-order fill reduces both copay and pharmacy visits, and a manufacturer patient assistance programme may cover the drug entirely for an uninsured patient.

Cost is a clinical variable, not an administrative one. An effective drug the patient cannot afford has an adherence rate of zero and therefore an effect size of zero. Ask about affordability at every titration visit, and document the answer.

If a prior authorization is denied, the first appeal should name the specific clinical criterion the patient meets. Appeals that restate the original request are denied again. Escalate to the section owner for a peer-to-peer review after one failed written appeal.

10. Preventive care and screening schedule for adults

Colorectal cancer screening starts at 45 for average-risk adults and continues to 75. Options are annual FIT, stool DNA every three years, CT colonography every five years, or colonoscopy every ten years.

Cervical cancer screening runs from 21 to 65: cytology every three years, or high risk HPV testing every five years from age 30. Breast screening is offered from 40 to 74, every one to two years.

Lung cancer screening with annual low-dose CT is offered from 50 to 80 for current smokers, or those who quit within the last 15 years, with a 20 pack-year history.

Screen for type 2 diabetes from age 35 to 70 in adults who are overweight or obese, every three years if normal. Screen earlier and more often with a family history, gestational diabetes, or a related condition such as polycystic ovarian syndrome.

Check blood pressure at least annually. Influenza vaccination annually for everyone over six months, pneumococcal vaccination per the age and risk schedule, and recombinant zoster vaccine from age 50. Tobacco cessation advice is delivered at every visit, not only at annual ones.