PrescQIPP
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IMPACT - Improving Medicines and Polypharmacy Appropriateness Clinical Tool

This bulletin provides suggestions for consideration by commissioning organisations and clinicians to optimise medicines use, and provide practical advice (where it is available) about how to safely stop/discontinue/withdraw a medicine and issues to consider. For person-centred care, clinicians should ask people what matters to them so that their treatment and care can be personalised. A discussion about medicines benefits and risks and possible consequences of different options should take place with the person to enable shared decisions with them about whether to continue or stop a medicine. If it is decided that therapy is appropriate, it should be continued. Where it is decided to stop a medicine because the risk of continuing outweighs the benefit to the patient, the information in this bulletin can be used as a practical decision aid, in conjunction with other relevant, patient specific data.

Background

The World Health Organisation (WHO) Medication Without Harm campaign is ongoing and the aim is to reduce medication errors globally. [WHO 2022] PrescQIPP have developed resources to support the WHO Medication without harm challenge, which are available here: https://www.prescqipp.info/our-resources/bulletins/bulletin-252-medicines-without-harm/

In September 2021 the National Overprescribing Review for England (Good for you, good for us, good for everybody) stated that 'Prescribing can be seen as a form of problem-solving, with a medical condition as the problem and a medicine as the solution. But more often than not medicines can only manage a condition, not cure it, and the wider needs and preferences of the patient may change. The key to stopping overprescribing is medicines optimisation: ensuring that patients are prescribed the right medicines, at the right time, in the right doses. In some cases, medicines optimisation may lead to a patient being offered additional medication, or having their dose increased, but it also provides a framework for reducing and stopping overprescribing. Stopping a medication may be just as challenging in terms of weighing the benefits or providing support as starting it. Deprescribing seeks to apply best practice in prescribing to the process of stopping a medicine. It needs the same skill and experience from prescribers, and the same level of support from pharmacists, and from guidance, data and insight, even from the pharmaceutical manufacturers, to get the best results. And just as with prescribing, it should place patients at the centre of the process'. [DHSC 2021]

The NHS in England and Wales spent £9.527 billion on medicines in primary care in 2021/2022. [NHSBSA 2022, Welsh Government 2022] The NHS in Scotland spent £1.0626 billion on medicines in primary care in 2019/2020. [Public Health Scotland 2021]. It is estimated that medicines worth over £300 million are wasted each year in England. The cost to the NHS of people not taking their medicines properly and not getting the full benefits to their health has been estimated at over £500 million a year. [NHSE 2015, YHEC 2010]

When talking with people about their medicines, health care professionals should ask the person what matters to them and work together with them to reach a decision about care. Health care professionals should review whether the medicines are still clinically appropriate and be able to discuss the risks, benefits and possible consequences of different options. Since July 2019, clinical pharmacists working in Primary Care Networks in England are responsible for undertaking adherence-centred medication

reviews in people with complex polypharmacy. This applies especially to the elderly, people in care homes, those with multiple comorbidities (in particular frailty, COPD and asthma) and people with learning disabilities or autism (through STOMP – Stop Over Medication Programme). [NHSE 2016, NHSE 2022, NHSE 2021, NICE NG197]

The National Institute for Health and Care Excellence (NICE) clinical guideline on medicines optimisation (MO) and Kings Fund report about MO highlight that polypharmacy may be either appropriate or problematic/inappropriate. Problematic/inappropriate polypharmacy should be reviewed to optimise medicines use. [Duerden 2013, NICE NG5]

There are many examples of tools to support reviewing medicines and safely tapering or withdrawing ones which are no longer appropriate: PrescQIPP Polypharmacy & Deprescribing webkit, NO TEARS, STOPP-START, Beers criteria 2023, Scotland Polypharmacy Guidance 2018, Australian 10-step discontinuation guide, NHS Specialist Pharmacy Service patient centred approach to polypharmacy, Wales Polypharmacy in older people guide for healthcare professionals and the Canadian MedStopper tool.

Some medicines may need to be stopped. This should be done in an evidence-based manner. [WHO 2017, NICE NG5, Scott 2013]

Medicines may be considered for stopping if:

- There is no valid or relevant indication for prescribing as assessed by changes in symptoms, signs, laboratory and diagnostic test results. [Scott 2013, Garfinkel 2010]
- The known possible adverse drug reactions outweigh the possible benefits. [Scott 2013, Garfinkel 2010] It is important to note that adverse drug reactions and risks of medicines can change over time as patients become older and more frail.
- There is a risk of cumulative toxicity if particular medicines are taken together. [Scott 2013]
- The patient is choosing to not take/use the medication as prescribed or intended. [Scott 2013]
- Unlicensed medicines ('specials') are being prescribed when an alternative licensed medicine or formulation that is suitable for the individual will provide the same therapeutic benefit. [RPS 2015]
- Non-drug measures can provide benefit, without adverse effects. [Scott 2013]
- The patient is nearing end of life. [Scotland Polypharmacy Guidance 2018]

A whole systems, person-centred approach to safe deprescribing interventions is required, involving healthcare professionals, patients, and carers. Good communication is essential for successful withdrawal of therapy that is no longer appropriate. Consider health literacy issues to ensure the patient understands what is being discussed, e.g. use different formats or resources to aid the explanation. Record discussions in patient notes including their comments. [Drugs Ther Perspec 2014, Doherty 2020]

Notes for the IMPACT table

- In the IMPACT table, the lists of example medicines are not exhaustive.
- Links to PrescQIPP resources are included where relevant. In order to access the PrescQIPP resources you will need to be logged in to the website before clicking links in the document.
- Some references (e.g. Parsons et al 2015) may require access via an institution and some websites (e.g. NHS Specialist Pharmacy Service) may require registration.
- The STOPP-START criteria are set out in the Supplementary information section of the webpage. The criteria are in Supplementary file 1 (appendix 1) and the references which support the criteria are listed in supplementary file 2 (appendix 2).
- **Clinical risk** classifies the risks versus the benefits of continuing therapy based on usual maintenance doses as a general indication for classes of medicines. The clinical risk is not absolute and is intended as a guide. Risks may differ for individual patients depending on various factors, e.g. age, co-morbidities etc.

- **Deprescribing priority** is to help in situations where, for example a patient is on 20 drugs and ten could be changed. It may not be possible (or desired by the clinician/patient) to stop these all at once, so criteria are needed to help decide which to do first. The priority has been assigned based on clinical risk and medicine/patient safety factors first, and only considers cost when all safety issues are equal. Consider stopping one medicine at a time, if more than one is stopped and there are unwanted effects, it may be unclear which medicine is responsible. The deprescribing priority is not absolute and is intended as a guide for the clinician to aid shared decision making discussions.
- When reviewing treatment for individual patients, it is important to consider the cumulative risks of medicines taken together and adjust the clinical risk and deprescribing priority accordingly using clinical judgement.
- The tapering and withdrawing advice is intended as a guide if the medicine is no longer indicated or as a result of shared decision making, the patient does not want to take it. Check whether local policies/guidelines may contain more detailed advice about tapering and withdrawal as IMPACT only has brief information. When using the advice from Medstopper about reducing doses, consider the formulations available as the reductions may not be easily achievable.
- A separate data pack is available to show current spend on medicines and also contains a tool where you can input an individual patient's medicines to pull off a patient specific deprescribing prioritisation report: https://www.prescqipp.info/our-resources/bulletins/bulletin-268-impact/

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KEY	CR = Clinical risk level	DP = Deprescribing priority if no longer needed or indicated	H = High	M = Medium	L = Low

Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Antispasmodics (e.g. alverine, atropine, dicycloverine, hyoscine butylbromide, mebeverine, propantheline)	How long have they been prescribed? Avoid long term use, they are highly anticholinergic preparations with uncertain effectiveness. [Scotland Polypharmacy Guidance 2018, Beers criteria 2023] Medicines with anticholinergic activity may influence the risk of falls by adversely affecting the cardiovascular or central nervous system (e.g. orthostatic hypotension, bradycardia, sedation, sleep disturbance, confusion, dizziness). [Lee 2021] Avoid concomitant use of two or more drugs with antimuscarinic/anticholinergic properties (e.g. bladder antispasmodics, intestinal antispasmodics, tricyclic antidepressants, first generation antihistamines, antipsychotics) due to the risk of increased antimuscarinic/anticholinergic toxicity. [STOPP-START, Beers criteria 2023] Avoid antispasmodics with potent anticholinergic/antimuscarinic effects (e.g. hyoscine) in patients with delirium or dementia due to risk of exacerbation of cognitive impairment. [STOPP-START] Are likely to cause constipation, and non-constipating alternatives are available, for example alverine, mebeverine. [STOPP-START]	Withdraw slowly to avoid adverse effects from sudden discontinuation. [Scott 2013] PrescQIPP Anticholinergic burden bulletin and briefing, searches Offer lifestyle/self management advice [CKS irritable bowel syndrome CKS diverticular disease]	M	M

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Gastrointestinal (GI) system

Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
H2 blockers/PPIs (e.g. cimetidine, famotidine, nizatidine/ esomeprazole, lansoprazole, omeprazole, pantoprazole, rabeprazole)	Cimetidine has some anticholinergic activity (PPIs have none - omeprazole may be preferred over lansoprazole). [Scotland Polypharmacy Guidance 2018] Avoid cimetidine with concomitant theophylline due to increased risk of theophylline toxicity. [Beers criteria 2023] Reduce dose of cimetidine, famotidine and nizatidine if CrCl <50ml/min due to mental status changes. [Beers criteria 2023] How long have they been prescribed at full (high) dose? [STOPP-START] Avoid use of PPI for uncomplicated peptic ulcer disease oesophagitis at full therapeutic dosage for >8 weeks. Dose reduction or earlier discontinuation usually indicated. [STOPP-START] Risk of bone loss and fractures with PPI use >1 year at high dose, particularly in the elderly. [Scotland Polypharmacy Guidance 2018, Beers criteria 2023] PPIs should be reviewed 4 to 8 weeks after starting treatment and discontinued where appropriate. Avoid regular use >8 weeks unless for high risk patients (e.g. oral corticosteroids or chronic NSAID use), erosive oesophagitis, Barretts oesophagitis, pathologic hypersecretory condition or demonstrated need for long term treatment. [Beers criteria 2023] Is an NSAID still being taken? If no, stop H2 blocker/PPI. [Medstopper] Stop PPI if there has been no proven peptic ulcer, GI bleeding or dyspepsia for one year, continued use may contribute to clostridium difficile infection. [Beers criteria 2023, NICE NG199] Consider other risk factors for GI bleeding including age >65 yrs; taking certain medicines, e.g. an antiplatelet, warfarin, DOAC, corticosteroid, SSRI etc.; history of peptic ulcer disease or GI bleeding. [CKS NSAIDs prescribing issues] If PPI use is appropriate, prescribe as generic omeprazole or lansoprazole capsules at the lowest dose needed. [BNF]	Offer lifestyle/self-management advice. [CKS Dyspepsia] Reduce the frequency and dose. Stop the H2 blocker/PPI and advise use on demand or as self care (purchase OTC). H2 blocker/PPIs can be stopped without tapering if needed. If rebound hypersecretion is a concern, then the dose of H2 blocker/PPI can be reduced gradually. If used daily for more than 3 to 4 weeks reduce dose by 50% every 1 to 2 weeks. Once at 25% of the original dose and no withdrawal symptoms have been seen, stop the drug. If any withdrawal symptoms occur, go back to approximately 75% of the previously tolerated dose. [Medstopper] PrescQIPP PPI deprescribing algorithm	H2 blockers: M PPI: H	H2 blockers: M PPI: H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
H2 blockers/PPIs cont.	For long term treatment, a medicine review of PPI therapy should be completed annually. Measurement of serum-magnesium concentrations should be considered before and during prolonged treatment with a PPI, especially when used with other drugs that cause hypomagnesaemia or with digoxin. [BNF] Limited benefit in people with limited life expectancy unless there is a recent history of gastrointestinal bleeding, peptic ulcer, gastritis, GORD, or the concomitant use of NSAIDs and steroids. [Thompson 2019]	See above		
Infantile colic products (e.g. Colief®, gripe water, simethicone)	Colief® is not considered as a medicinal product suitable for prescribing on the NHS unless the criteria set out by the Advisory Committee on Borderline Substances (ACBS) are met. [Drug Tariff] Infacol® is denoted in the BNF as being less suitable for prescribing on the NHS. Evidence does not support use. Gripe water is not licensed for the treatment of infantile colic and should not be used. [NHSE/NHSCC 2018]	No tapering required. Advise to purchase OTC if still required. Provide parents/carers with advice to manage infantile colic. [CKS Colic - infantile]	L	L

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Gastrointestinal (GI) system

Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Laxatives (e.g. bisacodyl, docusate, ispaghula, lactulose, macrogols, methylcellulose, senna, sodium picosulfate)	Is hypokalaemia an issue? May be a sign of excessive use of laxatives. [BNF] Has previous use of opioid analgesics or other medications which cause constipation reduced or stopped? [CKS constipation] Do regular bowel movements occur without difficulty? Is the patient eating and drinking and has an adequate fluid intake? [CKS constipation] Adjust the dose, choice, and combination of laxatives used, depending on the person's symptoms, the desired speed of symptom relief, the response to treatment, and their personal preference. [CKS constipation] What type of stool is passed? Use the Bristol stool chart. Check if the patient is taking an antipsychotic (e.g. clozapine, amisulpride, quetiapine) as they can cause constipation and prophylactic laxatives are needed. [BNF, CKS constipation] Macrogols should be used with caution in people with cardiovascular disease due to the risk of fluid and electrolyte disturbance. [CKS constipation] See PrescQIPP Constipation resources or local laxative/constipation guidelines if constipation still needs to be managed.	If laxatives are no longer needed, and >1 taken, reduce and stop one at a time slowly. Do not stop abruptly. Withdrawal may take a few months. Reduce stimulant laxative first if possible, adjust the dose of other laxatives if necessary. Restart laxatives if relapse occurs. Use stool frequency and consistency as a guide. Advise patient to have adequate fluid and fibre intake to stop constipation occurring. Offer self-management advice about diet, exercise and toileting. [CKS constipation]	M	M
Loperamide	Loperamide has some anticholinergic activity. Check if loperamide is being taken with other medicines that have anticholinergic activity and increase the anticholinergic burden. [Scotland Polypharmacy Guidance 2018] Medicines with anticholinergic activity may influence the risk of falls by adversely affecting the cardiovascular or central nervous system (e.g. orthostatic hypotension, bradycardia, sedation, sleep disturbance, confusion, dizziness). [Lee 2021]	If used daily for more than 3-4 weeks reduce dose by 50% every 1 to 2 weeks. Once at 25% of the original dose and no withdrawal symptoms have been seen, stop the drug. If any withdrawal symptoms occur, go back to approximately 75% of the previously tolerated dose. [Medstopper]	M	M

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Aldosterone antagonists/ mineralocorticoid receptor antagonists (MRAs) (e.g. spironolactone, eplerenone)	There is a risk of hyperkalaemia with MRAs if: • Spironolactone dose >25mg/day • Creatinine clearance <30ml/min • Concomitantly taking an NSAID, ACE inhibitor, angiotensin II receptor blocker, aliskiren, amiloride, triamterene or potassium supplement. [STOPP-START, Scotland Polypharmacy Guidance 2018, Beers criteria 2023] Consider stopping the NSAID to reduce risk and advise on alternative anti-inflammatory treatment. Advise not to purchase NSAID OTC. See PrescQIPP resources for Acute kidney injury and sick day guidance Measure serum sodium and potassium, and assess renal function, before and after starting an MRA and after each dose increment. Once the target, or maximum tolerated dose of an MRA is reached, monitor treatment monthly for 3 months and then at least every 6 months, and at any time the person becomes acutely unwell. [NICE NG106] Avoid MRAs (e.g. spironolactone, eplerenone) if eGFR <30ml/min/1.73m^2 due to risk of dangerous hyperkalaemia. [STOPP-START] If potassium >5.5mmol/l review medicines, if potassium >6mmol/l and acutely unwell or >6.5mmol/l, stop spironolactone. [Renal Association hyperkalaemia management in the community] If used as a step 4 treatment for resistant hypertension, check adherence with other antihypertensives. [NICE NG136] See entry for **antihypertensives.**	If taken daily for more than 3 to 4 weeks reduce dose by 50% every 1 to 2 weeks. Once at 25% of the original dose and no withdrawal symptoms have been seen (e.g. chest pain, pounding heart, increased heart rate, increased blood pressure (re-measure for up to 6 months), anxiety, tremor), stop the MRA. If any withdrawal symptoms occur, go back to approximately 75% of the previously tolerated dose. [Medstopper] Give advice about salt consumption, maintaining fluid balance, smoking cessation, alcohol consumption, physical activity, nutritional status. [CKS Heart failure]	M	M

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Antianginals (e.g. ivabradine, nicorandil, ranolazine)	Not first line treatments. Do the known possible adverse drug reactions outweigh the possible benefits, e.g. visual disturbance, MI, severe bradycardia, arrhythmia (ivabradine), severe mouth ulceration (nicorandil), GI and neuropsychiatric disorders, palpitations, peripheral oedema, bradycardia, hypotension, QT prolongation, (ranolazine). [Prescrire 2023] Reduce antianginal treatment if mobility decreases. [Scotland Polypharmacy Guidance 2018] Increased risk of bleeding with apixaban, dabigatran, edoxaban, rivaroxaban and P-glycoprotein (P-gp) drug efflux pump inhibitors, e.g. ranolazine. [STOPP-START]	No tapering required. Discuss withdrawal with specialist. Management of stable angina includes lifestyle advice about stopping smoking, a cardioprotective diet, healthy bodyweight, physical activity and alcohol consumption. [CKS Angina]	M	M

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Cardiovascular system

Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Antiarrhythmics (e.g. amiodarone, dronedarone)	Not usual first line treatment. Check if recommended by a specialist. [NICE NG196, Beers criteria 2023, STOPP-START] Rate control has better balance of benefits and harms than rhythm control for most older adults in AF. Antiarrhythmics associated with multiple toxicities (thyroid, pulmonary, QT prolongation). Class Ia (e.g. disopyramide, procainamide) and class III (e.g. amiodarone, dronedarone) antiarrhythmic can predictably prolong the QTc interval (QTc = QT/RR) in patients with known QTc prolongation (to >450 msec in males and >470 msec in females); avoid use due to risk of life threatening ventricular arrhythmias. [STOPP-START] Increased risk of bleeding with apixaban, dabigatran, edoxaban, rivaroxaban and amiodarone, dronedarone. [STOPP-START] Avoid when possible concomitant use of warfarin with amiodarone due to the increased risk of bleeding. If used together monitor INR closely. [Beers criteria 2023] Use dronedarone with caution in patients with heart failure who are asymptomatic and avoid in patients with symptomatic heart failure due to the potential to increase mortality in older adults with heart failure. [Beers criteria 2023] Check all monitoring is being done. [Scotland Polypharmacy Guidance 2018, Prescrire 2023, NHSE 2023] Antiarrhythmics may influence the risk of falls by adversely affecting the cardiovascular or central nervous system (e.g. orthostatic hypotension, bradycardia, sedation, sleep disturbance, confusion, dizziness). [Lee 2021]	Discuss tapering/withdrawal with specialist.	M	H

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Cardiovascular system

Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Anticoagulants – oral and injected (e.g. warfarin, apixaban, dabigatran, edoxaban, rivaroxaban, heparin, dalteparin, enoxaparin, tinzaparin)	Do the known possible adverse drug reactions outweigh the possible benefits. [STOPP-START, Beers criteria 2023, Pirmohamed 2004] Avoid anticoagulant drugs in people with a concurrent significant bleeding risk, i.e. uncontrolled severe hypertension, bleeding diathesis, recent non-trivial spontaneous bleeding due to a high risk of bleeding. [STOPP-START] Are LMWHs/oral anticoagulants prescribed following hip/knee replacement surgery still required? [BNF] Avoid starting warfarin as initial therapy for treatment of non-valvular atrial fibrillation (AF) and VTE unless alternative options (i.e. DOACs) are contraindicated or there are substantial barriers to their use. [Beers criteria 2023, NICE NG196] No proven added benefit of anticoagulant use >6 months for first DVT or >12 months for first PE unless there are continuing, provoking risk factors. [STOPP-START] Decision to continue anticoagulation should be made based on the balance between the person's risk of VTE recurrence and their risk of bleeding. [NICE NG158] Do not stop anticoagulants on the basis of falls risk. [NICE NG196] If patient cannot take warfarin for cognitive reasons, DOACs may not be indicated either. [Scotland Polypharmacy Guidance 2018] Not appropriate in nursing home patients with advanced/end stage dementia. [Parsons 2015, CKS Dementia] Avoid use of warfarin as first line anticoagulant for AF, unless there is concurrent metallic (mechanical) heart valve in-situ, moderate-to-severe mitral stenosis, or CrCl <15ml/min. [STOPP-START] Patients with mechanical heart valves should not use a LMWH or DOAC as an anticoagulant. [NatPSA 2021] Anticoagulation not offered after surgical biological valve replacement unless there are other indications for anticoagulation. [NICE NG208]	Warfarin - no tapering required. [CKS anticoagulation oral] DOACs – no tapering required. LMWH - no tapering required. If oral anticoagulants have to be stopped due to life threatening or uncontrolled bleeding, a reversal agent is given under specialist supervision in hospital. [BNF] In people with AF, do not stop anticoagulation solely because AF is no longer detectable. Base decisions to stop anticoagulation on a reassessment of stroke and bleeding risk using CHA2DS2-VASc and ORBIT and a discussion of the person's preferences. [NICE NG196]	H	H

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Cardiovascular system

Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Anticoagulants - oral and injected cont.	Do not use with aspirin for chronic AF unless there is concurrent coronary artery stent(s) inserted or angiographically proven high grade (>50%) coronary artery stenosis, as there is no benefit from adding in aspirin. [STOPP-START] No added benefit from dual therapy with antiplatelets for stable coronary, cerebrovascular or peripheral arterial disease. [STOPP-START] Do not use with NSAIDs as risk of major GI bleeding. [STOPP-START] Avoid use of anticoagulants with SSRIs with a previous history of major haemorrhage due to an increased risk of bleeding due to the antiplatelet effect of SSRIs. [STOPP-START] Avoid when possible concomitant use of warfarin with amiodarone, SSRIs, ciprofloxacin, macrolides (excluding azithromycin) or trimethoprim-sulfamethoxazole (co-trimoxazole) due to the increased risk of bleeding. If used together monitor INR closely. [Beers criteria 2023] Increased risk of bleeding with apixaban, dabigatran, edoxaban, rivaroxaban and P-glycoprotein (P-gp) drug efflux pump inhibitors, e.g. amiodarone, azithromycin, carvedilol, cyclosporin, dronedarone, itraconazole, ketoconazole (systemic), macrolides, quinine, ranolazine, tamoxifen, ticagrelor, verapamil. [STOPP-START] Avoid fondaparinux and reduce dose of enoxaparin if CrCl <30ml/min due to increased risk of bleeding. [Beers criteria 2023] Avoid direct thrombin inhibitors (e.g. dabigatran) if eGFR <30ml/min/1.73m^2 due to risk of bleeding. [STOPP-START, Beers criteria 2023] Avoid factor Xa inhibitors (e.g. edoxaban, rivaroxaban, apixaban) if eGFR <15ml/min/1.73m^2 due to risk of bleeding. [STOPP-START, Beers criteria 2023] Check BNF and individual SPCs for interactions with concomitant medicines/food/drink/supplements – are any of them enzyme inducers or inhibitors? [BNF] See https://www.medicines.org.uk/emc/ If there are interacting drugs, review patient need for them and monitor for changes in anticoagulation, particularly if the dose of the interacting medicines are changed or stopped. See PrescQIPP Anticoagulation resources	See above.	H	H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Antihypertensives See individual drug classes below for further information.	Is the blood pressure (BP) at a normal level or too low? Check if the medicine is being used for cardiovascular risk reduction or high blood pressure. Do the known possible adverse drug reactions outweigh the possible benefits, e.g. orthostatic hypotension, CNS effects, risk of falls? [Beers criteria 2023, Pirmohamed 2004] Is lifestyle advice being followed? [NICE NG136] In people >80 yrs with BP >150/90 mmHg, NICE NG136 says offer lifestyle advice and consider drug treatment [NICE NG136], so deprescribing appropriate in this age group. Antihypertensives have limited benefit for mild to moderate hypertension, secondary prevention of cardiovascular events and management of stable coronary artery disease in people with a limited life expectancy. [Thompson 2019] Antihypertensives (particularly alpha blockers, centrally acting antihypertensives and diuretics) may influence the risk of falls by adversely affecting the cardiovascular or central nervous system (e.g. orthostatic hypotension, bradycardia, sedation, sleep disturbance, confusion, dizziness). [Lee 2021, Seppala 2021, PrescQIPP medication and falls] Avoid using antihypertensives (except ACE inhibitors, angiotensin II receptor blockers and aliskiren) in people with severe symptomatic aortic stenosis due to risk of severe hypotension and syncope. [STOPP-START] Avoid vasodilator drugs in patients with recurrent falls with persistent postural hypotension, i.e. systolic BP drop ≥20mmHg and/or diastolic BP drop ≥10mmHg due to risk of syncope. [STOPP-START]	If >1 antihypertensives are used, stop one at a time, maintaining the dose of the others without change. [Garfinkel 2010] If taken daily for more than 3 to 4 weeks reduce dose by 50% every 1 to 2 weeks. Once at 25% of the original dose and no withdrawal symptoms have been seen (chest pain, pounding heart, increased heart rate, increased BP (re-measure for up to 6 months), anxiety, tremor), stop the drug. If any withdrawal symptoms occur, go back to approximately 75% of the previously tolerated dose. [Medstopper] Consider the difference in treatment options for people from black African/African-Caribbean family origin when considering which drug to stop first. Restart antihypertensives if BP increases above 150/95 mmHg if there is no organ damage.[NICE NG136] PrescQIPP antihypertensive deprescribing algorithm Offer lifestyle advice and continue to offer it periodically. Focus on diet and exercise, caffeine intake, dietary sodium, smoking and alcohol consumption. [CKS Hypertension]		

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
ACE inhibitors (ACEI, e.g. captopril, enalapril, lisinopril, perindopril, ramipril) **Angiotensin II receptor blockers (ARB)** (e.g. candesartan, losartan, valsartan)	Consider changing treatment if hyperkalaemia present (serum potassium >5.5mmol/l). [STOPP-START] Avoid using two or more renin angiotensin system (RAS) inhibitors. RAS inhibitors are ACE inhibitors, ARBs, angiotensin receptor neprilysin inhibitors (sacubitril/valsartan) and aliskiren. Avoid RAS inhibitor and a potassium sparing diuretic concurrently in those with chronic kidney disease Stage 3a or higher. [Beers criteria 2023] Increased risk of hyperkalaemia when trimethoprim-sulfamethoxazole (co-trimoxazole) used concurrently with an ACE inhibitor, ARB or angiotensin receptor neprilysin inhibitor (e.g. sacubitril/valsartan) in the presence of decreased CrCl. [Beers criteria 2023] Avoid use of lithium with ACE inhibitors, ARBs, angiotensin receptor neprilysin inhibitors and loop diuretics due to increased risk of lithium toxicity. Monitor lithium concentrations. [Beers criteria 2023] There is no benefit of perindopril arginine over generic perindopril erbumine. [NHSE 2023] Not appropriate in nursing home patients with advanced/end stage dementia. [Parsons 2015, CKS Dementia]	See information on pages 15 ACE inhibitors are commonly associated with adverse effects if discontinued suddenly and require slow withdrawal. [Scott 2013]	M	M
Aliskiren	Insufficient evidence of effectiveness of aliskiren to recommend use. [NHSE 2023, Prescrire 2023] Avoid using two or more renin angiotensin system (RAS) inhibitors. Avoid a RAS inhibitor and a potassium sparing diuretic concurrently in those with chronic kidney disease Stage 3a or higher. [Beers criteria 2023]	See information on pages 15	H	H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Alpha 1 blockers (e.g. prazosin, doxazosin, terazosin)	High risk of orthostatic hypotension, not recommended as routine treatment. Other antihypertensives have better risk-benefit profile. [Beers criteria 2023] There is no good evidence of benefit with doxazosin MR over immediate release doxazosin. [NHSE 2023] Avoid alpha blockers as antihypertensives in patients with recurrent falls as they may cause orthostatic hypotension. [STOPP-START]	See information on pages 15 Withdraw alpha blockers gradually to avoid severe rebound hypertension. [Scott 2013]	M	H
Centrally-acting antihypertensives (e.g. clonidine, methyldopa, moxonidine, guanfacine)	Not routinely recommended, use only if other antihypertensives not tolerated or not effective. High risk of adverse CNS effects that may cause bradycardia, impair sensorium and cause orthostatic hypotension. Avoid use unless there is clear intolerance of, or lack of efficacy with, other classes of antihypertensives, Centrally acting hypertensives are generally less well tolerated by older people than younger people. [STOPP-START, Beers criteria 2023] Not appropriate in nursing home patients with advanced/end stage dementia. [Parsons 2015, CKS Dementia]	See information on pages 15	H	H

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KEY	CR = Clincal risk level	DP = Deprescribing priority if no longer needed or indicated	H = High	M = Medium	L = Low

Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Beta blockers (e.g. atenolol, bisoprolol, carvedilol, metoprolol, nebivolol, propranolol)	Risk of heart block with concomitant use of verapamil/diltiazem. [STOPP-START] No firm evidence of efficacy where a beta-blocker used as monotherapy for uncomplicated hypertension, i.e. not associated with angina pectoris, aortic aneurysm or other condition where beta-blocker therapy is indicated. [STOPP-START] Increased risk of bleeding with DOACs and P-glycoprotein (P-gp) drug efflux pump inhibitors, e.g. carvedilol. [STOPP-START] Avoid non-selective beta-blockers in diabetes mellitus with frequent hypoglycaemic episodes due to risk of suppressing hypoglycaemic symptoms. [STOPP-START] In patients with bradycardia (<50/min), type II heart block or complete heart block, there is a risk of complete heart block/asystole if a beta blocker is taken. [STOPP-START] Potential risk of toxicity in overdose with propranolol. [HSSIB 2020]	See information on pages 15 Beta blockers are commonly associated with adverse effects if discontinued suddenly and require slow withdrawal. [Scott 2013]	M	M

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Calcium channel blockers (e.g. amlodipine, diltiazem, felodipine, nifedipine, verapamil)	Avoid verapamil/diltiazem in heart failure with reduced ejection fraction due to potential to promote fluid retention and/or exacerbate heart failure. [STOPP-START, Beers criteria 2023] Avoid use of immediate release nifedipine due to risk of hypotension and precipitating myocardial ischaemia. [Beers criteria 2023] Risk of profound hypotension and asystole with verapamil/diltiazem and concomitant bradycardia (<50 beats/min), type II heart block or complete heart block. [STOPP-START] Increased risk of bleeding with direct thrombin inhibitors (e.g. dabigatran) and diltiazem or verapamil. [STOPP-START] Increased risk of bleeding with DOACs and P-glycoprotein (P-gp) drug efflux pump inhibitors, e.g. verapamil. [STOPP-START] Avoid use of verapamil in patients with chronic constipation where non-constipating alternatives are appropriate due to the risk of exacerbation of constipation. [STOPP-START] Not appropriate in nursing home patients with advanced/end stage dementia. [Parsons 2015, CKS Dementia]	See information on pages 15	M	M

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Cardiovascular system

Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Diuretics (e.g. amiloride, bendroflumethiazide, bumetanide, chlortalidone, furosemide, indapamide)	Regular monitoring of U&Es required. [Scotland Polypharmacy Guidance 2018] Avoid amiloride and triamterene if CrCl <30ml/min due to risk of hyperkalaemia and hyponatraemia. [Beers criteria 2023] **Loop diuretics** • Lack of outcome data for first line use in hypertension unless there is concurrent heart failure requiring diuretic therapy; also safer, more effectives alternatives available. [STOPP-START] • Do not use for ankle oedema without clinical, biochemical or radiological evidence of heart failure, liver failure, nephrotic syndrome or renal failure; leg elevation and/or compression hosiery usually more appropriate. [STOPP-START] • Do not use for hypertension with concurrent urinary incontinence as may exacerbate incontinence. [STOPP-START] • Avoid concomitant use of lithium due to increased risk of lithium toxicity. Monitor lithium concentrations. [Beers criteria 2023] • Avoid concomitant use of non-selective peripheral alpha-1 blockers (e.g. phenoxybenzamine, phentolamine) in older women due to increased risk of urinary incontinence unless conditions warrant both drugs. [Beers criteria 2023] Diuretics may exacerbate or cause syndrome of inappropriate antidiuretic hormone (SIADH) or hyponatraemia; monitor sodium levels closely when starting or changing doses in older people. [Beers criteria 2023, STOPP-START, Pirmohamed 2004] **Thiazide diuretics** • Avoid use with current significant hypokalaemia (i.e. serum K+ <3.0mmol/l), hyponatraemia (i.e. serum Na+ <130mmol/l), hypercalcaemia (i.e. corrected serum calcium >2.65mmol/l) as these levels may worsen. [STOPP-START, Pirmohamed 2004] • Avoid use with a history of gout as this can be precipitated by thiazides. [STOPP-START, Pirmohamed 2004] Avoid using a RAS inhibitor and a potassium sparing diuretic concurrently in those with chronic kidney disease Stage 3a or higher. [Beers criteria 2023]	See information on pages 15	M	H

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Cardiovascular system

Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Antiplatelets (e.g. clopidogrel, dipyridamole prasugrel, ticagrelor)	Not indicated for primary prevention of CHD. [Scotland Polypharmacy Guidance 2018] Prasugrel and ticagrelor increase the risk of major bleeding in older adults (particularly those 75 yrs and older - consider lower prasugrel dose) compared with clopidogrel, use with caution. [Beers criteria 2023] No added benefit from dual therapy with anticoagulants for - • Stable coronary, cerebrovascular or peripheral arterial disease • Chronic AF unless there is concurrent artery stents inserted or angiographically proven high grade (>50%) coronary artery stenosis. Avoid use as alternatives to anticoagulants for stroke prevention in AF due to no evidence of efficacy. [STOPP-START] Is dual/triple therapy still required for CV risk reduction? Avoid use of aspirin + clopidogrel as long term secondary stroke prevention, i.e. >4 weeks, unless the patient has a coronary stent(s) inserted in the previous 12 months or concurrent acute coronary syndrome or has a high grade symptomatic carotid arterial stenosis as there is no evidence of long term benefit over clopidogrel monotherapy. [STOPP-START, Scotland Polypharmacy Guidance 2018] Do the known possible adverse drug reactions outweigh the possible benefits, e.g. GI bleeding? [STOPP-START, Scotland Polypharmacy Guidance 2018, Pirmohamed 2004] Use PPI (e.g. lansoprazole or pantoprazole) with clopidogrel if GI risk factors present. [STOPP-START, Scotland Polypharmacy Guidance 2018] Not appropriate in nursing home patients with advanced/end stage dementia. [Parsons 2015, CKS Dementia] Avoid use in people with a concurrent significant bleeding risk, i.e. uncontrolled severe hypertension, bleeding diathesis, recent non-trivial spontaneous bleeding due to a high risk of bleeding. [STOPP-START] Increased risk of bleeding with DOACs and P-glycoprotein (P-gp) drug efflux pump inhibitors, e.g. ticagrelor. [STOPP-START]	No tapering required. [Primary Health Tasmania deprescribing guide] Record stopping date for short term treatment and stop treatment when course complete. Offer advice on lifestyle changes that can reduce the risk of having further MI or other cardiovascular events following an MI, e.g. smoking cessation, healthy diet, physical activity, healthy body weight, alcohol consumption. [CKS MI - secondary prevention]	H	H

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Cardiovascular system

Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Aspirin – low dose	Do not use aspirin for primary prevention of cardiovascular disease. [STOPP-START, Beers criteria 2023] Limited benefit in people with limited life expectancy. [Thompson 2019] Do not use aspirin monotherapy solely for stroke prevention in people with AF. [NICE NG196] Do not use with anticoagulants for chronic AF as there is no added benefit from aspirin unless there is concurrent artery stents inserted or angiographically proven high grade (>50%) coronary artery stenosis. [STOPP-START] Do not offer aspirin for the primary prevention of cardiovascular disease to adults with type 1 diabetes. [NICE NG17] Do not offer antiplatelet therapy (aspirin or clopidogrel) for adults with type 2 diabetes without cardiovascular disease. [NICE NG28] Not appropriate in nursing home patients with advanced/end stage dementia. [Parsons 2015, CKS Dementia] Do the known possible adverse drug reactions outweigh the possible benefits, e.g. bleeding? [Garfinkel 2010, Pirmohamed 2004] Avoid use in people with a concurrent significant bleeding risk, i.e. uncontrolled severe hypertensioon, bleeding diathesis, recent non-trivial spontaneous bleeding due to a high risk of bleeding. [STOPP-START] Avoid long term aspirin at doses >100mg per day due to increased risk of bleeding and lack of evidence for increased efficacy. [STOPP-START] Use concomitantly with clopidogrel for maximum of 12 months post ACS. [Scotland Polypharmacy Guidance 2018]	No tapering required. [Primary Health Tasmania deprescribing guide] Offer advice on lifestyle changes that can reduce the risk of having further MI or other cardiovascular events following an MI, e.g. smoking cessation, healthy diet, physical activity, healthy body weight, alcohol consumption. [CKS MI - secondary prevention]	M	H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Digoxin	Do the known possible adverse drug reactions outweigh the possible benefits? E.g. if there is an increase in toxicity, or a decreased oral fluid intake. [Garfinkel 2010, Pirmohamed 2004] Avoid digoxin long term (i.e. more than 90 days) at a maintenance dose ≥125micrograms/day if eGFR <30 ml/min/1.73m^2 due to risk of digoxin toxicity if plasma levels not measured. [STOPP-START] No clear evidence of benefit for digoxin for heart failure with preserved systolic ventricular function. [STOPP-START] Risk of profound hypotension and asystole with digoxin and concomitant bradycardia (<50 beats/min), type II heart block or complete heart block. [STOPP-START] Digoxin can predictably prolong the QTc interval (QTc = QT/RR) in patients with known QTc prolongation (to >450msec in males and >470msec in females); avoid use due to risk of life threatening ventricular arrhythmias. [STOPP-START] Avoid as a first line treatment for long term (>3 months) ventricular rate control in AF due to increased mortality from long term use and cardio-selective beta-blockers are generally preferable. [STOPP-START] BNF advises to reduce dose in elderly patients. [BNF]	Digoxin is commonly associated with adverse effects if stopped suddenly. Slow weaning required. [Scott 2013] If taken daily for more than 3 to 4 weeks reduce dose by 50% every 1 to 2 weeks. Once at 25% of the original dose and no withdrawal symptoms have been seen (chest pain, pounding heart, increased heart rate, increased blood pressure (re-measure for up to 6 months), anxiety, tremor) stop the drug. If any withdrawal symptoms occur, go back to approximately 75% of the previously tolerated dose. [Medstopper]	M	H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Fibrates (e.g. bezafibrate, ciprofibrate, fenofibrate, gemfibrozil)	Do the known possible adverse drug reactions (e.g. cutaneous, haematological and renal disorders) outweigh the possible benefits? Monitor renal function and creatine phosphokinase levels closely. [Prescrire 2023] Limited benefit in people with limited life expectancy. [Thompson 2019]	No tapering required. Discuss the benefit of lifestyle modifications and optimise management of all other modifiable CVD risk factors. Some people may need support to change their lifestyle, e.g. exercise referral schemes or smoking support services. [CKS CVD risk assessment & management]	M	M
Nitrates (e.g. isosorbide mononitrate, isosorbide dinitrate)	The patient has not had chest pain for 6 months. [Garfinkel 2010] The patient has reduced mobility. [Scotland Polypharmacy Guidance 2018] Is the patient on nitrate monotherapy and still symptomatic? Consider alternative treatment. Avoid concurrent use of PDE-5 inhibitor (e.g. sildenafil, tadalafil, vardenafil) due to risk of cardiovascular collapse. [STOPP-START]	Withdraw slowly to avoid adverse effects from sudden discontinuation. [Scott 2013] If taken daily for more than 3 to 4 weeks reduce dose by 50% every 1 to 2 weeks. Once at 25% of the original dose and no withdrawal symptoms have been seen (chest pain, pounding heart, increased heart rate, increased blood pressure (re-measure for up to 6 months), anxiety, tremor) stop the drug. If any withdrawal symptoms occur, go back to approximately 75% of the previously tolerated dose. [Medstopper] Offer lifestyle advice - smoking cessation, cardioprotective diet, maintain healthy weight, increase physical activity and limit alcohol consumption. [CKS Angina]	M	M

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Omega 3 fatty acid supplements	Not recommended by NICE for a variety of conditions – MI secondary prevention, sleep problems in autism, primary prevention of cardiovascular disease in type 2 diabetes, preventing hypertensive disorders in pregnancy or treating familial hypercholesterolaemia. [NHSE 2023] Patients wishing to take these products should be advised to increase their dietary intake or purchase them over the counter.	No tapering required.	L	L
Icosapent ethyl	Icosapent ethyl is a stable ethyl ester of the omega-3 fatty acid, eicosapentaenoic acid (EPA). It is recommended as an option for reducing the risk of cardiovascular events in adults with raised triglycerides by NICE. [NICE TA805] Review/stop in patients with AF or flutter and caution with antithrombotic treatment (bleeding time increased). [BNF]	No tapering required.	L	L
Other lipid lowering agents (e.g. colesevelam, colestipol, colestyramine, ezetimibe, bempedoic acid, bempedoic acid with ezetimibe, nicotinic acid, alirocumab, evolocumab, inclisiran, lomitapide, volanesorsen)	Check indication for use, adherence to therapy and lifestyle modifications optimised. Nicotinic acid and bile acid sequestrants not recommended by NICE for preventing CVD. [NICE NG238] Limited benefit in people with limited life expectancy. [Thompson 2019]	No tapering required. Discuss withdrawal with specialist. Discuss the benefit of lifestyle modifications and optimise management of all other modifiable CVD risk factors. Some people may need support to change their lifestyle, e.g. exercise referral schemes or smoking support services. [CKS CVD risk assessment & management]	M	M

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Peripheral vasodilators (e.g. cilostazol, moxisylyte, naftidrofuryl, pentoxifylline)	Clinical effectiveness not established. [Scotland Polypharmacy Guidance 2018, BNF] Do the known possible adverse drug reactions outweigh the possible benefits? [Garfinkel 2010] Rarely indicated for long term treatment. [Scotland Polypharmacy Guidance 2018] Only naftidrofuryl oxalate recommended as an option by NICE. [NICE TA223]	No tapering required.	M	H
Statins (e.g. atorvastatin, fluvastatin, pravastatin, rosuvastatin, simvastatin)	Re-evaluate the patients risk profile for primary and secondary prevention of cardiovascular disease. [Petersen 2010] Avoid statins for primary cardiovascular prevention in persons aged ≥ 85 years (lack of evidence of efficacy) and established frailty with expected life expectancy less than 3 years. [STOPP-START] Consider the need for and intensity of treatment with respect to life expectancy and adverse drug reaction (ADR) risk. [Scotland Polypharmacy Guidance 2018, Thompson 2019] Stop in metastatic disease [Kutner 2015, LeBlanc 2015, Todd 2013] or other contraindications as per the SPCs, e.g. liver disease. See https://www.medicines.org.uk/emc/ Not appropriate in nursing home patients with advanced/end stage dementia. [Parsons 2015, CKS Dementia]	No tapering required. PrescQIPP statin deprescribing algorithm Discuss the benefit of lifestyle modifications and optimise management of all other modifiable CVD risk factors. Some people may need support to change their lifestyle, e.g. exercise referral schemes or smoking support services. [CKS CVD risk assessment & management]	M	M

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Antihistamines (e.g. acrivastine, alimemazine, brompheniramine, cetirizine, chlorphenamine maleate, clemastine, cyproheptadine, desloratadine, diphenhydramine, fexofenadine, hydroxyzine, levocetirizine, loratadine, promethazine)	**First generation antihistamines** are highly anticholinergic, clearance is reduced with advanced age, greater risk of confusion, dry mouth, constipation, tolerance develops when used as a hypnotic. [Beers criteria 2023 PrescQIPP Anticholinergic burden bulletin, briefing, searches] Antihistamines may influence the risk of falls by adversely affecting the cardiovascular or central nervous system (e.g. orthostatic hypotension, bradycardia, sedation, sleep disturbance, confusion, dizziness). First generation antihistamines increase the risk of falling compared to non-sedating antihistamines due to variation in sedative effects and anticholinergic activity. [Lee 2021, Seppala 2021, PrescQIPP medication and falls] Avoid first generation antihistamines in patients with recurrent falls as they may impair sensorium. [STOPP-START] Avoid first-generation antihistamines: • With potent anticholinergic/antimuscarinic effects (e.g. diphenhydramine, chlorphenamine) in patients with delirium or dementia due to risk of exacerbation of cognitive impairment. • As first line treatment for allergy or pruritis as safer antihistamines with fewer side effects now widely available. • For insomnia due to high risk of side-effects, Z-drugs safer and more appropriate for short-term use. [STOPP-START] Avoid concomitant use of two or more drugs with antimuscarinic/ anticholinergic properties (e.g. bladder antispasmodics, intestinal antispasmodics, tricyclic antidepressants, first generation antihistamines, antipsychotics) due to risk of increased toxicity. [STOPP-START, Beers criteria 2023] Hay fever symptoms can be self-treated with locally acting products. **Non-sedating antihistamines** (e.g. cetirizine, loratadine, fexofenadine) are less anticholinergic than the first generation antihistamines. [NHSE/ NHSCC 2018, Scotland Polypharmacy Guidance 2018]	First generation antihistamines - no tapering required. Non-sedating antihistamines - no tapering required.	H M	H M

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Antimuscarinics - inhaled (e.g. aclidinium, glycopyrronium, ipratropium, tiotropium, umeclidinium)	Long-acting antimuscarinic bronchodilators (e.g. aclidinium, glycopyrronium, tiotropium, umeclidinium) may exacerbate glaucoma in people with a history of narrow angle glaucoma or may cause urinary retention if someone has bladder outflow obstruction. [STOPP-START] Check if the antimuscarinic bronchodilators are being taken with other medicines that have anticholinergic activity and increase the anticholinergic burden. [Scotland Polypharmacy Guidance 2018]	No tapering required.	M	M
Corticosteroids – inhaled (e.g. beclomethasone, fluticasone, budesonide, mometasone)	Consider a MART (Maintenance And Reliever Therapy) regimen in patients with a history of asthma attacks on a medium-dose inhaled corticosteroid alone, or on a fixed-dose inhaled corticosteroid and long acting beta2 agonist (LABA) regimen. [BTS/SIGN 2019] In asthma – review response to treatment and asthma control at least annually and 4-8 weeks after starting or adjusting treatment. Consider using a validated questionnaire (for example, the Asthma Control Questionnaire or Asthma Control Test) to monitor asthma control in adults (aged 17 and over). [NICE NG80] If yes, maintain patients on the lowest possible dose of inhaled corticosteroid. If no, consider whether the dose is correct, do benefits outweigh risks? [BNF] In COPD – if adding an inhaled corticosteroid to a long acting antimuscarinic bronchodilator (LAMA) and a long acting beta2 agonist (LABA) does not improve symptoms after 3 months for people whose day to day symptoms adversely impact their quality of life and they have not previously had a severe exacerbation which needed hospitalisation or 2 moderate exacerbations within 1 year, switch back to LAMA/LABA combination. [NICE NG115]	Reduce dose slowly (by 25-50% every 3 months) if the adult is asymptomatic and they are involved with the decision. [BNF, BTS/SIGN 2019] Corticosteroids are commonly associated with adverse effects if discontinued suddenly and require slow reduction. [Scott 2013] If stepping down a combination product, a switch to an alternative product may be required. Note that while combination inhalers should be prescribed by brand, inhaled corticosteroids are not directly interchangeable. [BTS/SIGN 2019] If an adult is on high doses of an inhaled corticosteroid (>800 micrograms budesonide or equivalent), and/or on several asthma medicines, discuss withdrawal with a specialist. PrescQIPP asthma bulletin	M	M

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Corticosteroids – oral (e.g. betamethasone, dexamethasone, fludrocortisone, hydrocortisone, prednisolone)	Prescribe oral steroids at the lowest possible dose for the shortest duration. [Beers criteria 2023] For exacerbations in COPD offer 30mg oral prednisolone for 5 days then stop. [NICE NG115] Oral prednisolone maintenance in COPD is not usually recommended. [NICE NG115, GOLD 2023] Some people with advanced COPD may need long term oral corticosteroids when these cannot be withdrawn following an exacerbation. In these cases, the dose of oral corticosteroids should be kept as low as possible. [NICE NG115] Avoid systemic corticosteroids instead of inhaled corticosteroids for maintenance therapy in moderate-severe COPD due to unnecessary exposure to long term side-effects of systemic corticosteroids and effective inhaled therapies are available. [STOPP-START] Avoid use of corticosteroids (other than periodic intra-articular injections for mono-articular pain) for osteoarthritis due to the risk of systemic corticosteroid side-effects. [STOPP-START] Avoid long term corticosteroids (>3 months) as monotherapy for rheumatoid arthritis due to the risk of systemic corticosteroid side-effects. [STOPP-START] Avoid use of NSAIDs with concurrent corticosteroids for treatment of arthritis/rheumatism of any kind due to increased risk of peptic ulcer disease. [Beers criteria 2023, STOPP-START] Avoid corticosteroids in people with a history of peptic ulcer disease or erosive oesophagitis due to the risk of relapse unless proton pump inhibitor is co-prescribed. [STOPP-START] Avoid in older adults with or at high risk of delirium because of potential of inducing or worsening delirium. [Beers criteria 2023] Avoid use in people with heart failure requiring loop diuretic therapy due to risk of exacerbation of heart failure. [STOPP-START] Supply steroid card(s) and counselling where needed. Steroid treatment cards should be issued where appropriate to support communication of the risks associated with treatment and to record details of the prescriber, drug, dosage, and duration of treatment. Steroid emergency cards should be issued to patients with adrenal insufficiency and steroid dependence for whom missed doses, illness, or surgery puts them at risk of adrenal crisis. [BNF, PrescQIPP steroid emergency card - Hot Topic]	The magnitude and speed of dose reduction and withdrawal should be determined on a case by case basis. Gradual withdrawal should be considered for those who have received more than 3 weeks treatment in the last 12 months, and/or 40mg prednisolone daily (or equivalent) or have other possible causes of adrenal suppression. [STOPP-START, Scott 2013, BNF, AWMSG Polypharmacy in older people]	M	H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Cough and cold remedies (e.g. dextromethorphan or codeine (cough suppressants); guaifenesin or ipecacuanha (expectorants); phenylephrine hydrochloride, pseudoephedrine hydrochloride, ephedrine hydrochloride, oxymetazoline, or xylometazoline hydrochloride (decongestants))	These are treatments with limited clinical value/evidence. Advise patients who wish to try cough mixtures, decongestants, inhalations or lozenges, to purchase OTC. [NHSE/NHSCC 2018, PrescQIPP Over the counter items bulletin] Expectorants are not appropriate in nursing home patients with advanced/ end stage dementia. [Parsons 2015, CKS Dementia]	No tapering required.	L	L
Theophylline	Monotherapy in COPD is not appropriate – safer, more effective alternatives are available. [STOPP-START] Has some anticholinergic activity. Check if theophylline is being taken with other medicines that have anticholinergic activity and increase the anticholinergic burden? [Scotland Polypharmacy Guidance 2018] Avoid theophylline with concomitant cimetidine or ciprofloxacin due to increased risk of theophylline toxicity. [Beers criteria 2023]	No tapering required.	H	H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Analgesics – non opioid (e.g. paracetamol, aspirin, low dose ibuprofen, nefopam)	Purchase short courses of analgesics (e.g. paracetamol, ibuprofen) OTC. [NHSE/NHSCC 2018] Patients may also purchase up to 100 paracetamol tablets/month OTC at the discretion of a community pharmacist. Don't switch patients to co-codamol because the advantages with low dose opioid content (e.g. 8mg) have not been substantiated and may not provide significant additional relief of pain. Opioid side effects (e.g. constipation) are also possible.[BNF] Nefopam can cause antimuscarinic side effects, use with caution in the elderly. [BNF] Review the prescribing of paracetamol for chronic primary pain as part of shared decision making: • Explain the lack of evidence for use in chronic primary pain and • Agree a shared plan for continuing safely if there is benefit at a safe dose and few harms or • Explain the risks of continuing if there is little benefit or significant harm, and encourage and support person to reduce and stop the medicine if possible. Encourage non-pharmacological management of chronic primary pain. [NICE NG193] Avoid paracetamol at doses ≥3g/24 hours in patients with poor nutritional status i.e. BMI <18/body weight <50kg or chronic liver disease due to risk of hepatotoxicity. [STOPP-START, BNF]	No tapering required, possible withdrawal headache. Consider non-drug options and self-management strategies as alternative treatments, e.g. physical activity, supervised group exercise programmes, acceptance and commitment therapy (ACT), cognitive behavioural therapy (CBT), acupuncture or dry needling. [NICE NG193] Social prescribing interventions can work well for pain. Improving mental health will help.	L	M

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Central nervous system

Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Analgesics opioid (e.g. morphine, codeine, oxycodone, tramadol, dihydrocodeine, pethidine, fentanyl, buprenorphine, tapentadol, meptazinol, methadone)	Is a monthly prescription for an opioid still indicated for pain relief? Has the underlying painful condition resolved/been treated? [Opioids Aware, NICE NG193] Patients who do not achieve useful pain relief from opioids within 2 to 4 weeks are unlikely to gain benefit in the long term. [Opioids Aware] Is the opioid dose escalating without adequate response? Harms outweigh benefits if over 120mg oral morphine equivalent/24 hours is taken. [Opioids Aware] Avoid use of oral or transdermal strong opioids (morphine, oxycodone, fentanyl, buprenorphine, diamorphine, methadone, tramadol, pethidine, pentazocine) as first line therapy for mild pain [STOPP-START] Avoid use of long term opioids for osteoarthritis due to lack of evidence of efficacy, increased risk of serious side-effects. [STOPP-START] PrescQIPP Bulletin: Fentanyl immediate release formulations: potential safety problems due to high doses of a potent opioid and complicated titration/ maintenance instructions. [NHSE 2023] Could the patient be diverting their medication(s) to others? [Opioids Aware] Is the patient over ordering or collecting? If needed, add a minimum number of days between issuing prescriptions. **Stop** • Oxycodone/naloxone combination - not cost effective. [NHSE 2023] • Co-proxamol - withdrawn in 2005 for safety concerns. [NHSE 2023] • Tramadol/paracetamol combination - not more effective than established analgesics. [NHSE 2023] Co-codamol and co-dydramol are considered less suitable for prescribing. [BNF] Review laxative use when opioid stopped. [Scott et al 2013, PrescQIPP constipation bulletin]	Discuss benefits of withdrawing an opioid with the person, allow enough time to explore the person's circumstances and preferences, acknowledge concerns about withdrawal, reassure and signpost to support groups. [NICE NG215] Opioids are commonly associated with withdrawal symptoms if discontinued suddenly, slow weaning required. [Scott 2013, Opioids Aware] The dose of opioid can be tapered by 10% weekly or every two weeks. [Opioids Aware] Individualise tapering - slow rate of taper or pause if withdrawal symptoms are significant for the patient. [NICE NG215]	H	H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Analgesics opioid **cont.** (e.g. morphine, codeine, oxycodone, tramadol, dihydrocodeine, pethidine, fentanyl, buprenorphine, tapentadol, meptazinol, methadone)	Does the patient have intolerable side effects? The risk of constipation and falls can outweigh the benefits particularly with weak opioids. [BNF, Opioids Aware] Avoid opioids in patients with chronic constipation where non-constipating alternatives are appropriate due to risk of exacerbation of constipation. [STOPP-START] Opiates have some anticholinergic activity. [Scotland Polypharmacy Guidance 2018] Avoid opioids in patients with recurrent falls. [STOPP-START] Opioid analgesics may influence the risk of falls by adversely affecting the cardiovascular or central nervous system (e.g. orthostatic hypotension, bradycardia, sedation, sleep disturbance, confusion, dizziness). [Lee 2021, Seppala 2021, PrescQIPP medication and falls] Avoid concurrent use of 3 or more CNS-active drugs (antiepileptics, antidepressants, antipsychotics, benzodiazepines, Z drugs, opioids and skeletal muscle relaxants) due to increased risk of falls and fracture. [Beers criteria 2023] There is an association between opioids and delirium. For older adults with pain use a balanced approach that includes non-drug approaches to minimise opioid use. Avoid pethidine as an oral analgesic due to higher risk of neurotoxicity and delirium than other opioids, safer alternatives are available. [Beers criteria 2023] Check for interactions/contraindications to use due to concomitant centrally acting drugs and medical and mental health co-morbidities. [Opioids Aware, CKS Analgesia] Avoid opioids co-prescribed with a gabapentinoid or benzodiazepine due to increased risk of overdose, severe sedation-related adverse events and potentially fatal respiratory depression. [BNF, DSU 2020, Beers criteria 2023] Avoid use of extended release tramadol if CrCl <30ml/min and reduce dose of immediate release tramadol due to risk of CNS adverse effects. [Beers criteria 2023] Tramadol may exacerbate or cause SIADH or hyponatraemia; monitor sodium levels closely when starting or changing doses in older people. [Beers criteria 2023] Fentanyl patches: life-threatening and fatal opioid toxicity from accidental exposure, particularly in children. [DSU 2018]	Consider paracetamol with PRN weak opioid as an alternative to combination products. Consider non-drug options and self-management strategies as alternative treatments, e.g. physical activity, supervised group exercise programmes, acceptance and commitment therapy (ACT), cognitive behavioural therapy (CBT), acupuncture or dry needling. [Opioids Aware] Reduce and stop medications for opioid ADRs as the opioid is tapered, e.g. laxatives. Reduce and synchronise quantities of medicines so the person has the correct amount for the withdrawal programme. PrescQIPP opioid deprescribing algorithm	H	H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Antidepressants (e.g. selective serotonin reuptake inhibitors (SSRIs), tricyclic antidepressants (TCAs), others: MAOIs, agomelatine, duloxetine, reboxetine, venlafaxine, mirtazapine)	Dosulepin should not be prescribed. [NHSE 2023, BNF] For a single episode of depression treat for 6 to 9 months; for multiple episodes, treat for at least 2 years, no upper duration of treatment has been identified. [Maudsley Prescribing Guidelines 2021] Avoid starting TCAs as a first line treatment for major depression as there is a higher risk of adverse drug reactions than with SSRIs or SNRIs (e.g. duloxetine, venlafaxine). [STOPP-START] Avoid TCAs with potent anticholinergic/antimuscarinic effects (e.g. amitriptyline, doxepin, imipramine, nortriptyline) in patients with delirium or dementia due to risk of exacerbation of cognitive impairment. [STOPP-START] TCAs not appropriate in patients with advanced/end stage dementia. [Parsons 2015, CKS Dementia] Do the known possible adverse drug reactions outweigh the possible benefits? TCAs can worsen narrow angle glaucoma, cardiac conduction abnormalities, lower urinary tract symptoms related to benign prostatic hyperplasia, chronic constipation, recent falls, or urinary retention in people with a prior history; SSRIs may exacerbate or precipitate hyponatraemia in people with current or recent significant hyponatraemia, i.e. serum Na+ <130mmol/l. [STOPP-START, Garfinkel 2010] Antidepressants may exacerbate or cause SIADH or hyponatraemia; monitor sodium levels closely when starting or changing doses in older people. [Beers criteria 2023] TCAs are highly anticholinergic. SSRIs and mirtazapine have some anticholinergic activity. [Scotland Polypharmacy Guidance 2018] See PrescQIPP anticholinergic burden bulletin for further information. Avoid concomitant use of two or more drugs with antimuscarinic/anticholinergic properties (e.g. bladder antispasmodics, intestinal antispasmodics, tricyclic antidepressants, first generation antihistamines, antipsychotics) due to risk of increased antimuscarinic/anticholinergic toxicity. [STOPP-START, Beers criteria 2023]	Reduce dose gradually to avoid withdrawal effects. [NICE NG222, BNF] Aim to taper over months, not weeks. Take account of the pharmacokinetic profile and duration of treatment. Reduce by a fixed proportion of the previous dose, e.g. 50%. Use smaller reduction, e.g. 25% as dose gets smaller, use liquids if needed. Fluoxetine 20mg can be reduced by alternate day dosing; 40mg to 60mg should be withdrawn gradually. Evaluate effects after 1-2 weeks before reducing the dose further. [NICE NG222] Antidepressants with short half lives (e.g. paroxetine, venlafaxine) may need to be tapered more slowly. [PrescQIPP antidepressants bulletin, Maudsley Prescribing Guidelines 2021] PrescQIPP antidepressant deprescribing algorithm Anticholinergic burden bulletin, briefing, searches	TCAs: H SSRIs and others: M	TCAs: H SSRIs and others: M

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Antidepressants cont.	Antidepressants may influence the risk of falls by adversely affecting the cardiovascular or central nervous system (e.g. orthostatic hypotension, bradycardia, sedation, sleep disturbance, confusion, dizziness). [Beers criteria 2023, Lee 2021, Seppala 2021, PrescQIPP medication and falls, STOPP-START] Avoid concurrent use of 3 or more CNS-active drugs (antiepileptics, antidepressants, antipsychotics, benzodiazepines, Z drugs, opioids and skeletal muscle relaxants due to increased risk of falls and fracture. [Beers criteria 2023] Avoid use of TCAs, escitalopram (>10mg/day) and citalopram (>20mg/day) in patients with known QTc prolongation (to >450msec in males and >470msec in females) as they can predictably prolong the QTc interval (QTc = QT/RR) and increase risk of life threatening ventricular arrhythmias. [STOPP-START] Avoid SNRIs (e.g. duloxetine, venlafaxine) in people with severe hypertension (e.g. systolic blood pressure >180mmHg +/- diastolic blood pressure >105mmHg) as they are likely to make it worse. [STOPP-START] Avoid when possible concomitant use of warfarin with SSRIs due to the increased risk of bleeding. If used together monitor INR closely. [Beers criteria 2023] Avoid use of SSRIs with anticoagulants in people with a previous history of major haemorrhage due to an increased risk of bleeding due to the antiplatelet effect of SSRIs. Avoid use of SSRIs in people with current or recent significant bleeding due to risk of exacerbation or recurrence of bleeding due to antiplatelet effects of SSRIs. [STOPP-START] Avoid duloxetine if CrCl <30ml/min due to increased GI adverse effects (e.g. nausea, diarrhoea). [Beers criteria 2023]	Consider psychosocial and psychological interventions (e.g. guided self help, cognitive behavioural therapy (CBT), group based physical activity, counselling) depending on the severity of the depression. [CKS Depression]	TCAs: H SSRIs: M	TCAs: H SSRIs: M

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Central nervous system

Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Anti-epileptic drugs (e.g. brivaracetam, carbamazepine, clobazam, clonazepam, eslicarbazepine, ethosuximide, gabapentin, lacosamide, lamotrigine, levetiracetam, oxcarbazepine, perampanel, phenytoin, phenobarbital, pregabalin, primidone, rufinamide, sodium valproate, tiagabine, topiramate, vigabatrin, zonisamide)	Pregabalin - are adjustments in dose or dosing regimen needed for patients at higher risk of respiratory depression, e.g. those with compromised respiratory function; respiratory or neurological disease, or renal impairment taking other CNS depressants (including opioid-containing medicines); aged older than 65 years. [DSU 2021] Reduce dose of gabapentin and pregabalin if creatinine clearance <60ml/min. Reduce dose of levetiracetam if CrCl is ≤80ml/min. [Beers criteria 2023] Avoid concomitant use of phenytoin and co-trimoxazole due to increased risk of phenytoin toxicity. [Beers criteria 2023] Carbamazepine and oxcarbazepine may exacerbate or cause SIADH or hyponatraemia; monitor sodium levels closely when starting or changing doses in older people. [Beers criteria 2023] Carbamazepine has some anticholinergic activity and gabapentin has minimal anticholinergic activity, consider anticholinergic burden if other anticholinergic medicines used. [Scotland Polypharmacy Guidance 2018] Avoid concurrent use of 3 or more CNS-active drugs (antiepileptics, antidepressants, antipsychotics, benzodiazepines, Z drugs, opioids and skeletal muscle relaxants) due to increased risk of falls and fracture. Older generation antiepileptics are more fall risk increasing than newer antiepileptics. The risk difference is related to the sedative effects. [Beers criteria 2023, Seppala 2021, PrescQIPP medication and falls] Avoid anti-epileptic drugs in patients with recurrent falls as they may impair sensorium, may adversely affect cerebellar function. [STOPP-START] **Epilepsy** Check that medicines prescribed for epilepsy are prescribed as per the MHRA advice about those which must be supplied by brand and those which can be generic. [BNF] Ensure females of childbearing potential prescribed valproate medicines are supported on the Valproate Pregnancy Prevention Programme and males under 55 years can speak with their GP to discuss any concerns. [NICE NG217, CKS epilepsy, NatPSA 2023]	Discuss tapering/withdrawal for epilepsy and trigeminal neuralgia with specialist. [CKS epilepsy, CKS trigeminal neuralgia] If gabapentin or pregabalin are not effective or not tolerated for neuropathic pain or chronic primary pain, discontinue treatment gradually over a minimum of 1 week. [CKS neuropathic pain] Individualise reduction regimes with the patient. Length of withdrawal will vary dependent on the patient's response. Dose changes may occur weekly, fortnightly or monthly depending on an agreed reduction regime with the patient. At each dose change reduce the daily dose as follows - gabapentin by 300mg and pregabalin by 50mg. [AWMSG Polypharmacy in older people] Neuropathic pain bulletin, briefing and audit	H	H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Anti-epileptic drugs cont.	**Non-epilepsy indications** Assess effectiveness/dose if used for for neuropathic or chronic primary pain management. Do adverse effects outweigh benefits? [Scotland Polypharmacy Guidance 2018, NICE CG173, NICE NG193] Avoid gabapentinoids (e.g. gabapentin, pregabalin) for non-neuropathic pain due to lack of evidence of efficacy. [STOPP-START] Review sub-therapeutic doses of anti-epileptic drugs for non-epilepsy indications, if adverse effects outweigh benefits withdraw gradually and stop. Where these are used in care homes for people with learning difficulties, discuss gradually withdrawing and stopping with the prescriber. [NHSE 2016]	See above	H	H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Antipsychotics (e.g. chlorpromazine, levomepromazine, promazine, pericyazine, fluphenazine, perphenazine, prochlorperazine, trifluoperazine, benperidol, haloperidol, flupentixol, zuclopenthixol, pimozide, sulpiride, clozapine, aripiprazole, olanzapine, quetiapine, amisulpride, risperidone, lurasidone)	Do the known possible adverse drug reactions outweigh the possible benefits? [Garfinkel 2010] Antipsychotics may exacerbate or cause SIADH or hyponatraemia; monitor sodium levels closely when starting or changing doses in older people. [Beers criteria 2023] Antipsychotics may influence the risk of falls by adversely affecting the cardiovascular or central nervous system (e.g. orthostatic hypotension, bradycardia, sedation, sleep disturbance, confusion, dizziness). [Lee 2021, Seppala 2021, PrescQIPP medication and falls] Avoid concurrent use of 3 or more CNS-active drugs (antiepileptics, antidepressants, antipsychotics, benzodiazepines, Z drugs, opioids and skeletal muscle relaxants) due to increased risk of falls and fracture. [Beers criteria 2023] Chlorpromazine, clozapine, doxepin and levomepromazine are highly anticholinergic. Olanzapine, quetiapine, risperidone and haloperidol have some anticholinergic activity. Trifluoperazine and perphenazine have unknown anticholinergic activity. Check if antipsychotics are being taken with other medicines that have anticholinergic activity and increase risk of cognitive impairment, e.g. bladder antispasmodics, intestinal antispasmodics, TCAs, first generation antihistamines. [Scotland Polypharmacy Guidance 2018, STOPP-START, PrescQIPP anticholinergic burden] Avoid use of antipsychotics with moderate-marked antimuscarinic/anticholinergic effects in people with a history of lower urinary tract symptoms associated with benign prostatic hyperplasia or previous urinary retention due to the high risk of urinary retention. [STOPP-START, Beers criteria 2023] Avoid antipsychotics with potent anticholinergic/antimuscarinic effects in patients with delirium or dementia due to risk of exacerbation of cognitive impairment. [STOPP-START]	Discuss tapering/withdrawal with specialist. Withdrawal after long term therapy (1 to 2 years) must be gradual and individualised (start with 10-25% dose reduction) to reduce the risk of adverse events. Review weekly, then monthly, closely monitor for 2 years after drug withdrawal to avoid relapse. [Scotland Polypharmacy Guidance 2018, Scott 2013, BNF, Brandt 2022] In dementia patients with behavioural and psychological symptoms, review and discontinue if there has been no response and symptoms are mild, unless there is extreme risk or distress for the patient. [NHSE 2016, Alzheimer's Society 2017, Van Leeuwen 2018] Standardised symptom evaluations and drug cessation attempts should be undertaken at regular intervals. [Alzheimer's Society 2017, Van Leeuwen 2018] PrescQIPP antipsychotics in dementia deprescribing algorithm	M	H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Antipsychotics cont.	Avoid use of antipsychotics (i.e. other than clozapine or quetiapine) in those with parkinsonism or Dementia with Lewy Bodies due to risk of severe extra-pyramidal symptoms. [STOPP-START] Avoid use of antipsychotics prescribed for behavioural and psychological symptoms of dementia (BPSD) unless non-pharmacologic options (e.g. behavioural interventions) have failed or are not possible, [NHSE 2016, Beers criteria 2023] or if they have been used at an unchanged dose for >3 months without medication review due to increased risk of extrapyramidal side-effects, chronic worsening of cognition, increased risk of major cardiovascular morbidity and mortality. [STOPP-START, Norgaard 2022, Beers criteria 2023] Avoid use of neuroleptic antipsychotics used as hypnotics, unless sleep disorder is due to psychosis or non-cognitive symptoms of dementia (NCSD) due to the risk of confusion, hypotension, extra-pyramidal side effects and falls. Avoid use in patients with NCSD taken for longer than 12 weeks unless symptoms are severe and other treatments have failed due to increased risk of stroke or myocardial infarction. [STOPP-START] Haloperidol and phenothiazines can predictably prolong the QTc interval (QTc = QT/RR) in patients with known QTc prolongation (to >450 msec in males and >470 msec in females); avoid use due to risk of life threatening ventricular arrhythmias. [STOPP-START] Avoid long term antipsychotics in people with a known history of coronary, cerebral or peripheral vascular disease. [STOPP-START] Avoid antipsychotics with dysphagia due to increased risk of aspiration pneumonia. [STOPP-START] Antipsychotics may influence the risk of falls by adversely affecting the cardiovascular or central nervous system (e.g. orthostatic hypotension, bradycardia, sedation, sleep disturbance, confusion, dizziness). [Beers criteria 2023, Lee 2021, Seppala 2021, PrescQIPP medication and falls] Avoid antipsychotic drugs in patients with recurrent falls as they may cause Parkinsonism. [STOPP-START]	See above	M	H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Barbiturates (e.g. amobarbital, butobarbital, phenobarbital, secobarbital)	Intermediate acting preparations should only be used in severe intractable insomnia, avoid use in the elderly. [BNF] The long-acting barbiturate phenobarbital is still sometimes of value in epilepsy but its use as a sedative is unjustified. [BNF] All sedatives have an anticholinergic burden, use cautiously. See PrescQIPP anticholinergic burden bulletin for further information. High rate of physical dependence, tolerance to sleep benefits, risk of overdose at low doses. [Beers criteria 2023] Barbiturates may influence the risk of falls by adversely affecting the cardiovascular or central nervous system (e.g. orthostatic hypotension, bradycardia, sedation, sleep disturbance, confusion, dizziness). [Lee 2021]	If used daily for more than 3 to 4 weeks, reduce the dose by 25% every 3 to 4 days. Once at 25% of the original dose and no withdrawal symptoms (e.g. restlessness, insomnia, weakness, dizziness, nausea, sweating, anxiety, tremors, seizures, hallucinations, psychosis, hyperthermia, circulatory failure) have been seen, stop the drug. If any withdrawal symptoms occur, go back to approximately 75% of the previously tolerated dose. [Medstopper]	M	H

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Central nervous system

Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Benzodiazepines and other hypnotics (including 'Z' drugs) (e.g. alprazolam, clomethiazole, chlordiazepoxide, clonazepam (see also anti-epileptic drugs), diazepam, flurazepam, lorazepam, melatonin, nitrazepam, oxazepam, temazepam, zopiclone, zaleplon, zolpidem)	Is use still required if physical and psychological health and personal circumstances are stable? If the patient is willing, committed and compliant, and has adequate social support, is withdrawal possible in primary care? [CKS benzodiazepines] All benzodiazepines increase the risk of cognitive impairment, delirium, falls, fracture, and motor vehicle crashes. Avoid use of benzodiazepines and Z-drugs (zolpidem, zopiclone, zaleplon) for insomnia for ≥ 2 weeks due to high risk of dependency. [Beers criteria 2023, STOPP-START] Benzodiazepines should not be taken for ≥ 4 weeks as there is no indication for longer treatment. Benzodiazepines may influence the risk of falls by adversely affecting the cardiovascular or central nervous system (e.g. orthostatic hypotension, bradycardia, sedation, sleep disturbance, confusion, dizziness). [Beers criteria 2023, Lee 2021, Seppala 2021, PrescQIPP medication and falls] Avoid benzodiazepines and Z-drugs in patients with recurrent falls. [STOPP-START, Scott 2013, BNF, Fiss 2011] Nitrazepam and flurazepam have a prolonged action and may give rise to residual effects on the following day; repeated doses tend to be cumulative. [BNF] All sedatives have an anticholinergic burden, use cautiously. See PrescQIPP Anticholinergic burden bulletin for further information. Avoid concomitant use of benzodiazepines and opioids due to risk of sedation, respiratory depression, coma and death. [Beers criteria 2023] Avoid concurrent use of 3 or more CNS-active drugs (antiepileptics, antidepressants, antipsychotics, benzodiazepines, Z drugs, opioids and skeletal muscle relaxants) due to increased risk of falls and fracture. [Beers criteria 2023]	Withdrawal should be flexible. Rate of reduction must be tolerable for the patient. The rate depends on the initial dose of benzodiazepine, duration of use, and the patient's clinical response. [BNF, CKS benzodiazepines] Short-term users (2 to 4 weeks only) can usually taper off within 2 to 4 weeks. [BNF] For long term users, withdrawal should be gradual to avoid confusion, toxic psychosis and convulsions. [STOPP-START, BNF, CKS benzodiazepines] Switch to an approximately equivalent dose of diazepam. [BNF, CKS benzodiazepines] Stabilise on diazepam, then start with 5–10% reduction every one to two weeks, or an eighth of the dose fortnightly (use a slower reduction at lower doses), titrate according to the severity of withdrawal symptoms. [CKS benzodiazepines] **Information continued on next page.**	M	H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Benzodiazepines and other hypnotics (including 'Z' drugs) cont.	Avoid use of benzodiazepines for agitated behaviour or non-cognitive symptoms of dementia due to no evidence of efficacy. [STOPP-START] Avoid use of benzodiazepines with acute or chronic respiratory failure, i.e. pO2 < 8.0 kPa ± pCO2 > 6.5 kPa due to risk of exacerbation of respiratory failure. [STOPP-START] Current or recent use of benzodiazepines has been associated with an increased risk of pneumonia. [Sun 2019] Lack of evidence for benzodiazepines to treat chronic primary pain. Do not initiate treatment in chronic primary pain. Do benefits outweigh risks if treatment continued? [NICE NG193] Deprescribe melatonin if prescribed for jet lag on the NHS or insomnia with Alzheimers disease. Review and deprescribe modified release melatonin in adults after 13 weeks treatment. Check that all suitable people have undergone a two-week drug holiday to assess need for ongoing treatment: 3 months after treatment started and 6 monthly thereafter. Stop if sleep improvements are maintained during the drug holiday. [PrescQIPP melatonin]	Withdrawal symptoms (e.g. loss of appetite and body-weight, tremor, insomnia, anxiety, perspiration, tinnitus, perceptual disturbances) may start within 1 day with short acting benzodiazepines to up to 3 weeks after stopping a long acting benzodiazepine. Some symptoms may continue for weeks or months after stopping. Withdrawal symptoms for long term users usually resolve within 6 to 18 months of the last dose. [BNF] Drug withdrawal may take 3 months to a year or longer. [Scotland Polypharmacy Guidance 2018, CKS benzodiazepines] PrescQIPP polypharmacy benzodiazepine deprescribing algorithm PrescQIPP dependence forming medicines benzodiazepine deprescribing algorithm Melatonin - no tapering required. PrescQIPP melatonin deprescribing algorithm	M	H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Chloral hydrate	No convincing evidence of usefulness; avoid use/prolonged use. [BNF] All sedatives have an anticholinergic burden, use cautiously. See PrescQIPP anticholinergic burden bulletin for further information. Sedative hypnotic drugs may influence the risk of falls by adversely affecting the cardiovascular or central nervous system (e.g. orthostatic hypotension, bradycardia, sedation, sleep disturbance, confusion, dizziness). [Lee 2021]	Do not withdraw abruptly. [BNF] If used daily for more than 3 to 4 weeks reduce dose by 25% every week (i.e. week 1: 75%, week 2: 50%, week 3: 25%) and this can be extended or decreased (10% dose reductions) if needed. Withdrawal symptoms (e.g. rebound insomnia, tremor, anxiety, hallucinations, seizures and delirium) usually occur 1 to 3 days after a dose change. If they are intolerable go back to the previously tolerated dose until symptoms resolve and plan for a more gradual taper with the patient. Dose reduction may need to slow down as smaller doses used (i.e. 25% of the original dose). Overall, the rate of discontinuation needs to be controlled by the person taking the medication. [Medstopper]	M	H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Dementia drugs (e.g. donepezil, galantamine, memantine, rivastigmine)	The three acetylcholinesterase (AChE) inhibitors donepezil, galantamine and rivastigmine as monotherapies are recommended as options for managing mild to moderate Alzheimer's disease. Do not stop AChE inhibitors in people with Alzheimer's disease because of disease severity alone. [NICE NG97] Review benefits (slowing cognitive decline associated with Alzheimers dementia) vs. harms (gastrointestinal upset, urinary incontinence, asthma, bradycardia) particularly if person is frail, has low body weight or has limited life expectancy. [Primary Health Tasmania deprescribing guide] Avoid AChE in patients with a known history of persistent bradycardia (<60 beats/min), heart block or recurrent unexplained syncope and with concurrent medicines that reduce heart rate such as beta-blockers, digoxin, diltiazem, verapamil due to risk of cardiac conduction failure, syncope and injury. [STOPP-START] Avoid use of memantine with known current or previous seizure disorder due to increased risk of seizures. [STOPP-START] AChE inhibitors cause bradycardia and should be avoided in older adults whose syncope may be due to bradycardia. [Beers criteria 2023]	Discuss tapering/withdrawal with specialist. [AWMSG Polypharmacy in older people]	M	M

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Drugs used in nausea and vertigo (e.g. betahistine, ondansetron, prochlorperazine, metoclopramide, domperidone, hyoscine hydrobromide, cyclizine, doxylamine + pyridoxine)	Review indication and whether symptoms are ongoing (can be restarted if symptoms return). [BNF] Metoclopramide only for short term use (up to 5 days). [DSU 2013] How long has it been prescribed? Can cause extrapyramidal effects including tardive dyskinesia, risk greater in older adults with frailty. [Beers criteria 2023] Betahistine - consider reducing dose, evidence inconclusive regarding effectiveness, refer to ENT specialist if ineffective. [CKS Meniere's disease] Domperidone, maximum duration of treatment should not exceed one week. [DSU 2019] Cyclizine prone to abuse due to its euphoric and hallucinogenic effects. [SPC] Drugs for motion sickness such as hyoscine hydrobromide - should be purchased as part of self care. [NHSE/NHSCC 2018] Not appropriate for vertigo in nursing home patients with advanced/end stage dementia. [Parsons 2015, CKS Dementia] Prochlorperazine has some anticholinergic activity. [Scotland Polypharmacy Guidance 2018] Ondansetron can predictably prolong the QTc interval (QTc = QT/RR) in patients with known QTc prolongation (to >450 msec in males and >470 msec in females); avoid use due to risk of life threatening ventricular arrhythmias. [STOPP-START] Avoid prochlorperazine or metoclopramide with Parkinsonism due to risk of exacerbating Parkinsonian symptoms. [STOPP-START, Beers criteria 2023]	If taken for less than 3 to 4 weeks, no tapering needed. If taken daily for more than 3 to 4 weeks reduce dose by 50% every 1 to 2 weeks. Once at 25% of the original dose and no withdrawal symptoms have been seen, stop the drug. If any withdrawal symptoms occur, go back to approximately 75% of the previously tolerated dose. [Medstopper]	H	H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Drugs used in Parkinson's disease (e.g. amantadine, bromocriptine, co-careldopa, entacapone, orphenadrine, pramipexole, procyclidine, ropinirole, selegiline, trihexyphenidyl)	No evidence of efficacy of levodopa or dopamine agonists for benign essential tremor. [STOPP-START] Avoid use of levodopa or dopamine agonists for treatment of extrapyramidal side-effects of antipsychotics or other forms of drug-induced Parkinsonism to avoid inappropriate prescribing cascade. [STOPP-START] Procyclidine, trihexyphenidyl and orphenadrine are highly anticholinergic. Amantadine and bromocriptine have some anticholinergic activity. Entacapone has small potential for anticholinergic activity. Avoid use of anticholinergic/antimuscarinic drugs to treat extra-pyramidal side-effects of antipsychotic medications due to risk of anticholinergic toxicity. [STOPP-START] Avoid medicines with potent anticholinergic/antimuscarinic effects in patients with delirium or dementia due to risk of exacerbation of cognitive impairment. [STOPP-START] Check if these medicines are being taken with other medicines that have anticholinergic activity and increase risk of cognitive impairment, e.g. TCAs, oxybutynin, chlorphenamine? [Beers criteria 2023, Scotland Polypharmacy Guidance 2018, PrescQIPP anticholinergic burden]	Avoid abrupt withdrawal in patients taking long term treatment. [BNF]	H	H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Lithium	Lithium has some anticholinergic activity, consider anticholinergic burden if other anticholinergic medicines used. [Scotland Polypharmacy Guidance 2018] Avoid use of lithium in patients with known QTc prolongation (to >450msec in males and >470msec in females) as lithium can predictably prolong the QTc interval (QTc = QT/RR) and the risk of life threatening ventricular arrhythmias is increased. [STOPP-START] Avoid use of lithium with ACE inhibitors, ARBs, angiotensin receptor neprilysin inhibitors and loop diuretics due to increased risk of lithium toxicity. Monitor lithium concentrations. [Beers criteria 2023]	Where lithium is prescribed under shared care arrangements, discuss tapering/withdrawal with specialist. While there is no clear evidence of withdrawal or rebound psychosis with lithium, abrupt discontinuation increases the risk of relapse. If lithium is to be discontinued, the dose should be reduced gradually over a period of at least 4 weeks (preferably over a period of up to 3 months). Patients and their carers should be warned of the risk of relapse if lithium is discontinued abruptly. If lithium is stopped or is to be discontinued abruptly, consider changing therapy to an atypical antipsychotic or valproate. [BNF]	H	H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Antibacterials - oral (e.g. aminoglycosides, penicillins, tetracyclines, cephalosporins, carbapenems, quinolones, macrolides, minocycline, nitrofurantoin)	Inappropriate uses • Bacterial infection has resolved • Viral infection has been diagnosed • Prophylactic treatment prescribed but no pathogen isolated (unless immunocompromised)? [BNF] Minocycline should not be prescribed for acne due to safety risks and lack of evidence that it is more effective or better tolerated than other tetracyclines. [NHSE 2023] Treatment of asymptomatic bacteriuria (ASB) in older patients and people with diabetes has no beneficial effects. Review treatment for prophylaxis of UTI every 6 months. [Scotland Polypharmacy Guidance 2018, STOPP-START, PHE 2020] Avoid use of quinolones and macrolides in patients with known QTc prolongation (to >450 msec in males and >470 msec in females) as they can predictably prolong the QTc interval (QTc = QT/RR) and increase the risk of life threatening ventricular arrhythmias. [STOPP-START] Prophylactic azithromycin may be used long term to reduce the risk of COPD exacerbations where benefits outweigh risks on advice of respiratory specialist. [NICE NG115] There is a lack of evidence to evaluate the effect of preventing catheter associated-ASB with antibiotics. [Scotland Polypharmacy Guidance 2018] Is fluid intake adequate?	No tapering required.	M	H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Antibacterials - oral ctnd	Increased risk of hyperkalaemia when co-trimoxazole used concurrently with an ACEI, ARB or angiotensin receptor neprilysin inhibitor (e.g. sacubitril/valsartan) in the presence of decreased CrCl. [Beers criteria 2023] Avoid concomitant use of co-trimoxazole and phenytoin due to increased risk of phenytoin toxicity. [Beers criteria 2023] Avoid ciprofloxacin with concomitant theophylline due to increased risk of theophylline toxicity. [Beers criteria 2023] Avoid when possible concomitant use of warfarin with ciprofloxacin, macrolides (excluding azithromycin) or trimethoprim-sulfamethoxazole (co-trimoxazole) due to the increased risk of bleeding. If used together monitor INR closely. [Beers criteria 2023] Avoid use of co-trimoxazole if CrCl <15ml/min, reduce dose if CrCl is 15-29ml/min due to increased risk of worsening of kidney function and hyperkalaemia. [Beers criteria 2023] Increased risk of CNS effects (e.g. seizures, confusion) and tendon rupture with ciprofloxacin if CrCl <30ml/min. [Beers criteria 2023] Nitrofurantoin may be used with caution if eGFR 30–44 ml/min/1.73m^2 as a short-course only (3 to 7 days), to treat uncomplicated lower urinary-tract infection caused by suspected or proven multidrug resistant bacteria and only if potential benefit outweighs risk. [BNF] Avoid use of nitrofurantoin if CrCl <30ml/min or for long-term suppression due to potential for pulmonary toxicity, hepatotoxicty and peripheral neuropathy, especially with long term use; safer alternatives available. [Beers criteria 2023] See also PrescQIPP prevention, management and treatment of UTI resources.	No tapering required.	M	H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Antifungals - oral (e.g. fluconazole, itraconazole, clotrimazole, econazole, ketoconazole, tioconazole, miconazole, nystatin, griseofulvin, terbinafine)	For fungal nail infections, self care measures and topical antifungal nail paints should be tried first. Topical treatment should be purchased OTC. [BNF, CKS fungal nail infection] Skin scrapings should be taken if systemic therapy is being considered or doubt about the diagnosis. When a course of treatment of appropriate length has been finished, e.g. terbinafine orally for nail infections usually 6 weeks to 3 months (may need longer for toenail infection); oral and topical nystatin usually 7 days; do not continue indefinitely. [BNF] Terbinafine should not be prescribed in people with chronic or active hepatic disease. [CKS fungal nail infection] For finger and toe nail infections, cure is achieved in only a minority of patients, the relapse rate is high. [DTB 2008] Increased risk of bleeding with apixaban, dabigatran, edoxaban, rivaroxaban and P-glycoprotein (P-gp) drug efflux pump inhibitors, e.g. itraconazole, systemic ketoconazole. [STOPP-START]	No tapering required.	M	M

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Anti-hyperglycaemics (e.g. **dipeptidylpeptidases-4 (DDP-4) inhibitors** - alogliptin, linagliptin, saxagliptin, sitagliptin, vildagliptin; **thiazolidenediones** - pioglitazone; **SGLT2s** - canagliflozin, dapagliflozin, empagliflozin, ertuglifozin; **sulphonylureas**- glibenclamide, gliclazide, glimepiride, glipizide; **meglitinides** - nateglinide, repaglinide; **others** - acarbose, metformin, tolbutamide)	Do the known possible adverse drug reactions outweigh the possible benefits? [Garfinkel 2010] Avoid metformin if eGFR <30/min/1.73m^2 due to risk of lactic acidosis. [STOPP-START] Risk of prolonged hypoglycaemia with sulphonylureas with a long half-life (e.g. glibenclamide, glimepiride) with type 2 diabetes mellitus. [STOPP-START] Avoid sulphonylureas as first- or second line monotherapy or add-on therapy unless there are substantial barriers to use of safer and more effective agents. If a sulphonylurea is used, choose short acting agents (e.g. glipizide) over long acting agents (e.g. glimepiride). [Beers criteria 2023] Avoid thiazolidenediones in patients with heart failure due to risk of exacerbation of heart failure. [STOPP-START, Beers criteria 2023] Avoid sodium glucose co-transporter (SGLT2) inhibitors in people with symptomatic hypotension due to risk of exacerbation of hypotension. [STOPP-START] Use SGLT2 inhibitors with caution in older adults due to increased risk of urogenital infections, particularly women in the first month of treatment. [Beers criteria 2023] Check that patients with heart failure are taking SGLT2 inhibitors (dapagaflozin and empagliflozin) as per NICE recommendations. [CKS Heart failure-chronic] Check that patients with chronic kidney disease are taking an SGLT2 inhibitor (dapagliflozin) as per the MHRA license and NICE recommendations. [CKS Chronic kidney disease] Have diabetes patients taking SGLT2 inhibitors been advised about the signs and symptoms of diabetic ketoacidosis (DKA) and what to do if they occur? [Beers criteria 2023, DSU 2016] See PrescQIPP resources for Acute kidney injury and sick day guidance Do any of the following apply, patient is palliative/end of life, antihyperglycaemic medicine now contraindicated, patient does not wish to take anti-hyperglycaemic after shared decision making, patient has lost significant weight and anti-hyperglycaemic no longer needed. [BNF]	No tapering needed. PrescQIPP antihyperglycaemic treatment deprescribing algorithm Check each adult with type 2 diabetes has an individualised care plan and offer lifestyle advice on alcohol intake, smoking cessation, exercise and physical activity. [CKS Diabetes - type 2] Check each adult with heart failure has an individualised self-management plan with advice about symptoms of worsening heart failure, dietary advice, what to do if acutely unwell and physical activity. [CKS Heart failure-chronic] Check if a patient with confirmed chronic kidney disease has self management advice for healthy lifestyle measures, medicines to avoid and increased risk of acute kidney injury.	H	H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Bisphosphonates (e.g. alendronate, risedronate, ibandronate, zoledronic acid)	Was the patient suitable for a fracture risk assessment and was their FRAX® score in line with NICE treatment criteria? [NICE QS149] Is the patient suitable for a drug treatment break? [NOGG 2021] See PrescQIPP bulletin 231. Bisphosphonate treatment for osteoporosis Review adults for the need to continue treatment. Risk factors for osteoporotic fractures include prolonged immobility, rheumatoid arthritis, BMI <22kg/m^2. [Scotland Polypharmacy Guidance 2018] If zoledronic acid has been taken for 3 years, or alendronate, ibandronate or risedronate for 5 years or more and there is no need for continuing treatment. [NICE QS149] Consider deprescribing: • If risk outweighs benefits. [Garfinkel 2010] • After 3 years treatment in patients with multimorbidity. [NICE NG56] • If T-score >-2.5 then reassess BMD and fracture risk after 2 years. [NICE QS149] • If treatment length >10 years, ongoing management should be considered on an individual basis with the patient. Specialist advice may need to be sought. [NOGG 2021]	No tapering needed. [NICE QS149] PrescQIPP bisphosphonate deprescribing algorithm Provide lifestyle advice about taking regular exercise, eating a balanced diet, stopping smoking, drinking alcohol within recommended limits [CKS Osteoporosis]	M	M

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Biphosphonates cont.	Not appropriate in nursing home patients with advanced/end stage dementia. [Parsons 2015, CKS Dementia] Limited benefit in people with limited life expectancy. [Thompson 2019] Avoid oral bisphosphonates in patients with a history of upper gastrointestinal disease i.e. dysphagia, oesophagitis, gastritis, duodenitis, or peptic ulcer disease, or upper gastrointestinal bleeding due to the risk of relapse/exacerbation of oesophagitis, oesophageal ulcer, oesophageal stricture. [STOPP-START] Stop oral bisphosphonates (risedronate and ibandronate) if eGFR <30 ml/min/1.73m^2 and alendronate if eGFR <35 ml/min/1.73m^2 due to increased risk of acute renal failure. [STOPP-START, BNF]	See above.	M	M

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Levothyroxine, Liothyronine and dessicated thyroid extract (DTE)	Avoid levothyroxine in subclinical hypothyroidism, i.e. normal free T4, elevated TSH but <10mU/L due to no evidence of benefit and risk of iatrogenic thyrotoxicosis. [STOPP-START] Liothyronine monotherapy is not recommended in hypothyroidism; it may be suitable for a small number of patients who have not benefitted from levothyroxine. Combination levothyroxine/liothyronine should not be used routinely in the management of hypothyroidism due to lack of clinical evidence to show that combination therapy is superior to levothyroxine monotherapy. Seek specialist advice. [NHSE 2023a, Ahluwalia 2023] After several years' stability on liothyronine or DTE therapy, many patients find that they can resume levothyroxine monotherapy with no change in symptoms or quality of life. [Ahluwalia 2023] Avoid use of DTE due to concerns about cardiac effects, safer alternatives are available and there is a lack of evidence of superiority over levothyroxine. [Beers criteria 2023, NHSE 2023]	Do not stop abruptly, discuss tapering/withdrawal with specialist. When reducing or stopping liothyronine therapy, replace 5mcg of liothyronine with about 15mcg of levothyroxine (a 1:3 ratio). When reducing or stopping DTE therapy, one grain of DTE (e.g. Armour Thyroid) should be substituted by around 60mcg levothyroxine. Patients on larger doses of liothyronine may need a gradual change-over from liothyronine or DTE to levothyroxine monotherapy. Patients on a low dose of liothyronine may be able to stop immediately. Repeat TSH blood testing 6–8 weeks following any change in prescription recommended. [Ahluwalia 2023]	M	H

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Endocrine system

Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Oestrogens ± progestogens (e.g. estradiol, estriol, ethinylestradiol, tibolone)	Length of use of HRT - discuss individual benefits and risks of short term (up to 5 years) and longer-term use (e.g. VTE, CVD, type 2 diabetes, breast cancer, osteoporosis, dementia). [NICE NG23, DSU 2019a] Topical low dose oestrogen intravaginal cream is safe and effective for dyspareunia and other vaginal symptoms. [Beers criteria 2023] Avoid use of oral oestrogen for urinary incontinence in women due to lack of efficacy. [Beers criteria 2023] Avoid use of systemic oestrogens in women with a history of breast cancer and with a history of venous thromboembolism due to increased risk of recurrence. [STOPP-START] Avoid menopausal hormone therapy (oestrogen plus progestin) with a history of stenotic coronary, cerebral or peripheral arterial disease due to increased risk of acute arterial thrombosis. [STOPP-START] Avoid systemic oestrogens without progestogens in patients with intact uterus due to risk of endometrial cancer. [STOPP-START] Increased risk of recurrent venous thromboembolism when systemic oestrogens or androgens taken when there is a previous history of venous thromboembolism. [STOPP-START] Avoid use of megestrol acetate to increase appetite due to increased risk of thrombosis and death with unproven efficacy. [STOPP-START, Beers criteria 2023] Not appropriate in nursing home patients with advanced/end stage dementia. [Parsons 2015, CKS Dementia] See also PrescQIPP menopause bulletin	HRT can be stopped immediately or gradually by decreasing the dose or number of days per week that HRT is taken. Gradually reducing may limit recurrence of symptoms in the short term. Gradually reducing or stopping immediately makes no difference to symptoms in the longer term. [NICE NG23] Provide information and advice on lifestyle measures for menopause symptom relief. [CKS Menopause]	M	M
Other osteoporosis medications (e.g. raloxifene, strontium, denosumab)	Limited benefit in people with limited life expectancy. [Thompson 2019]	No tapering needed.	M	M

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Drugs for urinary retention (e.g. alpha blockers - alfuzosin, doxazosin prazosin, tamsulosin, terazosin; indoramin, bethanechol)	Review effectiveness every 4 to 6 weeks until symptoms stabilise, and then every 6 to 12 months. [BNF] Do the known possible adverse drug reactions outweigh the possible benefits? [Garfinkel 2010] e.g. postural hypotension, urinary retention, constipation. Check if continence pads are also used, is concomitant use necessary? No evidence on the use of continence pads for urinary incontinence and potential adverse effects in the long term on skin integrity. Lifestyle advice and pelvic floor muscle training should be offered. [CKS incontinence]	Alpha blockers are commonly associated with adverse effects if discontinued suddenly and require slow withdrawal. [Scott 2013] If used daily for more than 3 to 4 weeks reduce dose by 50% every 1 to 2 weeks. Once at 25% of the original dose and no withdrawal symptoms have been seen (e.g. return of symptoms, chest pain, pounding heart, increased heart rate, increased blood pressure, anxiety, tremor), stop the drug. If any withdrawal symptoms occur, go back to approximately 75% of the previously tolerated dose. [Medstopper]	M	M

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Drugs used for urinary frequency, urgency and incontinence (e.g. oxybutynin, tolterodine, darifenacin, fesoterodine, mirabegron, propiverine, solifenacin, trospium, duloxetine, desmopressin, vasopressin)	Avoid use of duloxetine with urinary urgency or urge incontinence as duloxetine is indicated in stress incontinence but not in urinary urgency or urge incontinence. [STOPP-START] Duloxetine is not recommended as first line treatment for women with stress incontinence. It may be used second-line where conservative treatment including pelvic floor training has failed, and only if surgery is not appropriate or pharmacological treatment is preferred, it should not be offered routinely. [BNF] Duloxetine should not be used in patients with severe hypertension (>180/105 mmHg (likely to make hypertension worse). [STOPP-START] Mirabegron contraindicated in severe uncontrolled hypertension (>180/110 mmHg). Monitor blood pressure regularly, particularly in those with pre-existing hypertension.[BNF] Stop mirabegron if blood pressure uncontrolled. Mirabegron can predictably prolong the QTc interval (QTc = QT/RR) in patients with known QTc prolongation (to >450 msec in males and >470 msec in females); avoid use due to risk of life threatening ventricular arrhythmias. [STOPP-START] Oxybutynin will decrease MMSE score in patients with dementia. [STOPP-START] Avoid vasopressin analogues (e.g. desmopressin, vasopressin) for urinary incontinence or urinary frequency due to risk of symptomatic hyponatraemia. [STOPP-START, Beers criteria 2023] Avoid systemic antimuscarinic drugs in patients with: • Narrow-angle glaucoma due to the risk of acute exacerbation of glaucoma. [STOPP-START] • Lower urinary tract symptoms associated with benign prostatic hyperplasia and high post-void residual volume, i.e. >200 ml due to uncertain efficacy and increased risk of urinary retention in older men. [STOPP-START] • Constipation due to the risk of exacerbation of constipation. [STOPP-START]	Anticholinergics are commonly associated with adverse effects if discontinued suddenly and require slow withdrawal. [Scott 2013] If taken daily for more than 3 to 4 weeks reduce dose by 50% every 1 to 2 weeks. Once at 25% of the original dose and no withdrawal symptoms have been seen, stop the drug. If any withdrawal symptoms occur, go back to approximately 75% of the previously tolerated dose. [Medstopper]	M	H

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Obstetrics, gynaecology & urinary tract disorders

Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Drugs used for urinary frequency, urgency and incontinence ctnd	Oxybutynin, tolterodine, darifenacin, fesoterodine, solifenacin and propiverine are highly anticholinergic. Check if the antimuscarinics are being taken with other medicines that have anticholinergic activity and can increase risk of cognitive impairment, e.g. intestinal antispasmodics, TCAs, first generation antihistamines, antipsychotics. [Scotland Polypharmacy Guidance 2018, STOPP-START] See PrescQIPP Anticholinergic burden bulletin for further information. Medicines with anticholinergic activity may influence the risk of falls by adversely affecting the cardiovascular or central nervous system (e.g. orthostatic hypotension, bradycardia, sedation, sleep disturbance, confusion and agitation, dizziness). [Lee 2021, STOPP-START, Seppala 2021, PrescQIPP medication and falls] Avoid in patients with chronic cognitive impairment, delirium or dementia due to risk of exacerbation of cognitive impairment. [STOPP-START, Beers criteria 2023] Not appropriate in nursing home patients with advanced/end stage dementia due to anticholinergic burden. [Parsons 2015, CKS Dementia]	See above		
Finasteride or dutasteride	Not indicated if patient has a long term catheter. [Scotland Polypharmacy Guidance 2018] Not appropriate in nursing home patients with advanced/end stage dementia. [Parsons 2015, CKS Dementia] The MHRA has received reports of depression in men taking finasteride for benign prostatic hyperplasia. Patients should be advised to stop finasteride immediately and inform a healthcare professional if they develop depression. [BNF]	Discuss stopping with urology specialist. [Scotland Polypharmacy Guidance 2018]	M	M

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Phosphodiesterase type-5 inhibitors (e.g. sildenafil, tadalafil, vardenafil)	Avoid use in severe heart failure characterised by hypotension, i.e. systolic BP <90mgHg due to risk of cardiovascular collapse. [STOPP-START] Avoid use with concurrent daily nitrate therapy for angina due to risk of cardiovascular collapse. [STOPP-START]	No tapering needed	M	M

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Cytotoxics, immunosuppressants	What outcome is expected, do the known possible adverse drug reactions outweigh the possible benefits? [Garfinkel 2010] Consider withdrawal of azathioprine for autoimmune conditions and ciclosporin for nephrotic syndrome if there is no improvement within 3 months of use. [BNF] Not appropriate in nursing home patients with advanced/end stage dementia. [Parsons 2015, CKS Dementia]	Do not remove from current medication unless confirmed by specialist. Refer to doctor who initiated treatment if stopping is being considered by primary care team.	M	H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Calcium + vitamin D	Does the patient have adequate levels through diet/sunlight exposure? [CKS osteoporosis] If the patient is not mobile, is a supplement still needed? [Primary Health Tasmania deprescribing guide]	No tapering needed. Provide lifestyle advice about taking regular exercise, walking outdoors to increase exposure to sunlight for vitamin D production, eating a balanced diet, stopping smoking, drinking alcohol within recommended limits [CKS osteoporosis] Take a vitamin D supplement OTC if needed.	L	L
Lutein and antioxidant vitamins	Evidence base does not show that lutein and other eye vitamins are beneficial. If required, they should be purchased as self care. [NHSE 2023]	No tapering needed. Offer advice on lifestyle interventions - stopping smoking and eating a healthy balanced diet. [CKS Macular degeneration - age related]	L	L
Sip feeds	Has screening for malnutrition been done using a validated screening tool such as the Malnutrition Universal Screening Tool (MUST)? Has a recent BMI/weight been recorded? Has a dietician recently reviewed the patient; is the patient able to prepare, or have someone else prepare fortified food and therefore does not need sip feeds? Is the patient at the end of life? Does the patient have limited mobility and is using sip feeds instead of a normal diet? Is an indication documented and does it meet ACBS criteria? Is the patient taking the sip feed as prescribed or leaving and discarding a significant amount? See PrescQIPP Oral Nutritional Supplements bulletin	No tapering needed. For advice and ideas to fortify food, see the PrescQIPP/BDA Creating a fortified diet recipe book	L	L

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Sodium, potassium and iron supplements	Do the known possible adverse drug reactions outweigh the possible benefits? [Garfinkel 2010] Check if any other drug therapy is causing the depletion? Avoid oral iron in patients with chronic constipation where non-constipating alternatives are appropriate due to the risk of exacerbation of constipation. [STOPP-START] Avoid oral elemental iron doses greater than 200mg daily (e.g. ferrous fumarate >600mg/day), ferrous sulphate >600mg/day, ferrous gluconate >1800mg/day as there is no evidence of enhanced iron absorption above these doses [STOPP-START] or with vitamin C. See PrescQIPP Vitamins and minerals bulletin.	No tapering needed.	L	L
Vitamins (see also vitamin D)	Does the patient have a disorder which requires vitamin and mineral supplements? [Garfinkel 2010, BNF] Dietary supplements/'pick me ups' should be purchased as self care. [NHSE 2023] Limited benefit in people with limited life expectancy. [Thompson 2019]	No tapering needed.	L	L

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Cannabis based medicinal products	Treatment with THC:CBD spray should be initiated and supervised by a physician with specialist expertise in treating spasticity due to multiple sclerosis. Treatment should only continue after a 4-week trial if the person has had at least a 20% reduction in spasticity-related symptoms on a 0 to 10 patient-reported numeric rating scale. [NICE NG144] Cannabis based medicinal products should not be used to manage chronic pain. [NICE NG144] For people with intractable nausea and vomiting, spasticity and severe treatment-resistant epilepsy follow advice in NICE NG144. For any other indication see NHSE guidance [NHSE 2023b]	Refer to specialist.	H	H
DMARDs (e.g. methotrexate, sulfasalazine penicillamine, leflunomide, hydroxychloroquine)	Discontinue penicillamine if there is no improvement within 1 year. [BNF] Not appropriate in nursing home patients with advanced/end stage dementia. [Parsons 2015, CKS Dementia] Methotrexate is a weekly dose, to minimise errors, only one strength (2.5mg) should be prescribed and dispensed. [BNF] Stop methotrexate if eGFR <30ml/min/1.73m^2. [STOPP-START]	Refer to doctor who initiated treatment. Offer advice about eating a Mediterranean diet (plenty of fruit, vegetables, fish and less meat and butter), stopping smoking, drinking alcohol. [CKS rheumatoid arthritis]	M	M
Glucosamine (including products containing chondroitin)	Not recommended by NICE for treatment of osteoarthritis (OA). Purchase OTC if required. [NHSE 2023, NICE CG173]	No tapering needed. Offer advice on self care management strategies for osteoarthritis, e.g. weight loss (if overweight), muscle strengthening exercises, psychological support if there is associated stress, anxiety, depression, use of analgesia. [CKS Osteoarthritis]	L	L

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Musculoskeletal and joint diseases

Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
NSAIDs (e.g. ibuprofen, mefenamic acid, naproxen, diclofenac, dexibuprofen, flurbiprofen, ketoprofen, dexketoprofen, aceclofenac, etodolac, celecoxib, indometacin, meloxicam, nabumetone, piroxicam, sulindac, tenoxicam, etoricoxib, parecoxib)	Is an NSAID still needed/appropriate? [STOPP-START] Do not use for chronic primary pain. [NICE NG193] Do the known possible adverse drug reactions outweigh the possible benefits? [Garfinkel 2010] Avoid use of indometacin and ketorolac in older adults due to increased risk of GI bleeding/peptic ulcer disease and acute kidney injury, safer alternatives available. [Beers criteria 2023] Avoid long term systemic NSAIDs in people with known history of coronary, cerebral or peripheral vascular disease due to increased risk of thrombosis. [STOPP-START] Avoid long term NSAID or colchicine (>3 months) for prevention of relapses of gout where there is no contraindication to a xanthine-oxidase inhibitor, e.g. allopurinol, febuxostat as xanthine-oxidase inhibitors are first choice prophylactic drugs in gout. [STOPP-START] Avoid chronic NSAID use unless alternatives are not effective and a PPI can be taken concurrently. [Beers criteria 2023] Avoid use of non-COX-2 selective NSAID with history of peptic ulcer disease or gastrointestinal bleeding, unless with concurrent PPI or H2 antagonist due to risk of peptic ulcer relapse. [STOPP-START] Avoid use of NSAID's with severe hypertension, i.e. systolic blood pressure consistently above 170mmHg and/or diastolic blood pressure consistently above 100mmHg due to risk of exacerbation of hypertension. [STOPP-START] Avoid use of NSAID's if CrCl <30ml/min due to increase in risk of acute kidney injury and further deterioration in renal function. [Beers criteria 2023]	No tapering needed. [Medstopper] Offer advice on self care management strategies for osteoarthritis, e.g. weight loss (if overweight), muscle strengthening exercises, psychological support if there is associated stress, anxiety, depression, use of analgesia. [CKS Osteoarthritis] PrescQIPP NSAID deprescribing algorithm	M	M

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
NSAIDs cont.	Avoid NSAIDs and COX-2 inhibitors use in patients with symptomatic heart failure and use with caution in patients who are asymptomatic due to the potential to promote fluid retention and/or exacerbate heart failure. [Beers criteria 2023, STOPP-START] NSAIDs may influence the risk of falls by adversely affecting the cardiovascular or central nervous system (e.g. orthostatic hypotension, bradycardia, sedation, sleep disturbance, confusion, dizziness). [Lee 2021] Avoid use of NSAIDs with anticoagulants due to risk of major GI bleeding. [STOPP-START] Avoid short term use in combination with oral or parenteral corticosteroids, anticoagulants or antiplatelet agents unless alternatives are not effective and a PPI can be taken concurrently. [STOPP-START, Beers criteria 2023] Avoid use of NSAIDs with concurrent corticosteroids for treatment of arthritis/rheumatism of any kind due to increased risk of peptic ulcer disease. [STOPP-START] If topical NSAIDs are continued indefinitely, review the need for use; short courses are generally advised for piroxicam, felbinac, diclofenac and ketoprofen. [BNF]	See above	M	M
Allopurinol, colchicine, febuxostat	Has patient been symptom free for many years? Have they successfully addressed modifiable risk factors, ceased or reduced diuretics? Has renal function improved? Does the patient have a normal serum uric acid level (<360micromol/L)? [CKS Gout] Avoid use of colchicine if eGFR <10 ml/min/1.73m^2 due to risk of colchicine toxicity. [STOPP-START] Avoid long term NSAID or colchicine (>3 months) for prevention of relapses of gout where there is no contraindication to a xanthine-oxidase inhibitor, e.g. allopurinol, febuxostat as xanthine-oxidase inhibitors are first choice prophylactic drugs in gout. [STOPP-START]	Reduce dose initially and monitor symptoms. If symptoms do not reappear, consider discontinuing treatment. PrescQIPP allopurinol deprescribing algorithm Offer advice about losing weight if overweight, eating a well balanced diet, drinking alcohol sensibly, avoiding dehydration, taking regular exercise, stopping smoking. [CKS Gout]	M	M

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Quinine	Not recommended for routine treatment due to potential toxicity. Should not be used unless cramps are very painful or frequent; when other treatable causes have been excluded; when non-pharmacological treatments have not worked (e.g. passive stretching exercises) and there is regular disruption to sleep. Interrupt treatment every 3 months to assess the need to continue. [BNF, Prescire 2023] Increased risk of bleeding with apixaban, dabigatran, edoxaban, rivaroxaban and P-glycoprotein (P-gp) drug efflux pump inhibitors, e.g. quinine. [STOPP-START]	In patients taking quinine long term, a trial discontinuation may be tried. [BNF] No tapering needed. [Medstopper] Offer advice on stretching and muscle massaging to alleviate leg cramps and stretching exercises to reduce the frequency of leg cramps. [CKS Leg cramps]	H	H
Rubefacients (e.g. methylsalicylate, capsaicin)	The evidence available does not support the use of topical rubefacients in acute or chronic musculoskeletal pain. Rubefacients should not be offered to treat OA. [NHSE 2023] If wanted purchase OTC for self care. See PrescQIPP Rubefacients bulletin. NICE states capsaicin patches should not be used for neuropathic pain in non-specialist settings, unless advised by a specialist. [NICE CG173]	Capsaicin patches - refer to specialist who initiated treatment. Rubefacients – no tapering needed.	L	M

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Skeletal muscle relaxants (e.g. baclofen, tizanidine, dantrolene, methocarbamol)	Rarely indicated long term (except for spasticity). Tizanidine is highly anticholinergic, baclofen, and methocarbamol have some anticholinergic activity. [Scotland Polypharmacy Guidance 2018] Hypotonia possible side effect. [BNF] Tizanidine can predictably prolong the QTc interval (QTc = QT/RR) in patients with known QTc prolongation (to >450 msec in males and >470 msec in females); avoid use due to risk of life threatening ventricular arrhythmias. [STOPP-START] Avoid medicines with potent anticholinergic/antimuscarinic effects (e.g. tizanidine) in patients with delirium or dementia due to risk of exacerbation of cognitive impairment. [STOPP-START] Avoid concurrent use of 3 or more CNS-active drugs (antiepileptics, antidepressants, antipsychotics, benzodiazepines, Z drugs, opioids and skeletal muscle relaxants due to increased risk of falls and fracture. [Beers criteria 2023] Avoid use of methocarbamol and orphenadrine as muscle relaxants for musculoskeletal complaints as poorly tolerated by older adults due to anticholinergic adverse effects, sedation, and increased risk of fractures. [Beers criteria 2023] Avoid baclofen in older adults with impaired kidney function (eGFR <60ml/min) or who require chronic dialysis due to increased risk of encephalopathy requiring hospitalisation. [Beers criteria 2023]	Baclofen is commonly associated with adverse effects if discontinued suddenly and requires slow withdrawal. [Scott 2013] If used daily for more than 3 to 4 weeks reduce dose by 25% every week (i.e. week 1: 75%, week 2: 50%, week 3: 25%) and this can be extended or decreased (10% dose reductions) if needed. If intolerable withdrawal symptoms occur (usually one to three days after a dose change, e.g. return of symptoms, muscle pain/spasm), go back to the previously tolerated dose until symptoms resolve and plan for a more gradual taper with the patient. Dose reduction may need to slow down as one gets to smaller doses (i.e. 25% of the original dose). Overall, the rate of discontinuation needs to be controlled by the person taking the medication. [Medstopper]	M	H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Eye drops/ointments (e.g. preservative free hypromellose, polyvinyl alcohol, sodium hyaluronate, sodium chloride, chloramphenicol, ciprofloxacin, ofloxacin, fusidic acid, gentamicin, tobramycin)	Review need for preservative free eye drops - is there a valid indication for prescribing (e.g. compromised cornea, previous preservative toxicity, use of multiple eye drops, eye drops instilled multiple times per day)? [Moorfields] Have antibiotic/antifungal/antiviral preparations been continued without a review or stop date? [BNF] Patients can manage mild to moderate cases of dry eye syndrome and sore tired eyes by using self care measures (e.g. good eyelid hygiene, avoidance of environmental factors) and lubricant eye drops, gels or ointments purchased OTC. [NHSE/NHSCC 2018]	No tapering needed.	M	M
Ear/nose/throat drops, sprays, solutions etc. (e.g. ciprofloxacin, ofloxacin, beclomethasone, budesonide, fluticasone, sodium cromoglicate, ephedrine, oxymetazoline, xylometazoline)	Is the medicine still required? Have antibiotic/steroid/sympathomimetic preparations been continued without review or a stop date? [BNF] Nasal sprays for the symptomatic relief of hay fever and congestion should be purchased OTC. [NHSE/NHSCC 2018]	No tapering needed.	M	M

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Eye drops for glaucoma (e.g. bimatoprost, latanoprost, tafluprost, travoprost, betaxolol, levobunolol, timolol, brinzolamide, dorzolamide, aproclonidine, brimonidine, pilocarpine)	Is the person having problems or difficulties with medication administration and treatment concordance? Does the person have short life expectancy? [Primary Health Tasmania deprescribing guide]	Refer to doctor/ophthalmologist who initiated treatment	M	M
Antimicrobial creams, ointments (e.g. fusidic acid, mupirocin, neomycin)	Has the condition resolved? Would continued use cause adverse effects or exacerbate the condition, e.g. preparations containing antibacterials or corticosteroids? Mupirocin, and neomycin are for short term use only. [BNF]	No tapering needed.	M	M

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Corticosteroids - topical (e.g. beclometasone, betamethasone, clobetasol, clobetasone, hydrocortisone, mometasone)	Use the lowest potency needed and advise patients on the amount of product to be applied as under use can prolong treatment duration. Inform patients how long they should use a topical corticosteroid, especially on sensitive areas such as the face and genitals. For patients currently on long term topical corticosteroid treatment, consider reducing potency or frequency of application (or both). [DSU 2021a] Is the patient using sufficient emollient to minimize the use of steroids? [CKS eczema atopic]	Long term continuous or inappropriate use of topical corticosteroids, particularly those of moderate to high potency, can result in the development of rebound flares after stopping treatment (e.g. dermatitis with intense redness, stinging, and burning that can spread beyond the initial treatment area). Be vigilant for the signs and symptoms of topical steroid withdrawal reactions and review the position statement from the National Eczema Society and British Association of Dermatologists. Report suspected adverse drug reactions to the Yellow Card scheme, including after discontinuation of topical corticosteroids. [DSU 2021a]	H	H
Eflornithine	No evidence of eflornithines efficacy in comparison to other treatments. Stop if no benefit within four months of starting treatment. It needs to be used indefinitely but the long term benefits and safety have not been established (past 24 weeks). [CKS hirsutism]	No tapering needed.	M	M

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Lidocaine plasters	NICE CG173 on neuropathic pain does not recommend the use of lidocaine plasters as a treatment option due to limited clinical evidence supporting their use. [NHSE 2023] Avoid topical lidocaine (lignocaine) patch for the treatment of chronic osteoarthritis pain due to no clear-cut evidence of efficacy. [STOPP-START]	No tapering needed.	M	H
Pain medicines - other (e.g. ketamine, local anaesthetics (topical or intravenous), corticosteroid +/- local anaesthetic trigger point injection)	NICE NG193 about chronic primary pain recommends to review the prescribing as part of shared decision making: • Explain the lack of evidence for these medicines for chronic primary pain and • Agree a shared plan for continuing safely if there is benefit at a safe dose and few harms or • Explain the risks of continuing if there is little benefit or significant harm, and encourage and support person to reduce and stop the medicine if possible. Local anaesthetics (topical or intravenous) may be continued if being used as part of a clinical trial for complex regional pain syndrome.	Refer to doctor who initiated treatment	M	H

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Dressings	Review wounds before prescribing to ensure correct dressing is chosen. Chronic wounds change/reduce in size over time – refer difficult to treat wounds to a tissue viability nurse. Address underlying problems, e.g. soiling from incontinence, wrong choice of dressing etc. Larger dressings are more expensive than the smaller sizes. Query large size dressings on repeat prescriptions. Avoid waste - prescribe the actual number of dressings needed rather than "1 x OP". Query quantities over ten units per month, most dressings can stay in place for three to five days except on infected wounds, although some patients may have multiple wound sites. [Top Tips for Prescribing Dressings] Hydrocolloid dressings for low exudate or dry wounds can be in place for up to seven days. [Dressing Formulary and Wound Care Guidelines 2022]	No tapering needed.	L	L

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Drugs	Considerations to optimise medicines use after checking for a valid current indication	Withdrawing/tapering and lifestyle advice	CR	DP
Complementary therapies, herbal supplements, homeopathy	There is a limited evidence base and a lack of robust randomised controlled trials directly comparing them with standard treatments. Some are also associated with severe adverse effects; they may significantly interact with other medicines and can delay accurate diagnosis of underlying pathology. None reviewed by NICE recommend their use. [NHSE 2023] Limited benefit in people with limited life expectancy. [Thompson 2019] There is no evidence of efficacy of the following medicines/supplements in dementia including - Gingko Biloba, piracetam, pramiracetam, phenylpiracetam, aniracetam, phosphatidylserine, modafinil, L-theanine, omega-3 fatty acids, panax ginseng, rhodiola, creatine. [STOPP-START]	No tapering needed.	M	M
Probiotics	Probiotics are food supplements, purchase OTC. [NHSE/NHSCC 2018] The Advisory Committee on Borderline Substances (ACBS) does not support use of probiotics for any indication. [Drug Tariff]	No tapering needed.	L	L

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References

- Ahluwalia R, Baldeweg SE et al, 2023. Use of liothyronine (T3) in hypothyridism: Joint British Thyroid Association/Society for Endocrinology consensus statement. Clinical Endocrinology; 99(2): 206-216. https://onlinelibrary.wiley.com/doi/10.1111/cen.14935
- Alzheimer's Society, Last reviewed July 2021. Drugs used to relieve behavioural and psychological symptoms in dementia. https://www.alzheimers.org.uk/about-dementia/treatments/drugs/drugs-used-relieve-behavioural-and-psychological-symptoms
- All Wales Medical Steering Group. Polypharmacy in older people. A guide for healthcare professionals. March 2023. https://awttc.nhs.wales/files/guidelines-and-pils/polypharmacy-in-older-people-a-guide-for-healthcare-professionalspdf/
- Beers criteria 2023. American Geriatrics Society 2023 updated AGS Beers Criteria for potentially inappropriate medication use in older adults. Journal of the American Geriatrics Society; 71 (7): 2052-2081. https://agsjournals.onlinelibrary.wiley.com/doi/10.1111/jgs.18372
- Brandt L, Schneider-Thoma J et al, 2022. Adverse events after antipsychotic discontinuation: an individual participant data meta-analysis. Lancet Psychiatry; 9 (3): 232-242. https://doi.org/10.1016/S2215-0366(22)00014-1
- British National Formulary (BNF) (online) London: BMJ Group and Pharmaceutical Press; accessed March 2023. https://bnf.nice.org.uk/
- British Thoracic Society/Scottish Intercollegiate Guidelines Network (BTS/SIGN), July 2019. British guideline on the management of asthma. https://www.brit-thoracic.org.uk/quality-improvement/guidelines/asthma/
- Clinical Knowledge Summary (CKS). Analgesia - Mild to moderate pain, last revised November 2021. https://cks.nice.org.uk/analgesia-mild-to-moderate-pain#!scenario:4
- Clinical Knowledge Summary (CKS). Angina, last revised June 2023. https://cks.nice.org.uk/topics/angina/
- Clinical Knowledge Summary (CKS). Anticoagulation – oral, last revised October 2023. https://cks.nice.org.uk/topics/anticoagulation-oral/
- Clinical Knowledge Summary (CKS). Benzodiazepine and Z-drug withdrawal, last revised April 2023. http://cks.nice.org.uk/benzodiazepine-and-z-drug-withdrawal
- Clinical Knowledge Summary (CKS). Chronic kidney disease, last revised May 2023. https://cks.nice.org.uk/topics/chronic-kidney-disease
- Clinical Knowledge Summary (CKS). Colic - infantile, last revised December 2022. https://cks.nice.org.uk/topics/colic-infantile/
- Clinical Knowledge Summary (CKS). Constipation, last revised January 2023. http://cks.nice.org.uk/constipation
- Clinical Knowledge Summary (CKS). CVD risk assessment and management, last revised May 2023. https://cks.nice.org.uk/topics/cvd-risk-assessment-management/
- Clinical Knowledge Summary (CKS). Dementia. Scenario: Management of end stage dementia, last revised December 2022. https://cks.nice.org.uk/topics/dementia/
- Clinical Knowledge Summary (CKS). Depression, last revised July 2023. https://cks.nice.org.uk/topics/depression/
- Clinical Knowledge Summary (CKS). Diabetes - type 2, last revised October 2023. https://cks.nice.org.uk/topics/diabetes-type-2
- Clinical Knowledge Summary (CKS). Diverticular disease, last revised July 2023. https://cks.nice.org.uk/topics/diverticular-disease/
- Clinical Knowledge Summary (CKS). Dyspepsia - proven GORD, last revised July 2023. https://cks.nice.org.uk/topics/dyspepsia-proven-gord/
- Clinical Knowledge Summary (CKS). Eczema – atopic, emollients section, last revised October 2023. https://cks.nice.org.uk/eczema-atopic#!prescribinginfosub:1

- Clinical Knowledge Summary (CKS). Epilepsy, last updated May 2023. https://cks.nice.org.uk/epilepsy
- Clinical Knowledge Summary (CKS). Fungal nail infection, last revised August 2023. https://cks.nice.org.uk/fungal-nail-infection#!scenario
- Clinical Knowledge Summary (CKS). Gout, last revised June 2023. https://cks.nice.org.uk/topics/gout/
- Clinical Knowledge Summary (CKS). Heart failure - chronic, last revised November 2023. https://cks.nice.org.uk/topics/heart-failure-chronic/
- Clinical Knowledge Summary (CKS). Hirsutism, last revised July 2020. https://cks.nice.org.uk/hirsutism
- Clinical Knowledge Summary (CKS). Hypertension, last revised March 2023. https://cks.nice.org.uk/topics/hypertension/
- Clinical Knowledge Summary (CKS). Incontinence – urinary, in women, last revised April 2023. http://cks.nice.org.uk/incontinence-urinary-in-women
- Clinical Knowledge Summary (CKS). Irritable bowel syndrome, last revised August 2023. https://cks.nice.org.uk/topics/irritable-bowel-syndrome/
- Clinical Knowledge Summary (CKS). Leg cramps, last revised December 2022. https://cks.nice.org.uk/topics/leg-cramps/
- Clinical Knowledge Summary (CKS). Macular degeneration - age related, last revised August 2022. https://cks.nice.org.uk/topics/macular-degeneration-age-related/
- Clinical Knowledge Summary (CKS). Meniere's disease, last revised March 2023. https://cks.nice.org.uk/menieres-disease#!scenario
- Clinical Knowledge Summary (CKS). Menopause, last revised September 2022. https://cks.nice.org.uk/topics/menopause
- Clinical Knowledge Summary (CKS). MI - secondary prevention, last revised May 2020. https://cks.nice.org.uk/topics/mi-secondary-prevention/
- Clinical Knowledge Summary (CKS). Neuropathic pain – drug treatment, last revised October 2023. https://cks.nice.org.uk/neuropathic-pain-drug-treatment
- Clinical Knowledge Summary (CKS). NSAIDs -prescribing issues, last revised May 2023. https://cks.nice.org.uk/topics/nsaids-prescribing-issues/management/nsaids-prescribing-issues/
- Clinical Knowledge Summary (CKS). Osteoarthritis, last revised October 2022. https://cks.nice.org.uk/topics/osteoarthritis
- Clinical Knowledge Summary (CKS). Osteoporosis - prevention of fragility fractures, last revised April 2023. https://cks.nice.org.uk/osteoporosis-prevention-of-fragility-fractures
- Clinical Knowledge Summary (CKS). Rheumatoid arthritis, last revised April 2020. https://cks.nice.org.uk/topics/rheumatoid-arthritis/
- Clinical Knowledge Summary (CKS). Trigeminal neuralgia, last revised January 2022. https://cks.nice.org.uk/topics/trigeminal-neuralgia/
- Department of Health and Social Care (DHSC). September 2021. Good for you, good for us, good for everybody. https://www.gov.uk/government/publications/national-overprescribing-review-report
- Doherty AJ, Boland P, Reed J et al, 2020. Barriers and facilitators to deprescribing in primary care: a systematic review. BJGP Open 4 (3): bjgpopen20X101096. https://bjgpopen.org/content/4/3/bjgpopen20X101096.long
- Dressing Formulary and Wound Care Guidelines March 2023. Derbyshire Community developed in collaboration with East Midlands Tissue Viability Group https://www.derbyshiremedicinesmanagement.nhs.uk/assets/Clinical_Guidelines/Formulary_by_BNF_chapter_prescribing_guidelines/Appendix_5/Derbyshire_Wound_Managment_Formulary.pdf
- Drug & Therapeutics Bulletin (DTB) 2008; 46(1): 3-8. How should fungal nail infection be treated? https://dtb.bmj.com/content/46/1/3
- Drug Safety Update (DSU) 2013; 7(1):S2. Metoclopramide: risk of neurological adverse effects. https://www.gov.uk/drug-safety-update/metoclopramide-risk-of-neurological-adverse-effects
- Drug Safety Update (DSU) 2016; 9(9):1. SGLT2 inhibitors: updated advice on the risk of diabetic

ketoacidosis. https://www.gov.uk/drug-safety-update/sglt2-inhibitors-updated-advice-on-the-risk-of-diabetic-ketoacidosis

- Drug Safety Update (DSU) 2018; 12(3):4. Transdermal fentanyl patches: life-threatening and fatal opioid toxicity from accidental exposure, particularly in children. https://www.gov.uk/drug-safety-update/transdermal-fentanyl-patches-life-threatening-and-fatal-opioid-toxicity-from-accidental-exposure-particularly-in-children
- Drug Safety Update (DSU) 2019; 13(5):1. Domperidone for nausea and vomiting: lack of efficacy in children; reminder of contraindications in adults and adolescents. https://www.gov.uk/drug-safety-update/domperidone-for-nausea-and-vomiting-lack-of-efficacy-in-children-reminder-of-contraindications-in-adults-and-adolescents
- Drug Safety Update (DSU) 2019a; 13(2):2 Hormone replacement therapy (HRT): further information on the known increased risk of breast cancer with HRT and its persistence after stopping. https://www.gov.uk/drug-safety-update/hormone-replacement-therapy-hrt-further-information-on-the-known-increased-risk-of-breast-cancer-with-hrt-and-its-persistence-after-stopping
- Drug Safety Update (DSU) 2020; 13(8):5. Benzodiazepines and opioids: reminder of risk of potentially fatal respiratory depression. https://www.gov.uk/drug-safety-update/benzodiazepines-and-opioids-reminder-of-risk-of-potentially-fatal-respiratory-depression
- Drug Safety Update (DSU) 2021; 14(7):2. Pregabalin (Lyrica): reports of severe respiratory depression. https://www.gov.uk/drug-safety-update/pregabalin-lyrica-reports-of-severe-respiratory-depression
- Drug Safety Update (DSU) 2021a; 15(2):1. Topical corticosteoirds: information on the risk of topical steroid withdrawal reactions. https://www.gov.uk/drug-safety-update/topical-corticosteroids-information-on-the-risk-of-topical-steroid-withdrawal-reactions
- Drug Tariff. NHS Business Services Authority. https://www.nhsbsa.nhs.uk/pharmacies-gp-practices-and-appliance-contractors/drug-tariff
- Drugs & Therapy Perspectives 2014; 30: 218-22. Consider the factors that influence patients' decisions to stop taking potentially inappropriate medications when developing a deprescribing plan. https://link.springer.com/article/10.1007/s40267-014-0113-9
- Duerden M, Avery T et al, 2013. Polypharmacy and medicines optimisation: making it safe and sound. King's Fund Report. http://www.kingsfund.org.uk/sites/files/kf/field/field_publication_file/polypharmacy-and-medicines-optimisation-kingsfund-nov13.pdf
- Fiss T, Dreier A et al, 2011. Frequency of inappropriate drugs in primary care: analysis of a sample of immobile patients who received periodic home visits. Age & Ageing; 40(1): 66-73. https://academic.oup.com/ageing/article/40/1/66/11197
- Garfinkel D, Mangin D, 2010. Feasibility study of a systematic approach for discontinuation of multiple medications in older adults: addressing polypharmacy. Archives of Internal Medicine; 170 (18): 1648-54. https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/226051
- Global Initiative for Chronic Obstructive Lung Disease (GOLD), 2023. Global strategy for the diagnosis, management, and prevention of chronic obstructive pulmonary disease: 2023 report. https://goldcopd.org/2023-gold-report-2/
- Health Services Safety Investigations Body (HSSIB) 2020. Potential under-recognised risk of harm from the use of propranolol. https://www.hssib.org.uk/patient-safety-investigations/potential-under-recognised-risk-of-harm-from-the-use-of-propranolol/
- Kutner JS, Blatchford PJ et al, 2015. Safety and benefit of discontinuing statin therapy in the setting of advanced, life limiting illness. A randomised clinical trial. JAMA Internal Medicine; 175(5): 691-700. https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2204034
- LeBlanc TW, McNeil MJ et al, 2015. Polypharmacy in patients with advanced cancer and the role of medication discontinuation. Lancet Oncology; 16(7): e333-41. https://www.thelancet.com/journals/lanonc/article/PIIS1470-2045(15)00080-7/fulltext

- Lee J, Negm A, Peters R et al, 2021. Deprescribing fall-risk increasing drugs (FRIDs) for the prevention of falls and fall-related complications: a sytematic review and meta-analysis. BMJ Open; 11: e035978. https://bmjopen.bmj.com/content/bmjopen/11/2/e035978.full.pdf
- Maudsley Prescribing Guidelines in Psychiatry, 2021. 14th ed. Taylor D, Barnes TRE, Young AH. London: Wiley-Blackwell.
- Moorfields Eye Hospital NHS Foundation Trust, Ophthalmic Formulary, updated monthly. http://www.moorfields.nhs.uk/service/pharmacy
- National Osteoporosis Guideline Group (NOGG), 2021. Clinical guideline for the prevention and treatment of osteoporosis. March 2017; updated September 2021. https://www.nogg.org.uk/
- National Patient Safety Alert (NatPSA), 2021. Inappropriate anticoagulation of patients with a mechanical heart valve. (NatPSA/2021/006/NHSPS) https://www.england.nhs.uk/wp-content/uploads/2021/07/NaPSA-DOAC-Heart-Valve-FINAL-v2.pdf
- National Patient Safety Alert (NatPSA), 2023. Valproate: organisations to prepare for new regulatory measures for oversight of prescribing to new patients and existing female patients. (NatPSA/2023/013/MHRA) https://www.gov.uk/drug-device-alerts/national-patient-safety-alert-valproate-organisations-to-prepare-for-new-regulatory-measures-for-oversight-of-prescribing-to-new-patients-and-existing-female-patients-natpsa-slash-2023-slash-013-slash-mhra
- NHS Business Services Authority (NHSBSA), November 2022. Prescribing costs in Hospitals and the Community - England 2021/22. https://www.nhsbsa.nhs.uk/statistical-collections/prescribing-costs-hospitals-and-community-england/prescribing-costs-hospitals-and-community-england-202122#:~:text=In%202021%2F22%2C%20the%20cost,community%20was%20%C2%A385.1%20million
- NHS England and NHS Clinical Commissioners (NHSE/NHSCC), March 2018. Conditions for which over the counter items should not routinely be prescribed in primary care. Guidance for CCGs. https://www.england.nhs.uk/wp-content/uploads/2018/03/otc-guidance-for-ccgs.pdf
- NHS England (NHSE), June 2015. Pharmaceutical waste reduction in the NHS. Version 1. https://www.england.nhs.uk/wp-content/uploads/2015/06/pharmaceutical-waste-reduction.pdf
- NHS England (NHSE), 2016. Stopping over medication of people with a learning disability, autism or both (STOMP). https://www.england.nhs.uk/learning-disabilities/improving-health/stomp/
- NHS England (NHSE), October 2022. Network Contract Directed Enhanced Service. Contract Specification 2022/23 – PCN Requirements and Entitlements. https://www.england.nhs.uk/publication/network-contract-directed-enhanced-service-contract-specification-2022-23-pcn-requirements-and-entitlements/
- NHS England (NHSE), March 2021. Network Contract Directed Enhanced Service. Structured medication reviews and medicines optimisation: guidance. https://www.england.nhs.uk/wp-content/uploads/2021/03/B0431-network-contract-des-smr-and-mo-guidance-21-22.pdf
- NHS England (NHSE), August 2023. Items which should not be routinely prescribed in primary care: policy guidance. https://www.england.nhs.uk/long-read/items-which-should-not-routinely-be-prescribed-in-primary-care-policy-guidance/
- NHS England (NHSE), August 2023a. Liothyronine - advice for prescribers. https://www.england.nhs.uk/long-read/liothyronine-advice-for-prescribers/
- NHS England (NHSE), August 2023b. Cannabis based products for medicinal use (CBPMs). https://www.england.nhs.uk/long-read/cannabis-based-products-for-medicinal-use-cbpms/
- NICE, CG173. Neuropathic pain in adults: pharmacological management in non-specialist settings. Published November 2013, last updated September 2020. https://www.nice.org.uk/guidance/cg173
- NICE, NG5. Medicines optimisation: the safe and effective use of medicines to enable the best possible outcomes. Published March 2015. http://www.nice.org.uk/Guidance/NG5
- NICE, NG17. Type 1 diabetes in adults: diagnosis and management. Published August 2015, last updated August 2022. https://www.nice.org.uk/guidance/NG17
- NICE, NG23. Menopause: diagnosis and management. Published November 2015, last updated December 2019. https://www.nice.org.uk/guidance/ng23

- NICE, NG28. Type 2 diabetes in adults: management. Published December 2015, last updated June 2022. https://www.nice.org.uk/guidance/ng28
- NICE, NG56. Multimorbidity: clinical assessment and management. Published September 2016. www.nice.org.uk/guidance/ng56
- NICE, NG80. Asthma: diagnosis, monitoring, and chronic asthma management. Published November 2017, last updated March 2021. https://www.nice.org.uk/guidance/ng80
- NICE, NG97. Dementia: assessment, management and support for people living with dementia and their carers. Published June 2018. https://www.nice.org.uk/guidance/NG97
- NICE, NG106. Chronic heart failure in adults: diagnosis and management. Published September 2018. https://www.nice.org.uk/guidance/ng106
- NICE, NG115. Chronic obstructive pulmonary disease in over 16s: diagnosis and management. Published December 2018, last updated July 2019. https://www.nice.org.uk/guidance/NG115
- NICE, NG136. Hypertension in adults: diagnosis and management. Published August 2019, last updated November 2023. https://www.nice.org.uk/guidance/ng136
- NICE, NG144. Cannabis-based medicinal products. Published November 2019, last updated March 2021. https://www.nice.org.uk/guidance/NG144
- NICE, NG158. Venous thromboembolic diseases: diagnosis, management and thrombophilia testing. Published March 2020, last updated August 2023. https://www.nice.org.uk/guidance/ng158
- NICE, NG193. Chronic pain (primary and secondary) in over 16s: assessment of all chronic pain and management of chronic primary pain. Published April 2021. https://www.nice.org.uk/guidance/NG193
- NICE, NG196. Atrial fibrillation: diagnosis and management. Published April 2021, last updated June 2021. https://www.nice.org.uk/guidance/ng196
- NICE, NG197. Shared decision making. Published June 2021. https://www.nice.org.uk/guidance/ng197
- NICE NG199. Clostridioides difficile infection: antimicrobial prescribing. Published July 2021. https://www.nice.org.uk/guidance/ng199
- NICE, NG208. Heart valve disease presenting in adults: investigation and management. Published November 2021. https://www.nice.org.uk/guidance/ng208
- NICE, NG215. Medicines associated with dependence or withdrawal symptoms: safe prescribing and withdrawal management for adults. Published April 2022. https://www.nice.org.uk/guidance/ng215
- NICE, NG217. Epilepsies in children, young people and adults. Published April 2022. https://www.nice.org.uk/guidance/ng217
- NICE, NG222. Depression in adults: treatment and management. Published June 2022. https://www.nice.org.uk/guidance/ng222
- NICE, NG238. Cardiovascular disease: risk assessment and reduction, including lipid modification. Published December 2023. https://www.nice.org.uk/guidance/ng238/chapter/Recommendations#lipid-lowering-treatments-that-should-not-be-used-or-not-used-routinely
- NICE, QS149. Osteoporosis Quality Standard. Published April 2017. https://www.nice.org.uk/guidance/qs149
- NICE, TA223. Cilostazol, naftidrofuryl oxalate, pentoxifylline and inositol nicotinate for the treatment of intermittent claudication in people with peripheral arterial disease. Published May 2011. https://www.nice.org.uk/guidance/ta223
- NICE, TA805. Icosapent ethyl with statin therapy for reducing the risk of cardiovascular events in people with raised triglycerides. Published July 2022. https://www.nice.org.uk/guidance/ta805
- Norgaard A, Jensen-Dahm C et al, 2022. Effect of antipsychotics on mortality risk in patients with dementia with and without comorbidities. Journal of the American Geriatrics Society; 70(4): 1169-1179. https://agsjournals.onlinelibrary.wiley.com/doi/10.1111/jgs.17623
- Opioids Aware: A resource for patients and healthcare professionals to support prescribing of opioid medicines for pain. Tapering and Stopping. Faculty of Pain Medicine with Public Health England. Accessed June 2020. https://www.rcoa.ac.uk/faculty-of-pain-medicine/opioids-aware/structured-

approach-to-prescribing/tapering-and-stopping

- Parsons C, McCann L et al, 2015. Development and application of medication appropriateness indicators for persons with advanced dementia: A feasibility study. Drugs & Aging; 32 (1): 67-77. https://link.springer.com/article/10.1007%2Fs40266-014-0226-9
- Petersen LK, Christensen K et al, 2010. Lipid-lowering treatment to the end? A review of observational studies and RCTs on cholesterol and mortality in 80+ -year olds. Age and Ageing; 39: 674-680. https://academic.oup.com/ageing/article/39/6/674/10228
- Pirmohamed M, James S et al, 2004. Adverse drug reactions as cause of admission to hospital: prospective analysis of 18,820 patients. British Medical Journal; 329: 15-19. https://www.bmj.com/content/329/7456/15
- Prescrire International 2023; 32(245): 50-53. Towards better patient care: drugs to avoid in 2023. https://english.prescrire.org/en/C44A03938C833408D637CCDBAC9C349A/Download.aspx
- Primary Health Tasmania. December 2022. A guide to deprescribing antiplatelets. https://www.primaryhealthtas.com.au/wp-content/uploads/2023/03/A-guide-to-deprescribing-antiplatelets.pdf
- Primary Health Tasmania. December 2022. A guide to deprescribing vitamin D & calcium. https://www.primaryhealthtas.com.au/wp-content/uploads/2023/03/A-guide-to-deprescribing-vitamin-D-and-calcium.pdf
- Primary Health Tasmania. December 2022. A guide to deprescribing cholinesterase inhibitors. https://www.primaryhealthtas.com.au/wp-content/uploads/2023/03/A-Guide-to-Deprescribing-Cholinesterase-Inhibitors.pdf
- Primary Health Tasmania. December 2022. A guide to deprescribing glaucoma eye drops. https://www.primaryhealthtas.com.au/wp-content/uploads/2023/03/A-guide-to-deprescribing-glaucoma-eye-drops.pdf
- Public Health England (PHE), last updated October 2020. Diagnosis of urinary tract infections. Quick reference tool for primary care: for consultation and local adaptation. https://www.gov.uk/government/publications/urinary-tract-infection-diagnosis
- Public Health Scotland, February 2021. Scottish Health Service Costs. Year ended March 2020. https://publichealthscotland.scot/media/5985/2021-02-23-costs-report.pdf
- Renal Association, July 2020. Management of hyperkalaemia in the community. https://ukkidney.org/health-professionals/guidelines/treatment-acute-hyperkalaemia-adults-hyperkalaemia-algorithm
- Royal Pharmaceutical Society (RPS), December 2015. Professional Guidance for the procurement and supply of specials. https://www.rpharms.com/Portals/0/RPS%20document%20library/Open%20access/Support/toolkit/specials-professional-guidance.pdf
- Scott IA, Gray LC et al, 2013. Deciding when to stop: towards evidence-based deprescribing of drugs in older populations. Evidence Based Medicine; 18(4): 121-124. https://ebm.bmj.com/content/18/4/121
- Scotland Polypharmacy Guidance, 2018. Scottish Government Polypharmacy Model of Care Group, Realistic Prescribing, 3rd Edition. https://www.therapeutics.scot.nhs.uk/wp-content/uploads/2018/04/Polypharmacy-Guidance-2018.pdf
- Seppala LJ, Petrovic M, Ryg J, et al, 2021. STOPPFall (Screening Tool of Older Persons Prescriptions in older adults with high fall risk): a Delphi study by the EuGMS Task and Finish Group on Fall-Risk Increasing Drugs. Age and Ageing; 50(4): 1189-1199. https://academic.oup.com/ageing/article/50/4/1189/6043386
- STOPP-START. O'Mahony D, Cherubini A, Renom Guiteras A et al. STOPP/START criteria for potentially inappropriate prescribing in older people: version 3. European Geriatric Medicine, May 2023. https://link.springer.com/article/10.1007/s41999-023-00777-y#Sec5
- Sun G, Zhang L et al, 2019. Benzodiazepines or related drugs and risk of pneumonia: A systematic

review and meta analysis. International Journal of Geriatric Psychiatry; 34(4): 513-521. https://onlinelibrary.wiley.com/doi/full/10.1002/gps.5048

- Thompson J, 2019. Deprescribing in palliative care. Clinical Medicine (London); 19: (4): 311-314. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6752237/
- Todd A, Williamson S et al, 2013. Patients with advanced lung cancer: is there scope to discontinue inappropriate medication? International Journal of Clinical Pharmacy; 35: 181-84. https://www.researchgate.net/publication/233892429_Patients_with_advanced_lung_cancer_Is_there_scope_to_discontinue_inappropriate_medication
- Top Tips for Prescribing Dressings. NHS Croydon Clinical Commissioning Group. May 2018. https://swlimo.southwestlondon.icb.nhs.uk/wp-content/uploads/2021/06/Prescribing-Top-Tips-for-Prescribing-Dressings-inc-Silver-Dressings.pdf
- Van Leeuwen E, Petrovic M et al, 2018. Withdrawal versus continuation of long term antipsychotic drugs for behavioural and psychological symptoms in older people with dementia. Cochrane Database of Systematic Reviews Issue 3. Art. No.: CD007726. DOI: 10.1002/14651858.CD007726.pub3. https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD007726.pub3/full
- Welsh Government September 2022. Prescriptions in Wales: April 2021 to March 2022. https://www.gov.wales/prescriptions-wales-april-2021-march-2022-html#104551
- World Health Organisation (WHO), March 2012. The pursuit of the responsible use of medicines: sharing and learning from countries experiences. https://www.who.int/medicines/areas/rational_use/en/
- World Health Organisation (WHO), September 2022. WHO calls for urgent action by countries for achieving Medication Without Harm. https://www.who.int/news/item/16-09-2022-who-calls-for-urgent-action-by-countries-for-achieving-medication-without-harm
- York Health Economics Consortium (YHEC) & The School of Pharmacy, University of London, November 2010. Evaluation of the Scale, Causes and Costs of Waste Medicines. http://discovery.ucl.ac.uk/1350234/1/Evaluation_of_NHS_Medicines_Waste__web_publication_version.pdf