STOPP: Screening Tool of Older People's potentially inappropriate Prescriptions – Quick Reference Guide

It is commonly agreed that older people are at greater risk of adverse effects from their medicines due to age related changes in their major organs which in turn alter pharmacokinetics and pharmacodynamics. They also often have multiple co-morbidities leading to drug-drug interactions or cautions and contraindications to preferred treatments.

As well as using the list of STOPP drugs to decide which might need to be stopped in the frail elderly, it should also be considered that if the drug gives daily symptomatic benefit, prevents rapid worsening of symptoms, or replaces a hormone vital for normal function e.g. levothyroxine, it should normally be continued. If wanting to reduce the burden of polypharmacy in gradual steps, it might be prudent to tackle the drugs below as a priority after removing ineffective or unnecessary treatment. Alternatives to stopping treatment may be to reduce dose amount or increase dosing interval. Alternatively, changing the timing of administration may be appropriate, which may be particularly useful if patients have care support at specific times of day.

Particular caution should be taken if considering stopping the following drugs (continue treatment, gradual withdrawal or specialist advice before stopping): angiotensin converting enzyme inhibitors (ACEI) and diuretics used in heart failure; amiodarone, calcium channel blockers, beta-blockers or digoxin used to control heart rate or rhythm; anticonvulsants used in epilepsy; antidepressant, antipsychotic or mood stabilizing drugs; antimuscarinic or other drugs used in Parkinson's disease; corticosteroids, disease monitoring anti-rheumatic drugs (DMARDS) or immunosuppressant drugs.

The ten most common medicines or drug classes implicated in hospital admissions for adverse drugs reactions (ADRs), in order of the percentage of ADR related admissions, are:

% ADR admissions	Drug or class	STOPP details
29.6 %	**Non-steroidal anti-inflammatory drugs (NSAIDs), including Aspirin**	**NSAID:** • With history of peptic ulcer disease or gastrointestinal bleeding, unless with concurrent, appropriate gastroprotection *(risk of peptic ulcer relapse).* • With concurrent oral corticosteroid, antiplatelet (especially Aspirin) or antidepressant (Selective serotonin reuptake inhibitor (SSRI), Venlafaxine) without concurrent, appropriate gastroprotection *(increased risk of peptic ulcer disease).* • With severe or uncontrolled hypertension (*risk of exacerbation of hypertension).* • With moderate-severe heart failure (*risk of exacerbation of heart failure).* Do not use Diclofenac or a Cyclo-oxygenase 2 selective inhibitor (COX-2) selective agent at any stage of heart failure. • Long-term (beyond 3 months) for symptom relief of musculoskeletal pain where simple analgesia and/ or topical NSAID (where appropriate) has not been tried *(may be as effective for pain relief).* • If estimated Glomerular Filtration Rate (eGFR) less than 50 ml/min/1.73m^2 (*risk of deterioration in renal function).* • With warfarin or novel oral anti-coagulants (NOACs) *(risk of gastrointestinal bleeding).* **Long-term NSAID or Colchicine** (beyond 3 months) for chronic treatment of gout where there is no contraindication to Allopurinol *(xanthine-oxidase inhibitors are first choice prophylactic drugs in gout).* **Diclofenac, COX-2 selective / specific agents or Ibuprofen dose greater than 1200 mg per day** with concurrent cardiovascular disease (*increased risk of thrombotic events).*
27.3 %	**Diuretics**	**Thiazide diuretic** with current significant hypokalaemia (i.e. serum K+ less than 3.0 mmol/L), hyponatraemia (i.e. serum Na+ less than 130 mmol/L) hypercalcaemia (i.e. corrected serum calcium greater than 2.65 mmol/L) or with recent/ concurrent gout (*hypokalaemia, hyponatraemia, hypercalcaemia and gout can be precipitated by thiazide diuretic*). **Loop diuretic:** • As treatment for hypertension (*safer, more effective alternatives available*). • For dependent ankle oedema without clinical, biochemical evidence or radiological evidence of heart failure, liver failure, nephrotic syndrome or renal failure (*leg elevation and/ or compression hosiery usually more appropriate).* **Aldosterone antagonists** (e.g. spironolactone, eplerenone), Angiotension II receptor antagonist (AIIRAs) particularly if co-prescribed with potassium-conserving drugs (e.g. ACEIs, amiloride, triamterene) without monitoring of serum potassium *(risk of dangerous hyperkalaemia i.e. greater than 6.0 mmol/L – serum K should be monitored regularly, i.e. at least every 6 months)* **Diuretics** or other drugs that increase urinary flow with concurrent urinary incontinence (*may exacerbate incontinence*).
10.5 %	**Anticoagulants** *Continues over*	**Antiplatelet agents with warfarin or NOACs** in patients with stable coronary, cerebrovascular or peripheral arterial disease *(No added benefit from dual therapy).*

References: Stopp Start Toolkit v2: Supporting Medication Review. North of England Commissioning Support on behalf of Cumbria CCG. June 2016.
Pirmohamed M et al. Adverse drug reactions as cause of admission to hospital: prospective analysis of 18,820 patients. BMJ 2004; 329; 15-17.

		Warfarin or NOACs: • For first deep vein thrombosis without continuing provoking risk factors (e.g. thrombophilia) for longer than 6 months *(no proven added benefit).* • For first pulmonary embolus without continuing provoking risk factors (e.g. thrombophilia) for longer than 12 months (*no proven added benefit*). **NSAID and warfarin or NOACs** in combination (*risk of major gastro-intestinal bleeding).* **Aspirin, clopidogrel, dipyridamole, warfarin or NOACs** with concurrent significant bleeding risk, i.e. uncontrolled severe hypertension, bleeding diathesis, recent non-trivial spontaneous bleeding (*high risk of bleeding*).
7.7 %	**ACEI and AIIRAs**	**ACEIs or AIIRAs:** • In patients with hyperkalaemia. • In combination with each other (*limited evidence of benefit*) – unless under specialist review and recommendation.
7.1 %	**Antidepressants including lithium**	**Tricyclic antidepressants (TCA) (particularly Dosulepin):** • With dementia *(risk of worsening cognitive impairment).* • With glaucoma *(likely to exacerbate glaucoma).* • With cardiac conductive abnormalities *(pro-arrhythmic effects).* • With constipation or medication likely to exacerbate constipation, following review *(likely to worsen constipation).* • With prostatism or prior history of urinary retention *(risk of urinary retention).* **Selective serotonin re-uptake inhibitors** (SSRIs) with a history of clinically significant hyponatraemia (below 130 mmol/l within the previous 2 months). **Citalopram** with QT-interval prolongation or with concomitant drugs that cause prolonged QT-interval.
6.8 %	**Beta-blockers**	**Non-selective beta-blocker** with a recent history of bradycardia, heart block or uncontrolled heart failure; or asthma requiring treatment (*risk of increased bronchospasm).*
6.0 %	**Opiates**	**Opiates:** • Use of long-term strong opioids as first line therapy for mild-moderate pain *(World Health Organisation analgesic ladder not observed).* • Regular opioids for more than 2 weeks in those with chronic constipation without concurrent use of laxatives *(risk of severe constipation).* • Long-term in those with dementia unless for palliative care or management of chronic pain syndrome *(exacerbation of cognitive impairment).* • Long-term in those with recurrent falls *(risk of drowsiness, postural hypotension, vertigo).* • Slow-release opioids in severe pain without short-acting opioids for break-through pain *(risk of persistence of severe pain).*
2.9 %	**Digoxin**	**Digoxin:** • For heart failure with normal systolic ventricular function (*no clear evidence of benefit).* • For left systolic ventricular dysfunction, where key interventions have not previously been tried. • At a long-term dose greater than 125 micrograms per day if eGFR less than 30 ml/min/1.73m^2 (*risk of toxicity if digoxin plasma levels not measured as eGFR may not be an accurate indicator of clearance*).
2.5 %	**Prednisolone**	**Long-term corticosteroids** (longer than 3 months) as monotherapy for rheumatoid arthritis (*risk of systemic corticosteroid side-effects).* **Corticosteroids (**other than periodic intra-articular injections for mono-articular pain) for osteoarthritis *(risk of systemic corticosteroid side-effects).* **Systemic corticosteroids** instead of inhaled corticosteroids for maintenance therapy in moderate-severe Chronic obstructive pulmonary disease (COPD) *(unnecessary exposure to long-term side-effects of systemic corticosteroids and effective inhaled therapies are available).*
2.4 %	**Clopidogrel**	**Aspirin, clopidogrel, dipyridamole, warfarin or NOACs** with concurrent significant bleeding risk, i.e. uncontrolled severe hypertension, bleeding diathesis, recent non-trivial spontaneous bleeding (*high risk of bleeding*). **Aspirin plus clopidogrel** as secondary stroke prevention, 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 *(no evidence of added benefit over clopidogrel monotherapy).* **Antiplatelet agents with warfarin or NOACs** in patients with stable coronary, cerebrovascular or peripheral arterial disease *(No added benefit from dual therapy).*

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