NHS
North West
Commissioning Support Unit

NHS
Wirral Clinical Commissioning Group

STOPP START Tool to Support Medication Review

Older people are known to have increased risk of adverse effects with medication due to age related alteration in pharmacokinetics and pharmacodynamics. This can sometimes lead to harm rather than benefit from a particular treatment.

Polypharmacy and inappropriate prescribing are well known risk factors for adverse drug reactions (ADRs), which commonly cause adverse clinical outcomes in older people. [1]

Systematic reviews and published evidence suggest some common drug groups associated with preventable drug related admissions especially in the elderly.[2,3] Hence prioritising to review these drug or drug groups helps reduce polypharmacy and the burden of ineffective or unnecessary treatment in the frail and elderly.

The recently published NICE guidance on Medicines Optimisation[4] recommends using a screening tool – for example the STOPP/START tool in older people – to identify potential medicines-related patient safety incidents for those on multiple medicines or with long term conditions.

This document is an adaptation of the

STOPP START medication review screening tool
(STOPP-Screening Tool of Older Persons Prescriptions START -Screening Tool to Alert doctors to Right i.e. appropriate, indicated Treatments)

Which aids physicians appraise older patient's medication in the context of their current clinical condition [5].

Eighteen experts in geriatric pharmacotherapy initially contributed to suggesting and then rating the criteria.

The tool was validated in patients aged 65 and over but physicians must use their clinical judgement when deciding if a person is "elderly" in terms of using the toolkit and also consider other drug interactions or contra-indications not listed here.

The final decision to stop the drug should be weighed against the daily symptomatic benefit or prevention of rapid worsening of symptoms.

Where there is any doubt with the above information please check that it is in line with manufacturers recommendations, published literature or changes in national and local guidance. All Wirral guidance can be found at http://mm.wirral.nhs.uk/forumulary/ or http://mm.wirral.nhs.uk/guidelines/

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STOP medications (age ≥ 65 years)	Circumstances to review	Reason to review
α-blockers	Long-term urinary catheter in situ >2 Months	Not indicated
Antibiotics Review	IV antibiotics - ensure review date has been discussed with microbiology (under OPAT team) with the aim to switch to oral if possible Long-term antibiotics for UTI prophylaxis	Review individual patients as recommended by microbiology – guidance at http://www.rcgp.org.uk/TArGeTantibiotics/ Risk of infected/phlebitic IV lines. Increased risk of adverse effects and errors in preparation are significantly higher with parenteral drugs, compared to oral formulations. Increased patient discomfort and reduced mobility Refer to urology. Patients should be reviewed at regular intervals to assess the risk: benefits in relation to C. difficile infection. Prophylactic antibiotics should be reviewed after 6 months and stopping should be considered.
Anticholinergics	To treat extra-pyramidal side-effects of antipsychotic medications	Risk of anticholinergic toxicity, including confusion and urinary retention
Anticholinergic antispasmodics (e.g. hyoscine butylbromide)	For patients with chronic constipation	Risk of exacerbation of constipation
Antidiarrhoeal drugs (co-phenotrope, loperamide or codeine phosphate)	For treatment of diarrhoea of unknown cause ***N.B. Please be aware of C. difficile in undiagnosed diarrhoea***	Risk of delayed diagnosis, may exacerbate constipation with overflow diarrhoea, may precipitate toxic mega colon in inflammatory bowel disease, may delay recovery in unrecognised gastroenteritis
Antidiarrhoeal drugs (co-phenotrope, loperamide or codeine phosphate)	For the treatment of severe infective gastroenteritis	Risk of exacerbation or protraction of infection Risk of colitis and toxic mega colon if Clostridium difficile
Antimuscarinics (bladder)	Dementia or glaucoma or constipation or prostatism	Risk of worsening respective condition NICE CG171 Urinary Incontinence in Women https://www.nice.org.uk/guidance/cg171 Joint Wirral Medicines Formulary – Urinary Tract Disorders http://mm.wirral.nhs.uk/guidelines/
Antipsychotics ***NB. Reduce slowly monitoring effect***	>1 month use as long-term hypnotic (check notes for duration) >1 month use in parkinsonism If fallen in last 3 months For treatment of behavioural and psychological symptoms of dementia patients (review ongoing need)	Confusion, ↓BP, extrapyramidal side effects, falls Risk of worsening extrapyramidal symptoms May cause gait dyspraxia, parkinsonism Risk of gait disturbances, dehydration, prolonged sedation, cognitive decline, falls, stroke and death
Aspirin	Dose >150mg / day, restart at 75mg if still indicated With a concurrent bleeding disorder Peptic ulcer disease without histamine H2 receptor antagonist or PPI If being used as monotherapy for stroke prevention in AF	Risk of bleeding; no evidence of increased efficacy High risk of bleeding Risk of bleeding Guidance at: https://www.nice.org.uk/guidance/cg180
Benzodiazepines – *reduce slowly & monitor effect*	>1 month use of long-acting benzodiazepines, eg. chlordiazepoxide, oxazepam, diazepam, flurazepam, nitrazepam If fallen in last 3 months	Risk of prolonged sedation, confusion, impaired balance, falls

STOP medications (age ≥ 65 years)	Circumstances to review	Reason to review
Beta-blocker	In combination with verapamil In those with diabetes mellitus and frequent hypoglycaemic episodes	Risk of symptomatic heart block Risk of masking hypoglycaemic symptoms
Beta-blocker (non-cardioselective)	In patients with asthma	Risk of bronchospasm
Bisphosphonates (oral)	Unable to sit upright / patient experiencing swallowing difficulties / compliance issues	Instruction for administration of medication if not followed causes increased risk of serious upper GI disorder Wirral Guidelines for the Management of Osteoporosis http://mm.wirral.nhs.uk/guidelines/
Calcium Channel Blocker	If ankle oedema present Verapamil and diltiazem should usually be avoided in heart failure	This may be an adverse effect of the Calcium Channel Blocker see UKMI Q&A 330.2; http://www.ukmi.nhs.uk/activities/medicinesQAs/default.asp They may further depress cardiac function and cause clinically significant deterioration.
Carbocisteine	If no benefit after 4 weeks	Unnecessary if no benefit shown
Clopidogrel	With concurrent bleeding disorder	High risk of bleeding
Corticosteroids	Systemic instead of inhaled corticosteroids for maintenance therapy in moderate-severe COPD >3 months as monotherapy for rheumatoid or osteoarthritis	Unnecessary exposure to long-term side effects of systemic steroids. Risk of major systemic corticosteroids side effects
Digoxin	At doses >125 microgram per day with impaired renal function (eGFR <50ml/minute)	Can be increased levels of toxicity (e.g. nausea, diarrhoea, arrhythmias)
Dipyridamole monotherapy	With concurrent bleeding disorder	High risk of bleeding
Diuretics (loop)	Dependent ankle oedema and no signs of heart failure As first line monotherapy for hypertension	No benefit; compression hosiery more appropriate Safer, more effective alternatives available
Diuretics (thiazides)	With history of gout	Risk of exacerbating gout
Domperidone	Indications except nausea/vomiting Underlying Cardiac conditions, impaired cardiac conduction, co-prescribed other medications known to prolong QT interval or potent CYP3A4 inhibitors or with severe hepatic impairment	See MHRA warning issued https://www.gov.uk/drug-safety-update/domperidone-risks-of-cardiac-side-effects
Ipratropium (nebulised)	Prescribing as required (prn) in addition to regular prescribing With glaucoma	Can lead to exceeding licensed dosage and therefore exacerbate side effects May exacerbate glaucoma
Laxatives – stimulant (e.g. bisacodyl, senna)	For patients with intestinal obstruction	Risk of bowel perforation http://mm.wirral.nhs.uk/guidelines/

STOP medications (age ≥ 65 years)	Circumstances to review	Reason to review
Metformin	Renal impairment: Review dose if eGFR <45mL/minute Avoid if eGFR <30ml/minute	Increased risk of lactic acidosis
NSAID (oral)	History of PUD or GI bleed unless with H2 antagonist, PPI or misoprostol	Risk of peptic ulcer relapse
	Moderate severe hypertension (moderate 160/100mm Hg - 179/109mm Hg; severe: >180/110mm Hg	Risk of exacerbation of hypertension
	Heart failure	Risk of exacerbation of heart failure
	With Warfarin	Risk of GI bleeding
	65+ and e GFR <60ml/min or heart failure	Risk of deterioration in renal function
	On long-term NSAID and colchicine for chronic treatment of gout when there is no C/I to allopurinol	Allopurinol first choice prophylactic in gout
	Long-term corticosteroids as monotherapy (>3 month for arthritis)	Risk of GI bleed and systemic corticosteroids side effects
	Cox-2 inhibitors and diclofenac in cardiovascular disease Ibuprofen (at total daily dose above 1200mg per day) in cardiovascular disease	Increased risk of thrombotic events Increased risk of thrombotic events
Oestrogen (systemic)	With history of breast cancer or venous thromboembolism	Increased risk of reoccurrence
	Without progesterone in patients with intact uterus	Risk of endometrial cancer
Omega-3 fatty acids	Prescribed for secondary prevention of MI	Review as per http://www.nice.org.uk/guidance/cg172/resources/guidance-mi-secondary-prevention-pdf
Opioids (all type)	Long-term use of powerful opiates (e.g. morphine, fentanyl) as first line therapy for mild-moderate pain	WHO analgesic ladder not observed
	Regular prescription >2 weeks in chronic constipation without concurrent use of laxatives	Risk of severe constipation
Pioglitazone (glitazones)	Heart failure and elderly patients	Increased risk of fracture, bladder cancer and heart failure
Prochlorperazine or metoclopramide	With Parkinsonism	Risk of exacerbating Parkinsonism. Metoclopramide is for 5 days use only Drug Safety Update August 2013
PPI treatment	Dose for PUD for more than 8 weeks	Earlier discontinuation or dose reduction for maintenance/prophylactic treatment of PUD, oesophagitis or GORD indicated Increased risk of C. *difficile* infection, pneumonia, bone fractures and hypomagnesemia http://mm.wirral.nhs.uk/guidelines/ http://www.nice.org.uk/guidance/CG184/

STOP medications (age ≥ 65 years)	Circumstances to review	Reason to review
PPI (omeprazole or esomeprazole)	If co-prescribed clopidogrel	MHRA Drug Safety Update 2010 advises that concurrent use should be discouraged due to reduced antiplatelet effect, see https://www.gov.uk/drug-safety-update/clopidogrel-and-proton-pump-inhibitors-interaction-updated-advice
SSRIs	If sodium less than 130 in past 2 months Citalopram & escitalopram – risk of QT prolongation	SSRIs can cause/worsen hyponatraemia Don't use in patients with congenital long QT syndrome or known pre-existing QT interval prolongation In combination with other drugs known to prolong the QT intervals
Statins	Prognosis of less than six months unless there is an acute vascular syndrome In patients displaying symptoms of muscle weakness and pain	In the absence of a recent acute coronary syndrome or cerebrovascular event, the discontinuation of a statin toward the end of life is reasonable Risk of myopathy and rhabdomyolysis. Check creatinine kinase if patient presents with muscular symptoms.
Sulfonylureas (particularly Glibenclamide or Chlorpropamide)	With Type 2 diabetes	Risk of prolonged hypoglycaemia
Theophylline	Monotherapy for COPD	Safer, more effective alternatives, risk of adverse effects due to narrow therapeutic index
Tricyclic antidepressants ***NB. Withdraw gradually over at least 4 weeks – monitor effect***	Dementia Glaucoma Cardiac conductive abnormalities Constipation Combination with opiate or calcium channel blocker Prostatism or history of urinary retention Patients taking dosulepin	Risk of worsening cognitive impairment May exacerbate glaucoma if untreated Pro-arrhythmic effects May worsen constipation Risk of severe constipation Risk of urinary retention Increased cardiac risk & toxicity in overdose
Vasodilator drugs (e.g. hydralazine, minoxidil)	With persistent postural hypotension i.e. recurrent > 20 mmHG drop in systolic blood pressure	Risk of syncope and falls
Warfarin	For 1st uncomplicated DVT for longer than 6 months or PE for longer than 12 months Hepatic impairment with impaired clotting ability and raised INR	No proven added benefit Increased risk of bleeding as a result of impaired ability to produce clotting factors
Any regular duplicate drug class prescription	E.g. two concurrent opiates, multiple NSAIDs, multiple diuretics Two or more anticholinergics (antimuscarinics)	Optimisation of monotherapy within a single drug class prior to considering a new drug class Increased risk of side-effects including confusion falls and death

START medications (age ≥ 65 years)	Circumstances
ACE Inhibitor	Chronic heart failure Following acute myocardial infarction Diabetes with nephropathy (overt urinalysis, proteinuria or microalbuminuria) >30mg / 24 hours ± serum biochemical renal impairment
Antidepressants	In presence of moderate to severe depressive symptoms lasting at least three months
Antihypertensive	Systolic blood pressure consistently >160mm Hg
Aspirin	Documented history of atherosclerotic coronary, cerebral or peripheral vascular disease in patients with sinus rhythm Following an acute MI
Beta-blocker (oral)	With chronic stable angina
Beta-agonist (inhaled)	Guidance at http://mm.wirral.nhs.uk/document_uploads/guidelines/COPDguidelinesv2.pdf Review patients with mild, moderate or severe COPD at least once a year, and very severe COPD at least twice a year as per NICE guidance - http://www.nice.org.uk/guidance/cg101
Bisphosphonates	In patients taking maintenance oral corticosteroid therapy with previous fragility fractures or incident fractures during glucocorticoid therapy. Ensure there are no absorption interactions e.g. Calcium. Counsel patient on the correct way to take a bisphosphonate.
Calcium and vitamin D	In patients with known osteoporosis (radiological evidence or previous fragility fracture) or acquired dorsal kyphosis
Clopidogrel	For ischaemic stroke or PVD as per http://www.nice.org.uk/guidance/ta210
DMARD	With active moderate-severe rheumatoid disease lasting >12 weeks
Fibre supplement	For chronic symptomatic diverticular disease with constipation
Laxatives	In patients taking opioids - to prevent constipation
PPI	For severe reflux or peptic stricture requiring dilatation For patients over 80 years old on antiplatelets and SSRI
Statins	Documented history of coronary, cerebral or peripheral vascular disease, where the patient's functional status remains independent for activities of daily living and life expectancy >5 years Diabetes mellitus plus ≥ 1 co-existing major cardiovascular risk factor present
Anticoagulation (warfarin or a NOAC)	Chronic atrial fibrillation as per http://www.nice.org.uk/guidance/cg180 Following diagnosis of DVT and PE if benefit outweighs the risk of treatment

References

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2. Howard R et al. Which drugs cause preventable admissions to hospital? A systematic review. Br J Clin Pharmacol 2006; 63:2; 136-147
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4. NICE Guidance – Medicines Optimisation: the safe and effective use of medicines to enable the best possible outcomes, published March 2015
5. Gallagher P, Ryan C, Byrne S, Kennedy J, O'Mahony D. STOPP (Screening Tool of Older Persons' Prescriptions) and START (Screening Tool to Alert Doctors to Right Treatment): Consensus Validation. Int J Clin Pharmacol Ther 2008; 46(2): 72 – 83. PMID 18218287
6. STOPP START medication toolkit supporting medication review, NHS Cumbria, February 2013
7. STOPP START tool, Leicestershire Medicines Strategy Group, Feb 2014

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