



STOPP START Toolkit

Supporting Medication Review

STOPP:

**Screening Tool of Older People's potentially
inappropriate Prescriptions**

START:

**Screening Tool to Alert doctors to
Right Treatments**

STOPP: Screening Tool of Older People's potentially inappropriate Prescriptions.

Prescriptions that are potentially inappropriate in persons aged ≥ 65 years

START: Screening Tool to Alert doctors to Right (i.e. appropriate, indicated) Treatments.

Treatments that should be considered for people ≥ 65 years of age, where no contraindication exists

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This document is designed to be used by healthcare professionals as a reference tool to support medication review for elderly patients.

Every effort has been made to ensure the information in this document is current and correct at the time of publication, however it is not exhaustive and data for individual drugs, national or local guidance may have changed. Where there is any doubt, information should be checked against manufacturers' recommendations, published literature or other specialist sources.

Produced by the North of England Commissioning Support (NECS) Medicines Optimisation Team on behalf of Cumbria CCG.

This update is a tribute to our late colleague, Sue Hawker, who wrote the 2013 version.

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Prescribing resources:

National Institute for Health and Care Excellence (NICE) guidelines:
<http://www.nice.org.uk/guidance/conditions-and-diseases>

NICE clinical knowledge summaries (CKS):
<http://cks.nice.org.uk/>

Map of Medicine prescribing guidelines and resources:
<http://mapofmedicine.com/access-map/>

The British National Formulary (BNF) can be found at:
<http://www.evidence.nhs.uk/formulary/bnf/current>

Medicines and Healthcare Product Regulatory Agency services and information:
<https://www.gov.uk/government/organisations/medicines-and-healthcare-products-regulatory-agency>

An evidence based approach to prescribing in the elderly.

A definition of medication review is “a structured, critical examination of a patient’s medicines with the objective of reaching an agreement with the patient about treatment, optimising the impact of medicines, minimising the number of medication-related problems and reducing waste”.

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.

These patients however are often excluded from drug trials making it difficult for the clinician to weigh up the benefits versus risks, let alone explain them to the patient. Furthermore, although with increasing age a patient can move from benefiting from a treatment to being at significant risk from it, there can be difficulty in stopping medication for the fear of being accused of ageism.

Take a person-centred approach when reviewing / prescribing medicines for the patient. Consider interlinked symptoms, co-morbidities and medication related side effects. Discussion with the patient about the risks and benefits of the interventions, and their values and preferences, aims to help them to reach a fully informed decision taking into account their knowledge, beliefs, culture and values. Further information to aid the assessment of benefits versus risks is available from a variety of sources, including patient decision aids, number needed to treat and number needed to harm. Shared decision-making is an essential part of evidence-based medicine, seeking to use the best available evidence to guide decisions about the care of the individual patient. When starting a medication, it should be considered as part of the overall management package for the condition, alongside appropriate lifestyle and non-medicinal interventions.

This document is based on the STOPP START Tool: a medication review tool designed to identify medication where the risks outweigh the benefits in the elderly and vice versa. The original version by Gallagher *et al* was published in 2008 and subsequently revised in 2014 by O’Mahony *et al*. Experts in geriatric pharmacotherapy initially contributed to suggesting and then rating the criteria. The STOPP criteria were evaluated (along with Beer’s criteria) against hospital admissions — one third of the patients with “potentially inappropriate prescriptions” according to STOPP criteria presented with an associated adverse drug event. The recommendations from the STOPP START Tool are included here, and where space allows, national guidance (in blue-edged boxes) these can only be considered correct at time of publication. The tool was validated in patients aged 65 and over, but there is still a place for clinical judgement in deciding whether a person is “elderly” in terms of the potential effects of medication.

When using the information in the STOPP/START toolkit the prescriber is reminded to follow guidance to ensure that patient care is clinically safe and where prescribing responsibilities lie for medicines used within the health economy. When clinical and / or prescribing responsibility for a patient is transferred from hospital to a primary care prescriber, the primary care prescriber should have full confidence to prescribe the necessary medicines. A transfer of care involving medicines that a primary care prescriber would not normally be familiar with should not take place without the 'sharing of information with the individual primary care prescriber and their mutual agreement to the transfer of care'. This information should include any necessary drug and also clinical monitoring. Also, if it becomes apparent when reviewing the patient's medication that prescribing responsibility has transferred inappropriately, it may be beneficial to refer back to the health professional making the original request.

Where local shared care guidelines for specific drugs are available, these should be followed. These include advice on possible adverse events and appropriate guide of when to reduce dose or stop medication. Any adverse events should be reported back to the consultant or specialist nurse. Pay particular attention of when to stop medications and seek specialist advice or for other medications follow British National Formulary (BNF), Summary of Product Characteristics (SPC) or other local guidelines available.

Prescribing within NICE guidance and the chosen local formulary and guidelines ensures that treatment choices are evidence based and cost effective. Specials (unlicensed products, imports and special formulations) are rarely cost effective. In preference a licensed alternative should be sought, if necessary used outside the licence. Patients' views about their medication will influence whether they take their medicines and non-compliance can cause ill health and cost to the NHS, therefore patient convenience is another factor to consider. Choice of treatment should also take into account the patient's individual condition, cautions and contra-indications.

As with all prescribing, conditions and new and current treatments for the elderly should be monitored following advice from the manufacturer, BNF, national and local guidelines. Prescribers should seek to review treatments and consider changes where monitoring falls outside of recommended levels, particularly if rapidly declining and/ or accompanied by changes to the patient's condition and/ or disposition.

Renal function declines with age; many elderly patients have renal impairment but, because of reduced muscle mass, this may not be indicated by a raised serum creatinine. It is wise to assume at least mild impairment of renal function when prescribing for the elderly.

The use of drugs in patients with reduced renal function can give rise to problems for several reasons:

- reduced renal excretion of a drug or its metabolites may cause toxicity;
- sensitivity to some drugs is increased even if elimination is unimpaired;
- many side-effects are tolerated poorly by patients with renal impairment;
- some drugs are not effective when renal function is reduced.

Many of these problems can be avoided by reducing the dose or by using alternative drugs. Prescribers can find more detailed information in the current BNF or Summary of Product Characteristics for individual drugs.

In patients at risk of Acute Kidney Injury (AKI), aligned with NICE Quality Standard 76, the NHS England Think Kidneys Programme Board recommend that health professionals communicate risk of AKI with patients and carers. This should include discussion about possible causes including the need to maintain fluid balance during episodes of acute illness. In terms of medicines management, advice from the Think Kidneys Programme Board is that it is reasonable for clinicians to provide “sick day rules” guidance on temporary cessation of medicines to patients deemed at high risk of AKI based on an individual risk assessment. Medications giving cause for concern are: Diuretics, ACEIs, AIIIRAs, NSAIDs and Metformin.

The recommendations in this toolkit are grouped according to the main BNF chapters, with the STOPP items coloured red and the START items coloured green. The references and guidelines for the recommendations are available on-line.

As well as using the list of drugs here 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.

Various prescribing resources are available, listing interactions, cautions and contra-indications to treatments. While the most significant issues are listed in the text, it is not possible to include all of these here and it is the clinicians’ responsibility to consider these when prescribing new medications.

The following drugs or drug classes were most often implicated in a UK study by Pirmohamed, looking at cause of admission in two hospitals over a six month period (result given as percentage of adverse drug reaction (ADR) related admissions which in turn were 6.5% of all admissions). This study was in patients over the age of 16, but clinicians will recognise that these drugs are commonly prescribed in older people.

	Drug or class	% ADR admissions
1.	<u>NSAIDs including Aspirin</u>	29.6%
2.	<u>Diuretics</u>	27.3%
3.	<u>Warfarin</u>	10.5%
4.	<u>ACEI and AIIIRAs</u>	7.7%
5.	<u>Antidepressants including lithium</u>	7.1%
6.	<u>Beta-blockers</u>	6.8%
7.	<u>Opiates</u>	6.0%
8.	<u>Digoxin</u>	2.9%
9.	<u>Prednisolone</u>	2.5%
10.	<u>Clopidogrel</u>	2.4%

The authors suggested that over 70% of the ADRs were avoidable. These findings are supported by a 2006 systematic review by Howard, which found the four most common drug groups associated with preventable drug-related admissions to be antiplatelets (16%), diuretics (15.9%), NSAIDs (11%) and anticoagulants (8.3%). In addition to those listed above, they found drugs used in diabetes (3.5%), positive inotropes (3.2%), calcium-channel blockers (2.8%) and antiepileptics (2.3%) were also implicated. (This review was not confined to the UK population and not all studies were specific to older people).

If wanting to reduce the burden of polypharmacy in gradual steps it might be prudent to tackle the above drugs as a priority after removing ineffective or unnecessary treatment.

Particular caution should be taken if considering stopping the following drugs (continue treatment, gradual withdrawal or specialist advice before stopping):

- 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, DMARDs or immunosuppressant drugs

Consider additive effects of drugs prescribed e.g. anticholinergic burden, increased risk of bleeding, drugs affecting or affected by renal function. Alternatives to stopping treatment may be to reduce the 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.

Many anticholinergic (antimuscarinic) drugs are included in the STOPP sections already, but as combining anticholinergic drugs increases the risk of side effects (including confusion, falls and death) the Anticholinergic Cognitive Burden scale for some commonly prescribed drugs is included on page 33.

Older adults (65 years or older) should be routinely offered a single dose of pneumococcal polysaccharide vaccine, if they have not previously received it. Annual influenza vaccination should also be offered. Adults aged 70 years should also be offered shingles vaccine, or via the catch-up programme for older patients. Patients with medical conditions or treatments increasing the risk of complications from specific infectious diseases should receive relevant protection, as listed in the green book.



Medication to consider stopping in patients over 65 from the STOPP Tool



Medication to consider starting in patients over 65 from the START Tool



NICE Guidelines or other supporting/useful information

BNF Chapter 1. Gastro-intestinal System

STOP:

Metoclopramide:

- with Parkinsonism (*risk of exacerbating symptoms*).
- after maximum treatment time of 5 days.

Domperidone:

- for treatment other than nausea and vomiting.
- after maximum treatment time of one week.
- in patients with serious underlying heart conditions.
- if receiving other medications known to prolong QT interval or potent CYP3A4 inhibitors.

PPI for uncomplicated peptic ulcer disease at full therapeutic dosage after 1-2 months (*if healed, offer low dose maintenance treatment, possibly on an 'as required' basis - review at least annually*).

Drugs likely to cause constipation (e.g. anticholinergic drugs, oral iron, opioids, verapamil, aluminium antacids) in patients with chronic constipation where non-constipating alternatives are available (*risk of exacerbation of constipation*).

For diarrhoea of an unknown cause, consider the possibility of Clostridium difficile infection (CDI) if there is a history of antibiotic use (in last 8 weeks) or recent hospital discharge. If CDI is suspected / diagnosed stop:

- **antimotility drugs.**
- **antibiotics if appropriate.**
- **unnecessary PPI use.**

Antimotility drugs should be AVOIDED if there is blood and mucus in stools or high fever during severe infective gastroenteritis.

Simple antacids: Long term, frequent dose, continuous prescribing of simple antacids (*relieves symptoms in the short term rather than preventing them*). See Start.

Known precipitants that patients associate with dyspepsia or reflux, where possible. These include smoking, alcohol, coffee, chocolate and fatty foods.

BNF Chapter 1. Gastro-intestinal System

START:

PPI (or other appropriate gastroprotection if contra-indicated):

- at full dose, long term (initially 8 weeks, if symptoms resolve consider full dose maintenance, review annually) with severe grade oesophagitis or oesophageal stricture requiring dilation.
- for patients on medication with risk of gastric bleeding eg. antiplatelets, SSRIs, venlafaxine, corticosteroids, NSAIDs (particularly if in combination where unavoidable).

Fibre supplements (e.g. bran, ispaghula, methylcellulose, sterculia) for diverticulosis with a history of constipation.

Lifestyle advice for patients with reflux or dyspepsia, including advice on healthy eating, weight reduction and smoking cessation.

NICE guidance:

- [CG184 Gastro-oesophageal reflux disease and dyspepsia in adults: investigation and management, September 2014.](#)

NICE CKS:

- [Constipation.](#)
- [Dyspepsia – proven GORD.](#)
- [Dyspepsia – proven non-ulcer.](#)
- [Dyspepsia – proven peptic ulcer.](#)
- [Dyspepsia – unidentified cause](#)

BNF Chapter 2. Cardiovascular System

STOP:

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 (see START).
- at a long-term dose greater than 125 micrograms/day if eGFR less than 30 ml/min/1.73m² (*risk of toxicity if digoxin plasma levels not measured as eGFR may not be an accurate indicator of clearance*).

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), AIIIRAs 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*).

Verapamil or diltiazem with heart failure (*may worsen heart failure*).

Nicorandil if ulceration of the gastro-intestinal tract, skin or mucosa (including eyes) occurs; consider alternative treatment or specialist advice if angina worsens (*ulcers caused by Nicorandil do not respond to conventional treatment*).

ACEIs or AIIIRAs

- in patients with hyperkalaemia.
- in combination with each other (*limited evidence of benefit*) – unless under specialist review and recommendation.

Centrally-acting antihypertensives (e.g. methyldopa, clonidine, moxonidine), unless clear intolerance of, or lack of efficacy with, other classes of antihypertensives (*centrally-active antihypertensives are generally less well tolerated by older people than younger people*).

Amiodarone as first-line antiarrhythmic therapy in supraventricular tachyarrhythmias (*higher risk of side-effects than beta-blockers, digoxin, verapamil or diltiazem*), following review and recommendation by specialist team.

Non-selective beta-blocker with a recent history of bradycardia, heart block or uncontrolled heart failure; or asthma requiring treatment (*risk of increased bronchospasm*).

BNF Chapter 2. Cardiovascular System

START:

Antihypertensive therapy

- where systolic blood pressure consistently above 160 mmHg and/ or diastolic blood pressure consistently above 90 mmHg.
- If diabetic, if systolic blood pressure above 140 mmHg and/ or diastolic blood pressure above 90 mmHg.

Beta-blocker or Calcium channel blocker for stable angina.

Appropriate beta-blocker with stable systolic heart failure.

ACE inhibitor with systolic heart failure and/or documented coronary artery disease.

Statin discussion with patients with known coronary heart disease, QRISK greater than 10%, diabetes type 1 or 2, or CKD with eGFR less than 60 min/1.73m². consider for 85 years or over . Use Atorvastatin first line.

Lifestyle advice for prevention of cardiovascular disease:

- Smoking cessation – offer support, advice and referral to local services to all patients who smoke.
- Diet and supplements –standard healthy eating advice.
- Physical Exercise – advise patients to aim to be active daily (at least 150 minutes moderate-intensity exercise over a week).
- Alcohol – advise no more than 14 units per week for both men and women.
- Psychosocial factors –interventions may include group counselling, cognitive behavioural therapy, stress management programmes, meditation/yoga.

Cardiovascular prescribing resources.

NICE guidance:

- [CG108 Chronic heart failure in adults: management, August 2010.](#)
- [CG126 Stable angina: management, July 2011.](#)
- [CG127 Hypertension in adults: diagnosis and management, August 2011.](#)
- [CG172 Myocardial infarction: cardiac rehabilitation and prevention of further MI, November 2013.](#)
- [CG181 Cardiovascular disease: risk assessment and reduction, including lipid modification, July 2014.](#)
- [PH25 Cardiovascular disease prevention, June 2010](#)

NICE CKS:

- [Angina.](#)
- [CVD risk assessment and management.](#)
- [Heart failure –chronic.](#)
- [Hypertension - not diabetic.](#)
- [Hyponatremia.](#)
- [MI –secondary prevention.](#)
- [Peripheral arterial disease.](#)
- [Stroke and TIA.](#)

Anticoagulants and antiplatelets

STOP:

Aspirin:

- Long-term aspirin at doses greater than 160 mg per day (*increased risk of bleeding, no evidence for increased efficacy*).
- with a past history of peptic ulcer disease without concomitant PPI (*risk of recurrent peptic ulcer*).
- in combination with warfarin or NOACs in patients with chronic atrial fibrillation (*no added benefit from aspirin*).
- as monotherapy for stroke prevention in atrial fibrillation.

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*).

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*).

Direct thrombin inhibitors (e.g. dabigatran) if eGFR less than 30 ml/min/1.73m² (*risk of bleeding*).

Factor Xa inhibitors (e.g. rivaroxaban, apixaban) if eGFR less than 15 ml/min/1.73m² (*risk of bleeding*).

Anticoagulants and antiplatelets

START:

Antiplatelet therapy (one of aspirin, clopidogrel, prasugrel or ticagrelor) with a documented history of coronary, cerebral or peripheral vascular disease.

Anticoagulation – for atrial fibrillation, using the CHA₂DS₂-VASc and HAS- BLED score and discuss the risk and benefit with the patient. Offer anticoagulation to people with a CHA₂DS₂-VASc score of 2 or above (1 or above for males), taking bleeding risk into account. Anticoagulation can be either Warfarin or a NOAC.

NICE guidance:

- [CG144 Venous thromboembolism: diagnosis, management and thrombophilia testing, June 2012.](#)
- [CG180 Atrial fibrillation: management, June 2014](#)

NICE CKS:

- [Anticoagulation – oral.](#)
- [Antiplatelet treatment.](#)
- [Atrial fibrillation.](#)
- [Deep vein thrombosis.](#)

Calculating Scores: American College of Cardiology.

CHA₂DS₂VASc Score

Congestive Heart Failure/ Left Ventricular Dysfunction	1
Hypertension	1
Age above 75 years	2
Diabetes mellitus	1
Stroke/ TIA/ Thromboembolism	2
Vascular disease (eg. MI, peripheral arterial disease or aortic plaque)	1
Age between 65 and 74 years	1
Sc - Sex category - Female	1

HAS-BLED Score

Hypertension, uncontrolled systolic above 160mmHg	1
Abnormal kidney function (Creatinine above 200µmol/L) and/or liver function (AST/ ALT/ AP greater than 3 times normal)	1 each
Stroke history	1
Bleeding: previous history, anaemia or predisposition	1
Labile INR, high INR or poor time in therapeutic range (less than 60%)	1
Elderly, age above 65yrs	1
Drugs and/or alcohol (more than 8 drinks per week), antiplatelets/ NSAIDs.	1 each

BNF Chapter 3. Respiratory System

STOP:

Anti-muscarinic bronchodilators (e.g. ipratropium, tiotropium) with a history of narrow angle glaucoma (*may exacerbate glaucoma*) or bladder outflow obstruction (*may cause urinary retention*).

Theophylline as monotherapy for Asthma or COPD (*safer, more effective alternative; risk of adverse effects due to narrow therapeutic index*).

Systemic corticosteroids instead of inhaled corticosteroids for maintenance therapy in moderate-severe COPD (*unnecessary exposure to long-term side-effects of systemic corticosteroids and effective inhaled therapies are available*).

BNF Chapter 3. Respiratory System

START:

Regular inhaled Beta-2 agonist or antimuscarinic bronchodilator (e.g. ipratropium, aclidinium) for mild to moderate COPD.

Regular inhaled corticosteroid for moderate-severe asthma or COPD (where FEV1 less than 50% of predicted value and repeated exacerbations requiring treatment with oral corticosteroids). Give a steroid warning card for high doses.

Long term oxygen therapy (LTOT) with documented chronic hypoxaemia - SaO₂ less than 92%.

A self-management plan including a course of antibiotics and oral corticosteroid tablets to keep at home (rescue pack), where patients are at risk of exacerbations and including advice on when to use them.

A spacer device for patients using high dose inhaled corticosteroids or if poor technique with metered dose inhalers.

New medications only after checking technique and compliance with existing inhalers.

Pulmonary rehabilitation should be available to all appropriate people with moderate-severe COPD, including those who have had a recent hospitalisation for an acute exacerbation.

Respiratory continued:

Smoking cessation for all COPD patients still smoking, regardless of age: encourage to stop, and offer help to do so, at every opportunity. Unless contraindicated, offer NRT, varenicline or bupropion, as appropriate, combined with an appropriate support programme to optimise smoking quit rates.

Lifestyle advice: a healthy weight and regular appropriate exercise can improve breathlessness symptoms for patients with COPD.

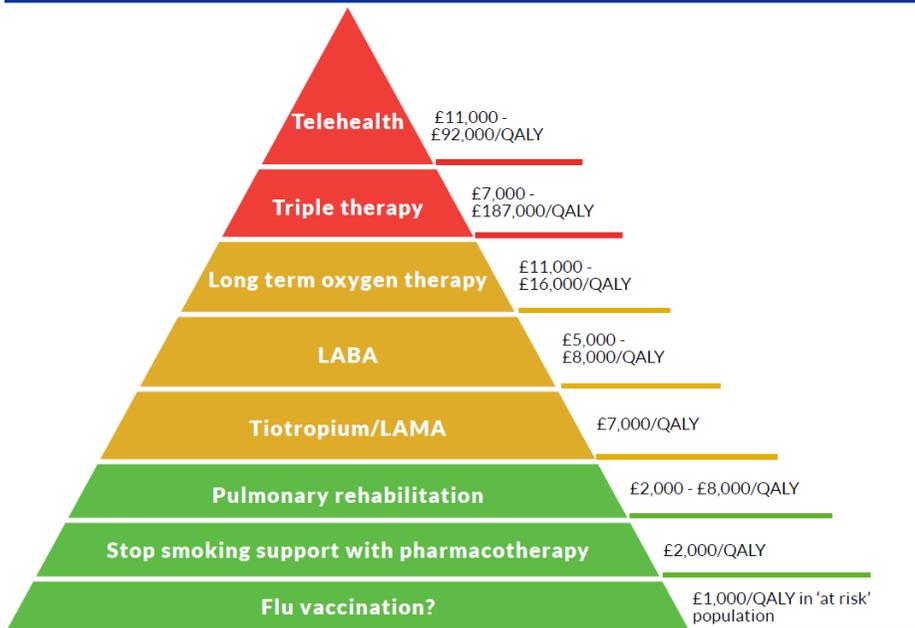
NICE guidance:

[CG101 Chronic obstructive pulmonary disease in over 16s: diagnosis and management, June 2010.](#)

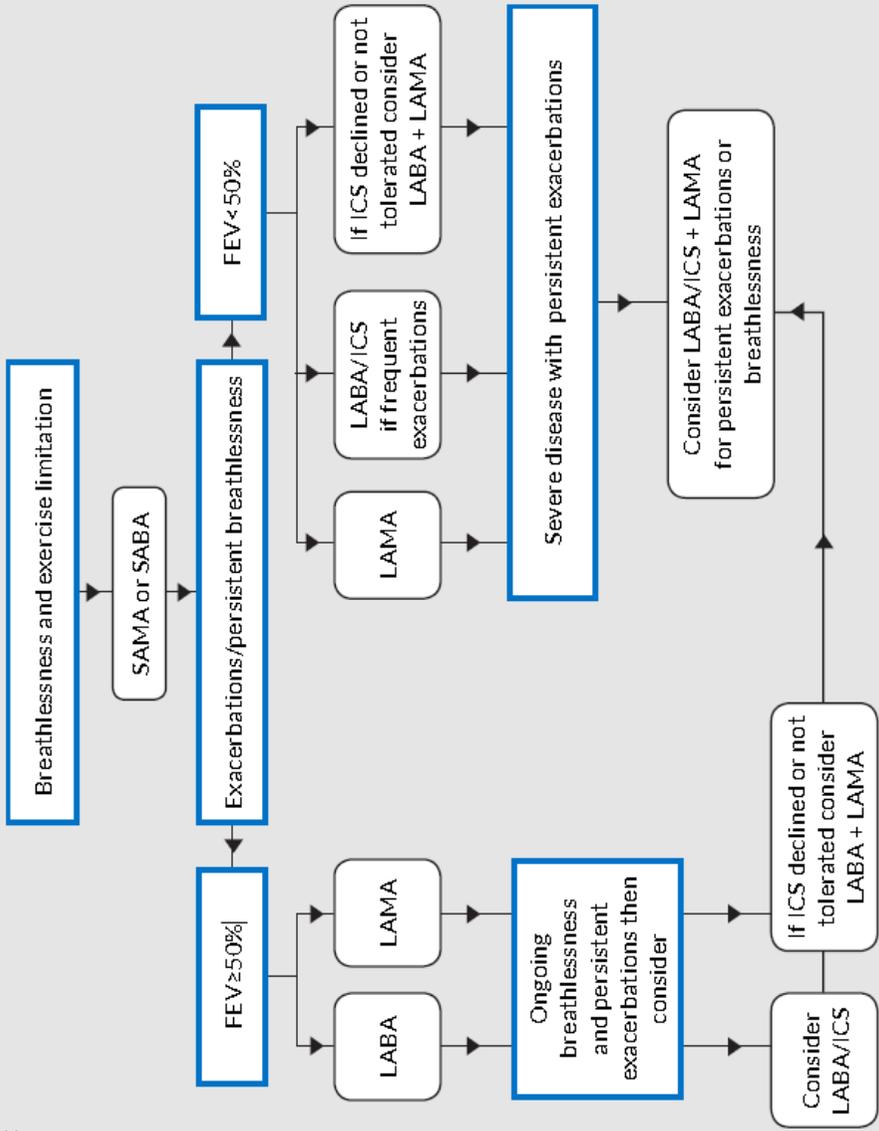
NICE CKS:

- [Asthma.](#)
- [Chronic obstructive pulmonary disease.](#)
- [Corticosteroids—inhaled.](#)

Cost of COPD treatments per Quality Adjusted Life Year

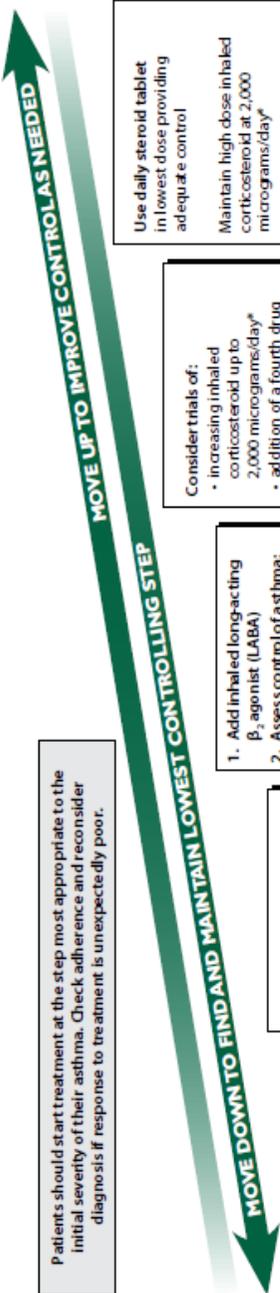


NICE CG101 COPD guideline flow chart — pharmacological management.



**British Thoracic Society /Scottish Intercollegiate Guideline Network:
guideline on the management of asthma, October 2014.**

Patients should start treatment at the step most appropriate to the initial severity of their asthma. Check adherence and reconsider diagnosis if response to treatment is unexpectedly poor.



Inhaled short-acting β_2 agonist as required

STEP 1

Mild intermittent asthma

Add inhaled corticosteroid 200-800 micrograms/day* appropriate starting dose for many patients

Start at dose of inhaled corticosteroid appropriate to severity of disease.

STEP 2

Regular preventer therapy

1. Add inhaled long-acting β_2 agonist (LABA)
2. Assess control of asthma:
 - good response to LABA - continue LABA
 - benefit from LABA but control still inadequate - continue LABA and increase inhaled corticosteroid dose to 800 micrograms/day* (if not already on this dose)
 - no response to LABA - stop LABA and increase inhaled corticosteroid to 800 micrograms/day* if control still inadequate, institute trial of other therapies, leukotriene receptor antagonist or SR theophylline

STEP 3

Initial add-on therapy

Consider trials of:

- increasing inhaled corticosteroid up to 2,000 micrograms/day*
- addition of a fourth drug eg leukotriene receptor antagonist, SR theophylline, β_2 agonist tablet

STEP 4

Persistent poor control

Use daily steroid tablet in lowest dose providing adequate control

Maintain high dose inhaled corticosteroid at 2,000 micrograms/day*

Consider other treatments to minimise the use of steroid tablets

Refer patient for specialist care

STEP 5

Continuous or frequent use of oral steroids

* BDP or equivalent



BNF Chapter 4. Nervous System

STOP:

Tricyclic antidepressants (TCA) (particularly Doxepin):

- 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*).

Benzodiazepines or hypnotics:

- with acute or chronic respiratory failure i.e. pO_2 less than 8.0 kPa and/ or pCO_2 greater than 6.5 kPa (*risk of exacerbation of respiratory failure*).
- if fallen in past 3 months.
- for longer than 4 weeks (*no indication for longer treatment; risk of prolonged sedation, confusion, impaired balance, falls, road traffic accidents; all benzodiazepines/ hypnotics should be withdrawn gradually if taken for more than 4 weeks as there is a risk of causing a withdrawal syndrome if stopped abruptly*).

Antipsychotics:

- long-term (i.e. beyond 1 month) as hypnotics (*risk of confusion, hypotension, extra-pyramidal side effects, falls*).
- long-term (beyond 1 month) in those with Parkinsonism or Lewy Body Disease (*likely to worsen extra-pyramidal symptoms*).
- if fallen in past 3 months (*may cause gait dyspraxia, Parkinsonism*).
- With moderate –marked antimuscarinic/anticholinergic effects. (chlorpromazine, clozapine, flupenthixol, flupenzine, pipothiazine, promazine, zuclopenthixol) with a history of prostatism or previous urinary retention (*high risk of urinary retention*).
- In patients with behavioural and psychological symptoms of dementia (BPSD) unless symptoms are severe and other non-pharmacological treatments have failed (*increased risk of stroke*).
- As hypnotics, unless sleep disorder is due to psychosis or dementia (*risk of confusion, hypotension, extra-pyramidal side –effects, falls*).

Levodopa or dopamine agonists for benign essential tremor (*no evidence of efficacy*).

Nervous system continued:

Phenothiazines:

- in patients with epilepsy (*may lower seizure threshold*).
- As first-line treatment, since safer and more efficacious alternatives exist (*phenothiazines are sedative, have significant anti-muscarinic toxicity in older people*), with the exception of prochlorperazine for nausea/vomiting/vertigo, chlorpromazine for relief of persistent hiccoughs and levomepromazine as an anti-emetic in palliative care).

Anticholinergics:

- to treat extra-pyramidal side-effects of antipsychotic medications (*risk of anticholinergic toxicity*).
- In patients with delirium or dementia (*risk of exacerbation of cognitive impairment*).

Selective serotonin re-uptake inhibitors (SSRIs) with a history of clinically significant hyponatraemia (below 130 mmol/l within the previous 2 months).

Citalopram and Escitalopram with QT-interval prolongation or with concomitant drugs that cause prolonged QT-interval.

First generation antihistamines if prolonged use (longer than 1 week) i.e. chlorphenamine, cyclizine, promethazine (*risk of sedation and anti-cholinergic side effects*).

Opiates

- Use of long-term strong opioids as first line therapy for mild-moderate pain (*WHO analgesic ladder not observed—see page 21*).
- 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 breakthrough pain (*risk of persistence of severe pain*).

Acetylcholinesterase inhibitors with a known history of persistent bradycardia (below 60 beats/min.), heart block or recurrent unexplained syncope or concurrent treatment with drugs that reduce heart rate such as beta-blockers, digoxin, diltiazem, verapamil (*risk of cardiac conduction failure, syncope and injury*).

BNF Chapter 4. Nervous System

START:

Levodopa or dopamine agonist in idiopathic Parkinson's disease with definite functional impairment and resultant disability.

Antidepressant (non TCA) in the presence of moderate-severe depressive symptoms lasting at least three months (*higher risk of adverse drug reactions with TCAs than with SSRIs or SNRIs*).

SSRI (or SNRI if SSRI is contra-indicated) for persistent severe anxiety that interferes with independent functioning, or for social anxiety disorder where patient declines cognitive behavioural therapy.

Dopamine agonist (ropinirole or pramipexole or rotigotine) for moderate-severe Restless Legs Syndrome, once iron deficiency and severe renal failure have been excluded and in conjunction with lifestyle measures.

Acetylcholinesterase inhibitor (e.g. donepezil, rivastigmine, galantamine – or Memantine if others not tolerated) for mild-moderate Alzheimer's dementia or Lewy Body dementia (rivastigmine) following review and recommendation by specialist team. Use donepezil first line.

Strong opioids in moderate-severe pain, where paracetamol, NSAIDs or weak opioids are not appropriate to the pain severity or have been ineffective. Use morphine first line.

Laxatives in patients receiving opioids regularly.

Psychological Intervention (eg. cognitive behavioural therapy, interpersonal therapy, behavioural activation, behavioural couple therapy), may be offered as a non-pharmacological treatment in the following conditions:

- Psychosis (or risk of) and schizophrenia in adults.
- Depression – including those thought to be at considerable risk of relapse or who have related residual symptoms. Also offer sleep hygiene advice.
- Bipolar disorder.
- Generalised anxiety disorder in adults (GAD).
- Social anxiety disorder (SAD) –specific CBT has been developed for SAD.
- Post-traumatic stress disorder (PTSD) – trauma-focused CBT for those with severe symptoms or with PTSD in the first month after the traumatic event.

Nervous system prescribing resources.

NICE guidance:

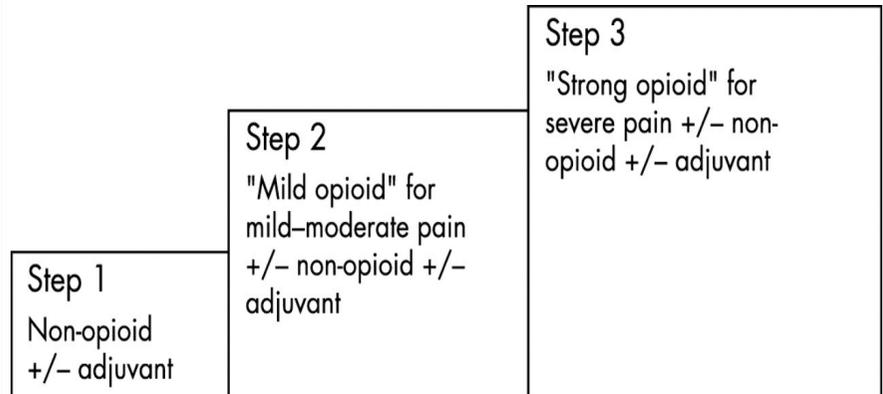
- [CG26 Post-traumatic stress disorder: management, March 2005](#)
- [CG42 Dementia: supporting people with dementia and their carers in health and social care, November 2006.](#)
- [CG90 Depression in adults: recognition and management, October 2009.](#)
- [CG103 Delirium: prevention, diagnosis and management, July 2010.](#)
- [CG113 Generalised anxiety disorder and panic disorder in adults: management, January 2011.](#)
- [CG137 Epilepsies: diagnosis and management, January 2012.](#)
- [CG140 Palliative care for adults: strong pain relief, May 2012.](#)
- [CG159 Social anxiety disorder: recognition, assessment and treatment, May 2013](#)
- [CG178 Psychosis and schizophrenia in adults: prevention and management, February 2014.](#)
- [CG185 Bipolar disorder: assessment and management, September 2014](#)

NICE CKS:

- [Analgesia – mild to moderate pain.](#)
- [Benzodiazepine and Z-drug withdrawal.](#)
- [Bipolar disorder.](#)
- [Delirium.](#)
- [Dementia.](#)
- [Depression.](#)
- [Epilepsy.](#)
- [Falls – risk assessment.](#)
- [Insomnia.](#)
- [Neuropathic pain – drug treatment.](#)
- [Palliative cancer care – pain.](#)
- [Palliative care – constipation.](#)
- [Restless legs.](#)

Nervous system resources.

World Health Organisation analgesic ladder:



BNF Chapter 6. Endocrine System

STOP:

Sulfonylureas with a long duration of action (e.g. glibenclamide, chlorpropamide, gliclazide) with type 2 diabetes mellitus (*risk of prolonged hypoglycaemia*).

Metformin if eGFR below 30 ml/min/1.73m² (*risk of lactic acidosis*).

Pioglitazone in patients with heart failure (*risk of exacerbation of heart failure*).

Oestrogens:

- with a history of breast cancer or venous thromboembolism (*increased risk of recurrence*).
- without progestogen in patients with intact uterus (*risk of endometrial cancer*).

Any hormone replacement therapy in females with:

- acute liver disease (*metabolised by the liver*).
- oestrogen-dependent cancer (*may worsen prognosis*).
- undiagnosed vaginal bleeding or untreated endometrial hyperplasia .
- active thrombophlebitis, thrombophilic disorder (*increased risk of venous thromboembolism*).
- active or recent arterial thromboembolic disease (e.g. angina or myocardial infarction) (*at increased risk of arterial thrombosis*).

Androgens (male sex hormones) in the absence of primary or secondary hypogonadism (*risk of androgen toxicity; no proven benefit outside of the hypogonadism indication*).

Bisphosphonates:

- if greater than 5 years treatment duration (for drug holiday), after discussion of risks and benefits.
- if unexplained thigh, hip or groin pain is reported, after discussion of risks and benefits.
- given orally in patients with a current or recent history of upper gastrointestinal disease i.e. dysphagia, oesophagitis, gastritis, duodenitis, or peptic ulcer disease, or upper gastrointestinal bleeding (*risk of relapse/exacerbation of oesophagitis, oesophageal ulcer, oesophageal stricture*).

Bisphosphonates or Denosumab in patients considered at low fracture risk (FRAX[®] assessment tool).

Denosumab if patient is unable to have regular dental check ups.

BNF Chapter 6. Endocrine System

START:

ACEI or AIIRA (if intolerant of ACEI) in diabetes with evidence of renal disease i.e. dipstick proteinuria or microalbuminuria (greater than 30 mg/24 hours) with or without serum biochemical renal impairment.

Bisphosphonates and vitamin D and calcium (where dietary calcium intake inadequate) in patients taking long-term systemic glucocorticosteroid therapy (greater than or equal to 7.5 mg prednisolone per day (or equivalent) for 3 months or more).

Vitamin D and calcium (where dietary calcium intake inadequate) supplement:

- in patients with known osteoporosis and/or previous fragility fracture(s) and/or (Bone Mineral Density T-scores greater than -2.5 in multiple sites).
- in older people who are housebound or experiencing falls or with osteopenia (Bone Mineral Density T-score is in the range of -1 to -2.5 in multiple sites).

Bone anti-resorptive or anabolic therapy (e.g. bisphosphonate) in patients with documented osteoporosis, where no pharmacological or clinical status contraindication exists (Bone Mineral Density T-scores is less than -2.5 in multiple sites) and/or previous history of fragility fracture(s).

Personalised management plan for diabetes, including dietary and other aspects of lifestyle modification: increasing physical activity and losing weight, alcohol intake and smoking advice (where applicable).

A group education programme for diabetes eg. [DESMOND](#) (type 1) and [DAFNE](#) (type 2) referral programmes.

Endocrine prescribing resources.

NICE guidance:

- [CG146 Osteoporosis: assessing the risk of fragility fracture, August 2012.](#)
- [NG17 Type 1 diabetes in adults: diagnosis and management, December 2015.](#)
- [NG28 Type 2 diabetes in adults: management, December 2015.](#)
- [NG23 Menopause: diagnosis and management, November 2015.](#)

NICE CKS:

- [Diabetes type 1.](#)
- [Diabetes type 2.](#)
- [Insulin therapy in type 1 diabetes.](#)
- [Insulin therapy in type 2 diabetes.](#)
- [Menopause.](#)
- [Osteoporosis – prevention of fragility fractures.](#)

[National Osteoporosis Guideline Group \(NOGG\) Guideline for the diagnosis and management of osteoporosis, March 2014.](#)

BNF Chapter 7. Genito-urinary medicine

STOP:

Alpha₁-receptor blocker in those with symptomatic orthostatic hypotension or micturition syncope (*risk of precipitating recurrent syncope*).

Anticholinergic drugs with:

- dementia, or chronic cognitive impairment (*risk of increased confusion, agitation*)
- narrow-angle glaucoma (*risk of acute exacerbation of glaucoma*)
- chronic prostatism (*risk of urinary retention*).

Phosphodiesterase type-5 inhibitors (e.g. sildenafil, tadalafil) in severe heart failure characterised by hypotension i.e. systolic BP below 90 mmHg, or concurrent nitrate therapy for angina (*risk of cardiovascular collapse*).

Diuretics or other drugs that increase urinary flow with concurrent urinary incontinence (*may exacerbate incontinence*).

BNF Chapter 7. Genito-urinary medicine

START:

Topical vaginal oestrogen or vaginal oestrogen pessary for symptomatic atrophic vaginitis.

Alpha₁-receptor blocker with symptomatic prostatism, where prostatectomy is not considered necessary.

5-alpha reductase inhibitor (e.g., finasteride) with symptomatic prostatism, where prostatectomy is not considered necessary.

Lifestyle advice for women with overactive bladder:

- Recommend a trial of caffeine reduction.
- Consider advising modification of high or low fluid intake.
- Advise women who have a BMI greater than 30 to lose weight.

Non-pharmacological therapy for women with urinary incontinence (UI):

- A trial of supervised pelvic floor muscle training of at least 3 months' duration as first-line treatment to women with stress or mixed UI.
- Bladder training lasting for a minimum of 6 weeks as first-line treatment to women with urgency or mixed UI.

Genito-urinary medicine prescribing resources.

NICE guidance:

- [CG97 Lower urinary tract symptoms in men: management, May 2010.](#)
- [CG171 Urinary incontinence in women: management, September 2013.](#)

NICE CKS:

- [Erectile dysfunction.](#)
- [Incontinence – urinary in women.](#)

BNF Chapter 9. Nutrition

STOP:

Oral elemental iron doses greater than 200 mg daily e.g. ferrous fumarate above 600 mg/day, ferrous sulphate above 600 mg/day, ferrous gluconate above 1800

BNF Chapter 9. Nutrition

START:

Nutrition support should be considered for patients who are malnourished or at risk of malnutrition. This may include dietary advice (such as food fortification) or supplements on the advice of local dietetic specialists.

NICE guidance:

- [CG32 Nutrition support for adults: oral nutrition support, enteral tube feeding and parenteral nutrition.](#)

NICE CKS:

- [Anaemia—iron deficiency.](#)

BNF Chapter 10. Musculoskeletal System

Note: The term NSAID refers to a non-selective or COX-2 selective non-steroidal anti-inflammatory unless otherwise stated.

STOP:

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 (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 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 eGFR less than 50 ml/min/1.73m² (*risk of deterioration in renal function*).
- with warfarin or NOAC (*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*).

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*).

Colchicine if eGFR less than 10 ml/min/1.73m² (*risk of colchicine toxicity*).

Quinine:

- take a trial break every three months, unless leg cramps are painful and cause regular disruption of sleep.
- If no benefit after four weeks.

BNF Chapter 10. Musculoskeletal System

START:

Allopurinol with a history of recurrent episodes of gout.

DMARD with active, disabling rheumatoid disease, following review and recommendation by specialist team.

Folic acid supplement in patients taking methotrexate, following local shared care guideline.

Appropriate gastroprotection for NSAID, particularly if in combination with other medicines that increase risk of gastro-intestinal bleeding eg. corticosteroids, antiplatelets, SSRIs or Venlafaxine.

Activity, fitness or exercise advice, including weight loss (where applicable) for patients with osteoarthritis and lower back pain, appropriate to their condition and fitness levels.

NICE guidance:

- [CG79 Rheumatoid arthritis in adults: management, February 2009 .](#)
- [CG 88 Low back pain in adults: early management, May 2009.](#)
- [CG173 Neuropathic pain in adults: pharmacological management in non-specialist settings, November 2013.](#)
- [CG177 Osteoarthritis: care and management, February 2014.](#)

NICE CKS:

- [Back pain – low \(without radiculopathy\).](#)
- [Corticosteroids \(oral\).](#)
- [DMARDS.](#)
- [Gout.](#)
- [NSAIDs – prescribing issues.](#)
- [Osteoarthritis.](#)
- [Rheumatoid arthritis.](#)
- [Sciatica – lumbar radiculopathy .](#)

BNF Chapter 11. Eye

STOP:

Non-selective beta-blocker (whether oral or topical for glaucoma) with a recent history of bradycardia, heart block or uncontrolled heart failure; or asthma requiring treatment (*risk of increased bronchospasm*).

BNF Chapter 11. Eye

START:

Topical prostaglandin, prostamide or beta-blocker for primary open-angle glaucoma.

NICE guidance:

[CG85 Glaucoma: diagnosis and management, April 2009.](#)

NICE CKS:

[Glaucoma.](#)

Abbreviations used:

ACEI: Angiotension-converting enzyme inhibitor.

AIIRA: Angiotension II receptor antagonist.

COPD: Chronic obstructive pulmonary disease.

COX-2: Cyclo-oxygenase 2 selective inhibitor.

DMARD: Disease modifying anti-rheumatic drug.

eGFR: Estimated glomerular filtration rate.

GORD: Gastro-oesophageal reflux disease.

NSAID: Non-steroidal anti-inflammatory drug.

PPI: Proton pump Indicator.

SNRI: Serotonin-noradrenaline reuptake inhibitor.

SSRI: Selective serotonin reuptake inhibitor.

TCA: Tricyclic antidepressant.

Anticholinergic Drug Burden (ACB)

STOP:

Concomitant use of two or more drugs with potential for anticholinergic adverse effects (ACB score greater than or equal to 4) (*risk of increased anticholinergic toxicity*). These are the medicines most commonly used in general practice,

Score 1	Score 2	Score 3
Alverine	Amantadine	Amitriptyline, Doxepin and most related tricyclic antidepressants
Atenolol and most beta-blockers	Baclofen	Atropine, dicycloverine, propantheline, hyoscine
Bupropion	Carbamazepine	Chlorphenamine and other sedating antihistamines
Chlorthalidone	Cetirizine and most non-sedating antihistamines	Olanzapine and most atypical antipsychotics
Codeine and other opiates	Cimetidine	Orphenadrine
Diazepam and other benzodiazepines	Clozapine	Oxybutynin and most incontinence drugs
Digoxin	Cyproheptadine	
Furosemide and other diuretics	Levomepromazine	
Haloperidol	Loperamide	
Paroxetine	Oxcarbazepine	
Quetiapine	Pethidine	
Ranitidine	Pimozide	
Trazadone	Prochlorperazine	

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Partners in improving local health



North of England
Commissioning Support

**North of England Commissioning Support (NECS) Medicines Optimisation
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