Reviewing and deprescribing medicines with anticholinergic activity

1. Scope

This guideline has been adapted from national guidance on anticholinergic burden and serves to provide advice to practitioners to support the safe and effective review or prescribing of medicines with anticholinergic activity for patients across the West Yorkshire Integrated Care System (WY ICS).

2. Background

Anticholinergic medicines are competitive antagonists of the neurotransmitter acetylcholine in the brain and peripheral nervous system, subsequently, reducing involuntary muscle contractions of smooth muscle located in the lungs, urinary tract, and other areas of the body. As such, they are widely used to treat conditions such as Parkinson's disease, COPD, overactive bladder, depression and psychiatric disorders (1,2).

Anticholinergic medicines are known to cause side-effects such as tachycardia, decreased sweating, dry mouth, constipation, urinary retention, blurred vision, dizziness, delirium and hallucinations (3,4). These side effects can lead to cognitive decline and falls and have also been linked to an increased risk of dementia and mortality (5).

Patients taking multiple anticholinergic medicines at high doses, or those who have been taking them for some time, are at a higher risk of experiencing adverse effects of anticholinergic medicines. Older people, particularly those who are frail with multiple co-morbidities, are most susceptible to the cumulative effects of anticholinergic medicines due to increased drug permeability of the blood-brain barrier and decreased drug metabolism and elimination (4).

3. Anticholinergic burden and scoring tools.

When anticholinergic medicines are used in combination, they can have additive adverse effects. This is known as anticholinergic burden (ACB) (3).

Medicines with anticholinergic side-effects are assigned a score between 0 to 3 known as the ACB score (1). The higher the ACB score, the greater the anticholinergic burden.

- ACB Score 0 = No anticholinergic activity
- ACB Score 1 = Low or possible anticholinergic activity
- ACB score 2 or 3 = Definite anticholinergic activity

Reducing this score can improve adverse effects associated with anticholinergic medicines such as delirium and falls (6).

Various tools exist which can be used to calculate the ACB score of medicines. Different tools may produce different scores based on how the anticholinergic burden is measured. Some tools measure overall anticholinergic burden, both peripheral and central effects whilst others measure only central effects (7). ACB scores should be used in shared-decision-making conversations with patients and/or their carers to individualise therapy depending on what matters to them and their clinical circumstances.

The following two tools are commonly used in practice:

1. Anticholinergic Burden (ACB) calculator (Peripheral & Central)
2. Anticholinergic Effect on Cognition (AEC) scale (Central)

Please note, NICE does not recommend use of one tool over the other due to insufficient evidence of comparison of their use in practice (8).

4. Advice for prescribers

4.1 When prescribing a new anticholinergic medication (8, 9,10).

1st Line: Non-pharmacological management
Where clinically appropriate, consider non-pharmacological management before prescribing a new anticholinergic medicine.

2nd Line: Pharmacological management
Where non-pharmacological management is clinically inappropriate or unsuccessful, consider management using a medicine with no or low anticholinergic effects. When prescribing any anticholinergic medicine ensure that the patient is aware of the associated risks prior to prescribing, particularly cognitive side effects (confusion, dizziness, falls) Once prescribed, monitor efficacy and adverse effects regularly. If therapeutic benefit is not achieved, review to stop, trial without or prescribe an alternative medicine, where appropriate.

4.2 When carrying out a medication review with anticholinergic medicines (8,9,10).

Identify

Patient identified as high risk of anticholinergic effects or is experiencing anticholinergic side effects (e.g. blurred vision, falls, urinary retention etc.)

Calculate ACB Score

Calculate the ACB score of all medicines the patient is taking i.e. both prescribed and over the counter medicines.

Switch, reduce or stop

Review anticholinergic medicines and consider withdrawing, reducing, or switching to a medicine with no or a lower ACB score, if appropriate. (Table 1).

When considering switching, reducing, or stopping, prioritise medicines with high ACB scores (2 or 3). Be careful not to adversely impact management of the condition being treated and ensure the patient/carer are aware of the impact of stopping treatment.

Be aware some anticholinergic medicines (e.g. amitriptyline) can be associated with adverse effects if discontinued suddenly and may require slow withdrawal.

Some anticholinergic medicines may be used with a minimum effective dose for the shortest period.

Anticholinergic medicines such as those to treat Parkinson's disease or dementia may require special consideration or discussion with the relevant specialist before making any changes.

Patient/Carer involvement

Shared decision making, involving the patient and/or their carer, should be implemented in every review including the medication review.

Ensure any changes made during the review are agreed and individualised and that patients/carers understand the risks of continuing, reducing or stopping treatment, where applicable. For instance, potentially increasing anticholinergic effects with ongoing treatment or worsening symptoms if treatment is stopped or reduced.

Follow Up- Primary Care, Secondary/Intermediate Care

After changes to medicines are actioned, review the outcome at an appropriate interval.

On discharge, clearly highlight any changes made and request a follow up review by the GP.

Table 1 below includes some examples of medicines with a high ACB Score and potential alternatives. This list is not exhaustive and an ACB score should always be calculated before newly initiating any medicine or when switching to an alternative in all patient groups (7,11).

Please always check RAG classifications before initiating or switching to an alternative medicine.

Drug class	High central anticholinergic burden	Alternatives with low/no central anticholinergic burden
Urinary symptoms	Oxybutynin Tolterodine	Darifenacin Fesoterodine Mirabegron Solifenacin Trospium Vibegron
Antihistamines	Chlorphenamine Promethazine Hydroxyzine Cyclizine (and other first-generation antihistamines)	Cetirizine Fexofenadine (and other second-generation antihistamines) Loratadine
Nausea and vertigo	Hyoscine hydrobromide (can also be used for hypersalivation) Levomepromazine (can also be used for agitation in palliative care or schizophrenia) Prochlorperazine Cyclizine	Domperidone (See MHRA Alert regarding use) Metoclopramide (See MHRA Alert regarding long-term use) Ondansetron
Antidepressants	Tricyclic antidepressants (e.g. amitriptyline, nortriptyline) Paroxetine	SSRIs (except paroxetine) Agomelatine Duloxetine Mirtazapine Moclobemide Tranylcypromine Venlafaxine Vortioxetine
Antipsychotics	Chlorpromazine Clozapine Levomepromazine (can also be used as an anti-emetic or for agitation in palliative care) Olanzapine Quetiapine	Amisulpride Aripiprazole Lurasidone Risperidone

Drug class	High central anticholinergic burden	Alternatives with low/no central anticholinergic burden
Antispasmodics	Atropine	Alverine Hyoscine butylbromide Mebeverine Peppermint oil Propantheline bromide
Parkinson's disease	Amantadine Orphenadrine Procyclidine Trihexiphenidyl hydrochloride	Co-beneldopa Co-careldopa Entacapone Rasagiline Ropinirole Selegiline

5. References

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