PrescQIPP Community Interest Company

Anticholinergic burden

An increasing number of systematic reviews and meta-analyses report that medicines with anticholinergic effects are associated with an increased risk of cognitive impairment, falls and all-cause mortality in older people. This bulletin summarises the evidence, discusses the anticholinergic burden scoring scales and considers actions that health care professionals can take to minimise the use of medicines that may adversely affect cognitive function.

Recommendations

- Prescribe anticholinergic drugs with caution in older people or people with frailty or multimorbidities as they are more likely to experience adverse effects such as constipation, urinary retention, dry mouth, dry eyes, sedation, confusion, delirium, photophobia, falls and reduced cognition.[1-5]
- There is increasing evidence of the potential harm caused by medicines that have anticholinergic effects.[6-10] Use one of the risk scales to assess and review the anticholinergic burden.[11,12]
- Minimise the use of highly anticholinergic drugs where possible.[5,12]
- Review at regular intervals. Discontinue medicines if there is no absolute need or switch to a medicine with a lower anticholinergic burden score.[5,12,13]
- Undertake a medication review in older people that have had a fall or are at increased risk of falling as part of a multifactorial risk assessment.[14]
- In patients with dementia, perform a medication review to identify and minimize use of drugs that may adversely affect cognitive function.[12] Avoid prescribing anticholinergics with acetylcholinesterase inhibitors.[15]
- Use the NHS Business Services Authority anticholinergic burden prescribing comparator to identify the number of patients at risk of anticholinergic side effects and prioritise work in this area.[16]

Anticholinergic medicines are prescribed for a wide range of conditions, including Parkinson's disease, overactive bladder, chronic obstructive pulmonary disease, nausea and vomiting, depression and psychosis. Some drugs, e.g. oxybutynin or hyoscine are used for their anticholinergic effects. Others have anticholinergic activity not related to their primary mode of action, e.g. ranitidine or carbamazepine.

There is increasing evidence of the potential harm caused by medicines that have anticholinergic effects. Combining medicines with anticholinergic activity might have cumulative harmful effects when given to a person with more than one clinical condition. This potential for harm increases with frailty and age. Furthermore, anticholinergic medicine use is closely related to serious negative outcomes on older adults' health status, with increased risk of falls[1] and higher mortality rates.[2] In terms of defining an 'older adult', most of the evidence base relates to people aged 65 and over,[2 4,6-9] however, a study from 2019 indicates an association with dementia risk in people aged 55 and over.[10]

Pharmacology

Medicines with anticholinergic effects block the neurotransmitter acetylcholine and inhibit smooth muscle function in the lungs, gastrointestinal tract and urinary tract. Five distinct muscarinic receptor subtypes (M1–M5) are known to exist resulting in the potential for side effects. These include constipation, dry mouth, dry eyes, urinary retention and falls. Dizziness, sedation, confusion, agitation, delirium and cognitive impairment have been reported as central adverse effects.[3,4]

Clinically, older patients with existing cognitive impairment and those with early stage dementia or age associated memory impairment can be especially vulnerable to these cognitive side effects.[4]

The central nervous system (CNS) side effects caused by anticholinergic medicines may vary depending on their ability to penetrate the blood-brain barrier (BBB) and their pharmacologic activity on CNS receptors. All muscarinic receptor subtypes (M1–M5) are present in the brain:

- M1 receptors, predominantly located in the neocortex, are the most abundant subtype in the CNS, hippocampus, and neostriatum.
- M2 receptors are also located throughout the brain.
- M3 receptors are present throughout the CNS but in relatively lower density.
- M4 receptors are abundant in the neostriatum.
- M5 receptors are localized in the hippocampus and projection neurons of substantia nigra, pars compacta, and ventral tegmental nuclei.

The absolute presence of receptors and the binding to receptors does not determine potency or pharmacologic effect. Clinical studies suggest that cognitive impairment, in particular memory loss, may result from antagonism of M1 and, to some extent, M2 or M4 receptors in the CNS. The factors determining the penetration of any pharmacologically active parent compound or metabolite include:

- Serum concentration (passive diffusion).
- Active transport (“in” or “out”).
- Lipophilicity (predisposition to dissolve in fat vs. water).
- The electrical charge (polarity).
- Molecular size and configuration (bulk, not purely molecular weight).[4]

Evidence for cognitive impairment with anticholinergic medicines

- An initial study in 2011, involving more than 13,000 UK men and women aged 65 years and over, found that anticholinergic activity appears to increase the risks of both cognitive brain impairment and death in older people.[2] Trained interviewers conducted structured interviews with the participants to establish which prescribed and over the counter medications they took. The medication data was then independently analysed using the Anticholinergic Cognitive Burden (ACB) Scale which grades levels of blockade of acetylcholine. Each medicine taken by the participants was given a ranking based on the strength of its anticholinergic activity, or ACB score; 0 for no effect, 1 for mild effect, 2 for moderate effect and 3 for severe effect (NB. the various anticholinergic burden scales are covered later in this bulletin). The key findings were:
  - » 20% of participants taking drugs with a total ACB of four or more had died by the end of the two-year study, compared with only 7% of those taking no anticholinergic drugs. The authors suggested this was the first time a link between mortality and anticholinergic burden had been shown, although this should be treated with caution as medications with possible anticholinergic effects are used for many diseases e.g. hypertension, congestive heart failure. Therefore, the finding may just reflect the prevalence of anticholinergic prescribing in disease states with significant morbidity.

  - For every additional ACB point scored, the odds of dying increased by 26%.
  - Participants taking drugs with a combined ACB of 5 or more scored 4.2% lower in a cognitive function test than those taking no anticholinergic medications – confirming evidence from previous smaller studies of a link between anticholinergics and cognitive impairment.
  - The increased risks from anticholinergic drugs were shown to be cumulative, based on the number of anticholinergic drugs taken and the strength of each drug's anticholinergic effect.
  - Those who were older, of lower social class, and with a greater number of health conditions tended to take the most anticholinergic drugs.
- In 2011, the LASER–AD study examined the effect of medicines with anticholinergic effects on cognitive impairment and deterioration in 224 patients with Alzheimer's disease over 18 months. The mean number of medicines taken was 3.6 (standard deviation (SD) 2.4) and the mean anticholinergic load was 1.1 (SD 1.4, range 0–7). In this study, a low dose of one medication with a low degree of anticholinergic activity (anticholinergic burden score of 1) was not found to affect cognition in patients with established dementia over the course of 18 months, and there was no effect on mortality. The authors suggested the results may be due to decreased sensitivity of patients with more advanced cognitive impairment or because participants had taken anticholinergic medication for significant time periods and therefore any impact on cognitive function had occurred prior to enrolment in the study. Additionally, about half the people in the study were taking cholinesterase inhibitors which may have masked the cognitive effects of co-prescribed medications with anticholinergic effects.[17]
- A prospective population-based cohort study published in 2015 of 3,434 participants aged 65 years or older with no dementia at study entry, was undertaken to examine whether cumulative anticholinergic use is associated with a higher risk for incident dementia. The most common anticholinergic classes used were tricyclic antidepressants, first-generation antihistamines, and bladder antimuscarinics. During a mean follow-up of 7.3 years, 797 participants (23.2%) developed dementia and 637 (79.9%) of these were considered to have possible or probable Alzheimer's disease. A 10-year cumulative dose-response relationship was observed for dementia (test for trend, $P<0.001$); a similar pattern of results was noted for Alzheimer's disease. This observational study demonstrated that cumulative anticholinergic use is associated with a higher risk for incident dementia.[6]
- A systematic review and meta-analysis published in 2015 examined the evidence of cognitive impairment, falls and mortality from drugs with anticholinergic effects.[7] The authors included 18 studies (n=124,286) in the systematic review, with the results of 11 studies included in the meta-analysis. The majority of the studies were of people aged 65 years and over and were conducted in Europe (n=12), the USA (n=4), Canada (n=1) and Australia (n=1). Follow-up ranged from one month to six years, depending on the adverse outcome reviewed. The systematic review found that the individual studies had conflicting results on the effects of medicines with anticholinergic effects as a class. Meta-analysis of three studies showed that exposure to medicines with anticholinergic effects as a class was associated with a significant increase in cognitive impairment (Odds Ratio (OR) =1.45, 95% Confidence Interval (CI) 1.16 to 1.73).

  This review did report on all-cause mortality relative to the ACB score. This analysis showed a significant association between ACB scale and all-cause mortality, with an increase of 1 point on the scale approximately doubling risk (OR=2.06, 95% CI 1.82 to 2.33).

  This study has a number of limitations. The majority of studies included were observational, with only two randomised controlled trials included, one of which was available only as an abstract. Significant heterogeneity was observed in the meta-analysis of some drugs or scoring systems and limited data were available on the relative risks associated with specific drugs.

- A longitudinal study published in 2016 investigated the association between anticholinergic medicines use and neuroimaging biomarkers of brain metabolism and atrophy as a proxy for understanding the underlying biology of the clinical effects of anticholinergic medicines.[8]

  Two cohorts of cognitively normal older adults were either taking, or not taking, at least one medicine with medium or high anticholinergic activity. Cognitive scores and brain atrophy measures from structural magnetic resonance imaging were compared between the two groups after adjusting for potential confounders. The total anticholinergic burden score was calculated and was related to target measures.

  The study demonstrated that use of medicines with medium or high anticholinergic activity was associated with poorer memory and executive function, brain hypometabolism, brain atrophy, and increased risk of clinical conversion to cognitive impairment. This finding was greatest for those taking medicines with the most anticholinergic activity.[8]

- A large, nested, case-control study in UK general practices, published in 2018, including 40,770 people diagnosed with dementia and 283,933 controls, investigated the association between daily doses of anticholinergic medicines and incidence of dementia.[9]

  The authors defined anticholinergic medicine exposure using the ACB scale.[11] For the medicines available in the UK in the last 30 years without an ACB score, the investigators made some assumptions. For example thiazide diuretics, loop diuretics and antihistamines were allocated an ACB score of 1 and tricyclic antidepressants have an ACB score of 3.

  After categorisation, 35.5% (14,453) of people diagnosed with dementia had prescriptions for medicines with an ACB score of 3 compared to 30.4% (86,403) of controls, and exposure to these medicines was significantly associated with incident dementia (adjusted OR 1.11, 95% CI 1.08 to 1.14). The authors also reported significant associations with medicines with an ACB score of 1 and 2 (OR 1.10, 95% CI 1.06 to 1.15; OR 1.10, 95% CI 1.03 to 1.16, respectively). While there was evidence of a dose-response relationship for medicines with ACB scores of 2 and 3, there was little evidence for those with a score of 1.

  Subgroup analyses were performed for medicines with an ACB score of 3 which are used to treat a number of different conditions. The authors reported a significant association between antidepressant, urological and antiparkinsonian medicines with an ACB score of 3, and dementia incidence (OR 1.11, 95% CI 1.08 to 1.14; OR 1.18, 95% CI 1.13 to 1.23; OR 1.29, 95% CI 1.11 to 1.50, respectively), after adjustment for potential confounders at the end of the drug exposure period. The medicines most consistently associated with incident dementia were the antidepressants amitriptyline, dosulepin and paroxetine, and predominantly oxybutynin and tolterodine from urological medicines. Antipsychotic, gastrointestinal and respiratory anticholinergic medicines were not significantly associated with incident dementia.

  Although the study design does not preclude the possibility of reverse causality, where early symptoms of dementia could lead to an increased likelihood of being prescribed anticholinergic medicines, the authors reported that associations were observed even when the exposure to the medicine was 15 to 20 years prior to the diagnosis being made. This means reverse causality, although possible, is less likely to explain the associations observed.

- Another nested case-control study, published in 2019, assessed the associations between anticholinergic medicines and risk of dementia in persons 55 years or older.[10] In this study of 58,769 people with a diagnosis of dementia and 225,574 matched controls, there were statistically significant associations of dementia risk with exposure to anticholinergic antidepressants, anti-Parkinson drugs, antipsychotic drugs, bladder antimuscarinics, and antiepileptic drugs after adjusting for confounding variables.

The authors conclude that the associations observed for specific types of anticholinergic medication suggest that these drugs should be prescribed with caution in middle-aged and older adults.

The use of anticholinergic medicines in people with dementia

The National Institute for Health and Care Excellence (NICE) published guideline NG97, 'Dementia: assessment, management and support for people living with dementia and their carers' in 2018.[12]

The NICE guideline committee agreed there was a need to raise awareness that there are certain groups of medicines that may influence cognitive function and that any recommendations should acknowledge both the minimisation of medicines causing anticholinergic activity and raise awareness of the scales that may be used to detect anticholinergic activity or burden. The committee recognised that there was a clinical issue that older aged populations include a substantial proportion of people with multimorbidities, where more than one condition may be treated with a medicine that has an anticholinergic effect, and the use of multiple medicines with anticholinergic burden has a cumulative effect.[18]

Two separate settings were identified where anticholinergic burden may be an important factor to consider. The first is when considering a diagnosis of dementia, where the presence of a substantial anticholinergic burden may mimic the symptoms of dementia and therefore lead to false diagnoses. The second, in people with a known diagnosis of dementia, is that the use of anticholinergics may exacerbate the symptoms of cognitive decline, and therefore their use should be carefully monitored.[18]

The committee agreed that, whilst many of the classes of medicines with high anticholinergic activity were understood widely by clinicians, there were other individual drugs where the high level of anticholinergic activity was not well known, particularly when these come from a class of drugs not usually associated with it.[18]

In section 1.6 of the guideline, 'Medicines that may cause cognitive impairment', NICE therefore recommends:[12]

1.6.1 Be aware that some commonly prescribed medicines are associated with increased anticholinergic burden, and therefore cognitive impairment.

1.6.2 Consider minimising the use of medicines associated with increased anticholinergic burden, and if possible, look for alternatives:

- When assessing whether to refer a person with suspected dementia for diagnosis.
- During medication reviews with people living with dementia.

1.6.3 Be aware that there are validated tools for assessing anticholinergic burden (for example, the Anticholinergic Cognitive Burden Scale), but there is insufficient evidence to recommend one over the others.

(This is explained further in the next section of the bulletin).

Anticholinergic medicines also directly oppose the pharmacologic actions of acetylcholinesterase inhibitors. Data from a small study suggest that concomitant therapy with anticholinergics may be associated with significant deleterious effects on acetylcholinesterase therapy in people with dementia.[15]

Anticholinergic burden scales

Various anticholinergic burden or risk scales have been devised to aid medication reviews so that certain medicines can either be stopped, or the medication regimen altered to reduce this burden. However, there is no single standard anticholinergic burden scale to aid in conducting medication reviews in older people or patients with frailty who take multiple medicines.

Most scales are constructed using expert opinion panels, in vitro data and literature reviews. This is further complicated by the fact that anticholinergic adverse effects increase with increasing dose, and multiple low-level anticholinergic drugs can add up to the same anticholinergic burden (or more) as a single high-level anticholinergic.

The NICE guideline committee considered the types and classes of drugs listed in each scale. It noted that different drugs may be rated differently in each scale, with some drugs scoring higher for anticholinergic activity than others (this is likely to result from the different methodologies by which the scales were constructed). It agreed that there was currently no evidence to recommend the use of one scale in preference to another, so agreed that it was appropriate only to make clinicians aware of the existence of these scales, rather than make a specific recommendation that one should be used.[18]

However, the committee agreed it would be helpful to provide a link to an example of one of these scales, to ensure that non-specialist clinicians could understand the sorts of tools that exist. The Anticholinergic Cognitive Burden Scale was chosen as the most appropriate to reference because it uses standard UK names for medicines, and because it has been updated more recently (2012) than some of the scales identified.[11] It did, however, want the recommendation to re-emphasise that this was simply one tool available for determining the anticholinergic activity of specified medicines and not the only tool available for consideration.

The ACB scale was originally developed in 2008 and updated in 2012 and was agreed (using literature review, in vitro data and consensus agreement) for commonly used medicines such that those with no anticholinergic activity scored 0, low activity scored 1, moderate activity scored 2 and high activity scored 3.

At the time the NICE dementia guideline[12] was published, there were seven tools assessing anticholinergic burden score which have been validated in real patients and the results published.[19]

- The Anticholinergic Drug Scale (ADS) is a four-point (0-3) scale that ranks anticholinergic drugs based on expert opinion.[20]
- The Anticholinergic Burden Classification (ABC) is a four-point scale (0-3) based on serum anticholinergic activity and expert opinion.[21]
- The Clinician-rated Anticholinergic Score (CrAS) is a four-point scale (0-3) based on pre-existing published anticholinergic scales and expert opinion.[22]
- The Anticholinergic Risk Scale (ARS) is a four-point scale (0-3) based on extensive literature review and expert opinion.[23]
- The Anticholinergic Cognitive Burden (ACB) scale is a four-point (0-3) scale based on published data and expert opinion. This is the scale[11] referenced in NG97[12] and can be found as attachment 1.
- The Anticholinergic Activity Scale (AAS) is a five-point scale (0-4) based on existing evidence and expert opinion.[24]
- The Anticholinergic Loading (ACL) scale is a four-point (0-3) scale based on pre-existing published anticholinergic scales and expert opinion.[25]

A further scale, the Anticholinergic Effect on Cognition (AEC) scale has been developed by the South London and Maudsley NHS Foundation Trust.[26] The authors identified drugs widely used in older people and attempted to classify their anticholinergic effect on cognition, according to a three-point scale which scored AEC according to in vitro anticholinergic potency, capacity to cross the blood–brain barrier and statements made in standard texts. In total, 165 drugs were examined. Twenty one drugs with an AEC score of 3, 18 with a score of 2, 21 with a score of 1 and 62 with a score of 0 were identified. Owing to insufficient information, the authors were unable to classify 43 drugs.

A free website App called MediChec based on the AEC scale is available and can be used as part of a structured medication review.[27]

The NHS Scotland Polypharmacy Guidance includes a useful table (table 38, page 37) that indicates which medicines are likely to have the highest anticholinergic burden, ones where caution is required and suggested alternatives.[13]

Reviewing the anticholinergic burden

Not all medicines with anticholinergic properties may individually put patients at risk of severe adverse effects, however when used in combination, effects may accumulate. Reducing the anticholinergic burden may result in improvements in short term memory, confusion, behaviours and delirium.[13]

One of the anticholinergic burden scales should be used to assess the anticholinergic burden of medicines, particularly in older people or those with frailty or complex multimorbidities.

If the person is prescribed an anticholinergic medicine which has been assigned an ACB score of 2 or 3, or if they are on a range of medicines that add up to an ACB score of 3 or more, then an informed decision should be made to either discontinue the medicine if there is no absolute need, or where appropriate, to switch to a medicine with a lower ACB score.

Highly anticholinergic medicines include tricyclic antidepressants, urinary antispasmodics such as oxybutynin and first-generation antihistamines such as chlorphenamine; these should be avoided if possible. Many clinicians will be aware of these highly anticholinergic medicines but may be less aware of those with a lower anticholinergic burden, such as opioids, loratadine, cetirizine, ranitidine and loperamide for example, the effects of which may be additive.[11]

Some highly specialised therapeutic areas (for example Parkinson's disease) would require expert advice before considering a medicine change.

Anticholinergics are commonly associated with adverse effects if discontinued suddenly and may require slow withdrawal. Withdrawal symptoms may include anxiety, nausea, vomiting, headache and dizziness.[28]

The NICE guideline on 'Falls in older people: assessing risk and prevention' (CG161) recommends that people who have had a fall or are at increased risk of falling should have their medication reviewed as part of a multifactorial risk assessment. The guidance recommends that older people on psychotropic medicines (including neuroleptics, sedatives, hypnotics and antidepressants) should have their medication reviewed and if possible discontinued to reduce their risk of falling.[14]

In patients with dementia, a medication review should be undertaken to identify and minimise use of drugs that may adversely affect cognitive function[12] and co-prescribing anticholinergics with acetylcholinesterase inhibitors should be avoided.[15]

The use of medicines associated with increased anticholinergic burden should be minimised and alternatives considered, where possible, when assessing whether to refer a person with suspected dementia for diagnosis.[12]

There are a number of tools available to help support medication review; these are discussed further in the PrescQIPP Practical Guide to Polypharmacy and Deprescribing bulletin.[29]

The medication review should be documented with an appropriate SNOMED CT code when an informed decision to switch or discontinue a medicine is made.

National Prescribing Comparators

As part of the efforts to address polypharmacy, a suite of England-wide Medicines Optimisation Polypharmacy Prescribing Comparators at Clinical Commissioning Group (CCG), Primary Care Network (PCN) and GP Practice level have been developed to highlight the variation in prescribing activity with respect to polypharmacy.[16]

The intention behind the publication of these prescribing comparators is to support local interventions to help patients to get the most from their medicines, in line with the principles of medicines optimisation.

One of the comparators is 'Percentage of patients with an anticholinergic burden score of 6/9/12 or greater' and shows the number of patients prescribed anticholinergic medicines with a combined

anticholinergic burden score of 6 or greater, 9 or greater, 12 or greater as a percentage of the number of patients prescribed one or more medicines. The percentage is available for all patients and also for those aged 65 and over, 75 and over or 85 and over. The scores are derived from the Anticholinergic Cognitive Burden (ACB) Scale.[11]

This comparator allows GP practices, PCN's and CCGs to:

- See the variation across practices within a CCG and across CCGs.
- Identify if this polypharmacy topic is an area to be investigated.
- Help prioritise potential areas of activity.
- Demonstrate the impact of initiatives to address this polypharmacy topic.
- Identify the number of patients at risk of anticholinergic side effects, which can be especially harmful in those aged over 65.
- Raise awareness amongst prescribers of the problems associated with anticholinergic burden.

The All Wales Medicines Strategy Group (AWMSG), National Prescribing Indicators (NPIs) are used to highlight therapeutic priorities for NHS Wales and compare the ways in which different prescribers and organisations use particular medicines or groups of medicines.

In 2019-20 the AWMSG Prescribing Safety Indicators also included one relating to anticholinergic burden; 'Number of patients aged 75 and over with an Anticholinergic Effect on Cognition (AEC) score of 3 or more for items on active repeat, as a percentage of all patients aged 75 and over'.

The AWMSG state that it is intended that NPIs move towards a more patient-focussed approach, with measures considering whether the right patients are getting the right medicines, and whether these medicines are making a difference to their outcomes.[30]

Medication Safety Prescribing Indicators

A set of national medication safety prescribing indicators have been developed as part of a programme of work to reduce medication error and promote safer use of medicines.[5] The programme of work is in response to the 'World Health Organisation' (WHO) Global Patient Safety Challenge – 'Medication Without Harm'.[31]

The analysis is an experimental piece of work; it is the first time prescribing data has been linked to admissions data at a national level.

The purpose of the indicators is to identify hospital admissions that may be associated with prescribing that potentially increases the risk of harm, and to quantify patients at potentially increased risk. Where an admission has been recorded that is linked to a patient currently taking medicines that may increase the risk of harm, it is still possible that the cause of admission may be due to other external factors. The analysis only highlights the potential risk of harm and possible association with hospital admission. Any review of benefits and risks of prescribing should be undertaken on an individual patient basis.

The August 2019 update[5] included four new indicators relating to anticholinergic burden:

Indicator 17 – ACB01a	Patients 18 years old or over admitted to hospital for constipation, confusion or a fall, concurrently prescribed 2 or more different medicines which have moderate or high anticholinergic activity.
Indicator 18 – ACB01b	Patients 18 years old or over admitted to hospital with a fracture (hip, colles or humerus) resulting from a fall, concurrently prescribed 2 or more different medicines which have moderate or high anticholinergic activity.

Indicator 19 – ACB02a	Patients 18 years old or over admitted to hospital for confusion or a fall, concurrently prescribed 1 or more medicines for dementia and 1 or more medicines which have moderate or high anticholinergic activity.
Indicator 20 – ACB02b	Patients 18 years old or over admitted to hospital with a fracture (hip, colles or humerus) resulting from a fall, concurrently prescribed at 1 or more medicines for dementia and 1 or more medicines which have moderate or high anticholinergic activity.

In the development of these indicators, a literature review was performed by NHS England Specialised Pharmacy Services (SPS) on the topic of anticholinergic burden. SPS noted that there are a number of differing risk scales or scoring systems, including some that are validated tools for assessing anticholinergic burden, with significant differences between them but, in common with NICE, agreed there is insufficient evidence to recommend one over the others. A methodology was agreed and implemented to create a consensus-based list of medicines based on the anticholinergic activity rating from each of the scoring systems identified in the literature search. The medicines included in the indicator were considered by consensus to have moderate or high anticholinergic activity in the majority of the scoring systems where the medicine was listed.

The indicator development group noted that further research and evidence are required to both understand the impact of anticholinergic burden on both short- and long-term outcomes and develop robust and meaningful indicators. Therefore, these indicators should be considered as experimental. However, they may be useful to support local reviews of prescribing, alongside other risk factors for potential harm and to minimise the use of medicines that are unnecessary and where harm may outweigh benefits.

Summary

A growing number of systematic reviews and meta-analyses show that there appears to be some association between anticholinergic medicines and cognitive impairment, falls and mortality. Taken alongside the other known adverse effects of these drugs, it seems sensible to be cautious when prescribing any medicine with anticholinergic effects.

The current evidence supports using one of the various anticholinergic burden risk scales when reviewing medicines, particularly for older people, or people with frailty or complex co-morbidities. An informed decision should be made to either discontinue the medicine(s) if there is no absolute need or, where appropriate, to switch to a medicine with a lower anticholinergic burden score.

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Implementation tools	

Information compiled by Sue Smith, PrescQIPP CIC, August 2020 and reviewed by Katie Smith, PrescQIPP CIC September 2020. Non-subscriber publication September 2021.

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