

Multimorbidity and polypharmacy

Key therapeutic topic

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www.nice.org.uk/guidance/ktt18

Key points

- Multimorbidity is associated with reduced quality of life, higher mortality, polypharmacy and high treatment burden, higher rates of adverse drug events, and much greater health services use (including unplanned or emergency care).
- Polypharmacy in people with multimorbidity is often driven by the introduction of multiple medicines intended to prevent future morbidity and mortality in individual health conditions. The absolute benefit gained from each additional medicine is likely to reduce when people are taking multiple preventative medicines but the risk of harms increases. Resources and screening tools (see [table 1](#)) are available to help guide decision making about the appropriateness of prescribing and stopping medicines (deprescribing).
- **Options for local implementation:**
 - Develop and agree an action plan for multimorbidity and polypharmacy to inform local medicines optimisation strategic and operational plans. [Shared learning case studies](#) are available showing how NICE guidance and standards have been put into practice by a range of NHS organisations.
 - Encourage and support a shared decision-making approach to care: see the related NICE key therapeutic topic on [shared decision making](#) that discusses this in more detail.
 - Develop an individualised, person-centred approach to reviewing the care and treatment of people with multimorbidity and polypharmacy, in line with the NICE guideline on [multimorbidity](#). This may be included in local education and support initiatives to assist shared decision making in individualising care.

Evidence context

Multimorbidity

The NICE guideline on [multimorbidity](#) explains that multimorbidity refers to the presence of 2 or more long-term health conditions, which can include:

- defined physical and mental health conditions such as diabetes or schizophrenia
- ongoing conditions such as learning disability
- symptom complexes such as frailty or chronic pain
- sensory impairment such as sight or hearing loss
- alcohol and substance misuse.

The guideline notes that multimorbidity is common, becomes more common as people age, and is more common in people from less affluent areas. In older people, multimorbidity is largely because of higher rates of physical health conditions, whereas in younger people and people from less affluent areas, it is often because of a combination of physical and mental health conditions (notably depression).

Multimorbidity is associated with reduced quality of life, higher mortality, polypharmacy and high treatment burden, higher rates of adverse drug events, and much greater health services use (including unplanned or emergency care). A particular issue for health services and healthcare professionals is that treatment regimens (including non-pharmacological treatments) can easily become very burdensome for people with multimorbidity, and care can become uncoordinated and fragmented.

The NICE guideline on multimorbidity recommends considering an approach to care that takes account of multimorbidity in circumstances outlined in the guideline. This approach to care involves personalised assessment and the development of an individualised management plan. The aim should be to improve quality of life by reducing treatment burden, adverse events, and unplanned or uncoordinated care. The approach takes account of the person's individual needs, preferences for treatments, health priorities and lifestyle. It aims to improve coordination of care across services, particularly if this has become fragmented. Medicines are likely to be just one aspect of a person's care and should not be considered in isolation.

The guideline has [recommendations](#) on how to identify adults with multimorbidity who are at risk

of adverse events, and how to assess frailty. [Guidance and resources to support the GP core contract \(2017/18\) regarding frailty](#) (updated April 2019) are available on the NHS England website. The British Medical Association has also published advice for clinicians on [identifying and helping people with frailty](#).

The NICE quality standard on [multimorbidity](#) describes a concise set of prioritised statements designed to drive measurable quality improvements within this area.

Polypharmacy

Polypharmacy in people with multimorbidity is often driven by the introduction of multiple medicines intended to reduce the risk of future morbidity and mortality in specific health conditions. However, the evidence for recommendations in NICE guidance on single health conditions is often drawn from people without multimorbidity who are participating in studies and who are taking fewer regular medicines. The absolute benefit made by each additional medicine is likely to reduce when a person is taking multiple preventative medicines; often referred to as the 'law of diminishing returns'. Conversely, the risk of harms is likely to increase the more medicines a person takes. [The King's Fund report \(2013\)](#), [All Wales Medicines Strategy Group \(AWMSG\) guidance \(2014\)](#) and [NHS Scotland guidance \(2018\)](#) on polypharmacy recognise that not all polypharmacy is inappropriate. The King's Fund proposed a classification where treatment with multiple medicines may be either 'appropriate' or 'problematic':

Appropriate polypharmacy

Prescribing for a person for complex conditions or for multiple conditions in circumstances where medicines use has been optimised and where the medicines are prescribed according to best evidence.

Problematic polypharmacy

The prescribing of multiple medicines inappropriately, or where the intended benefits from the medicines are not realised.

Problematic polypharmacy may arise if medicines are used without a good evidence base for doing so, or if (taking into account the person's views and preferences) the risk of harm from treatments is likely to outweigh the benefits, or where 1 or more of the following apply:

- the medicine combination is hazardous because of interactions
- the overall demands of medicine-taking, or 'pill burden', are unacceptable to the person

- these demands make it difficult to achieve clinically useful medicines adherence
- medicines are being prescribed to treat the side effects of other medicines, but alternative solutions are available to reduce the number of medicines prescribed.

In December 2018, the Department of Health and Social Care announced that a [review into overprescribing in the NHS](#) will take place. The review will look at addressing problematic polypharmacy, creating a more efficient handover between primary and secondary care, improving management of non-reviewed repeat prescriptions, the role of digital technologies in reducing overprescribing, and the increased role for other forms of care, including social prescribing.

The World Health Organisation (WHO) Third Global Patient Safety Challenge, [Medication without harm](#), has included the appropriate management of polypharmacy as a key flagship area to address. The aim is to reduce severe, avoidable, medication-related harm by 50% over 5 years, globally. NHS Improvement has established the [Medicines Safety Programme](#). This is gathering opinion about the most important priorities to address, through 3 lenses:

- high risk drugs
- high risk parts of the medicines use process
- patients with the highest vulnerabilities

The risks associated with medicines with anticholinergic effects in polypharmacy are highlighted in polypharmacy resources such as [NHS Scotland guidance \(2018\)](#) and [All Wales Medicines Strategy Group \(AWMSG\) guidance \(2014\)](#). A systematic review and meta-analysis ([Ruxton et al. 2015](#)) reported that use of such medicines was associated with an increased risk of cognitive impairment and all-cause mortality in older people, and some medicines were associated with an increased risk of falls. This is discussed further in NICE's eyes on evidence commentary on [drugs with anticholinergic effects and risk of cognitive impairment, falls and all-cause mortality](#).

More specifically, the NICE guideline on [dementia](#) published in 2018 notes the risk of cognitive impairment associated with an increased anticholinergic burden. It recommends that health professionals should 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.

The guideline states that, although there are validated tools for assessing anticholinergic burden

(for example, the [Anticholinergic Cognitive Burden Scale](#)), there is insufficient evidence to recommend one over the others.

A large, nested, case-control study in UK general practices found that some classes of anticholinergic medicines were significantly associated with an increase in incidence of dementia. This is discussed further in NICE's medicines evidence commentary on [anticholinergic medicines and the risk of dementia](#).

Other medicines optimisation: key therapeutic topics discuss the risks associated with medicines, see especially:

- [Anticoagulants, including direct-acting oral anticoagulants \(DOACs\)](#).
- [Acute kidney injury \(AKI\): use of medicines in people with or at increased risk of AKI](#).
- [Psychotropic medicines in people with learning disabilities whose behaviour challenges](#).
- [Non-steroidal anti-inflammatory drugs](#).
- [Safer insulin prescribing](#).
- [Medicines optimisation in chronic pain](#).

Person-centred care

NICE guidelines should be understood as 'guidelines, not tramlines': every guideline states clearly that although healthcare professionals are expected to take it fully into account when exercising their judgement, they should do so alongside the individual needs, preferences and values of their patients or service users. The NICE guideline on [medicines optimisation](#) recommends that all people are offered the opportunity to be involved in making decisions about their medicines. The NICE guideline on [patient experience in adult NHS services](#) recommends holding discussions in a way that encourages the patient to express their personal needs and preferences for care, treatment, management and self-management. This is known as shared decision making, and is discussed fully in another NICE key therapeutic topic on [shared decision making](#).

The NICE guideline on [multimorbidity](#) recommends that healthcare professionals should think carefully about the risks and benefits of individual treatments recommended in guidance for single health conditions. These should be discussed with the person alongside their preferences for care and treatment. The guideline also recommends using a tailored approach to care that takes account of multimorbidity for people of any age who are prescribed 15 or more regular medicines, and that

this approach is considered for people of any age who:

- are prescribed 10 to 14 regular medicines
- are prescribed fewer than 10 regular medicines but are at particular risk of adverse events.

Reviewing polypharmacy and deprescribing

The NICE guideline on [medicines optimisation](#) recognises that optimising a person's medicines can support the management of long-term health conditions, multimorbidity and polypharmacy. Deprescribing is the complex process needed to ensure the safe and effective withdrawal of inappropriate medicines ([A patient-centred approach to polypharmacy](#), NHS Specialist Pharmacy Service 2017). Resources have been developed to support healthcare professionals who are reviewing people with polypharmacy to help guide decision making about the appropriateness of prescribing and deprescribing (see [table 1](#)). These resources include the Royal Pharmaceutical Society guidance on [polypharmacy: getting our medicines right](#), case examples and practical tools, such as the [STOPP/START](#) and [NO TEARS](#) tools. The NICE guideline on [multimorbidity](#) recommends that the use of a screening tool is considered (for example, the [STOPP/START](#) tool in older people) to identify medicine-related safety concerns and medicines the person might benefit from but is not currently taking. Several published examples highlight the importance of identifying underuse and overuse of medicines. For more information see, NICE's medicines evidence commentaries on:

- [Medicines optimisation: adverse outcomes from potentially inappropriate prescribing in older people living in the community.](#)
- [Medication underuse in older people: pharmaceutical care interventions.](#)
- [Primary prevention of stroke and transient ischaemic attack: UK observational study suggests under-prescribing of prevention medicines.](#)
- [Medicines optimisation: impact of inappropriate prescribing on mortality and hospitalisation in older people.](#)
- [Medicines adherence: medicines problems associated with use of multi-compartment compliance aids in a UK community setting.](#)
- [Secondary prevention after myocardial infarction: report on a new joint pharmacist-cardiologist medicines optimisation clinic at UK hospital.](#)
- [Incidence and cost of medicines-related harm in older people following hospital discharge.](#)

- [Polypharmacy and shared decision-making: development of a conversation guide.](#)

The [scope](#) for the NICE guideline on multimorbidity included reviewing evidence for the effect of stopping drugs. However, although the NICE guideline development group was able to make recommendations about stopping bisphosphonates, there was insufficient evidence about stopping other treatments (such as statins and antihypertensives). A number of resources are available to help healthcare professionals approach the challenges of inappropriate polypharmacy, see table 1.

Table 1 Polypharmacy resources

- [A patient-centred approach to polypharmacy](#) (NHS Specialist Pharmacy Service 2017).
- [Polypharmacy guidance](#) (NHS Scotland and the Scottish Government 2018).
- [Polypharmacy: guidance for prescribing](#) (All Wales Medicines Strategy Group 2014).
- [Polypharmacy supplementary guidance – BNF sections to target](#) (All Wales Medicines Strategy Group 2014).
- [Polypharmacy and medicines optimisation: making it safe and sound](#) (The King's Fund 2013).
- [Personalised care and support planning handbook: the journey to person-centred care](#) (NHS England 2016).
- [The challenge of polypharmacy: from rhetoric to reality](#) (Royal Pharmaceutical Society 2016).
- [Responding to the needs of patients with multimorbidity: a vision for general practice](#) (Royal College of General Practitioners 2016).
- [Polypharmacy: getting our medicines right](#) (Royal Pharmaceutical Society 2019).
- [PrescQipp](#) have published a number of resources around polypharmacy and deprescribing.

[Bruyère Research Institute Deprescribing Guidelines Research Team](#) has produced a [benzodiazepine and Z-drug deprescribing algorithm](#) that supports recommendations in the NICE guidance on the use of [zolpidem](#) and [zopiclone](#) for the short-term management of insomnia, and [medicines optimisation](#).

Addressing inappropriate polypharmacy is a medicines optimisation priority that is supported by the work of the [Regional Medicines Optimisation Committees](#).

The NICE quality standard on [medicines optimisation](#) describes a concise set of prioritised statements designed to drive measurable quality improvements within this area.

Practice examples and shared learning

Primary Care Commissioning has published a [collection of case studies](#) from the clinical pharmacists in general practice programme, illustrating the benefits gained by some of the nearly 600 practices taking part. An independent [evaluation of the pilot scheme](#) was undertaken by researchers from the University of Nottingham supported by patient representatives and colleagues from the University of Queensland, Australia. The evaluation showed that pharmacists increase capacity in patient appointments either through direct face-to-face contact or releasing GP time by taking on tasks ordinarily done by GPs. Pharmacists provided numerous examples of interventions to optimise patient's medicines and promote safer prescribing.

The Specialist Pharmacy Service [WHO good practice repository](#) has been created to support the NHS Medicines Safety Programme. [Examples of good practice](#) are categorised against each of the WHO's suggested work domains including Medication Without Harm. The [English Deprescribing Network](#) also shares ideas, best practice and learning, to potentially shape policy and drive change across organisations.

There are several NICE [shared learning case studies](#) relating to multimorbidity and polypharmacy, showing how NICE guidance and standards have been put into practice by some NHS organisations:

- [Utilising the skills of the clinical pharmacist within the MDT for improved medicines optimisation.](#)
- [Re-engineering the post-myocardial infarction medicines optimisation pathway.](#)
- [Improving medicines optimisation for care home residents and providing medicines management support to care homes – the Wigan Borough CCG approach.](#)
- [Medicines optimisation for older people in care homes and the intermediate care setting: developing and reproducing new models of care.](#)
- [Neighbourhood integrated medicines optimisation team: improving medicines use at home.](#)

- [Refer-to-pharmacy and medicines optimisation.](#)
- [Implementing NICE's medicines management in care homes guidance in Plymouth.](#)
- [Patient-led clinical medicines reviews.](#)
- [Integrated care clinical pharmacist for frail older people: case management and enhanced rapid response.](#)
- [Integrated medicines optimisation on care transfer \(IMPACT\) project.](#)
- [Peer support meetings for pharmacists undertaking medication reviews for older people in care homes and domiciliary settings.](#)
- [A medicines optimisation service.](#)

Prescribing data, metrics or supporting resources

At this point, the following metrics and indicators have been identified to support this topic.

[Medicines optimisation polypharmacy prescribing comparators](#) have been developed by the NHS Business Services Authority in conjunction with Wessex Academic Health Science Network. They include a comparator for the percentage of patients with a high anticholinergic burden score. These are available on ePACT2 and will be included in the [medicines optimisation dashboard](#).

A [series of indicators](#) have been developed to inform safer prescribing practice to help pharmacists, clinicians and patients review prescribed medication and prevent harm. These include indicators about polypharmacy.

Update information

September 2019: This topic was retained for the 2019 rapid update of medicines optimisation: key therapeutic topics. Minor editorial changes have been completed, links to new NICE quality standards and medicines evidence commentaries have been added, and references to NHS Improvement's medicines safety programme and the English deprescribing network have been added.

About this key therapeutic topic

This document summarises the evidence base on this key therapeutic topic that has been identified to support medicines optimisation. **It is not formal NICE guidance.**

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