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EffectivenessMatters

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Reducing harm from polypharmacy in older people

- **Polypharmacy is common among older people; it can increase the risk of adverse drug reactions and interactions, as well as reduce compliance and adherence**
- **Positive (but inconsistent) effects of deprescribing interventions have been observed**
- **Patient and practitioner decisions about stopping medications are influenced by social influences, expected consequences, and factors such as consultation length**
- **Practitioners said their own knowledge and skills, plus beliefs about the capabilities of patients could influence their decisions**
- **Patients said their emotions, treatment goals, and willingness to experiment could also influence their decisions**
- **A multifaceted person-centred coordinated care approach, as advocated in NICE clinical guidelines and by the 'House of Care' model, should underpin efforts to reduce harm from polypharmacy in older people**

Effectiveness Matters is a summary of reliable research evidence about the effects of important interventions for practitioners and decision makers in the NHS and public health. This issue was produced by CRD in collaboration with the Yorkshire and Humber AHSN Improvement Academy and Connected Yorkshire, part of Connected Health Cities. *Effectiveness Matters* is extensively peer reviewed.

Background

Polypharmacy in older people

The use of multiple medications is often referred to as polypharmacy.[1] Epidemiological evidence shows that as people age they develop a greater number of conditions (multimorbidity), with a related increase in polypharmacy.

NICE guidance on medicines optimisation distinguishes between "appropriate polypharmacy" (where medicines use has been optimised and prescribed according to best evidence) and "problematic polypharmacy" (where the prescribing of multiple medicines is either inappropriate or sub-optimal).[2] This bulletin will focus on approaches that aim to reduce problematic forms of polypharmacy.

Scale of the problem

During the period 2005-2015, 60.4% of all prescription items in England were dispensed to patients aged 60 and over,[3] and approximately one in five prescriptions to older people living in their own homes may be inappropriate.[4,5] Among older people in care homes, up to 91%, 74%, and 65% of residents take more than five, nine, and ten medications, respectively.[6]

Consequences of polypharmacy in older people

Polypharmacy may increase risk of adverse drug reactions, drug-drug and drug-disease interactions, and reduce compliance and adherence (due to complexity of drug regimens).[7]

NICE guideline evidence suggests that polypharmacy (five or more drugs) is associated with increased risks of unplanned hospital admission and mortality, with even greater risks at higher levels of polypharmacy. Polypharmacy (when defined as ≥13 drugs) is associated with increased risk of admission to a care home. No evidence was identified on how polypharmacy influences health-related quality of life.[8]

Systematic review evidence has shown polypharmacy to be associated with falls among both nursing home residents and community-dwelling older people.[9] However, the potentially harmful consequences of polypharmacy are difficult to estimate precisely.[10]

Identifying people at risk of harm

NICE guidelines describe people who may benefit from an approach to care that takes account of multimorbidity. This includes adults who are prescribed 15 or more regular medicines, or adults prescribed fewer than 15 regular medicines who are at particular risk of adverse events.[8]

Additional reasons for re-appraising an older person's medication needs might include: emergence of adverse drug effects; onset of dementia or end-stage disease; loss of symptom control; ongoing use of high risk medications (alone or in combination); newly available evidence on a medication; and concerns around intolerance or non-adherence.[11]

Within the wider population of older adults, subgroups at particular risk of harm from polypharmacy could include people recently admitted to hospital, care home residents, and those living with frailty.

Identifying frailty among older adults with polypharmacy

NICE guidelines recommend assessing people with multimorbidity for frailty.[8] Frailty can be conceptualised and measured in a number of ways; up-to-date information on how to recognise and manage frailty in primary care in general is available elsewhere.[12]

Few published studies report the relationship between measures of frailty and subsequent inappropriate medication use.[13] One recent retrospective database study reported a significant correlation between Frailty Index (FI) score and both potentially inappropriate prescribing (PIP) and adverse drug reactions (ADR) in older hospitalised patients.[14] However, the use of FI scores to reduce PIP and ADR has yet to be tested.

Evidence on interventions to reduce harm from problematic polypharmacy

Multiple approaches to improve polypharmacy have been proposed, including organisational (e.g. medication review, specialist clinics, computerised decision support, risk screening tools), professional (e.g. educational programmes), financial (e.g. incentive schemes) and regulatory methods.[15,16]

One Cochrane review found that complex, multi-faceted pharmaceutical approaches for improving the appropriate use of polypharmacy in older people led to some benefits in terms of Medication Appropriateness Index scores and number of Beers medications (a list of potentially inappropriate medications to be avoided in older adults),[17] though evidence on hospital admissions and medication-related problems was inconsistent.[15,16]

A second Cochrane review concluded that interventions to optimise prescribing for older people living in care homes may lead to fewer days in hospital, a slower decline in health-related quality of life, identification and resolution of medication-related problems, and improved medication appropriateness, but may make little or no difference to adverse drug events or mortality.[18]

Evidence on deprescribing approaches

While the Cochrane reviews evaluated prescribing optimisation, other evaluations have focused solely on deprescribing. This is the complex process needed to ensure the safe and effective withdrawal (i.e. tapering or stopping) of inappropriate medicines.[19]

Deprescribing interventions can include: screening tools or criteria (e.g. Beers criteria, STOPP/START tool), specific medication- or population-specific guidelines,[20] or more structured frameworks for deprescribing (e.g. Good Palliative-Geriatric Practice algorithm, CEASE framework, The 7 Steps).[11,19,21]

Several systematic reviews have evaluated the effects of deprescribing interventions (including comprehensive and drug-specific medication reviews, education programmes for prescribers, and patient-specific interventions) on the total number of prescribed or inappropriate medications,[22-25] hospitalisation rates,[22]

symptoms[26,27] and mortality.[22,28] While positive effects were observed in many primary studies, reviews often failed to draw definitive conclusions about the relative effectiveness of different deprescribing approaches due to the poor quality and high variability of research evidence in this area.

In addition, interventions are often complex and it can be unclear how best to organise and implement these to achieve a reduction in inappropriate polypharmacy.[22]

Evidence on barriers and enablers to deprescribing

Three systematic reviews have synthesised qualitative data on the perceived barriers and enablers to deprescribing inappropriate medications in adults.[11,29-31] Much of this evidence focuses on the perceptions and beliefs of primary care practitioners and older patients (see online for details).[32]

Factors identified by practitioners fell into the following domains:

- Knowledge and skills (e.g. being unaware of inappropriate prescribing; needing more education in geriatric pharmacology;[11,29] lacking confidence,[11,29] feeling insecure, overwhelmed or inadequately prepared)[31]
- Beliefs about the capabilities of others (e.g. assuming that older patients lack health literacy or don't share information about their medicine intake)[31]
- Beliefs about consequences (e.g. fears about the possible risks of deprescribing)[11,29]
- Environmental context and resources (e.g. lack of time or remuneration;[11,29] the impact of multiple disease guidelines;[31] lack of communication or clarity about responsibilities among professional groups)[31]
- Social influences (e.g. patient reluctance; professional attitudes favouring more rather than less medication use)[11,29]

Factors that might influence a patient's decision to cease a medication included:

- Beliefs about consequences (e.g. perceived effectiveness and side effects; hopes of future benefit; peace of mind from keeping medications; scepticism about non-pharmacological alternatives)[30,31]
- Intentions (e.g. experimenting with certain medications to understand the effect of stopping)[31]
- Goals (e.g. prioritising treatments according to their effects on survival, physical function, and symptom relief)[31]
- Environmental context and resources (e.g. lack of consultation time, GP support or clear procedures;[30] dislike of medications;[30,31] distrust of the system; perceived lack of generalist knowledge or cooperation between specialists; concerns about pharmaceutical industry influence);[31]
- Social influences (e.g. perceived pressure from family or health professionals;[30] the need for a trusting relationship and good communication with GP)[31]
- Emotion (e.g. fear of worsening illness or withdrawal reactions[30])

Figure 1. 'House of Care' model illustrating the building blocks of high quality person-centred coordinated care

Solutions proposed by GPs have included: relaxing treatment targets, applying patient-centred and patient education strategies, optimising medication management processes and relying on IT system support.[31]

Implications for practitioners and commissioners

While much of the research evidence on effectiveness is heterogeneous and of relatively low quality, it suggests that tools and strategies that promote appropriate deprescribing need to be considered at both the level of individual patient–prescriber encounters and the systems of care.[11,29]

The environmental and resource barriers identified by patients and practitioners reflect those identified in other areas of integrated care. These include services being focused on single condition guidelines,[8] insufficient communication or coordination between professional groups, and a lack of emotional/psychological support. NHS England and its partners have responded to such barriers by proposing the 'House of Care' model for person-centred coordinated care (see figure 1).[33]

Prescribers should be aware that deprescribing is likely to be relevant to their own clinical practice and, when done appropriately and carefully, can have a positive and worthwhile impact. Where possible, deprescribing methods should address prescribers' information needs, including information about previous prescribing decisions, and any known benefit-harm trade-offs for relevant medications or special patient populations. NICE guideline on multimorbidity specifically recommends using its supporting database of treatment effects[34] to inform medication reviews. Polypharmacy guidance issued by NHS Scotland also provides information on the efficacy of several commonly prescribed medications.[35] This includes the number of patients who would need to be treated with each medication for one patient to benefit on relevant health outcomes. In addition, the NHS Business Service Authority's ePACT 2 includes a Polypharmacy

Dashboard (incorporating a collection of polypharmacy-related indicators), which is being rolled out across England in the summer of 2017.[36]

In line with existing recommendations,[37,38] deprescribing should be patient-centred, incorporating shared decision-making, informed patient consent, and appropriate monitoring arrangements. Patient concerns and beliefs about deprescribing can mirror those of prescribers, so everyone involved in the clinical consultation should be empowered to discuss openly the available options, along with their possible benefits and harms. Where available, appropriate decision aids may be used to support these discussions.

Both patients and clinicians have identified inter-professional communication as an important influence on polypharmacy. NICE guidance recommends that organisations consider a multidisciplinary team approach to improve outcomes for people who have long-term conditions and take multiple medicines.[2] This includes consideration of a structured medication review for people taking multiple medicines, and use of a screening tool such as STOPP/START to identify potentially inappropriate medication in older people.[2]

NICE guidance also recommends individualised management plans for patients with multimorbidity that take into account disease and treatment burden (including the medicines they are taking), as well as patient goals, values and priorities.[8]

Implementation of such recommendations will require professional awareness of the likely enablers and barriers to success, alongside the fostering of a trusting, patient-centred consultation style within a supportive environment.

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