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REVIEW

Medication Management to Reduce Falls—With Particular Focus on Frailty, Polypharmacy and Prescribing

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Abstract

Falls are a common presentation to the acute medical take, particularly with the increasing prevalence of frailty. Polypharmacy is an important risk factor for falls, and also commonly coexists with frailty. Polypharmacy review should be undertaken whenever a patient presents to hospital with a fall in order to address treatable factors and reduce readmission rate. Pharmacokinetics and pharmacodynamics alter with age and may have implications for the suitability of medications in older patients; some drugs may be less effective, whilst others may have more potent side effects, altering the risk/benefit profile considerably when compared to the standard population. A variety of tools are available to aid appropriate deprescribing. We consider some of the real-world barriers to deprescribing and highlight the importance of at least beginning the process in hospital, with a recommendation for robust communication with community services for continuation.

Key words: falls; polypharmacy; frailty; aged; medication therapy management; inappropriate prescribing; medication review; drug withdrawal

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Introduction

"*Mechanical fall. Needs physiotherapy*". Anyone who has ever looked at a medical take list will be familiar with this vignette as a presenting complaint. Often, these patients get deprioritised as "*social admission*" or "*medically fit*" and receive little attention from doctors, who assume no medical intervention is required. A more appropriate tagline would be "*Fall. Underlying frailty. Needs Comprehensive Geriatric Assessment*". This article will focus on one aspect of the Comprehensive Geriatric Assessment (CGA): the Medication Review. While the process of a thorough medication review may be too complex to complete in its entirety on the acute medical take, we hope to convince you that it is an important place to start the process.

The British Geriatrics Society defines frailty as a state in which "multiple body systems gradually lose their in-built reserves" (Turner, 2014) and tells us that it affects around 10% of over 65s and around 25% of over 85s (Turner, 2014). One consequence of frailty is that, owing to this diminished reserve, seemingly innocuous events have a more significant consequence for frail patients (e.g., minor infections or the introduction of a new medication). Consequences may manifest as a

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reduction in cognition, strength and balance, often culminating in a fall (Clegg et al, 2013). In 2017, the UK incidence of falls requiring medical attention amongst adults aged over 70 was 12,099 per 100,000 (Haagsma et al, 2020). Frailty is significantly associated with multi-morbidity (Hanlon et al, 2018) and frail patients are more likely to be taking multiple medications (Gutiérrez-Valencia et al, 2018). Polypharmacy has been demonstrated to be associated with increased risk of falls (Dhalwani et al, 2017) and, furthermore, increased risk of hospitalisation due to falls (Zaninotto et al, 2020). Mechanisms of concern include sedative side effects and anticholinergic activity, as well as blood pressure side effects from alpha-receptor activity (Seppala et al, 2021). Addressing this polypharmacy through medication review can lead to a reduction in hospital admission rate (Dautzenberg et al, 2021).

We must also remember that pharmacokinetics and pharmacodynamics change with age. This has two important implications: firstly, a patient's long-term medication may now result in side effects that were not present previously; secondly, we must consider whether our frail patient will gain the same intended effects from the medication if the clinical trial demonstrating efficacy was conducted on non-frail patients with different physiology.

Polypharmacy

Polypharmacy describes the use of multiple medicines by one individual (Duerden et al, 2013). Despite the lack of a universal definition, it is often referred to as taking at least five medications concurrently (World Health Organisation, 2019). However, it has been recognised that a numeric threshold is of limited value to indicate the appropriateness and rationale of the sum of multiple treatments in older people. Therefore, the King's Fund report on polypharmacy highlighted the importance of differentiating between appropriate and inappropriate polypharmacy (Duerden et al, 2013). It defined appropriate polypharmacy where 'medicines use has been optimised and the medicines are prescribed according to best evidence', with the aim to extend life expectancy, preserve good quality of life and minimise medication-related harm (Duerden et al, 2013). Problematic polypharmacy, on the other hand, referred to circumstances where 'multiple medicines are prescribed inappropriately, or where the intended benefit of the medication is not realised'. This can be due to non-evidence-based therapy, the risks associated with treatment outweighing the benefits, harmful drug interactions, intolerable 'pill burden', low adherence or introducing a prescribing cascade to counteract adverse effects of another medication (Duerden et al, 2013).

Polypharmacy is becoming increasingly common and is more prevalent in older people, particularly those with frailty and multiple co-morbidities (Duerden et al, 2013; Scottish Government Polypharmacy Model of Care Group, 2018; World Health Organisation, 2019). The prescribing of multiple independent treatments for one individual is driven by disease-specific guidelines, which rarely consider multi-morbidity and clinical complexity (Duerden et al, 2013). The involvement of multiple healthcare providers and inadequate communication between health services are additional contributing factors leading to polypharmacy. Furthermore,

it is important to be aware of socioeconomic inequalities: a meta-analysis identified that older people with lower socioeconomic status are more likely to receive polypharmacy (Iqbal et al, 2023).

Polypharmacy in adults over the age of 60 was associated with a 21% increased risk of falls (Dhalwani et al, 2017). It has been recognised that several negative consequences are linked to polypharmacy, including higher health care costs, adverse drug events, drug interactions, hospital admissions and mortality (Hung et al, 2024). One study found that 11% of unplanned hospital admissions were attributable to medication-related harm and almost half of them were considered avoidable. More than 70% of these preventable adverse drug events affected older people on multiple medications (Kongkaew et al, 2013).

Inappropriate polypharmacy is also associated with malnutrition, non-adherence to medication and various geriatric syndromes including cognitive impairment, functional decline, urinary incontinence and falls (Maher et al, 2014).

Multidisciplinary collaboration is required to manage polypharmacy in order to achieve medicines optimisation and patients' individual goals (Scottish Government Polypharmacy Model of Care Group, 2018). One study in particular highlighted the role of pharmacists in reducing inappropriate prescribing (The Investigators of the MAGIC-PHARM Study et al, 2021).

Older people living with frailty are at greater risk of medication-related harm due to their enhanced vulnerability to stressors (van der Velde et al, 2023). Therefore, it is recommended that a structured, personalised and patient-centred medication review is conducted to ensure the prescribed medication is safe, effective and meets patient's desired outcome (Scottish Government Polypharmacy Model of Care Group, 2018). The frequency of the review depends on the needs of the individual patient but should be performed at least annually and at every alteration in health status (van der Velde et al, 2023). In our opinion, admission to hospital constitutes an "alteration in health status" requiring medication review.

Pharmacology

When undertaking medication review in a frail patient, we must keep in mind that both pharmacokinetics (the body's actions on the drug) and pharmacodynamics (the drug's actions on the body) are altered with ageing (Andres et al, 2019).

Pharmacokinetics can be divided into drug absorption, distribution, metabolism and excretion.

Whether there are significant enough changes in the gastrointestinal tract to affect drug absorption is still uncertain. There has been investigation into various aspects including reduced salivation (Xu et al, 2019), changes to gastric pH and gastric emptying (Soenen et al, 2015), changes in the structure of the intestines (Lipski et al, 1992) and loss of microbiome (Ticinesi et al, 2019). Much of the evidence remains conflicting, with no clear consensus on whether significant changes occur, still less on whether these lead to clinically significant reduction in absorption (Mangoni and Jackson, 2004).

For non-orally administered drugs such as insulin, changes to the subcutaneous thickness with age can also have an impact on speed of absorption, changing the efficacy profile of the drug (Derraik et al, 2014).

It should also be considered that some elderly patients may not be in a position to take medications at an appropriate time in relation to food, which can also impact absorption. Consider a patient with a once-a-day carer visit to provide meals and medication. For this patient, taking medication "one hour before food" is not feasible. Similarly, consider the patient with twice-daily district nurse visits to administer insulin; given resourcing constraints, these visits may not synchronise with the patient's mealtime.

Drug distribution is affected by the changing composition of the body with ageing. There is a progressive reduction in fat-free body mass with age, which results in an increased proportion of fat to lean body mass (Fantin et al, 2007). Many of us are familiar with this concept in relation to sarcopenia (the reduction of muscle mass with age), but we do not always appreciate the implications with regard to drug metabolism; fat-soluble drugs such as benzodiazepines have a longer half-life in elderly patients (Greenblatt et al, 2021) and may have a longer duration of action. Conversely, a reduction in the percentage of total body water with ageing (Lu et al, 2023) has implications for distribution of polar drugs, which may be a factor in higher plasma concentrations of drugs such as digoxin (Yilmaz et al, 2020) as well as antibiotics such as aminoglycosides (Giarratano et al, 2018); this may lead to increased risk of toxicity and monitoring should be considered.

The liver plays an important role in pharmacokinetics, both in first pass metabolism and the subsequent metabolism of drugs by the cytochrome P450 system. There is evidence that ageing is associated with declining hepatic volume, hepatic blood flow (resulting in a reduced first pass metabolism) and declining function of the cytochrome P450 system (Anantharaju et al, 2002). Furthermore, patients with polypharmacy will be at risk of interactions affecting P450 metabolism. One study estimated the risk for potential interactions to be as high as 80% in a cohort of patients with polypharmacy (Doan et al, 2013). Paroxetine is an example of a drug with higher plasma concentrations in the elderly than in younger patients at the same dosing; this effect is further compounded if other P450 drugs are taken (Bourin et al, 2001). Prescribers should be mindful of the enhanced effects at "usual" doses when prescribed for an elderly person. Other age-related mechanisms purported to affect drug metabolism include inflammation (which may reduce P450 enzymic activity), altered circadian rhythm (P450 enzymes are expressed differently at different times of the day), changes in gut microbiota (which may also have a role in co-metabolism) and potentially changes in DNA methylation (which impacts normal gene expression) (Waring et al, 2017).

Perhaps the aspect of pharmacokinetics that we are most used to considering when prescribing for elderly patients is drug elimination, particularly the impact of reduced renal function on renally-excreted drugs. The key changes with the ageing kidney are reduced volume of the cortex as well as a reduction in glomeruli, which leads to a reduction in glomerular filtration rate (Denic et al, 2016). There is also a reduction in renal blood flow seen with age (Czarkowska-Pączek et al, 2020),

and this may be further exacerbated by dehydration. Apart from "healthy" ageing kidneys, we must also remember that the prevalence of chronic kidney disease increases with age (Mallappallil et al, 2014). Reduction in glomerular filtration rate has implications for clearance of many medications; consider adjustments that are commonly required in clinical practice to medications such as morphine, penicillin and apixaban.

Drugs that rely on biliary excretion may also be affected by the ageing process; age is a risk factor for many common liver conditions, including Metabolic Associated Fatty Liver Disease (MAFLD) and drug-induced toxicity (Georgieva et al, 2023). Whilst the British National Formulary commonly recommends "caution" to drug use in hepatic impairment, specific guidance is much rarer in hepatic impairment than in renal impairment. Furthermore, hepatic impairment may be underrecognised as liver function tests may be normal in chronic liver disease (Sharma and Nagalli, 2024).

Pharmacodynamics may also be affected by ageing, thus the drug we prescribed may have a greater or a lesser effect than we expected. A 2007 review of some commonly used medication highlighted greater sensitivity to medications such as benzodiazepines, opioids and anaesthetics (Bowie and Slattum, 2007). This is an important consideration when considering falls and delirium (including postoperative delirium) in our elderly patients. Another example is the increased susceptibility to anticholinergic effects of medication with age; purported mechanisms for this include increased permeability of the blood-brain barrier, increased sensitivity of the receptors to blockade, or changes to receptor-mediated responses (Yamada et al, 2024). This, again, has important consequences for elderly patients (who may be on multiple medications with anti-cholinergic side-effects) in terms of cognition and falls risk; one study showed a 2.5× increased risk of falls in patients with a high anti-cholinergic burden (Saz et al, 2023).

Given the differing pharmacokinetics and pharmacodynamics of many medications in our elderly population, we should be prompted to ask two questions whenever reviewing medication in an elderly patient:

(1) "Is this medication likely to have the same beneficial effects on this patient, if their demographic was not represented in the clinical trial?"

(2) "Are they at increased risk of side effects compared to the trial population?"

This will help us to consider whether there may be an altered risk/benefit profile in this patient, to reach an individualised decision. This may be avoiding/stopping the drug altogether, using a reduced dosage, or increasing therapeutic drug monitoring.

Falls and Medication Review

Falls and frailty are both linked to polypharmacy (Bennett et al, 2014) and associated with an increased risk of hospital admission (Hung et al, 2024). Data from the English Longitudinal Study of Ageing suggests that there is an increased risk with higher degrees of polypharmacy: those taking 4 or more medications had an adjusted incidence rate ratio of 1.18, whilst those taking 10 or more medications had

Table 1. STOPPFall medication classes as agreed through the expert Delphi consensus process.

STOPPFall medication classes
Benzodiazepines
Antipsychotics
Benzodiazepine-related drugs
Opioids
Antidepressants
Anticholinergics
Antiepileptics
Diuretics
Alpha-blockers used as antihypertensives
Alpha-blockers for prostate hyperplasia
Centrally-acting antihypertensives
Antihistamines
Vasodilators used in cardiac diseases
Overactive bladder and urge incontinence medications

Extracted from Seppala et al (2021). STOPPFall, Screening Tool of Older Persons Prescription in older adults with high Fall risk.

an adjusted incidence rate ratio of 1.50 (Dhalwani et al, 2017). There are often multiple causes for falls with medication use being identified as one of the modifiable risk factors (de Jong et al, 2013). Triggers due to recent medication changes can be easily recognised. However, falls are often caused by medications that have been taken for a long period of time, as almost any medication that acts on the central nervous system or on the circulation can be a contributing factor (Alicehajic-Becic and Smith, 2023). This might be less obvious at the initial impression, but, as we have described above, new adverse effects can develop at any point due to changes in pharmacokinetics and pharmacodynamics in older age (van der Velde et al, 2023). Therefore, medication review is a key component of a multifactorial assessment and essential in order to reduce the risk of further falls (Montero-Odasso et al, 2022).

Specific medication classes have been recognised as Falls Risk-Increasing Drugs (FRIDs) and there is evidence that appropriate deprescribing of FRIDs can considerably reduce the risk of falls (van der Velde et al, 2023). One study found that even patients on only a few medicines are at an increased risk of falls if these include a combination of FRIDs (Ie et al, 2021). In order to aid identification and management of these falls risks-increasing medicines, a European expert group developed the "Screening Tool of Older Persons Prescription in older adults with high Fall risk" (STOPPFall) and a practical deprescribing tool (Seppala et al, 2021). Table 1 represents the 14 medication classes that have been included in the consensus list (Seppala et al, 2021).

It was recognised that there are potential risk differences within these pharmacological classes, which are due to variations in their properties, including sedation and anticholinergic activity (Seppala et al, 2021). Tricyclic antidepressants, for example, have been identified as posing a higher falls risk compared to other an-

tidepressants as well as strong opioids compared to weak opioids (Seppala et al, 2021).

Although STOPPFall reports the greatest consensus around stopping benzodiazepines, antipsychotics and opioids, there is no one class that should be "prioritised" for deprescribing; this will depend on individual patient factors. Clinical judgement and patient preference will be required to balance any potential benefit of the drug against the falls risk. Each case should be individualised to establish the likely aetiology of falls in that individual. For example, in a patient presenting with significant postural hypotension, medications affecting blood pressure, such as diuretics or alpha-blockers, may be targeted first, whilst in a patient presenting with over-sedation, antipsychotics or benzodiazepines may be targeted first. The deprescribing guidance for STOPPFall items provides detailed recommendations to investigate whether the original indication is still valid, and consideration of alternatives with a better side effect profile. It highlights in which cases to use a stepwise approach to withdrawal, including suggested tapering strategies and monitoring requirements (Seppala et al, 2021). An interactive version of the STOPPFall deprescribing tool, including decision trees, can also be accessed online (Montero-Odasso et al, 2022).

The tool emphasises that withdrawal of STOPPFall medicines should always be considered if there is no indication or if there is a safer alternative available (Seppala et al, 2021). This approach was already endorsed in the decision tree for FRIDs management by the European Geriatric Medicine Society (EuGMS) Task and Finish group on FRIDs as shown in Fig. 1 (Seppala et al, 2019).

STOPPFall was developed with exclusive focus on identifying and reviewing FRIDs (Seppala et al, 2021). However, other prescribing tools such as the Screening Tool of Older Persons Prescriptions/Screening Tool to Alert to Right Treatment (STOPP/START), Screening Tool of Older Persons Prescriptions in Frail adults with limited life expectancy (STOPPFrail), Beers Criteria, Fit for the Aged (FORTA) or Web-based Meds 75+ Guide, are also suitable (Montero-Odasso et al, 2022). It is important to mention that STOPP/START and FORTA provide positive and negative lists to reduce medication-related harm by identifying potentially inappropriately prescribed medicines and also potential prescribing omissions of beneficial medication (Rochon et al, 2023). This process of medicines optimisation by addressing over- and under-prescribing has been referred to as 'represcribing' (Wehling and Petrovic, 2022).

As part of a comprehensive post fall medication review, it is equally important to identify and review any medicines that may cause or contribute to fractures, which include long-term steroids, antiepileptics, antipsychotics, aromatase inhibitors, gonadotropin-releasing hormone analogues, proton pump inhibitors, loop diuretics, medroxyprogesterone, thiazolidinediones, and immunosuppressants (Sahota and Anpalakhan, 2019). All patients should also be assessed for osteoporosis and the requirement for bone protection (Sahota and Anpalakhan, 2019).

It should be noted that tools such as STOPPFall were produced through expert consensus and, at present, there is insufficient clinical data to demonstrate their clinical efficacy. Research in this cohort of patients is often challenging and studies

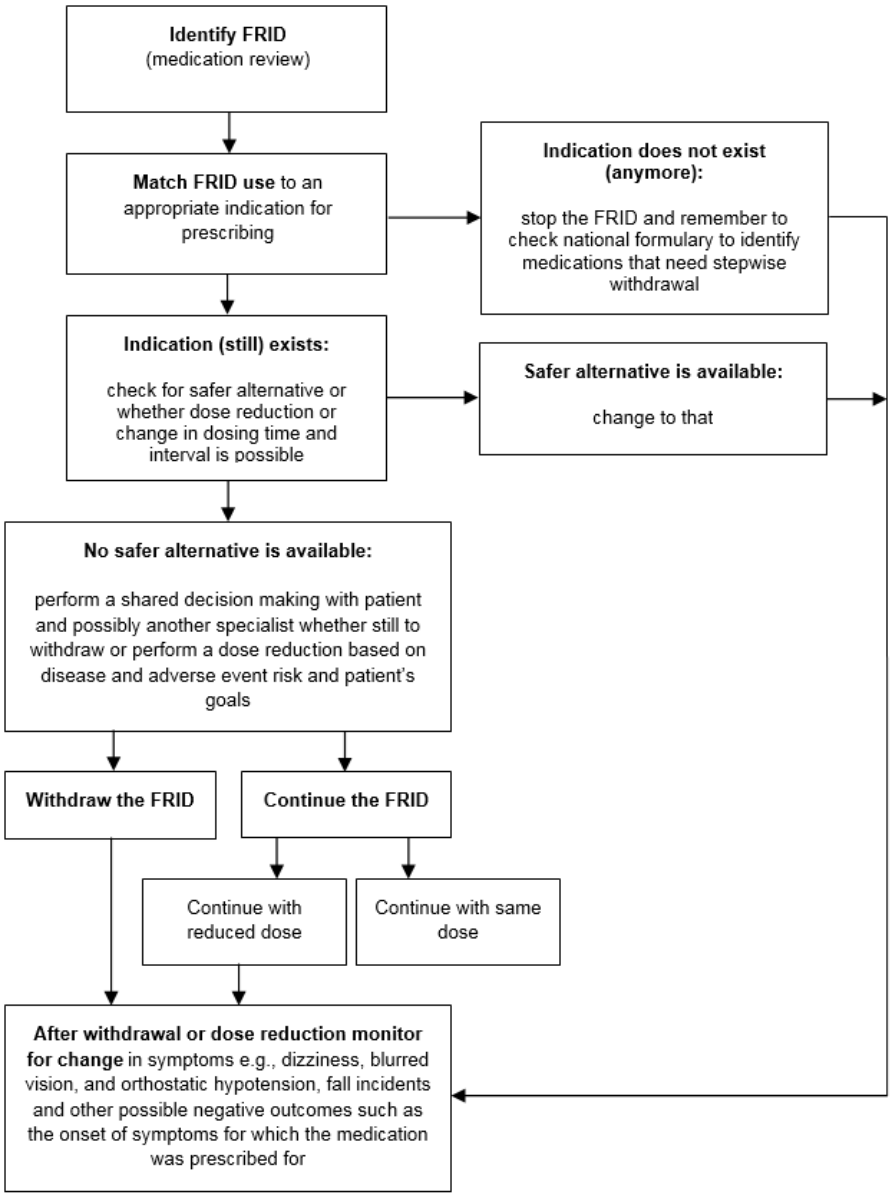

Fig. 1. Decision tree for management of FRIDs. Reproduced from Seppala et al (2019), licensed under CC BY 4.0 (http://creativecommons.org/licenses/by/4.0/). FRIDs, Falls Risk-Increasing Drugs.

available are heterogenous in their methods and in the outcomes explored, making it difficult to generalise results: some focus on hospital settings, some on community settings, some on particular tools or particular drugs, some on single-component intervention and others on medication review as part of a wider intervention (Seppala et al, 2022). Despite the vast number of tools and guidance available for a comprehensive medication review, none of these can replace the prescriber's clinical judgement and experience, which are essential requisites in tailoring the recommendations provided to the needs of an individual patient (Scottish Government Polypharmacy Model of Care Group, 2018; Rochon et al, 2023).

A fundamental condition for safe prescribing and deprescribing is an accurate and comprehensive medication history (Marvin et al, 2017), including previous

allergies, side effects and adverse events, and information regarding how the patient manages their medication at home (van der Velde et al, 2023).

When conducting a medication review, it needs to follow a structured and person-centred approach (Scottish Government Polypharmacy Model of Care Group, 2018; Rochon et al, 2023), considering individual factors such as co-morbidities, frailty, life expectancy and patients' goals and preferences (van der Velde et al, 2023). This is particularly important when reviewing treatment targets and therapy options in order to prevent over-treatment and subsequent consequences from adverse effects (Strain et al, 2021).

Fig. 2, from the Scottish Government Polypharmacy Model of Care Group (2018), illustrates '7 steps to appropriate polypharmacy'.

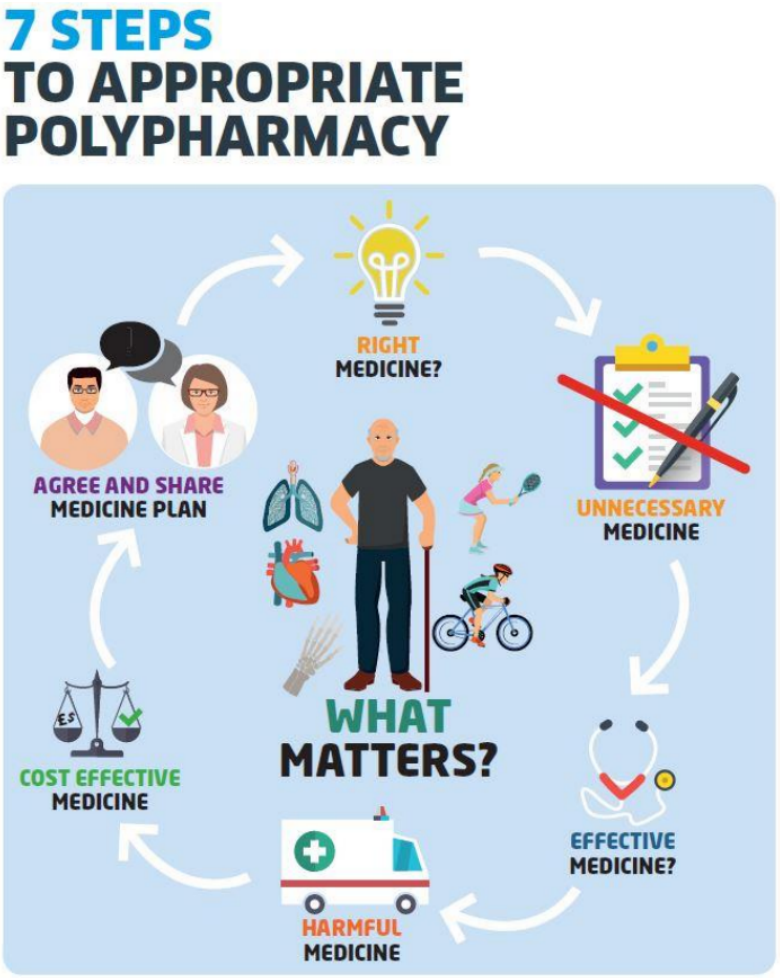

Fig. 2. 7 steps to appropriate polypharmacy. Reproduced from Scottish Government Polypharmacy Model of Care Group (2018), Polypharmacy Guidance, Realistic Prescribing 3rd Edition, 2018, Scottish Government.

These encompass what matters to the patient, identifying essential and unnecessary drug therapy, assessing the effectiveness, safety and efficiency of medication as well as ensuring patient's preferences are taken into account and the agreed plan is communicated to everyone involved in patient's care (Scottish Gov-

ernment Polypharmacy Model of Care Group, 2018). Medication review is a cyclical event, which requires continued attention and repeated evaluation with the patient at the centre and a shared-decision-making approach (Scottish Government Polypharmacy Model of Care Group, 2018).

Practicalities of Deprescribing—Overcoming the Barriers

Although many of us understand the importance of safe prescribing (including appropriate deprescribing), the practicalities are often not straightforward. A 2020 study focused on the experience of hospital geriatricians and pharmacists to highlight potential barriers: patient preference, perceived risks of discontinuation, and resourcing (time, prioritisation/incentivisation) (Scott et al, 2020). The resourcing constraint could be argued as the most significant of these. Appropriate deprescribing takes time as it involves acquiring a thorough knowledge of the patient's medical history, assessing the various competing risks and benefits, and exploring their treatment goals and their preferences.

Patient preferences must remain paramount. A patient who has spent many years controlling chronic conditions such as hypercholesterolaemia or hypertension may require a comprehensive explanation as to why their medications may now cause more harm than good. In the authors' experience, a patient who is not in agreement may continue taking medication from old stock at home, or may ask their General Practitioner (GP) to reinstate medication after discharge. Medications that are perceived to be helpful for current symptoms (such as in chronic pain or insomnia) may prove particularly challenging to deprescribe, and negotiation may be required to begin weaning; follow-up will certainly be required during the weaning period. Patient education is key, and has been shown to be effective in the deprescribing of medications such as benzodiazepines (Tannenbaum et al, 2014).

When a patient presents to the hospital with a problem impacted by polypharmacy (such as a fall), this is a golden opportunity to address this. However, on a busy medical post-take (which, if a short admission for a "medically fit" fall, may be the only time the patient sees a consultant), review of long-term medications may well be deemed "too complex", and will almost certainly be last on the list of priorities when there are other acutely unwell patients to be reviewed. Conversely, while there may be a certain logic in medications deprescribing being undertaken by primary care, time and resourcing constraints are no less a consideration here than in the acute hospital.

In some cases, a patient who has had falls or is at risk of falling may be referred to a Falls Clinic, where medications can be reviewed as part of a holistic assessment, but while access to Falls Clinic remains patchy across the country, it is important that all clinicians involved in the acute care of patients with falls have confidence with appropriate deprescribing.

The acute medical take is an opportune time to begin this process by being vigilant for potentially inappropriate medication and starting a conversation with the patient about tapering or stopping (it is also a valuable opportunity to check

that the medication is being taken appropriately in the first place). This process can then be continued during their inpatient journey or after discharge. At present, there remain significant challenges in coordinating a thorough medication review between different members of the multidisciplinary team. In hospital, the patient may be transferred between teams (from Accident and Emergency [A&E] to acute medicine to a geriatric ward) and may receive a brief review from a number of doctors or pharmacists. Recommendations that require follow-through (such as exploring the original indication for a drug or giving the patient time to weigh the pros and cons) may be lost with transfer of care. This applies equally with transfer back to primary care, where there is a risk that recommendations on a discharge summary are not followed through due to numerous other demands. If the process is to be continued after discharge, robust communication with the GP or Community Pharmacist is essential.

We are particularly interested in a novel approach piloted in the East Midlands which involved collaboration between GPs, an acute medical consultant and pharmacists in a multidisciplinary team (MDT) approach to discussing referrals and making individualised recommendations for patients (Gupta et al, 2023). It may be that in future, patients could be referred to "polypharmacy MDTs" who have allocated time and resources to consider their case properly. However, even if this were to become widely available, the emphasis will remain with the generalist to spot the polypharmacy and begin the conversation.

With the rise of interest in Artificial Intelligence (AI) as a tool in healthcare, it is plausible that various AI models for deprescribing may be explored. There has already been some limited research into this area, examining apps aimed at patients and at healthcare professionals (Okati et al, 2025), as well as the use of large language models in deprescribing (Bužančić et al, 2024; Rao et al, 2024). Current large language models carry a risk of unsuitable decisions and therefore cannot be relied on (Bužančić et al, 2024), but this is a rapidly developing field and it is likely that better models may emerge in future.

Conclusion

Polypharmacy and frailty are both linked with increased falls risk and it has been demonstrated that polypharmacy is associated with an increased risk of hospital admission from a fall. New medications (particularly FRIDs) can be implicated in falls and careful thought should be given when prescribing a new medication to a person living with frailty to ensure that it is appropriate. It must be remembered that the pharmacokinetics and pharmacodynamics in an elderly person may be very different from those of the trial population and they may not derive the same benefit or may be at risk of additional harms. Similarly, due to changing pharmacology with age, even medications that the patient has been taking for a long time can be implicated in falls.

A change in health status such as a hospital admission should prompt a review of polypharmacy (in addition to an annual review that should be carried out). Presentation following a fall is an ideal time to identify polypharmacy as a risk factor

in falls. It is recognised, however, that many challenges need to be overcome to achieve this, not least a lack of adequate time and resources to perform the review properly. A thorough review should take into account the patients personalised circumstances including previous history and personal preferences. Patient preference may be another barrier to discontinuing some medications and negotiating a plan may take several encounters.

It is often not possible to complete this process in full during an acute admission, but the acute medical take is an excellent time to begin this process by identifying inappropriate medications (or absence of important medications such as bone protection) and beginning a conversation with the patient. Robust communication is required between hospital and community teams to ensure that this process is continued after discharge. There are a variety of tools to support decision making in deprescribing including the STOPPFall tool. In some areas, there may be specialist services that a patient can be referred into (such as a falls clinic or MDT service), but in many areas coverage remains patchy and the onus is on the generalist to recognise the risks and initiate the process of deprescribing.

Key Points

- Polypharmacy is more prevalent in older people; evidence suggests 11% of unplanned hospital admissions are attributable to medication-related harm.
- New adverse effects to long-term medication can develop at any point due to changes in pharmacokinetics and pharmacodynamics in older age.
- In order to address inappropriate polypharmacy, a medication review must be structured, personalised and patient-centred.
- The acute medical take is a vital time to begin the process of addressing inappropriate polypharmacy.
- There are a variety of tools available to support medication reviews with the STOPPFall tool focusing on reviewing Falls Risk-Increasing Drugs (FRIDs).
- All patients with falls should also be assessed for osteoporosis and the requirement for bone protection.

Availability of Data and Materials

All data generated or analyzed during this study are included in this article.

Author Contributions

MU, KNV and HK designed the work. MU and KNV drafted the maunscript equally, and HK reviewed the manuscript. All authors contributed to writing and revising the manuscript critically for important intellectual content. All authors read and approved the final manuscript. All authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

Ethics Approval and Consent to Participate

Not applicable.

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Conflict of Interest

The authors declare no conflict of interest.

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