REVIEW ARTICLE

Deprescribing: Lesser Medicines For Better Health

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ABSTRACT

The proportion of older adults exposed to polypharmacy defined as use of multiple medications, is rapidly increasing in the last two decades. There are many negative medical consequences associated with polypharmacy apart from higher health care costs. Studies in developed world have revealed that people aged between 65 and 69 years fill an average of 14 prescriptions per year whereas people between 80 and 84 years of age fill an average of 18 prescriptions per year. Deprescribing is the planned and supervised process of dose reduction or stopping of medication(s) that may be causing harm, or are no longer providing benefit. The reduced homeostatic ability as people age, given the changes in pharmacokinetics, pharmacodynamics and physiological reserve, affects different regulatory systems in elderly subjects. Ideally speaking, deprescribing is an inherent component of good prescribing practice and good medicine management for improving the quality use of medicines by reducing polypharmacy, lessening the burden of medicines, correcting overuse of medicines and reducing inappropriate prescribing. JMS 2017; 20 (2):57-61

Key Words: Polypharmacy, problematic polypharmacy, inappropriate medication, inappropriate prescribing, medication management.

INTRODUCTION

Polypharmacy is the concurrent use of multiple medications by a patient. Adults, especially elderly people, often live with chronic diseases and multiple comorbidities, resulting in indications for prescription of several medications to this population. Studies have reported that more than 50% of older adults in institutions and 27% of those living in the community are taking more than five prescribed medications daily.[14] The proportion increases with age, and as world's older population continues to grow at an unprecedented rate,[5] this brings with it many socioeconomic problems and increased pressures at all levels of care, particularly in the health care. In 2014, people aged 65 years or older constituted about 14.5% of the U.S. population, yet used 40% of all prescription drugs a 70 percent increase in polypharmacy over 12 years. People aged 65-69 years fill an average of 14 prescriptions per year and adults aged 80-84 years average 18 prescriptions per year.[24] Half of all Australians aged between 65-74 years and two-thirds of those aged 75 and over, reported taking five or more medicines daily.[6] This increase has several reasons, such as the rising use of cardio-protective and anti-depressant medications and probably also the promotion of guidelines recommending multiple drug therapy to achieve targets such as blood pressure or glycaemic control. Unfortunately, there is no standard cut point with regard to the number of medications that is agreed upon for the definition of polypharmacy. To operationalize this definition, researchers have arbitrarily chosen various cut points like use of five or more than five drugs. An alternative definition for polypharmacy is the use of more medications than are medically necessary. For this definition, medications that are not indicated, not effective, or constitute a therapeutic duplication would be considered polypharmacy. Although this definition is clinically more relevant, it does necessitate a clinical review of medication regimens.[7,8]

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Problems caused by polypharmacy

There are many negative consequences associated with

polypharmacy apart from greater health care costs. Polypharmacy is associated with an increased risk of adverse drug events (ADEs), drug-interactions, medication non-adherence and many geriatrics syndromes like falls, incontinence and confusion states.[14] It has been reported that up to 35% of outpatients and 40% of hospitalized elderly experience an Adverse Drug Event (ADE). Furthermore, approximately 10% of emergency room visits are attributed to an ADE. In a population based study, outpatients taking five or more medications had an 88 percent increased risk of experiencing an ADE compared to those who were taking fewer medications.[8,9] Another study evaluating unplanned hospitalizations in older veterans found that a patient taking more than five medications was almost 4 times as likely to be hospitalized from ADE.[9,10] A study in Scotland looked at 180,000 adults, in which 6% of patients had at least one unplanned hospitalization over the past year. Patients taking 10 or more medications were at a statistically greater risk for hospitalization than patients taking one to three chronic medications (24.8% vs. 5.2%; OR 1.25 [95% CI 1.1 - 1.4]). A study in Canada recently showed that in a group of elderly patients (mean age, 81 years), the average number of medications taken was 15 (range, 6-28) with 8.9 drug-related problems occurring per patient. When these problems were analysed, 2.5 of those 8.9 problems were found to be caused by drugs that were not needed. In the United States, it is estimated that 28% of hospitalizations in seniors are caused by medication.[9, 10]

The avoidable cost from polypharmacy mismanagement among older adults has been estimated to be around $1.3 billion, with a range of $900 million to $1.7 billion, in the United States. Most of these costs are incurred through inpatient care and emergency room visits and hospitalizations due to complications and adverse drug events.[11] However, despite the complexity of medication lists for many patients, less than half of older Canadians with chronic conditions reported having their medications reviewed by a physician (48%) or having the potential adverse reactions explained to them. Only 28% of older adults reported receiving help, at least some of the time, in making a treatment plan, and 48% reported talking to a health professional about their treatment goals.[12, 13]

What is deprescribing

Deprescribing is the planned and supervised process of dose reduction or stopping of medication(s) that may be causing harm or are no longer providing benefit. The term "deprescribing", while not yet included as a MeSH (Medical Subject Heading) term, is useful because it is a unique and easily identifiable keyword, as it encompasses and unifies all of the various terms used in the literature like medicine withdrawal, cessation of therapy, etc.[14,15] Unfortunately, Health care providers work in a culture that facilitates diagnosing and prescribing, but pay relatively little attention to deprescribing or reducing chronic medications. The use of the term deprescribing dates back to 2003,[16] and since then the Ministry of Health and Long-Term Care in Ontario Canada has taken the initiative in supporting the systematic development and testing of a series of evidence-based guidelines for deprescribing. Ideally speaking, deprescribing is an inherent component of good prescribing practice and it is important to recognize that deprescribing involves more than just identifying inappropriate medicine use. The deprescribing process, has been defined as a five-step cycle that encompasses gaining a comprehensive medication history, identifying potentially inappropriate medications, determining whether the potentially inappropriate medication can be ceased, planning the withdrawal regimen (e.g. tapering where necessary) and provision of monitoring, support and documentation.[17]

Why deprescribing is needed

Medication that may have offered a benefit at a younger age or at a particular time might have little benefit for, and even harm in, the aging patient. The reduced homeostatic ability as people age, given changes in pharmacokinetics, pharmacodynamics and physiological reserve affects the different regulatory systems in elderly subjects. Pharmacokinetic changes include a reduction in renal and hepatic clearance and an increase in volume of distribution of lipid soluble drugs (hence prolongation of elimination half-life). On the other hand, pharmacodynamic changes involve altered (usually increased) sensitivity to several classes of drugs such as anticoagulants, cardiovascular and psychotropic drugs.[18,19]

Evidence supporting the benefits and risks of medications are usually established via randomized controlled trials in relatively young patients with a single morbidity. The application of these guidelines to older patients with

multiple comorbidities results in polypharmacy.[18,20] For example, most studies on statin drugs for hyperlipidemia were conducted on people aged 70 years or younger. It is not known whether the benefits extend beyond that age or what the harms might be. Indeed, in the case of statins, applying the new cholesterol treatment guidelines as advocated, will double the number of people eligible for statin therapy and thus, increase the number of people aged 60 to 75 years who are receiving statins, from 48% to 78.[21] It has been suggested that the results from the statin treatment discontinuation trial could be incorporated into clinical practice guidelines. The prescribing recommendations should, in the very least, acknowledge that deprescribing might be warranted in patients with advanced illness.

Existing guidelines to regulate polypharmacy in the elderly

Given the risks of polypharmacy and inappropriate medication use in older persons, even before the use of relatively new term deprescribing, there are various tools and guidelines available to the prescribers to rationalize the use of multiple drugs as people age (Box 1). There are various other clinical guidelines that provide the necessary and relevant information about the prescribing in elderly along with list of medication associated with particular high risk. However, despite availability of these guidelines, there is still a considerable gap in the management of polypharmacy and the use of drugs for chronic conditions where therapeutic alternatives do not exist.

BOX 1. **Tools and guidelines available to the prescribers to rationalize the use of multiple drugs**

- **Beer's Criteria**[22] – First created in 1991, through a consensus panel of experts; updated in 1997, 2003, 2012 and 2015
- **STOPP/START**[23] – screening tool of older people's prescriptions and to ale rt to right treatment criteria; first published in 2008
- **Medstopper**[24] – a free website tool to help providers navigate the difficult decision making of stopping medications

How to do deprescribing

The first step in rationalizing the medicine use is to take a complete and comprehensive medication list and history from the patient or attendants. The high risk elderly who would benefit most from deprescribing are, individuals above 75 years of age using multiple medicines from multiple prescribers with limited life expectancy. The factors to consider while contemplating deprescribing are:[25,26]

- **Indication** is the drug still indicated? Is there a valid or relevant indication for prescribing as assessed by symptoms, signs, and laboratory or diagnostic test results and whether patient is using multiple drugs for same indication?
- **Appropriateness of the drug** (for the patient's condition) is the patient receiving a high risk drug as per Beers and STOPP criteria?
- **Benefits** does potential benefits outweigh the risks?
- **Adherence** does the patient take the drug regularly and as prescribed or is there any difficulty in taking the medicine?
- **Adverse effects** Is the patient suffering from adverse effects of the drug and is there a risk of cumulative toxicity if particular medicines are taken together?
- **Prescribing cascade** is the drug being used to treat the side effect of another drug?
- **Duration of use** are the benefits of drugs still relevant, e.g. has pt.'s condition/situation changed, e.g. if patient has become less mobile there may be reduced need for anti-anginal?
- **Life expectancy** can all the attributed benefits of medication be realized?

In a study which involved many specialist and paramedics involved in the geriatrics care, benzodiazepines stood out in the consensus with the number one group which should be targeted for deprescribing, followed by atypical antipsychotics in second rank, followed by, statins, tricyclic anti-depressants and proton-pump inhibitors.[27]

Barriers to deprescribing

Even when deprescribing is desirable, it is difficult to carry out. The barriers to deprescribing include difficulty in making decisions to stop medications (both from the clinician and patient perspective), worry about stopping medications started by others, and concern about medication withdrawal effects. But the most important

barrier is the limited knowledge and lack of guidelines on how to apply available information in stopping medications. Patients play an important role in their own health and, while they may complain about the number of medications they have to take, they may also be reluctant to cease a medication when given the opportunity to do so. Small studies have demonstrated successful deprescribing approaches, yet have not been synthesized to produce class-specific deprescribing guidelines.[24] This deficit of guidelines to stop medications stands in contrast to the vast number of guidelines that promote starting medications.[28] Also the role of clinical pharmacists and nurses is very important in this regard as they can influence and encourage other staff members to sustain their roles and overcome barriers for an ultimate reduction in causes and outcomes of problematic polypharmacy.

CONCLUSIONS

Polypharmacy is a useful 'flag' for increased risk and a cue for medicines review. The potential risks of polypharmacy are evident but so are the benefits when medicines are appropriately combined to improve quality of life and prevent complications. However, balancing the risks and benefits of multiple therapies can be challenging so polypharmacy is frequently also associated with inappropriate prescribing. Good medicine management improves quality use of medicines by correcting underuse of medicines and also by reducing inappropriate prescribing.[2,3,28] Regular patient review and support is required for successful deprescribing.

Unanswered questions and future directions

The trials have shown that deprescribing led to reductions in medication usage and cost, however, few of the studies investigated the broader clinical outcome, like its effect on overall mortality. Despite a comprehensive review of the literature, there is still a lack of an evidence base on which to conduct deprescribing. There is currently minimal intervention-type research to support the recommendations made, particularly those that relate to how to employ tapering and how monitoring and support should be provided. The next step in broadening the evidence to support deprescribing will be to develop and test the patient-centred process to determine feasibility in a clinical setting.[28,29] Innovative approaches are required to address these barriers in order to limit the negative impact of polypharmacy on our older population.[27] Key points of Deprescribing are shown in BOX 2.

BOX 2: Key Points.

Deprescribing

1. Older people are frequently prescribed unnecessary or dangerous medications.
2. It is possible and indeed an obligation to deprescribe, reduce, substitute or cease inappropriate medications.
3. Deprescribing should be planned and generally not overly hasty.
4. Deprescribing should be performed as a partnership between the patient and the prescribing team.

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