

Inappropriate polypharmacy management versus deprescribing: A review on their relationship

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Abstract

Medication burden and polypharmacy are highly prevalent among patients with multimorbidity. There have been multiple initiatives to overcome polypharmacy and medication burden in patients with multimorbidity. These initiatives have evolved over time as effective in reducing the negative health consequences of polypharmacy. In recent years, the concept and practice of deprescribing has emerged and gained popularity as an efficient comprehensive approach to manage polypharmacy and ultimately improve health outcomes. Clinicians and researchers with interest in deprescribing view it as a novel and unique strategy that should be a part of effective prescribing process. However, other traditional polypharmacy management strategies such as drug review and medication therapy management still coexist. It is intriguing if deprescribing is considered as a type of these strategies or not. This narrative mini-review explored published literature in an effort to ascertain the differences and similarities between deprescribing and other prominent polypharmacy management interventions. It is clear that there is an overlap between deprescribing and inappropriate polypharmacy management. This is represented by focusing on multimorbid older adults, using similar explicit and implicit tools and having drug review as the core principle of both approaches. This overlap has probably made deprescribing considered as one of polypharmacy management approaches.

KEYWORDS

deprescribing, inappropriate polypharmacy management, polypharmacy

1 | INTRODUCTION

The management of multimorbidity among older adults is associated with the use of multiple medications, leading to polypharmacy.¹ This may be considered appropriate when it leads to controlling the associated health conditions without negatively affecting the patient's quality of life.^{1,2} Unfortunately, polypharmacy may be

inappropriate when the use of the medications could be harmful, prescribed for no obvious or beneficial reasons, continued for longer duration than prescribed or leads to adverse drug reactions (ADRs) that may cause prescribing cascades.^{1,2} This may translate into adverse clinical (e.g., hospitalizations and emergency room visits), economic (e.g., increased healthcare costs) and humanistic (e.g., medication burden and health-related

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quality of life) outcomes, especially among the older patients.¹ To mitigate this, several intervention strategies under the umbrella of “polypharmacy management” have been introduced over the last several years.^{2,3} One recently highlighted successful intervention strategy is “deprescribing,” which has been extensively described in the literature. One of the most comprehensive definitions of deprescribing could be “the supervised process of intentionally stopping a medication, reducing its dose, or replacing it with a safe alternative in order to improve patients’ outcomes and reduce adverse drug events (ADEs).”^{3–5} Deprescribing was proposed in the literature as a conclusive supervised multi-step approach aimed at achieving polypharmacy management goals.^{3,6}

However, the presence of numerous polypharmacy management strategies or interventions could be overwhelming as the approaches and goals of the different interventions could be overlapping.^{1,3,7} The aim of this narrative mini-review was to explore the published literature in an effort to ascertain the differences and similarities between deprescribing and other inappropriate polypharmacy management interventions. This was illustrated by uncovering the definitions, general principles, processes and resources available for undertaking each of these related interventions.

2 | CONCEPT, PROCESS AND TARGET POPULATION

There are multiple approaches to manage inappropriate polypharmacy in clinical practice and the published literature. Examples of such approaches include optimal prescribing, pharmaceutical care, medication therapy management (MTM), comprehensive geriatric assessment (CGA) and drug use review. In a review conducted by Kurczewska-Michalak et al., the investigators concluded that drug use review is the most common core step among the reviewed polypharmacy management approaches.² The providers of these interventions and polypharmacy management strategies also vary from pharmacists, physicians, nurses, to multidisciplinary teams. Although inappropriate polypharmacy can be encountered in any population of patients, these approaches, however, share a common focus on older patients.

There are few reported limitations regarding these interventions. For example, there is a lack of clinical practice guidelines to inform optimal prescribing compared to guidelines that encourage more and more prescribing.² Moreover, studies have provided evidence on the benefits of CGA on enhancing the overall functions

of the older adults.^{8–10} However, there is still a need for the CGA to focus on polypharmacy and its consequences. CGA includes five domains as components of the intervention, namely, “medical, mental health, functional capacity, social circumstances, and environment.” Medication review besides comorbidities is mentioned as part of the medical domain. The focus on inappropriate polypharmacy assessment and the use of validated tools could be beneficial as it is an evident problem among older adults.¹¹ Table 1 includes summarized descriptions of the mentioned examples of polypharmacy management approaches.

Deprescribing on the other hand has emerged at the first time for the purpose of reducing medications of the older persons.³ With the development of research in this area, this approach has been clarified to propose a supervised, proactive, comprehensive and patient-centred intervention²³ with several definitions and frameworks been developed.²⁴ One of the most systematic definitions has been provided by Reeve et al., who defined deprescribing as “the process of withdrawal of an inappropriate medication, supervised by a health care professional with the goal of managing polypharmacy and improving outcomes.”²³ In further research initiatives, this definition has included dose changes of medications,⁴ as well as population of patients other than older adults such as children and patients with psychiatric disorders as they have been identified as in need of deprescribing.²⁵ Moreover, populations other than older adults have been identified as in need of deprescribing, such as children and psychiatric patients.^{7,26} Multiple deprescribing frameworks have been proposed and evaluated. These include in general, cyclic steps of drug review, discussion with the patients, consultations with healthcare teams, monitoring, documentation and follow-up.²⁷ Interventions vary according to the practitioners leading this programme and according to the healthcare setting. General practitioners were described in several interventions as the ideal leaders of deprescribing as their role is crucial in following up with the multimorbid patients.^{2,28} However, given the complexity of levels and components of polypharmacy, the shift now is directed to the multidisciplinary teamwork.⁴ For example, pharmacists, nurses and different healthcare providers can contribute on different levels to managing polypharmacy.²⁹ Notably, a considerable proportion of the reported deprescribing interventions have been focused on polypharmacy among older adults. So far, deprescribing and other mentioned inappropriate polypharmacy management interventions share the focus on drug review among older adults with polypharmacy. Deprescribing, however, is a proactive approach designed to prevent expected medication harm.³⁰ Although one could argue that other

TABLE 1 Summarized description of selected examples of polypharmacy management interventions.

Polypharmacy management approach	Description of the approach	Healthcare providers involved
Optimal prescribing	<ul style="list-style-type: none"> • General process to provide appropriate prescribing to prevent polypharmacy. • Several theories have been used to guide this approach.^{12,13} 	General practitioners and pharmacists ^{12,13}
Pharmaceutical care	<ul style="list-style-type: none"> • Pharmaceutical care is a philosophy of providing care that was proposed in 1990.¹⁴ • This approach is used in several interventions to resolve drug-related problems or identification of inappropriate medications during any stage of medication therapy. • It may also contain the use of screening tools and advanced training to help identify medication inappropriateness.^{15–17} 	Pharmacist, with or without collaboration with other healthcare providers
Medication therapy management (MTM)	<p>This is a set of services intended to be used by the pharmacists to enhance adherence, safety and proper use of medications. The healthcare professional, depending on the needs of the patients, can provide one or more of several described services of MTM. These include assessment of patient health, medication plan, monitoring safety and effectiveness, medication review to resolve or prevent adverse events, documentation, patient education and coordination with health management and healthcare providers.^{18,19}</p>	Pharmacists, in collaboration with other healthcare providers
Comprehensive geriatric assessment (CGA)	<p>A comprehensive intervention is a multi-component intervention performed for the purpose of reducing mortality and increasing physical functioning. It targets different components: medications, nutritional status, mental health, functional capacity, social circumstances and related environment. It also includes reducing inappropriate medications or identifying untreated conditions and managing them.^{8–10}</p>	Team of professionals (e.g., geriatricians, nurses, physiotherapists, occupational specialists and social workers)
Drug review	<ul style="list-style-type: none"> • It can be a stand-alone intervention (i.e., the intervention is about reviewing the medications of the patients and proposed proper changes only) or as part of more comprehensive processes. For example, The UK's Medication Use Review (MUR) is service provided by community pharmacists to reduce medication wastage and enhance patients' understanding of their medications and improve adherence. The service also provides highlighting the side effects and proposing solutions for patients with chronic conditions.²⁰ • It can also be performed with the presence of the patient to address issues related to their medications as perceived by them or without their presence using prescription reviews. • They also include follow-up and monitoring for specific periods of time.^{21,22} 	Pharmacists or team of professionals

Note: The table does not contain an exhaustive or complete list of all available polypharmacy management approaches.

polypharmacy management interventions contain preventative components, but several barriers have been reported in the literature to achieve this.²⁰ For example, several interventions lack comprehensive systematic

approach, and more research is needed to facilitate their utilization into the clinical practice.^{20,31} Moreover, recent developments in deprescribing are focused on different populations of patients other than older adults.²⁵

3 | GUIDELINES AND RESOURCES

A plethora of evidence shows a wide range of polypharmacy management guides developed as resources for polypharmacy management. These use either explicit criteria to screen for problematic prescribing of medications, implicit criteria to aid practitioners for proper decision-making or combination of both.² Explicit tools include lists of possible problematic medications that clinicians should screen for in patients' medications to make related decisions. Examples of such tools include Beers' criteria³² and STOPP/START criteria.³³ Implicit tools such as the Medication Appropriateness Index (MAI), on the other hand, include guides or algorithms that aid clinicians in making medication-related decisions alongside their subjective judgement and experience.^{34,35} However, several limitations have been proposed that may hinder the use of those guides and tools. The most notable limitation is the impracticality of using them in the busy clinical settings,⁷ that is, for explicit tools, the length of the lists of problematic medications to be screened and the need for more than one implicit tool to capture issues related to drug omissions, adherence and other factors to be addressed.^{2,7}

There are also comprehensive generic guides for the proper delivery of polypharmacy management. The most comprehensive example is perhaps the Scottish polypharmacy management guide by Stewart et al. that puts the patient at the centre of care and advocates the appropriate safe prescribing of multimorbid older patients.¹ Electronic decision support systems were also proposed to help clinicians in screening for problematic polypharmacy and in drug review.³⁶

Implicit and explicit tools used in prior interventions were also reviewed as possible guides for deprescribing.⁷ Numerous validated guidelines have been developed for the purpose of enabling healthcare practitioners to deliver best practices of deprescribing. Those are distinguished for their rigorous development methodologies and simplistic ways of presentations which make them user-friendly at the busy clinical settings.³⁷ They include guides for deprescribing specific drug classes such as benzodiazepines,³⁸ antipsychotics³⁹ and proton pump inhibitors.⁴⁰ Moreover, each of these guidelines also contains one-page algorithm to be used within the busy clinical settings.³⁷

A substantial part of deprescribing research is focused on providing the highly needed evidence-based clinical practice guidelines as this will enable the utilization of such intervention in clinical practice.³⁷ Polypharmacy guides, on the other hand, do exist as mentioned, but there is paucity of evidence-based, comprehensive and applicable guides.² It appears that deprescribing guidelines are more robust, developed through rigorous

methodologies, and provide user-friendly algorithms. The overlap is still there with polypharmacy management in using the screening tools for problematic medications.

4 | HOW USEFUL ARE DEPRESCRIBING AND POLYPHARMACY MANAGEMENT INTERVENTIONS?

The impact of complex, multifaceted pharmaceutical care approaches that included medication reviews, education sessions, case conferences or electronic decision support systems on several clinical and humanistic outcomes has been reported in recent reviews.⁴¹ Although evidence was uncertain, complex pharmaceutical care interventions were found to be feasible with the potential to reduce inappropriate medications. Furthermore, the use of more than one polypharmacy management approach was recommended to reach the needed goals of therapy.^{1,2,41} For example, several interventions have reported the use of patient education, case conferences, practitioner training and use of validated tools. However, such approaches could be time consuming and difficult to utilize in clinical settings.² The positive impact of such interventions was represented by reducing pill burden, reductions in inappropriate polypharmacy prescribing,⁴¹ cost effectiveness⁴² and enhancing quality of life.⁴³ The benefit of such interventions on clinical outcomes such as emergency room visits is still unclear.^{41,44}

Regarding deprescribing intervention, the same need to measure its impact on clinical endpoints is highlighted in the literature.^{27,45} However, trials that evaluated the effect of deprescribing compared to usual care have found little or no differences on clinical endpoints.^{4,46} This can be considered favouring deprescribing because reducing medications without affecting the clinical status or causing harm is preferred effect for the patients. Evidence suggested that patients are willing to deprescribe their medications if that would be possible.^{47,48} Moreover, deprescribing has been shown to be a safe and cost-effective intervention.⁴ Notably, several recent reviews that aimed on evaluating the impact of deprescribing have included several inappropriate medication management interventions.^{46,49–52} For each of the mentioned approaches, the need to provide evidence on the impact of these interventions on clinical outcomes is still lacking.

5 | PUBLIC RECOGNITION

Despite the quite long time that polypharmacy management processes have been studied, and the government

TABLE 2 Summary of identified differences and similarities between deprescribing and inappropriate polypharmacy management.

	Deprescribing	Polypharmacy management	Similarities	Differences
Definition or scope	“The supervised process of intentionally stopping a medication, reducing its dose or replacing it with a safer alternative to improve a person’s quality of life or reduce the risk of adverse drug events” ³	A variety of interventions provided in literature to manage polypharmacy among the older patients ²	The focus on older multimorbid patients (previous rationale of deprescribing)	Deprescribing focuses on other population of patients
Processes/Steps	<ol style="list-style-type: none"> 1. Review of medicines history 2. Identification of problematic medications 3. Identifying targeted medications 4. Planning, consulting patients, executing 5. Monitoring and documentation⁴ 	<ul style="list-style-type: none"> • Optimal prescribing • Pharmaceutical care • Collaborative physician—pharmacist medication therapy management (MTM) • Comprehensive Geriatric Assessment (CGA) • Drug review with follow-up² 	<ul style="list-style-type: none"> • Having drug review as core focus • Initially led by GPs, then pharmacists showed competency to lead such interventions • Can be performed at different healthcare settings • Both concentrate on patients’ engagement in the decision-making • Both include multidisciplinary team(s) and put the patients at the centre of care 	<ul style="list-style-type: none"> • Deprescribing focuses on reducing, tapering or altering medications while pharmaceutical care or optimal prescribing can start medications or increase doses. • Some polypharmacy management approaches such as CGA include assessment of the patients’ physical functions other than medications.
Guidelines and resources	<ul style="list-style-type: none"> • Generic guidelines (to inform the whole process)⁷ • Drug class specific^{57–59} • User-friendly algorithms that coexist with most of the evidence-based drug class-specific deprescribing guidelines^{7,37,59} 	<ul style="list-style-type: none"> • Explicit tools (STOPP/START criteria, Beer’s criteria, MAI index and others)^{2,44} • Implicit tools (comprehensive geriatric assessment [CGA]) • Generic guidelines to inform prescribing and polypharmacy management provided by institutions such as NIH and NICE are developed but they are still under-utilized by clinicians² 	<ul style="list-style-type: none"> • Electronic decision support systems utilized to help clinicians in screening for problematic medications and in decision-making • Generic guidelines have been mentioned in literature evaluating polypharmacy management and deprescribing as well 	Deprescribing guidelines have been shifted to be drug class specific or populations of patients specific
Public recognition	Government recognition of the process in Australia, Canada, United Kingdom and the WHO International deprescribing networks ⁴⁵	National Institute for Clinical Excellence (NICE) and the United Kingdom Royal College of General Practitioners have indorsed explicit and implicit tools mentioned above ²	Government recognition has been sought based on providing evidence-based procedure guidelines. Mentioned interventions still in need policy makers to implement them in large health systems	Government recognition depends on the country of origin of each intervention

(Continues)

TABLE 2 (Continued)

	Deprescribing	Polypharmacy management	Similarities	Differences
Evidence for utilization in practice	Recent research argues that reducing medications without difference on clinical endpoints could be considered as a positive effect of deprescribing ^{41,45}	Research suggests that the use of more than one approach at the same time could improve the outcomes of polypharmacy management ⁴⁵	Mentioned interventions have shown impact on enhancing quality of life, pill burden and appropriate medications use. They are, however, still need to provide evidence on their effect on clinical endpoints	No differences captured so far

institutions reports being published, policy makers still need to invest more efforts on promoting these interventions.² Efforts should also be directed to develop a gold standard evidence-based approach to be followed.² Such approach should meet the intended goals in providing medication management that avoid unneeded consequences of inappropriate polypharmacy while providing usual care in different settings. High-profile policy-driven projects such as “Stimulating Innovation Management of Polypharmacy and Adherence in the Elderly” (SYMPATHY) are needed to make changes in large healthcare systems. This mentioned programme, for example, has focused on older persons and has led to change management strategy and produced polypharmacy management guidance based on best practices.¹ In another instance, the Centers for Medicare and Medicaid included medication reviews as part of Care for Adults in the Medicare Modernization Act of 2023. This provides funding for annual comprehensive medication reviews for adults of 66 years and older by physician or clinical pharmacist.⁵³ Projects of these levels are needed if interventions are intended to make meaningful change in clinical practice.

Deprescribing on the other hand has gained government institutions’ recognition such as the National Overprescribing report in UK (2021)⁵⁴ and the World Health Organization Global Safety Challenge: Medication without Harm.⁵⁵ Moreover, several deprescribing platforms or professional networks have been developed for the purpose of unifying and structuring deprescribing efforts.⁴⁵ These networks comprise of multidisciplinary researchers whose focus is to produce evidence on deprescribing to inform clinical practices. Deprescribing networks and related research groups are now available in many countries, including, Canada, Australia, the United States and Japan, among others. They are working currently to raise awareness on deprescribing interventions and provide the policy makers with evidence-based approach and

clinical practice guidelines to be put in practice.⁵⁶ Table 2 summarizes the similarities and differences discussed in this review.

6 | CONCLUSION

There is an evident overlap between deprescribing and inappropriate polypharmacy management. This is represented by focusing on multimorbid older adults, using similar explicit and implicit tools and having drug review as a core step of the process. This overlap has probably made deprescribing considered as one of the polypharmacy management approaches. Comparing deprescribing and inappropriate polypharmacy management interventions is a major challenge, given that the rationale of providing deprescribing has been so far to manage polypharmacy. The difference is represented by the relatively new focus of deprescribing research on providing proactive approach for different populations of patients as well as producing evidence-based and user-friendly deprescribing guidelines. Deprescribing seems a well-structured, comprehensive and promising intervention designed to achieve appropriate medication therapy.

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