

## The Practice of Polypharmacy: Do Pharmacists Have A Role?

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### Abstract

Polypharmacy is the use of more drugs than are necessary for the medical management of a patient. Although in the past, polypharmacy was considered to be harmful, recently it is gaining acceptance to be therapeutically beneficial in many circumstances. Pharmacists who are generally considered as drug experts, are in a unique position to monitor and intervene in patients with polypharmacy and improve their quality of life. This article highlights the relevance of pharmacists' role in the practice of polypharmacy.

**Keywords** Polypharmacy; Pharmacist; Pharmacy; Deprescribing; Interventions; Healthcare; Quality of life

### Introduction

Polypharmacy is a term that has been used for a long time denoting the concurrent use of multiple drugs in an individual patient. Polypharmacy is defined by many studies as the intake of five or more medications [1]. While most definitions have various cut points to define polypharmacy, they do not take into consideration the prescriber's awareness of the patient or the patient's needs. Therefore, another suitable definition of polypharmacy would be "the use of more medications than are medically necessary" [1].

Polypharmacy is associated with many negative consequences such as increased healthcare costs, adverse drug events, non-adherence, drug interactions, impairment of functional capacity etc. [1]. However, although in the past, polypharmacy was considered a problem that had to be avoided, it is now gaining acceptance among health care providers that polypharmacy is therapeutically beneficial in many circumstances. A paper has proposed the terms "problematic polypharmacy" and "appropriate polypharmacy" which recognizes the fact that polypharmacy can be harmful, if managed poorly but beneficial for some patients [2].

While reviewing a prescription with polypharmacy, one might first attempt to reduce the number of drugs to improve the quality of care. This is not always desirable, as the medications might have positive effects.

The aim of this article is to describe briefly how pharmacists can provide positive interventions to improve quality of care in patients with polypharmacy.

### Prevalence and Interventions

Polypharmacy is most commonly encountered in patients with chronic diseases with co-morbidities and in the elderly [3]. Multiple medications are often required by practice guidelines to treat diseases such as diabetes for optimal therapeutic outcomes. The number of drugs prescribed for patients with diabetes is usually high. In addition to drugs needed to manage hyperglycemia, these patients also require

medications to manage complications and co-morbidities that are associated with diabetes and to prevent cardiovascular diseases.

A study assessed the number of drugs in a sample of patients with type 1 and type 2 diabetes admitted to a specialized diabetes clinic in Germany. They found that prescriptions were higher in patients with type 2 diabetes [4]. They compared the individual prescriptions with the recommendations from evidence-based guidelines and found that most prescriptions were appropriate. This is an example of a study which shows that prescribing according to guideline recommendations leads to polypharmacy. The authors did conclude that although the prescriptions appear to be justified, in order to achieve better outcomes in diabetic patients, the high number of medications could be a barrier to adherence to treatment [4]. Combination of several active ingredients into one dosage form could be considered as a strategy to reduce the number of doses and hence improve adherence [5].

With a global increase of the elderly population, polypharmacy is becoming more prevalent in this population. The use of multiple medications has been related to potentially inappropriate prescribing in the elderly [1]. One review stated that some of the common reasons for considering a medication as inappropriate, in the setting of ambulatory care of the elderly, are lack of effectiveness, followed by lack of indication and therapeutic duplication [1].

An important review determined which interventions were effective in improving the appropriate use of polypharmacy in the elderly. The main outcome measured, by a validated instrument, was the change in the prevalence of appropriate use of polypharmacy. Most of the interventions were multi-faceted and complex. Majority of the interventions were pharmaceutical care interventions. A brief outline of the interventions described in the review will bring to light the interventions that pharmacists can provide in this population. The interventions included automated drug alerts, screening by consultant pharmacists who visited nursing homes, pharmacists outreach, and interventions in various settings by clinical pharmacists. Only one intervention involved computerized decision support system [6]. Pharmacists who worked closely with other healthcare professionals in a variety of settings were commonly involved in providing pharmaceutical care. Within the setting of a hospital, pharmacists worked in outpatient clinics, provided clinical pharmacy service in inpatient wards and also in the discharge process. The pharmaceutical

care services provided in the community settings included patient interviews and counseling, and medication reviews. In nursing homes settings, pharmacists provided drug therapy management service along with participation in case conferences and providing education to a multi-disciplinary healthcare staff [6].

The authors also observed that the interventions, across all studies, did not have a consistent pattern. They attributed this inconsistency to differences in the method of provision of the interventions, variable processes and culture in care delivery and background practice. With regard to study specific factors, the differences in the quality of studies could have had an effect. The methods described in the studies had insufficient details on the development of interventions, design of trials and training of staff in the provision of interventions. The studies also did not clearly state information which was relevant to the success of the interventions such as extent of access to records, sharing and communication of information and documentation. Although the results of these studies were promising, suggesting that the appropriateness of polypharmacy was improved successfully by the interventions, the “clinical impact is not known” [6]. This is a significant conclusion and must be seriously taken into account in future studies to show the positive and clinically significant intervention by the pharmacist on the practice of polypharmacy. It was difficult for the researchers to evaluate the effect of any improvement in medication appropriateness owing to the use of various appropriateness scales in the selected studies. In spite of the fact that the objective of the studies included in the review was to reduce injuries due to polypharmacy and make certain that elderly people are given appropriate drugs and consequently enhance their quality of life, several intervention studies gave priority to reduction of the number of drugs rather than refining the appropriateness of prescribing, which includes underprescribing [6].

Some experts are of the opinion that the best intervention, for improving polypharmacy in elderly patients, is to have an interprofessional approach which often includes a clinical pharmacist [1].

Polypharmacy is not an exclusive issue that affects only the elderly but it also affects other age groups. Pediatric drug effectiveness and safety, a previously neglected area, is now receiving increased attention. The approval by US Food and Drug Administration requires testing of isolated agents. As a result, the net health outcomes with medication combinations are not clearly known. The lack of sufficient efficacy and safety studies in pediatric care magnifies this uncertainty [7]. The efficacy and safety of several pediatric medications, in the hospital setting, have not been well established and most of the medications is for off label indications and it is common for medication errors to occur [8,9].

A retrospective cohort study examined drug use patterns in hospitalized children focusing on exposure to polypharmacy [8]. Hospital drug use data from two databases were combined for analysis. The first data set were extracted from children's hospitals and the second set from general hospitals. Together, the data represented 19.9% of all inpatient children hospitalizations in the US. Healthy newborns were excluded from this study. The results of the study revealed that the level of polypharmacy exposure raised patient safety concerns. However, some experts are of the opinion that this study had insufficient information on which prescribing patterns were problematic for patients, which is vital as pediatric care in hospital setting is complex and there are no clear statements on which drugs and their combinations are most suitable for a pediatric patient [7].

The children in some facilities might have been exposed to potentially harmful and unnecessary polypharmacy while in other hospitals they might have been undertreated. However, the study by Feudtner et al. could provide information to randomized control trials and highlight the health impact of pediatric polypharmacy. It is recommended that outpatient pediatric polypharmacy also deserves attention as it is increasingly prevalent in non-hospitalized children [7]. Healthcare professionals, researchers and policy makers need to collaborate in promoting the development of evidence to improve pediatric polypharmacy and also have a commitment towards “translating new knowledge into better practice” [7]. There is potential for pharmacists to make interventions to improve the quality of healthcare for pediatric patients with polypharmacy. A pharmacist can perform discharge counseling, assess drug-drug interactions, prevent medication errors, monitor for adverse events etc. [10]. However, the documentation of evidence for interventions to reduce polypharmacy in children is limited [10].

Deprescribing is being promoted as a tool for optimizing drug therapy in patients with polypharmacy, especially in elderly patients, and is recommended to be included in the prescribing processes for all professionals involved in healthcare [11]. Deprescription is the “process of discontinuing drugs by analyzing them, revealing and trying to resolve their contradictions and ambiguities” [12]. Results from studies reveal benefits in mortality, especially in the elderly, cost and hospitalization reductions, less drug adverse effects, and is considered a safe intervention, although studies on the “consequences” of deprescription are limited and biased [11]. The objectives of deprescription will be fully met if there is a professional discussion with the patient and the patient's preferences are taken into consideration [12].

## Conclusion

Depending on individual cases, pharmacists have a positive role to play and should intervene to reduce and if necessary, stop the inappropriate use of polypharmacy, and improve its appropriate use.

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