

# POLYPHARMACY IN THE ELDERLY

Kate L. Szymanski, DO<sup>1</sup>; Anu Garg, MD, CMD<sup>1</sup>; Megan Sizemore, RPh, PharmD, BCACP, BCMTMS<sup>1</sup>; Lindsey Loutzenhiser, BSPS<sup>2</sup>

<sup>1</sup>Department of Family Medicine and Geriatrics, University of Toledo, Toledo, OH

<sup>2</sup>University of Toledo College of Pharmacy, Toledo, OH

## KEYWORDS

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## ABSTRACT

Polypharmacy is the regular use of multiple medications and is often seen in older adults and individuals with multiple comorbidities. The commonly accepted definition of polypharmacy is the use of five or more medications by any individual. As patients become more multimorbid, the use of medication therapy increases and in turn raises the risk of polypharmacy. Polypharmacy is often associated with adverse outcomes, including increased mortality, falls, drug interactions, drug reactions, increased length of stay in the hospital, and increased readmission to the hospital after discharge. Patients over the age of 65 are often not included or well represented in drug trials, which can make medical decision-making challenging for evaluation of risk versus benefit in this patient population. There are several important factors to take note of when evaluating patients with polypharmacy.

## INTRODUCTION

Polypharmacy is the regular use of multiple medications and is often seen in older adults and individuals with multiple comorbidities.<sup>1</sup> As patients become more multimorbid, the use of medication therapy increases to treat each condition. Multimorbidity is generally defined as having two or more disease states.<sup>1,2</sup> The commonly accepted definition of polypharmacy is the use of five or more medications in any individual.<sup>3</sup> While prescribing medications can satisfy specific quality metrics and mitigate disease-specific concerns, it also increases the risk of adverse consequences from polypharmacy. Patients over the age of 65 are often not included or not well represented in drug trials, which can make medical decision-making challenging for evaluation of risk versus benefit in this patient population. Polypharmacy is often associated with adverse outcomes, including mortality, falls, drug interactions, drug reactions, increased length of stay in hospital, and increased readmission to the hospital after discharge. There are several important factors to take note of when evaluating patients with polypharmacy.

While numeric classification of polypharmacy is convenient, it is not always efficient as it is often too simplistic.<sup>3</sup> The use of more than five medications is not always problematic in a well-optimized patient without medication side effects. Therefore, there are also qualitative definitions of polypharmacy, defined as the use of multiple unnecessary medications. This includes

medications that are unnecessary, ineffective, harmful, or the product of side effect treatment. To do this, polypharmacy reduction strategies should encompass the reduction of the number of medications prescribed while addressing unnecessary or ineffective medications.

## CONSEQUENCES OF POLYPHARMACY

Polypharmacy contributes to a significant number of negative outcomes for both patients and healthcare systems.<sup>4</sup> Specifically, there is an increased financial burden from taking multiple medications that can be associated with increased healthcare costs and the increased risk of drug-related adverse events and interactions. These consequences can be seen across the multiple settings of medical practice and can have significant detrimental effects on patient wellness. In part, this can be attributed to the disproportionate use of medications in the geriatric population in the United States. According to data published by Medicare,<sup>5</sup> approximately 15% of beneficiaries receive up to 35% of prescription medications in the United States. These data also report that older adults account for approximately 66% of the over-the-counter and supplement use in the United States.

Another consequence of polypharmacy is adverse drug events.<sup>6</sup> It has been estimated that up to 35% of outpatients and 40% of hospitalized elderly adults will experience an adverse drug event. Multiple studies have demonstrated that patients taking more than five medications can be up to four times more likely to be hospitalized from an adverse drug event. Common drug classes associated with these events include anticoagulants, antihypertensives, antibiotics, anticonvulsants, antiglycemic agents, nonsteroidal anti-inflammatory drugs, opiates, and benzodiazepines. Several of these medications can be prescribed

## CORRESPONDENCE:

Kate L. Szymanski, DO | kate.szymanski@utoledo.edu,

in one individual, leading to a further increase in the risk of drug interactions and also to adverse drug events.

It has been demonstrated that polypharmacy is associated with an accelerated decline in functional status, worsening of geriatric syndromes, and increased medication nonadherence. The Women's Health Initiative Observational Study<sup>7</sup> found that the use of five or more medications was associated with a reduction in the ability to perform independent activities of daily living. This functional impairment can further contribute to lack of adherence to a medication regimen.

Nonadherence to medications is frequently complex and multifactorial. There are often multiple reasons why any one individual will have medication nonadherence, including side effects, cost of medications, and complicated medication regimens. While nonadherence may be mitigated through the use of a pill pack system, it may create difficulties with changing medications and deprescribing.<sup>8</sup> These complicated medication regimens and nonadherence issues are associated with increased hospitalization and disease progression.

## SOURCES OF POLYPHARMACY

Multimorbidity and patient perception of health can both contribute to polypharmacy. With each new diagnosis, an alteration in medication regimen is often made. For example, on diagnosis of diabetes, patients often are started on antiglycemic medications, cholesterol regulation medications, and renal-protective antihypertensive medications. In just one diagnosis, the patient has already been started on at least three medications. This does not take into consideration any additional comorbidities or over-the-counter medications the patient may also be taking. Based on survey data,<sup>5</sup> 34% of the population between 60 and 79 years old takes five or more prescription medications.

It has been noted that patients over 65 are the largest consumers of over-the-counter vitamins and supplements in the United States.<sup>6</sup> The supplements are often advertised to increase overall well-being and treat a multitude of conditions. Common over-the-counter supplements that are known to interact with prescribed regimens include St John's wort, saw palmetto, ginseng, ginkgo biloba, garlic, and green tea extract. These medications are all well known to have interactions with prescription medications and liver enzymes. It is of growing importance to ask all patients about their use of nonprescription medications and supplements.

## INDICATIONS FOR DEPRESCRIBING

Evaluation for deprescribing should not wait until there is a problem. Periodic evaluation of medications can easily occur multiple times throughout a calendar year.<sup>9</sup> During a patient's annual wellness exam, their medication list should be reviewed by a provider. With each transition of care, the medication list should be reevaluated for changes, drug interactions, over-the-counter vitamins or supplements, and medications used to treat side effects. The American Geriatric Society recommends not prescribing any new medications without conducting a review of the current drug regimen. This is also supported by the American

Society of Health System Pharmacists, which also recommends evaluating for over-the-counter and dietary supplements concurrently.

## CHALLENGES TO DEPRESCRIBING

In our training, providers are taught how to start medications and find new diagnoses, but we are not educated on how to evaluate and reduce medications. As osteopathic physicians, we have a unique capability to use a holistic approach to care for patients. In this approach, we can use our osteopathic tenets to decrease the need to start medications. Interventions such as osteopathic manipulation and motivational interviewing for lifestyle modifications can lead to decreased medication intervention. Once patients are already on medications, it is often challenging to discontinue therapy.

Unfortunately, there is no one validated tool to use for polypharmacy or deprescribing. Multiple tools are commonly discussed, such as the Beers list, Screening Tool of Older People's Prescriptions (STOPP), Screening Tool to Alert to Right Treatment (START), and the Medication Appropriateness Index. However, these tools can be time-consuming and may not always address patient concerns or complexity.

## TOOLS FOR DEPRESCRIBING

### Beers List

The Beers list provides a comprehensive list of medications that should be prioritized for deprescribing; however, it does not provide recommendations on how or when to stop medications. The *Journal of the American Geriatric Society* updates the AGS Beers criteria annually.<sup>10,11</sup> This was originally developed by Mark Beers, et al. in 1991<sup>10,11</sup> as a list of medications to avoid in older adults due to increased morbidity and mortality. In more recent years it has been transitioned to being governed by the American Geriatric Society. While this is an extensive list of medications, it is subdivided into different categories to help facilitate appropriate medication management: avoided by most older people, avoided by older people with specific<sup>10,11</sup> health conditions, avoided in combination with other treatments because of risk of harmful interactions, used with caution because of the potential for harmful side effects, and dosed differently or avoided among people with reduced kidney function. The Beers list content is incredibly detailed and can be intimidating to providers. Enlisting the help of a pharmacist can help mitigate the confusion with the Beers list.

### STOPP/START

The next tool would be of best use for prescribers looking for recommendations on appropriate treatments versus potentially harmful medications for a variety of disease states in elderly patients. The Screening Tool of Older People's Prescriptions and the Screening Tool to Alert to Right Treatment were both created by a consensus panel of 18 experts.<sup>12</sup> The contents of each are unique and look at criteria by organ system. The intention of the STOPP/START criteria is to provide explicit

evidence-based guidelines to potentially prevent inappropriate prescribing and correct potential omissions. An additional aim is to prevent adverse drug events while reducing drug costs.

STOPP/START look at medications that should be removed or considered in adults over age 65 where there are no other contraindications. This tool evaluates the gastrointestinal, cardiovascular, respiratory, endocrine, urogenital, and musculoskeletal systems as well as the central nervous system. A unique facet to this tool is that it includes a scoring scale for anticholinergic burden based on medication and medication class. This allows an evidence-based approach to deprescribing in elderly populations who are often excluded from drug trials.

### Medication Assessment Index (MAI)

To examine a single medication and assess the risk versus benefit, the Medication Assessment Index<sup>13</sup> can be used. The MAI is a 10-question tool used to evaluate the benefits and risks of medications. This tool helps the clinician look at the medication in relation to the patient and their other medications, focusing on indication, directions, drug-drug interactions, and drug-disease state interactions. This tool, like the Beers list, can be intimidating and may also be time-consuming. Recruiting the help of a pharmacist may decrease the time burden of this tool.

### MedStopper

When attempting to discontinue multiple medications for patients with polypharmacy, it may be difficult to determine how to prioritize removing medications. MedStopper<sup>14</sup> is a tool designed to rank which medications might be the best to discontinue for a patient. The application analyzes the medication's potential to improve symptoms, reduce risk of future illness, and likelihood of causing harm based on its indication. In addition, it provides taper instructions and potential withdrawal symptoms to be aware of if the medication will be discontinued. Each medication will also display whether the medication is included on the Beers list/STOPP criteria.

### Pharmacists

Pharmacists<sup>15,16</sup> are another tool for prescribers to use. Though there are several tools available to help deprescribe medications, they can be time-consuming and overwhelming for clinicians. Pharmacists have the ability, training, and knowledge to quickly and effectively use these tools to make recommendations for medication regimens. Several studies support the use of pharmacists in deprescribing, showing positive outcomes, including reduced drug-drug interactions, cost, and improved adherence.<sup>15,16</sup>

### A Stepwise Approach for Deprescribing

If a patient is suspected of polypharmacy or considered as a candidate for deprescribing, the most logical first step would be to collect an accurate medication list for the patient. A "brown bag"

appointment where the patient brings in all their medications and goes over them with a pharmacist or nurse can help to identify gaps or duplicates in care. Having the patient verbally confirm how they take each medication can help identify nonadherence as well.<sup>17</sup> Once an accurate list of the patient's medications has been obtained, and adherence is assessed if possible, using one of the tools described above to identify any unnecessary medications would be the next step. Finally, time will need to be spent with the patient to provide them with education on benefits or any withdrawal side effects from eliminating medications.

## CONCLUSION

We want to bring attention to the problems associated with polypharmacy in older adults and provide tools to providers to help address this issue. Recommendations include reviewing medication lists and having patients bring bottles to visits. Ask about all over-the-counter medications and, when possible, stop vitamin supplementation. Consider deprescribing medications if the patient is asymptomatic and monitor for symptoms.

Using tools such the Beers list and the START/STOPP tool can improve a provider's ability to stop unnecessary medications. These tools can also help avoid medication cascade and therefore minimize further polypharmacy. The presence of a pharmacist can help by simplifying the medication regimen, improving compliance, and consistently providing medication review at the time of outpatient visits. The American Geriatric Society regularly updates online resources and allows utilization of polypharmacy tools available to all providers. Primary care providers can be instrumental in the implementation of the abovementioned tools and improving polypharmacy in older adults.

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