

## The prescription paradox: a guide to appropriate prescribing in the elderly

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### Abstract

Appropriate prescribing in the elderly can be challenging. While most of the older patients suffer from multiple comorbidities and undergo physiological changes with aging, no clinical guidelines account for these unique characteristics of the elderly adequately. Our commentary proposes a continuous process of prescribing and deprescribing as a necessary step for providers to prevent adverse drug events associated with unnecessary polypharmacy, a result of clinical guidelines working in silos. In addressing this issue, we employed Dr. Nick Barber's four tenants of appropriate prescribing – maximize effectiveness, minimize risk, minimize cost, and respect patient choice – as a framework to guide providers through actionable insights on how to optimize the intended effects of their clinical treatment while also achieving desirable humanistic and economic outcomes.

### Introduction

Elderly patients are traditionally some of the most complex patients providers will treat, as they present many unique challenges. As patients age, anatomical and physiological changes alter the body's pharmacokinetic and pharmacodynamic profile. On top of that, many patients' physical activity level decreases and general health will slowly deteriorate with aging as well. However, the most challenging aspect of aging, from a provider's perspective, is certainly the steady diagnosis of new comorbidities. As comorbidities increase, patients receive complex treatment regimens that require multiple medications for optimal management, an experience defined as polypharmacy. Polypharmacy is a widely prevalent phenomenon in older patients, with up to 44 percent of the elderly in Europe exposed to polypharmacy (5+ med-

ications), and 12 percent exposed to excessive polypharmacy (10+ medications).<sup>1,2</sup>

While polypharmacy is commonly seen as a necessary evil that is inevitable for the elderly as they cope with aging, there is no question that it comes with multiple negative consequences.<sup>3</sup> Polypharmacy has been associated with increased risk for adverse drug events (ADEs), drug-drug and drug-disease state interactions, reduced functional capacity, multiple geriatric syndromes, medication non-adherence, increased mortality, and increased costs to the healthcare system.<sup>4</sup> As such, optimizing drug therapy in the elderly is a complex, yet necessary, task for the prescriber.

In a letter to the Editor published in *BMJ* more than 20 years ago, Dr. Nick Barber, recognizing the inherent difficulty of the prescribing process, pondered what constitutes good prescribing. Dr. Barber proposed that good prescribing should aim to achieve the following: maximize effectiveness, minimize risk, minimize costs, and respect the patient's choice.<sup>5</sup> It is our belief that if providers were to re-focus their prescribing in the elderly around these four principles, the intended effects of drug regimens could be optimized while also achieving desirable clinical, humanistic, and economic outcomes.

### Maximize effectiveness

In treating the elderly population, maximizing the effectiveness of medications has been and will likely remain difficult. The lack of clinical studies in the elderly population is commonly referenced by providers as a significant challenge to prescribing appropriately. Historically, the elderly population has been under-represented in randomized controlled trials (RCTs) since their inclusion would increase the risk of confounding.<sup>6</sup> Therefore, providers must look outside of traditional RCTs and consider real world evidence (RWE) in their decision-making process. RWE studies are typically less restrictive with inclusion and exclusion criteria and therefore are an excellent resource to bridge the gap between clinical trials and actual practice.

One commonly-referenced technique to help maximize effectiveness for patients is the use of evidence-based medicine. Many may consider adhering to clinical practice guidelines (CPGs) as a necessary component to practice evidence-based medicine, as the recommendations made in CPGs are based on the findings of the best available data. CPGs, while useful in most situations, do have drawbacks that must be considered.

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CPGs primarily look at disease states in silos and therefore are unable to fully consider all possible patient comorbidities and how the suggested treatments would affect other aspects of the patient's treatment regimen. CPGs also heavily rely on RCTs for their recommendations; therefore, the recommendations may not be well-suited for the patient populations that are typically excluded in RCTs, such as the elderly.<sup>6</sup> Evidence has shown that if providers attempt to strictly apply CPGs to an elderly patient, the treatment strategy could be highly complex, and the patient could be at increased risk for medication errors, ADEs, drug interactions, and hospitalization.<sup>7</sup> It is our belief that true evidence-based medicine would rely not solely on CPG recommendations but rather strike a balance between CPG recommendations, RWE, the patient's medical history, and professional opinion.

If providers hope to further maximize effectiveness, they must also be aware of and

work to avoid the prescribing cascade. The prescribing cascade occurs when an ADE is mistakenly interpreted as a new medical condition. Due to the high prevalence of comorbid diseases, polypharmacy, and health care utilization in the elderly, this patient population is at increased risk of experiencing the prescribing cascade.<sup>8</sup> This phenomenon is not absolute and could certainly be prevented if providers are given the time to fully assess the patient at each interaction and determine the root cause of any newly-manifested symptoms. Bain and colleagues have proposed a framework that encourages providers to approach medical treatment as a continuous process between starting new medications and deprescribing inappropriate ones.<sup>9</sup> Traditionally, prescribing has been associated only with starting a new medication, but the Bain framework challenges this way of thinking and encourages providers to consider regimen changes, medication discontinuation, and continuing current therapy all as important components of effective prescribing. By taking this more holistic approach to prescribing, providers would be more likely to consider all options before starting a new therapy and therefore limit the occurrence of the prescribing cascade.

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### Minimize risk

Upon graduating from medical school, the majority of providers take a version of *The Hippocratic Oath*. As part of this oath, providers pledge to, *Do no harm*, which is considered the standard premise for all medical care. As such, it is the provider's duty to minimize risks whenever possible. With this goal of minimizing risk in mind, numerous professional organizations have developed explicit criteria to aid providers in the prescribing process for the elderly. The goal of these criteria is to protect the elderly from potentially inappropriate medications (PIMs) that research has determined provide minimal benefit to this patient population. The first explicit criteria were established by Dr. Mark H. Beers and his colleagues in 1991, and all further criteria have been derived from this list.<sup>10</sup> Explicit criteria are widely accepted, and studies have shown that use of PIMs positively correlates with increased risk for negative health outcomes. For instance, patients exposed to PIMs listed in the Maio criteria, a nationally recognized explicit criteria in Italy, were at 16% higher risk for hospitalization than those that were not exposed.<sup>11</sup>

While explicit criteria provide a good foundation for decision making, respecting

explicit criteria without individualization, is, at its best, rational prescribing, and fails to adequately address the complexities of individual patients. If providers hope to truly minimize the risks associated with the prescribing process, they must consider implicit criteria as well. Implicit criteria are patient-specific and judgement-based, and they consider the patient's medication list when making treatment decisions.<sup>12</sup> Implicit criteria rely heavily on the knowledge and experiences of the provider; therefore, treatment is not standardized, and may vary slightly from provider to provider. Although implicit criteria may be difficult to quantify, due to its somewhat abstract nature, it remains a vital component in any medication decision process if providers hope to maximize patient outcomes.

To further maintain low risk for patients, providers must actively correct potentially harmful situations through deprescribing, the discontinuation of inappropriate medications. While this process seems simple in theory, there are many psychological barriers that providers must overcome to fully implement deprescribing into their daily practice. For instance, providers are less likely to discontinue a medication that they have identified as inappropriate, if it was prescribed by another provider.<sup>13</sup> One possible reason for this hesitation may be due the halo effect, where it is assumed that specialists are infallible in their field and thus the non-specialist defers to the specialist's opinion, regardless of their own beliefs and past experiences.<sup>14</sup> This type of bias discourages active collaboration between the providers of the same patient, potentially putting the patient at higher risk for negative outcomes. In order to alleviate the halo effect, providers must be educated on the negative consequences associated with this phenomenon and provider collaboration must be encouraged.

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### Minimize cost

Medical decisions should always be influenced primarily by clinical outcomes. However, as healthcare costs continue to rise, an increased emphasis is being placed on cost of care. Health systems are constantly looking for ways to lower patient costs without sacrificing patient outcomes. Potentially inappropriate prescribing in the elderly has been identified as one such opportunity. One study conducted in Canada found that inappropriate medication used in the elderly resulted in 419 million dollars wasted, and thus represents a major concern for the healthcare system.<sup>15</sup> If

providers hope to lower costs for patients and the healthcare system as whole, then appropriate prescribing in the elderly must be emphasized.

Deprescribing is not just a logical means to save healthcare costs, but rather a necessary step. Cost of care can be controlled by limiting pharmaceutical costs through the judicious use of medications, but most importantly, by preventing ADEs that occur secondary to inappropriate medication use. A study conducted in 2015 comparing sedative hypnotics, a universally agreed upon PIM in the elderly, to cognitive behavior therapy (CBT) for the treatment of insomnia in older adults found that CBT resulted in reduced health care costs and improved quality of life compared to sedative hypnotics.<sup>16</sup> The cost associated with delivering CBT, \$167 annually, was higher than the cost of sedative hypnotics, \$137 annually, but ultimately CBT resulted in fewer ADEs; therefore, overall cost savings with CBT was greater than \$10,000. As illuminated by this study, the possible ADEs associated with treatment must be considered when clinically and economically evaluating possible treatment strategies, as even seemingly effective treatments could result in side effects whose cost may alter the decision-making process.

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### Respect patient choice

The last of the four components that make up good prescribing by Dr. Barber's definition - respecting patient's preference - is as critical, if not more critical, than the other three mentioned previously. Even supposing the treatment strategy is tailored to protect the patient from PIMs and unnecessary costs, if the patient does not take the medications as prescribed, then treatment should be deemed inappropriate. While it is the patient's responsibility to follow the prescription, providers are still held accountable for ensuring that treatment is tailored to individual patient preference.<sup>12</sup> Following this logic, a therapy regimen that the patient would unlikely comply with would be considered inappropriate prescribing.

Given that the elderly population is often prescribed more than 5 medications (*i.e.*, polypharmacy), non-adherence is inevitably more prevalent in this age group compared to the younger cohorts who, typically, need to keep track of fewer drugs.<sup>17</sup> Deprescribing, hence, is even more crucial in this population, as a simpler drug regimen would be easier to manage. Even in the process of deprescribing and prescribing, medication adherence may be improved

even further if decisions were made by exploring and respecting what matters most to patients, rather than by taking the traditional paternalistic approach.<sup>18</sup> This so-called shared decision making process promotes self-determination of individuals where patients' intrinsic tendencies to protect their well-being are respected in making informed decisions.<sup>18</sup> It has demonstrated to be effective in increasing patient adherence, which in turn would improve their health outcomes.<sup>19</sup> We firmly believe empowering patients would help optimize the effectiveness of the treatment regimens, and the extent to which patients adhere to prescriptions depends on how collaborative a relationship providers form with their patients.

## Conclusions

While appropriate prescribing in the elderly is undoubtedly a challenge, it is one that must be met head on. Improving prescribing practices in the elderly is not a sprint but rather a marathon, and requires providers to alter habits that may have become ingrained in them over time. By adjusting prescribing habits to center around the four tenants proposed by Dr. Nick Barber - maximize effectiveness, minimize risk, minimize cost, and respect patient choice - providers are able to better limit the negative effects associated with inappropriate prescribing.<sup>5</sup>

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