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## Editorial

## Medications in Post-Acute and Long-Term Care: Challenges and Controversies



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### Keywords

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Pharmaceutical agents are a valuable resource to assist in the care of older persons. Their use in post-acute and long-term care settings is particularly notable—for example, the proportion of nursing home residents taking 9 or more medications increased from 18% in the mid-1990s to 40% less than 15 years later.<sup>1,2</sup> Average drug counts are similarly high around the world, although there is considerable variation in use between settings and countries.<sup>3,4</sup> High medication use occurs despite the fact that persons with advanced age and

multimorbidity are particularly susceptible to drug adverse effects due to physiological changes such as declines in hepatic and renal clearance. Further, the probability of deleterious drug interactions rises exponentially as the number of medications increases.<sup>5</sup>

Why are so many drugs administered in post-acute and long-term care, and why does the number keep rising? One reason is because new and better agents have been developed for a variety of conditions common in nursing homes, which relieve or prevent morbidity and delay mortality. Many of these newer medications, such as bisphosphonates for fracture prevention, angiotensin-converting enzyme inhibitors for diabetic renal protection, and beta blockers for coronary artery disease, have strong data in the nursing home literature supporting their use. Other reasons for increasing drug lists, however, are less clearly good for patients. In some cases,

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pharmaceuticals are prescribed for convenience, when equally or more effective nonpharmacologic treatments are avoided because they require more time to administer or are deemed impractical in the long-term care environment. Sometimes medications are continued because of simple benign neglect or poor communication with outside providers who may have started a prescription for justifiable reasons that no longer apply. On other occasions, they are prescribed because of patient or family insistence by a reluctant medical provider; at times, they increase because of the “prescribing cascade,” in which the side effects of one medication beget the prescription for another<sup>6</sup>; and sometimes they may reflect the subtle influence of promotion by the pharmaceutical industry, despite the fact that older multimorbid, frail, and polymedicated people have been insufficiently included in drug trials.<sup>7</sup>

Regardless the reasons, medications have become so ingrained in nursing home culture that the role of the unit nurse now revolves to a great extent around the administration, documentation, and monitoring of medications. Regulatory guidelines have mandated the involvement of pharmacists in medication management, but their level of engagement and influence on prescribing is highly variable.

The heavy and ubiquitous role of medications in post-acute and long-term care has given rise to many concerns and controversies. To help lend a focus on these topics, the January 2021 issue of *JAMDA* is entirely devoted to challenges in medication use in post-acute and long-term care. In this editorial, members of the steering committee for the special issue provide an overview of key areas of controversy, many of which are touched on by papers in this issue. We have listed key issues in [Table 1](#); they are discussed in the sections that follow.

### Concern About Overprescribing of Certain Medication Classes

Certain medications and medication classes are particularly controversial because of concern about adverse effects from potentially inappropriate use. Among the areas of greatest concern include drugs with anticholinergic properties, medications for mood and behavior, antibiotics, and proton pump inhibitors.

**Table 1**  
Current and Emerging Issues in Drug Therapy in Nursing Homes

Concern about overprescribing of certain medication classes
<ul style="list-style-type: none"> <li>• Anticholinergics</li> <li>• Psychoactive medications for mood and behaviors</li> <li>• Antimicrobials</li> <li>• Proton pump inhibitors</li> </ul>
Better individualize prescribing decisions based on patient risk factors, health status, prognosis, care goals, and risk of adverse effects
<ul style="list-style-type: none"> <li>• Medications for osteoporosis</li> <li>• Anticoagulants</li> <li>• Antihypertensives</li> <li>• Statins and other lipid-lowering agents</li> <li>• Alcohol and cannabinoids</li> <li>• Opiates</li> <li>• Patients near the end of life</li> </ul>
Need to improve the overall quality of prescribing
<ul style="list-style-type: none"> <li>• Systems and tools for medication surveillance and monitoring</li> <li>• Communication with residents and families around medications</li> <li>• Prescribing practice around diabetes care</li> <li>• More precise attention to renal function</li> <li>• Management of medications during transitions from the hospital</li> <li>• Novel methods of medication administration to improve adherence or reduce adverse effects</li> <li>• PRN (as-needed) medication use</li> <li>• Deprescribing</li> </ul>
Other emerging issues
<ul style="list-style-type: none"> <li>• Medications to treat early COVID-19 infection</li> <li>• Interaction between ongoing medications and COVID-19 infection</li> <li>• Roles of medical directors and pharmacists in nursing home prescribing</li> </ul>

- **Anticholinergic burden.** It has long been known that many medications have anticholinergic properties, which not only produce bothersome symptoms such as dry mouth and constipation but also can worsen cognition. Many of the worst offenders have been largely eliminated since publication of the first Beers criteria<sup>8</sup>; however, the lengthening of medication lists has caused many older persons to garner considerable anticholinergic burden from the summation of many drugs with mild and moderate anticholinergic effects. In the January 2021 issue of *JAMDA*, 2 systematic reviews summarize the current state of knowledge about the impact of anticholinergic effects on physical function, quality of life, and the incidence of delirium.<sup>9,10</sup>
- **Psychoactive medications for mood and behavior.** At any given day, more than half of nursing home residents typically are on at least 1 antipsychotic, hypnotic, sedative, anxiolytic, antidepressant, or anticonvulsant to address mood or behavior, despite the fact that side effects are common and effectiveness is often limited in older persons.<sup>11–13</sup> Efforts to curtail psychoactive drug use have been ongoing for several decades and in recent years have resulted in modest decreases in antipsychotics, with such results requiring intensive interdisciplinary effort from physicians, pharmacists, and nursing staff<sup>13–15</sup>; however, use of psychoactive medication in general and antipsychotics in particular remains an area of concern. This issue of *JAMDA* includes 3 papers that shed new light on this topic; one documents that antipsychotics are often initiated during hospitalizations and continued in the nursing home<sup>16</sup>; another documents increases in prescription rates during the first 6 months of a nursing home stay<sup>17</sup>; and a third describes a successful program that decreased by a third the use of antipsychotics in 2 long-term care hospitals.<sup>18</sup>
- **Antibiotic overprescribing.** The prevalence of colonization with multidrug-resistant organisms in nursing homes now considerably exceeds that found in acute care hospitals.<sup>19</sup> One major cause is the high rate of antimicrobial prescribing in nursing homes, much of which is believed to be unnecessary.<sup>20</sup> In response, antibiotic stewardship efforts aimed at reducing overprescribing are widely promoted, and some successes have been achieved.<sup>21,22</sup> In this issue of *JAMDA*, 3 articles report research relevant to better understanding some of the issues related to antibiotic overprescribing. Beeber et al<sup>23</sup> present research documenting how nurses are more likely to make decisions that do not follow prescribing guidelines when they have limited time; Hendricksen and colleagues<sup>24</sup> identify facility factors that are associated with increased prescribing in persons with advanced dementia; and Hanlon et al<sup>25</sup> report encouraging results from an intervention study to improve prescribing for suspected cystitis. Additionally, an editorial provides guidance on how nursing home consultant pharmacists can be particularly helpful in advancing antibiotic stewardship efforts.<sup>26</sup>
- **Overprescribing of proton pump inhibitors.** This class of medications has become highly popular for relief of gastrointestinal symptoms and, while guidelines generally recommend short courses, they are commonly used on a long-term basis in geriatric patients. This practice places patients at increased risk for a wide range of complications, and so reduction in prescribing rates is widely advocated. An article in this month's *JAMDA* summarizes the issues.<sup>27</sup>

Strategies to reduce overuse of these and other medications continue to be the foci of many regulatory and quality improvement activities, and strategies to effectively reduce overprescribing continue to be an important research area.

## Need to Better Tailor Prescribing Based on Resident Characteristics

A related issue is the optimization and individualization of medication prescribing in the nursing home setting. Attention to this area is needed because residents vary widely in their risk, comorbid conditions, life expectancy, care goals, and personal priorities; so, medications that are administered to prevent future morbidity and extend life expectancy will be appropriate for some nursing home residents and not for others. Among the medication classes discussed in this issue of *JAMDA* where the need for tailoring is most cogent are anticoagulants,<sup>28</sup> antihypertensives,<sup>29</sup> and drugs for osteoporosis<sup>30,31</sup>; other medications that commonly require tailoring include statins and related lipid-lowering agents. What is unknown and therefore where research continues to be needed is better ways of estimating and comparing the risk of prescribing with that of omitting specific medications for individual patients.

These issues become especially relevant as patients approach the end of life, when discontinuation of most or all “preventive” medications is reasonable, and where medications that would be considered inappropriate in other settings can be associated with quality care.<sup>32</sup> One example discussed in this month’s *JAMDA* is the use of sedation to relieve severe distress among persons who are dying.<sup>33</sup>

A somewhat different issue around individualization involves medications to relieve symptoms and/or increase quality of life. One such category of drugs is recreational agents such as alcohol and marijuana. Here decisions involve consideration of personal and organizational factors but must also take into account ethical principles and legal requirements. This month’s *JAMDA* includes a detailed analysis of these issues around alcohol use in post-acute and long-term care settings<sup>34</sup>; a previous publication reviewed these issues in the context of development and implementation of a formal policy on marijuana by a multilevel long-term care community.<sup>35</sup>

Another area where controversies frequently arise involves treatment of chronic pain, particularly with opioids.<sup>36</sup> The disastrous effects of opioid overprescribing in younger adults are well known and have led many health professionals to avoid chronic use in all patients. Thus, it is not surprising that opioid prescribing in nursing homes has declined during recent years, as is documented by Mehta and colleagues in this issue of *JAMDA*.<sup>37</sup> However, the potential for opioid abuse in nursing homes is minimal (except among staff); untreated chronic pain can severely erode quality of life; and drug alternatives for chronic pain such as nonsteroidal anti-inflammatory drugs may be more dangerous or far less effective than opioids; so, opioid prescribing remains a particularly controversial area.

## Other Themes Around Improving the Overall Quality of Prescribing

Many challenges exist around a broad range of topics that can roughly be described as attempts to improve prescribing. Among the themes that are reflected in current research are the following:

- *Better, more systematic methods of quality assessment and improvement around drug prescribing, administration, and monitoring.* In particular, research is seeking to better use technology to provide decision support, track medication prescribing, relate current practice to established standards and guidelines, provide prompts for prescribers, and monitor for adverse effects and drug interactions. This issue of *JAMDA* reports that formal interprofessional medication assessment improved quality of prescribing by reducing risks of adverse effects and drug interactions among home care patients in Finland.<sup>38</sup>

- *Care models that include more active medication management by an interdisciplinary team, with enhanced roles for pharmacists and nurses.* One such care model reported in this month’s *JAMDA* explicitly provided pharmacists and nurses with an expanded scope of practice and greater autonomy and reduced both polypharmacy and potentially inappropriate medication use in one pilot facility.<sup>39</sup>
- *Changes in prescribing goals for residents with type 2 diabetes.* Recent standards from the American Diabetes Association recommend less stringent hemoglobin A<sub>1c</sub> target goals and the avoidance of intensive therapy and monitoring in long-term care residents, with the objective of increasing quality of life, but with the caveat, of course, that care be taken to avoid symptomatic hypoglycemia or hyperglycemia.<sup>40</sup> More research is needed to determine how to best implement these recommendations.
- *More precise attention to renal function in determining medication dosing.* The value of serum creatinine by itself is a poor measure of estimated glomerular filtration rate in long-term care residents who are old and frail. Providers are encouraged, therefore, to routinely estimate the glomerular filtration rate in their patients using an acceptable formula, as this is critical in determining the appropriate medication dosage for drugs handled by the kidneys,<sup>41</sup> and research continues on alternative methods of renal function estimation, such as cystatin C.<sup>42</sup>
- *Improved strategies and systems for communicating with residents and families around controversial medication issues and involving them in clinical decision making.* Given that residents and families are themselves drivers of medication prescribing, some of which may be suboptimal, communication about benefits, risks, and tradeoffs is important. This is an area of much interest, where new models are being developed but still need validation and dissemination into the broader practice environment.<sup>43–47</sup>
- *Promotion of seamless pharmaceutical care during transitions from acute care settings to post-acute care.* Drug-related errors are especially common during these transitions, because patient status and needs are changing rapidly during the time of transfers, the “handoff” often includes transitioning from one medical record system to another, the transfer of information from hospital to nursing home is often incomplete, and the rationale for prescribing each medication is rarely communicated.<sup>48</sup> Medication reconciliation is only 1 portion of an effective transitional care drug program, because patients often need to discontinue or change medications as their status changes. A formal interdisciplinary medication review is one strategy to address this issue, but even when available it is not always used, as is illustrated in an article in this month’s *JAMDA*.<sup>49</sup>

Another area of research and innovation is responding to drug delivery challenges that present in long-term care populations. Swallowing problems are common; the majority of residents have cognitive impairment; intravenous access is often challenging; and concern about adverse effects is heightened. These issues give rise to novel strategies, several of which are discussed in articles in this month’s *JAMDA*—administration of parenteral antibiotics intramuscularly or subcutaneously rather than intravenously,<sup>50</sup> use of pilocarpine drops to relieve xerostomia,<sup>51</sup> and the combination of several toxic oral medications into a topical gel with questionable effectiveness.<sup>52</sup> A related controversial area is how much to encourage or discourage pro re nata (PRN) administration in residential long-term care settings, which is discussed in the context of results of a multi-facility survey conducted in Australia.<sup>53</sup>

With the COVID-19 pandemic having particularly devastating effects in long-term care communities, a particularly urgent emerging

need is to better understand whether and how to effectively treat early COVID-19 infection in older persons, to prevent disease progression and reduce the probability of long-term consequences.<sup>54</sup> Initial enthusiasm for hydroxychloroquine and azithromycin has waned, but reports continue on other agents, including one in this month's *JAMDA* on metformin.<sup>55</sup> Much work needs to be done, however, to validate reports such as these, and to date no breakthrough therapy has been found.

## Deprescribing

Because physicians are rarely on site in most post-acute and long-term care settings, communication about patient problems is often by telephone, and this process tends to lead to far more additions to the medication list than subtractions.<sup>56</sup> This and other decision-making factors in the long-term care setting, combined with multimorbidity in the patient population, result in long medication lists that often contain drugs that are no longer needed or for which the potential for harm outweighs the benefit. In response to this ongoing challenge, a movement has taken hold in geriatric medicine to periodically and systematically review medication lists specifically with the objective of reducing polypharmacy, a process that is described as deprescribing.

Deprescribing typically follows a formal medication review protocol, which is informed by one or more of the tools that are now available to help clinicians identify medications to target for reduction—most notably the AGS Beers criteria and the STOPP/START Criteria.<sup>57–59</sup> This issue of *JAMDA* reports results from 2 deprescribing programs: a randomized trial in 4 Singapore nursing homes, which demonstrated reductions in pill burden, costs, hospitalizations, and mortality<sup>60</sup>; and a preliminary report from Australia of an electronic system in an acute hospital that focused on deprescribing and was shown to lower overall drug burden and potentially inappropriate medications.<sup>61</sup> These and other studies indicate that although purists would advocate that “right prescribing” is the ultimate goal, deprescribing has gained a legitimate and useful role in medication management in post-acute and long-term care.

## Principles of Clinical Practice Around Medication Prescribing and Use

One additional article in this month's *JAMDA* merits special comment. It is a multinational consensus paper on principles for clinical practice, research, and education around medication management in frail older persons.<sup>62</sup> That article provides a valuable overview of good practice in addressing the issues outlined in this editorial. The authors identify the following principles of clinical practice: up-to-date medication lists, medication reconciliation, accounting for the patient's capacity to self-manage medications, appropriate prescribing and deprescribing, regimen simplification, alertness to complications and adverse effects of medications, tailoring regimens to changing goals of care, and ongoing quality communication within the health care team and with the patient and caregivers. Implementing these principles in the context of continued research on the many challenges noted above provides numerous opportunities for research, innovation, and quality improvement.

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