Featured Article

Post-acute long-term care COVID-19 medication optimization survey: Informing medication management initiatives

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ABSTRACT

The Medication Management Guide (MMG) provides guidance on strategies to optimize medication management in PA-LTC and simplify administration to reduce the transmission risk of COVID-19. The objectives of this study were to evaluate the utility of the MMG, determine the barriers and facilitators of the MMG implementation in PALTC sites to help inform future research and initiatives. Individuals who accessed MMG during the pandemic (April 2020-March 2021) were contacted to elicit feedback on this tool via an online survey. The survey response rate was 7.7% (156/2,018) after three rounds of emails. Respondents consisted of 31% (n=49) pharmacists, 27% (n=42) physicians, 11% (n=18) nurses, and 12% (n=19) nurse practitioners. The "Other" respondents (11%, n=17) included dieticians (n=4), physician assistants (n=3), pharmacy technicians (n=3), students (n=1), consultants (n=1), and educators (n=2). From these respondents, 77% (n=122) took tactics to optimize medications at their facilities during COVID-19.

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Introduction

The COVID-19 pandemic has disproportionately affected the older adult population, especially those that are residing in Post-Acute and Long-Term Care facilities (PA-LTC). Globally, many countries have reported more than 40% of their COVID-19 deaths stemmed from long-term care facilities.[1] A major factor in the rapid transmission of the disease in this environment is the frequent and close contact between the residents and the staff. Furthermore, residents in PA-LTC have numerous co-morbidities that require multiple medications, necessitating monitoring and care coordination by the healthcare team. To reduce the transmission of COVID-19 between residents and staff as well as treatment burden, the administration of medications can be optimized by: deprescribing medications that are no longer clinically indicated, reducing medication administrations by using longer-acting formulations, and stopping unnecessary medication monitoring (e.g., frequent blood glucose testing).[2-5]

To simplify medication management, reduce staff workload, as well as protect against COVID transmission in PA-LTC, a Medication Management Guide (MMG) was developed.[4] The intention of this guide was to "provide practical guidance on strategies to improve medication management and support the efforts of frontline staff within these care settings." A series of recommendations were offered, including suggestions to reduce the use of unnecessary

medications, temporarily discontinue certain medications and supplements, reduce monitoring of stable patients, and focus on infection control principles (i.e., minimizing the use of nebulized routes of administration).[4] Some of the MMG recommendations were based on the Simplification of Medications Prescribed to Long-term Care Residents (SIMPLER) trial, which was a randomized controlled trial conducted in PA-LTC settings. Through the use of a validated tool to simplify medication regimens, the investigators showed sustained reductions in medication administration times over 12 months when implemented with a resident-centered approach.[5]

The objectives of our study were to evaluate the uptake and utility of the MMG, determine the barriers and facilitators of MMG implementation, and learn about the perceptions of benefits and unintended harms that arose from adopting recommendations via an electronic survey. The overall goal of this research is to determine how PA-LTC providers and leaders identified, prioritized, and implemented recommendations of the MMG during the pandemic to optimize medication regimens, and how these lessons learned can inform future efforts.

Methods

Participants

Individuals who accessed the MMG[6] and provided their email from April 2020 to March 31, 2021 were contacted electronically to complete the survey. There was a total of 2138 individuals who provided their contact information voluntarily.

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Survey

Post-Acute Long-Term Care (PALTC) COVID-19 Medication Optimization (MedOpt) Survey was developed to understand the utility of the MMG, any barriers, and facilitators to implementation, as well as any benefits and unintended harms that have arisen from putting recommendations from the MMG into practice. The survey consisted primarily of multiple-choice questions and at least one short open-ended question. Fig. 1 provides an overview of the survey design and content. The number of questions completed by participants varied based on individual responses as conditional skip logic was used throughout the survey. This survey asked questions regarding respondent and facility demographics, previous measures to optimize medications, methods, barriers, and facilitators of the MMG implementation, and the overall usefulness of the MMG. At the end of the survey (Appendix A), respondents were asked for any suggestions they had for improving the MMG. The whole survey took approximately 8 minutes to complete and was administered online using the Survey Monkey platform.[7]

Procedures for data collection

The survey was sent out electronically via the SurveyMonkey platform. This is a secure site that requires multi-factor authentication to access the data. Each subject received a web link and up to 3 email reminders encouraging them to participate in completing the survey. The survey was initially sent out on April 19th, 2021. Two reminder emails were sent out to remind participants with no response or partial response on May 3rd, 2021, and June 4th, 2021. The survey response period was closed on June 28th, 2021. Each of the three email reminders contained the same content.

Participation in the survey was voluntary, participants remained anonymous, and consent was implied with the completion of the survey. There were no incentives provided to encourage survey completion. However, implementation of principles of survey design were used to maximize response rate; specifically, keeping the survey brief and sending multiple follow-up emails to encourage participation. This study was reviewed and approved by the Institutional Review Board at the University of Maryland Baltimore, USA (Study Number: HP-00095418).

Data analysis

We utilized quantitative and descriptive methods to analyze the survey data and report findings. Any duplicated surveys were identified by the IP address of the survey submission, and in these instances, the most complete survey response was retained for inclusion in the analyses. The less-complete survey was discarded. Participants who skipped questions were included in our study population, but we noted that they did not respond to each applicable question. Chi-square tests were used to compare the multilevel categorical variables.

Results

Of the 2,138 total emails sent to users, 49.7% (n=1,062) opened the survey, 44.7% (n=956) did not open the survey, and 4.1% (n=87) emails bounced back. Of the 1,062 who opened the survey, 11.1% (n=118) provided complete responses, and 3.6% (n=38) provided partial responses, yielding a response rate of 7.7% (156/2,018).

Respondent demographics

Sixty-two percent (n=98) of the 158 respondents indicated PA-LTC as their organizational affiliation. In addition, 25% (n=40) reported affiliation with acute care, clinic, or other healthcare setting and 19% (n=30) with assisted living facilities. The "Other" respondents (14%, n=22) noted their affiliation to: community health care, hospice, research institutes, and education. When asked about their role in their organization, 31% (n=49) were pharmacists; 27% (n=42) were physicians; 11% (n=18) were nurses; and 12% (n=19) were nurse practitioners. The "Other" respondents (11%, n=17) were dietician (n=4), physician assistants (n=3), pharmacy technician (n=3), student (n=1), consultant (n=1), and educator (n=2). In the PA-LTC setting, 72% (n=113) of respondents self-identified as having a direct leadership role.

MMG implementation: overview, facilitators, and barriers

Despite having downloaded the MMG, only 60% (n=95) remembered the MMG prior to completing the survey. Furthermore, 56.84% (n=54) of the respondents implemented at least some part of the MMG, 15.79% (n=15) did not take any action nor discuss the implementation, 14.74% (n=14) discussed but did not implement the MMG, and 8.42% (n=8) did not know their implementation status. Each of the 37 respondents implemented a portion of the MMG at between 12 and 350 facilities (median=2). Overall, 77% (n=122) of the respondents implemented some of the recommendations to optimize medications at their facilities during the COVID pandemic, while 23% (n=36) did not.

Out of the 122 respondents who reported implementing some recommendations to optimize medications at their facilities during the COVID-19 pandemic, 80% (n=98) of them elaborated on what they implemented. Most of these respondents, 65.3% (n=64), spoke about additional and focused medication reviews for their residents and actions taken. For these respondents' medication reviews constituted identifying and discontinuing unnecessary medications, optimizing antibiotic stewardship, and changing medications or their administration frequency to streamline therapy. One out of four (n=16) specifically mentioned deprescribing, 21.8% (n=14) mentioned discontinuing nebulizers and aerosolized medications, and 12.5% (n=8) mentioned discontinuing vitamins and supplements. As many as a quarter of respondents, 25.5% (n=26), noted reducing medication passes. These respondents consolidated nursing medication administration times and adjusted therapies to reduce administration frequency.

One out of ten respondents mentioned how they implemented the MMG by using it to make recommendations to the healthcare team. This included providing resources to the team, educating on medications that could mask symptoms of COVID-19, and giving guidelines. Four percent of respondents spoke about implementing protocols on how to protect staff and residents from COVID-19 and what they would do when residents tested positive for COVID-19. Respondents indicated that advocating the value of the MMG in reducing staff workload (10/37, 27.03%), improving patient outcomes (7/37,18.92%), producing financial benefits (7/37, 18.92%), acquiring buy-in from front-line staff (5/37, 13.51%), and receiving support from regulators (3/37, 8.11%) were the most important factors facilitating the adoption of the MMG (Fig. 2).

When looking at barriers to adoption, among respondents who *did not* discuss with leadership or implement the MMG (n=16), 31.25% (n=5) of respondents forgot, 37.5% (n=6) thought it was useful but had other priorities, 6.25% (n=1) did not know, and 25% (n=4) had other barriers to implementation. The other barriers and why implementation was never discussed among leadership included: lack of communication with ground staff, another program already being pursued, and provider did not feel the need to discuss with leadership since medication optimization could be implemented without having a discussion with leadership. Among those who discussed with the leadership, but not implement (n=16), 6.25% (n=1) of
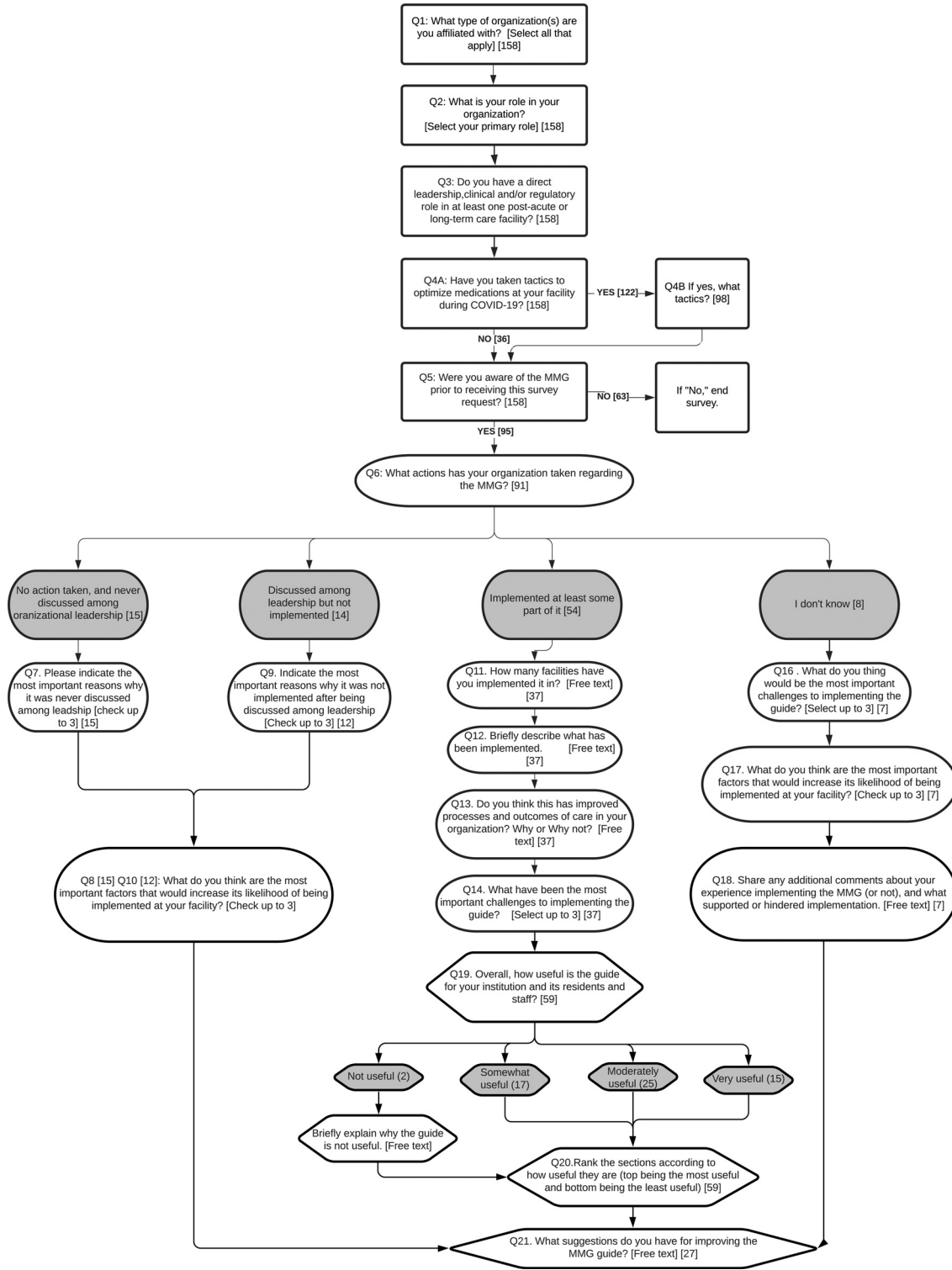
Q1: What type of organization(s) are you affiliated with? [Select all that apply] [158]

Q2: What is your role in your organization? [Select your primary role] [158]

Q3: Do you have a direct leadership,clinical and/or regulatory role in at least one post-acute or long-term care facility? [158]

Q4A: Have you taken tactics to optimize medications at your facility during COVID-19? [158] —YES [122]→ Q4B If yes, what tactics? [98]

NO [36]

Q5: Were you aware of the MMG prior to receiving this survey request? [158] —NO [63]→ If "No," end survey.

YES [95]

Q6: What actions has your organization taken regarding the MMG? [91]

No action taken, and never discussed among oranizational leadership [15]

Discussed among leadership but not implemented [14]

Implemented at least some part of it [54]

I don't know [8]

Q7. Please indicate the most important reasons why it was never discussed among leadship [check up to 3] [15]

Q9. Indicate the most important reasons why it was not implemented after being discussed among leadership [Check up to 3] [12]

Q11. How many facilities have you implemented it in? [Free text] [37]

Q16 . What do you thing would be the most important challenges to implementing the guide? [Select up to 3] [7]

Q8 [15] Q10 [12]: What do you think are the most important factors that would increase its likelihood of being implemented at your facility? [Check up to 3]

Q12. Briefly describe what has been implemented. [Free text] [37]

Q17. What do you think are the most important factors that would increase its likelihood of being implemented at your facility? [Check up to 3] [7]

Q13. Do you think this has improved processes and outcomes of care in your organization? Why or Why not? [Free text] [37]

Q18. Share any additional comments about your experience implementing the MMG (or not), and what supported or hindered implementation. [Free text] [7]

Q14. What have been the most important challenges to implementing the guide? [Select up to 3] [37]

Q19. Overall, how useful is the guide for your institution and its residents and staff? [59]

Not useful (2)   Somewhat useful (17)   Moderately useful (25)   Very useful (15)

Briefly explain why the guide is not useful. [Free text]

Q20.Rank the sections according to how useful they are (top being the most useful and bottom being the least useful) [59]

Q21. What suggestions do you have for improving the MMG guide? [Free text] [27]

Fig. 1. Overview of Survey Design and Questions.

respondents did not find the MMG useful, 18.75% (n=3) said the front-line staff did not think the MMG was useful, 50% (n=8) said leadership thought it was potentially useful but had other barriers to implementation, 12.5% (n=1) did not remember the barriers, and 12.5% (n=1) had other barriers. The other barriers to implementation, even though leadership thought it was potentially useful, included: leadership received, or anticipated receiving, scrutiny or lack of inter-est from residents, regulators, or others, leadership gave it lower

priority than other tasks, and leadership thought it was too compli-cated or time-consuming to implement.

Utility of the MMG and areas for improvement

Of the 37 respondents who implemented portions of the MMG, 83.78% (n=31) said the MMG has improved processes and outcomes of care in their organization, 8.11% (n=3) said MMG did not improve
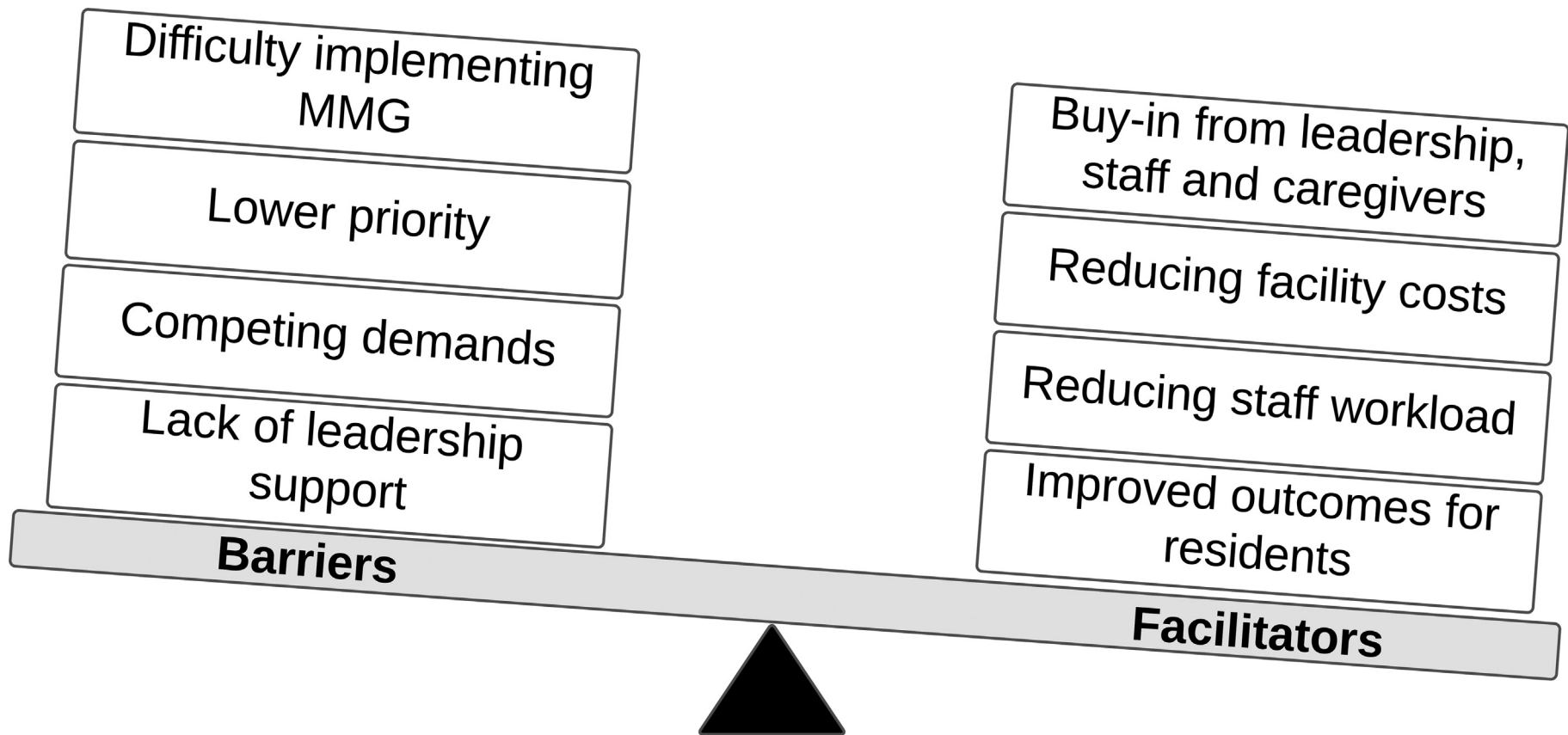
Fig. 2. Overview of the facilitators and barriers to the implementation of the MMG.

Table 1
Recommendations to Improve Utility of the MMG.

Areas for Improvement	Number of Respondents
More recommendations	2
More literature/ references/ case studies on how to apply MMG	3
More information on training and reducing bureaucratic hurdles	3
Resources to share with families/residents (to get their buy-in)	3
Updating MMG (with new information as pandemic progressed/ medication-based table of contents, algorithms, graphics, order set suggestions)	4
Online seminar	1
No suggestion/satisfied	5

processes, and outcomes of care and 8.11% (n=3) of the respondents were unsure. Table 1 lists recommendations to improve the utility of the MMG. Some additional respondents quoted:

- "Pharmacists helped develop guidelines and protocols, but not sure if physicians actually used the recommendations and medication optimization is an ongoing process."
- "I think this guide is wonderfully done but would love to see the information extended to post-COVID world. Residents in long-term care facilities deserve to have their medications optimized with or without a pandemic world around them."

Study strengths and limitations

One of the main strengths of this study is that the topic of medication optimization in PA-LTC and how to address it from an interdisciplinary perspective is under-studied.[8] Despite the low survey response rate of 7.8%, we believe that these findings provide preliminary data for future research. It is important to note that other web-based surveys of practitioners were also noted to range from 7% to 15%, depending on whether incentives were given or not.[9] We believe this low response rate can be due to the length of the survey, lack of incentives, email interception, such as being filtered into respondents' SPAM folders, survey burnout as well as demands of the pandemic. The result might not be generalizable to other PA-LTC facilities due to the low response rate and several biases that could occur, such as recall bias, response bias, and non-respondent bias. It is possible that the people who chose to respond to the survey were, in general, more invested in and favorably inclined to the MMG compared to non-respondents. Nonetheless, it provides a critical window into how some used the guide and the barriers and opportunities they encountered through the MMG.

An additional limitation of the results would be survey design as well as the role of the respondent. For instance, it is possible that those not in leadership positions do not know the exact facilitators and barriers to implementation and may just have inferred why the leadership did not implement the tactics from the MMG. Furthermore, it is also possible that the MMG was downloaded by a single practitioner but shared with multiple practitioners. In that case, we could not collect information from the practitioners who did not leave their emails. Lastly, the cross-sectional quality of this one-time survey as well as survey completion are a limitation. Of note, open-ended questions and select all that apply (up to 3 choices) were more likely to be skipped limiting additional valuable information.

Discussion

Collaborative interprofessional teamwork helps to optimize the delivery of care and medications for older adults in PA-LTC.

However, 23% (n=36) of the respondents who did not implement tactics from MMG to optimize medications at their facilities noted the major barriers included convincing leadership of the beneficial effects of MMG on patient outcomes, staff workload, and finances. Additional roadblocks included difficulty getting buy-in from the frontline staff and residents or their caregivers. Although MMG was developed to guide the optimization of medication in the PA-LTC setting during a pandemic, effective communication between team members, residents, and caregivers, is critical to achieve resident-centered care. An example of this was a facility or chain-wide medication hold policy that was implemented across numerous facilities and integrated with pharmacy services. This led to the discontinuation of 54% of nonessential medication orders, such as probiotics, multivitamins, H2 receptor antagonists (H2RAs), antihistamines, statins, and proton pump inhibitors (PPIs), and probiotics.[10]

Models exist demonstrating that by allowing providers to work to the "top of their license" through collaborative practice agreements, they can improve medication use and quality.[11,12] For instance, pharmacists are integral in implementing protocols and programs to optimize medications yet may not always have the support or means to effectively collaborate within the PA-LTC and with residents and staff. This was noted by limited presence onsite or limited access to needed clinical information during the pandemic. Technology such as telehealth is helping to bridge these gaps, but equity across healthcare providers, as well as PA-LTC residents, is vital. This means not only training on tools such as the MMG but also by defining roles and expectations as well as having the means of communicating effectively as a team.[13] For instance, the Reimagine New York Commission conducted a needs assessment finding that many healthcare providers want more training, guidelines, and information about best practices in telehealth.[11] It is critical that the healthcare workforce receive training to utilize telehealth for education, collaboration, and interprofessional practice and learn how to ensure that telehealth mitigates, rather than exacerbates, disparities in health and healthcare access.

Additionally, there were multiple lessons learned from the rapid development and implementation of the MMG during the pandemic which can help propel pragmatic clinical trials that will help us reimagine medication management initiatives in PA-LTC.[8] For instance, comments suggested that this pandemic-centered MMG should be adapted into a post-pandemic guideline that can further tactics to address medication burden. For instance, aligning existing work such as advanced care planning focusing on resident-centered goals of care while discussing the continued needs of medications and potentially unnecessary monitoring (e.g., multiple finger sticks for serum glucose testing) helped to reduce the burden on the direct care staff and the residents. We realize that effective adoption of deprescribing may require multiple forms of communication (e.g., oral, written) as well as collaborative practice.

Collaboration between pharmacists, physicians, nurses, and additional PA-LTC staff is fundamental for successfully tackling the challenges of the COVID-19 pandemic. In the Project ECHO study, a team of nurse practitioners, geriatricians, pulmonologists, clinical nurse leaders, and nurse educators came together to connect long-term care facility administrators to assess needs for the COVID-19 pandemic. Through this project, the nursing educators formed relationships with the local PA-LTC nursing leaders to determine facility needs for personal protective equipment (PPE) assistance, inpatient medical team and facility coordination, and telemedicine consultation. Due to these collaboration efforts, two facilities with outbreaks that were a part of the project showed a decreased mortality rate compared to others. The ECHO facilities each had a mortality rate of 12% and 19%, which were

significantly lower than the published mortality rate of 28%. The collaboration project allowed the team to meet the residents' as well as the facilities' needs.[14] The results of this study support the idea that collaboration between the healthcare team members is vital for improving the quality of care during the pandemic.

During the development of this guide, we employed various stakeholders from long-term care organizations (e.g., AMDA, GAPNA, ASCP), long-term care pharmacies, and long-term care providers (e. g., nursing, medicine, dietary, pharmacy). However, it would have been helpful to engage residents and caregivers, certified nursing assistants as well as PA-LTC administrators. Due to the short timeline for the MMG development, it limited our efforts to be more inclusive. Efforts during the pandemic have taught us that we need to have regular and open lines of communication to address staffing shortages as well as implement programs and resources that meet the needs of the residents and staff.[15,16]

Conclusions and implications

The findings from this survey illustrate the importance of stakeholders' engagement in the development and dissemination of tools such as the MMG. Despite the limitations of this study, the MMG provides a resident-centered approach that tackles the topic of medication management and optimization. It empowered PA-LTCFs to increase the number of focused medication reviews, deprescribe as well as engage with the interprofessional team. Continued efforts and research are needed to move resources such as the MMG and SIMPLER into the LTC workflow

Acknowledgements

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