

Brown Bag Simulation to Improve Medication Management in Older Adults

Chelsea E. Hawley, PharmD*, Laura K. Triantafylidis, PharmD, Sarah C. Phillips, MD, Andrea Wershof Schwartz, MD, MPH

*Corresponding author: chelsea.henderson@va.gov

Abstract

Introduction: Medical students must care for aging patients with growing medication lists and need training to address negative patient outcomes associated with polypharmacy. The literature shows that many trainees and practitioners are not confident in their abilities to care for this older population with complex medical conditions. We created an innovative simulation activity to teach safe, effective, and simplified medication management to second-year medical students. **Methods:** We developed the brown bag medication reconciliation simulation to improve self-efficacy and knowledge for trainees working with older adults. The case example was an older patient who presented with his brown bag of medications and prefilled pillbox for a medication reconciliation with his provider. Teams of medical students identified his medication-management errors and determined strategies for resolution. We assessed learner self-efficacy, knowledge, and satisfaction. **Results:** A class of 137 second-year medical students completed the simulation. The average number of learners confident about medication management in older adults increased overall by 41%, with a significant increase across all four self-efficacy domains ($p < .001$). The average percentage of correctly answered knowledge questions significantly increased from 85% on the presurvey to 92% on the delayed postsurvey ($p = .009$). Learner open-ended feedback indicated high satisfaction with the simulation. **Discussion:** The brown bag medication reconciliation simulation increased medical student self-efficacy and knowledge related to medication reconciliation and management for older adults. Interactive simulations like this one may be considered for inclusion in health science curricula to improve skills in medication reconciliation and management.

Keywords

Polypharmacy, Older Adults, Geriatrics, Simulation

Educational Objectives

By the end of this activity, learners will be able to:

1. Perform a brown bag medication reconciliation with a simulated older patient.
2. Identify intentional and unintentional errors in medication management that commonly occur.
3. Recommend strategies to simplify medication management for older adults.

Introduction

Older adults account for more than one-third of annual visits to primary care physicians and subspecialists, many of whom lack formal geriatrics training.¹⁻⁴ Polypharmacy, commonly defined as

the use of five or more medications, is increasing among older adults (from 31% in 2006 to 36% in 2011)⁵ and is a proven predictor of prescribing problems. These problems include inappropriately dosed medications, drug-drug interactions, and drug-disease interactions.⁶ Similarly, medication-related factors, including pill burden and medication regimen complexity, have been associated with poorer adherence in patients with multimorbidity.^{7,8} Many organizations have unilaterally attempted to modify physician education and the health care system to respond to the growing number of older patients.^{1,2,9-13} Despite these efforts, most trainees and practitioners remain less confident in their ability to care for older adults with complex medical conditions and polypharmacy.^{3,9,11,12,14}

The American Geriatrics Society (AGS),¹⁵ Institute for Healthcare Improvement,¹⁶ and Agency for Healthcare Research and Quality¹⁷ recommend medication reconciliation as a best practice in patient care. A handful of educational publications teach these best practices to clinician trainees. One such publication illustrates challenges in the health system and in provider-to-provider communication related to medication

Citation:

Hawley CE, Triantafylidis LK, Phillips SC, Schwartz AW. Brown bag simulation to improve medication management in older adults. *MedEdPORTAL*. 2019;15:10857. https://doi.org/10.15766/mep_2374-8265.10857

management. This publication does not teach principles of medication reconciliation as a part of a comprehensive medication-management approach.¹⁸ A second publication asks learners to fill a pillbox and adhere to a medication regimen for 1 week.¹⁹ Although this method is creative and provides excellent points of discussion, the activity does not offer specific examples of how to change prescribing to improve medication management. The activity also does not cover medication reconciliation.¹⁹ We built on these important educational publications to address the gap in practitioner confidence in caring for older patients with complex medical conditions. We created a hands-on medication reconciliation simulation to improve trainee self-efficacy and knowledge related to medication reconciliation and management. The simulation introduced an older patient, whose role was played by a fellow learner, who presented for a brown bag medication reconciliation. The simulation design allowed learners to develop a systematic approach to medication reconciliation and management for continued use within their clinical practices. During the debriefing portion of the simulation, facilitators imparted best practices for medication reconciliation, including assessment of patient-reported medication-management techniques, comparison of a medication list to the patient's pill bottles and pillbox, use of cues to identify medication nonadherence, and use of open-ended questions about nonprescription/over-the-counter medications during the reconciliation process.^{20,21} Finally, facilitators reinforced techniques for managing polypharmacy through deprescribing,^{22,23} a key component of simplifying medication management in older adults with complex medical conditions. These elements have not been included in previous educational publications.

We developed this simulation to improve the self-efficacy and knowledge of trainees working with older adults at the VA Boston Healthcare System. Learners and clinicians at our medical center came from a variety of training institutions, and there was no uniform approach to medication reconciliation education. Our target audience was second-year medical students. The simulation was reviewed by the internal review boards of our institution and its affiliated medical school. The simulation was determined to be nonresearch, and further oversight by the institutional review board was not required.

Methods

Needs Assessment

Prior to the final implementation of the brown bag medication reconciliation simulation, we conducted a needs assessment

with a group of 32 learners from six different professions at our institution: pharmacy (17), medicine (nine), rehabilitation therapy (two), psychology (two), social work (one), and advanced practical nursing (one). The goals of the needs assessment were to assess simulation effectiveness and identify what types of learners could be best served by the simulation. Participants were recruited from a pool of trainees who were completing required outpatient geriatrics rotation experiences at our institution. Participation in the simulation was optional. The needs assessment included pre- and postsimulation self-efficacy assessments and a postsimulation knowledge assessment. All learners showed significant improvements in self-efficacy ($p < .05$) and rated the session useful and satisfying. However, learner feedback and facilitator observation determined that the simulation would best be employed in groups of medicine, pharmacy, and nursing trainees, as these types of learners were most often responsible for medication reconciliation and management for older patients. Although learners in medicine showed significant improvements in self-efficacy and knowledge, many (six out of nine) indicated that the session would be better geared toward medical students who were early in their educational career. Knowledge-assessment questions from the needs-assessment session were modified to match our target learner population: medical students in their second year of medical school. We also adjusted the appendices to improve scalability.

Curricular Design

We implemented the final brown bag medication reconciliation simulation with a class of 137 second-year medical students. We chose this group of learners for two reasons. First, we wanted to ensure that our medical students would meet the minimum geriatric competencies upon their graduation. Competencies related to medication management, which are endorsed by the AAMC,¹² include the following:

1. Explain the impact of age-related changes on drug selection and dose based on knowledge of age-related changes in renal and hepatic function, body composition, and central nervous system sensitivity.
2. Identify medications, including anticholinergic, psychoactive, anticoagulant, analgesic, hypoglycemic, and cardiovascular drugs, that should be avoided or used with caution in older adults, and explain the potential problems associated with each.
3. Document a patient's complete medication list, including prescribed, herbal, and over-the-counter medications, and for each medication, provide the dose, frequency, indication, benefit, side effects, and an assessment of adherence.

The learning objectives for our simulation were derived from these competencies. Second, this simulation built on previous curricular elements. During their first year, our medical students learn the basics of taking a medication history. They also complete an introductory workshop with a focus on the using the AGS Beers Criteria²⁴ and safe prescribing principles for older adults. Finally, the first-year medical students complete a geriatric home visit to begin to assess medication use in older patients. Early in their second year, our medical students complete all of their pathophysiology coursework. Here, they learn how medications may be used for treatment. Later in their second year, the students are ready to engage in a more advanced medication reconciliation simulation. Therefore, we designed the developmentally appropriate brown bag simulation for these students.

Activity Description

We designed the brown bag medication reconciliation simulation activity in which an older patient presented for an in-person medication reconciliation with his providers. The patient brought his brown bag, which contained his medication bottles, inhalers, insulin, and prefilled pillbox. The patient also brought his medication list. Pairs of medical students reconciled the contents of the brown bag with the medication list. The pairs also asked open-ended questions to identify the patient's medication-management errors. After the simulation, medical student learners engaged in a large-group debriefing session. Here, they discussed medication-management errors that had occurred in the simulation and determined strategies for resolution. The simulation and subsequent debriefing highlighted common errors in medication management, techniques for effective medication reconciliation, and methods to safely simplify a medication regimen.

Evaluation

We assessed learner self-efficacy using a 5-point Likert scale (1 = *not at all confident*, 5 = *very confident*). Confident learners were defined as those who rated themselves as a 4 or 5 on the Likert scale. Optional participation in self-efficacy assessment occurred immediately before and after the simulation. We evaluated learner knowledge through multiple-choice questions. Knowledge questions were administered as a part of a mandatory course evaluation tool 4 weeks before and 2 days after the simulation was completed. Knowledge-based questions were derived from teaching points from the debriefing session. We collected formative feedback on learner satisfaction with the relevance, effectiveness, and quality of the session using a

5-point Likert scale (1 = *not at all satisfied*, 5 = *very satisfied*) and an open-ended section for comments. Optional participation in formative feedback occurred immediately following the simulation.

Roles Within the Simulation

There were two roles within the simulation: medical student leaders and facilitators. There was no prerequisite knowledge needed by learners or facilitators to complete the simulation. During the simulation, medical student learners were broken into groups of three individuals. Within the group, one student played the part of the patient. The other two students played the part of the providers conducting the medication reconciliation. Our learners included a class of second-year medical students, broken into groups of three individuals based on physical proximity to one another.

Within the simulation, the role of the facilitators was to assemble the materials needed for the simulation activity and conduct the debriefing portion of the simulation activity. Ideally, facilitators should be experienced in caring for older adults with challenging medication regimens. The number of facilitators required is variable based on the desired facilitator-to-learner ratio. When there are multiple facilitators, one facilitator should be chosen as the lead facilitator. We completed our final simulation with three facilitators: one geriatrician, one medical student, and one clinical pharmacist (lead facilitator). The clinical pharmacist, who had prior experience in facilitating the needs assessment, served as the trainer for the other two facilitators. Training consisted of the clinical pharmacist completing the full simulation activity with the two facilitators in training. During the training, the geriatrician played the part of the patient, and the medical student played the part of the provider. At the end of the training session, the clinical pharmacist reviewed the contents of all Appendices once more with facilitators in training.

Physical Materials Needed

To conduct the simulation, facilitators needed the following materials:

- A room large enough to accommodate all learners, with space to break into groups of three learners.
- Desk or table space for each group of three learners.
- One copy of Appendix A per group of three learners; this detailed the patient role and script.
- One copy of Appendix B per facilitator; this detailed the facilitator's role in the simulation and the debriefing.
- One preassembled brown bag per group of three learners (see below for how to assemble the brown bag using Appendices C and D).

- One copy of Appendix E per learner; this included the patient medication list used for the medication reconciliation.

If facilitators wish to conduct the simulation with the evaluation components, they will also need the following:

- One copy of Appendix F per learner, printed as two single-sided pages.
- Two copies of Appendix G per learner: one copy for the preassessment and one copy for the postassessment (the answer key is found in Appendix H).

Assembling the Brown Bag

Prior to the simulation activity, the lead facilitator assembled the materials needed for the patient's brown bag of medications. There was one brown bag for each group of three learners. By design, the pillbox and pill bottles were sometimes not filled correctly. These errors were intentional and reflected possible errors that older adults might intentionally or unintentionally make when managing their medications. The brown bag also contained medications and supplies that were not included on the patient's medication list. This also was intentional.

All materials needed for the preparation of the brown bag are outlined in Appendix C. There are two methods for preparing the brown bag. Method 1 involves filling physical medication bottles and a pillbox with designated candies. Method 2 involves substituting a paper version of the pillbox and pill bottles. Method 2 may be more feasible for large groups of learners.

Method 1:

- Prepare the pill bottles by affixing the respective label on each bottle; place the designated candies into each individual bottle.
- Prepare the pillbox by placing the respective candies into each designated slot of the pillbox.
- Prepare additional medications by labeling the objects representing the inhalers and insulin pen.
- Prepare the final brown bag by placing the pill bottles, pillbox, and additional medications into a brown paper bag.

Method 2:

- Print one copy of pages 6-7 of Appendix C for each patient; these represent the patient's pill bottles, pillbox, and additional medications.
- Place pages 6-7 into a brown paper bag (optional).

Logistics

The full duration of the activity was 45 minutes:

- Facilitators dispensed materials and oriented learners to the activity (5 minutes).
- Brown bag simulation (20 minutes).
- Debriefing and discussion (20 minutes).

If time does not allow for the full 45-minute period, the simulation may be condensed to 10-15 minutes and the debriefing to 10-15 minutes for a 30-minute total period. For our needs assessment, the simulation activity was completed in a 30-minute period.

The following is an overview of the simulation activity:

1. The facilitators distributed Appendix E to all learners. At this time, facilitators also distributed the self-efficacy and knowledge assessments (Appendices F and G). This step is optional.
2. The facilitators gave learners an overview of the objectives and expectations of the simulation activity (5 minutes).
 - The simulation was described as an outpatient visit with an older patient being seen by members of his or her health care team.
 - The facilitators asked learners to complete the self-efficacy and knowledge preassessments at this time.
3. The facilitators asked learners to break into groups of three based on physical proximity to one another.
 - Within each group of three, one learner was asked to volunteer to play the part of the patient.
 - The facilitators distributed a brown bag and Appendix A to each patient.
4. Patients were specifically directed to pages 4-7 of Appendix A, as these pages contained a description of their brown bag medications and the patient script. Patients were given 3-5 minutes to review this material. When the patient was ready, he or she began the simulation by saying, "This bag contains all of my medications. I brought them all in today to go over with you. I fill my own pillbox, and I refill it every Thursday. Today is Monday. Go ahead and ask me any questions that you have about my medicine."
 - Medical student learners reviewed the contents of the brown bag (15 minutes).
 - The goal was for the learners to compare the medication list in Appendix E with both the

instructions on the pill bottles and how the pillbox was filled by the patient.

- The facilitators encouraged the learners to ask the patient questions and advised the patient to follow Appendix A for scripted responses to anticipated questions.
 - Facilitators roamed the room to oversee groups of learners and support group discussions.
5. The lead facilitator called all learners back together for the large-group debriefing (20 minutes).
 6. Learners were asked to complete postactivity self-efficacy and knowledge questions, as well as Appendices F and G (however, this was optional).

Debriefing

After giving the learners 20 minutes to complete the simulation activity, the lead facilitator facilitated an open-ended group reflection and discussion. In our session, the entire group participated in the same debriefing session with the lead facilitator; however, if multiple facilitators are present, the debriefing may be done in smaller groups. The debriefing was designed to illuminate potential medication concerns noted in the activity. The facilitator led learners through targeted teaching points related to simulation patient examples. The facilitator also reinforced techniques for managing polypharmacy through deprescribing. Finally, the facilitator probed learners for further discussion on certain potential medication concerns as time allowed. The debriefing lasted 20 minutes. However, facilitators may not be able to cover all of the structured teaching points in the 20-minute debriefing period. If time permits, facilitators may spend longer on the debriefing to cover all included teaching points.

Results

A class of 137 second-year medical students completed the brown bag simulation activity. A total of 47 (34%) learners provided optional feedback on self-efficacy on the presurvey, and 32 (23%) did so on the postsurvey. The number of confident learners related to medication management in older adults significantly increased across all four self-efficacy domains, with an average increase in the number of confident learners of 41% from pre- to postsurvey (all p values < .001).

A total of 30 (22%) learners offered optional feedback on their satisfactions with the session. Learners reported that the simulation was relevant (97%), effective (97%), and of high quality (90%). Suggestions for improvement included increasing the duration of the session and orienting the learners to the contents of the brown bag before distributing the supplies to them.

Nearly all learners (135, 99%) completed the mandatory knowledge presurvey, and 132 (96%) completed the mandatory postsurvey. The average percentage of correctly answered knowledge questions significantly increased from 85% on the presurvey to 92% on the delayed postsurvey ($p = .009$; see the Table).

Discussion

The brown bag medication reconciliation simulation successfully addressed previously published gaps in knowledge for trainees caring for older adults. Our unique hands-on approach significantly improved learner self-efficacy and knowledge related to medication management in older adults. The final simulation led to statistically significant increases in self-efficacy and knowledge in a class of 137 second-year medical students. Learners praised the relevance, effectiveness, and quality of the simulation activity.

Through open-ended feedback, learners revealed that this was their first hands-on training in medication reconciliation and management. Furthermore, many learners requested that the simulation activity be longer or that a similar modified activity be delivered within another class session to allow for further practice in the areas of medication reconciliation and management. Although we did find a statistically significant increase in self-efficacy across all four domains assessed, learner self-efficacy postsimulation remained moderate. This finding is consistent with current literature, as many clinicians and trainees continue to lack confidence in their ability to care for older adults with multimorbidity.^{3,9,11,12,14} In contrast to these findings, our learners scored highly on our knowledge-assessment questions on the pre- and postsurveys. We postulate that our learners may not have needed another lecture on the AGS Beers Criteria,²⁴ deprescribing when setting individualized hemoglobin A1c goals,^{15,22} or the risk of anticholinergic side effects.²⁵ Instead, our learners reported benefiting from this clinically relevant, hands-on simulation activity to practice principles of medication reconciliation and deprescribing in a real-world setting.

Our learners entered the simulation with a strong foundation of knowledge, as evidenced by high scores on the presimulation knowledge assessment. The knowledge-assessment questions that we used in the final brown bag simulation may have been answered correctly due to knowledge of medication-management concepts. Thus, we are unable to know if the increase in learner knowledge postsimulation was directly related to the simulation. After our needs assessment, we redesigned the knowledge-assessment questions to align with

Table. Quantitative Results of the Self-Efficacy, Satisfaction, and Knowledge Evaluations (N = 137 Students)

Domain and Evaluation	No. (%) Confident Learners Presurvey (n = 47, 34%)	No. (%) Confident Learners Postsurvey (n = 32, 23%)	Delta (%) ^a	p ^b
Self-efficacy^c				
Perform a brown bag medication reconciliation	3 (6)	14 (44)	38	<.001
Identify intended and unintended errors via medication reconciliation	6 (13)	19 (59)	46	<.001
Recognize factors that make medication management challenging	14 (30)	22 (69)	39	<.001
Propose solutions to simplify medication management	4 (9)	15 (47)	38	<.001
Average confident learners	7 (15)	18 (56)	41	<.001
No. (%) Satisfied Learners Postsurvey (n = 30, 22%)				
Satisfaction^d				
Relevance to my clinical work		29 (97)		
Effectiveness of the teacher		29 (97)		
Quality of the session		27 (90)		
No. (%) Correct Responses Presurvey (n = 135, 99%)				
No. (%) Correct Responses Postsurvey (n = 132, 96%)				
Knowledge^e				
Average correct responses	115 (85)	121 (92)	7	.009

^aDelta value calculated as the difference in the percentage of confident learners pre- and postintervention.

^bp value calculated using chi-square analysis comparing the number of confident learners pre- and postintervention at an alpha level of .05.

^cAssessed with a 5-point Likert scale (1 = not at all confident, 5 = very confident); confident learners reported a score of 4 or 5.

^dAssessed with a 5-point Likert scale (1 = not at all satisfied, 5 = very satisfied); satisfied learners reported a score of 4 or 5.

^eAssessed using differing multiple-choice questions 1 month before the simulation and 2 days after the simulation.

our target learners: second-year medical students. Although these questions were related to the content of the simulation, they did not correlate to our learning objectives. We consider this a lesson learned. Within this publication, we have included our needs-assessment knowledge questions in Appendix G. These questions align with our learning objectives. These questions were validated within our needs assessment but have not been validated in medical student learners specifically. Our knowledge questions may have been more appropriate for first-year medical students, but the low to moderate self-efficacy of our learners highlighted the need for hands-on training in medication reconciliation and medication management in older adults.

One challenge related to learner knowledge attainment is variation among learner groups. For example, learners within each group may not have identified all errors in the pillbox or may have identified different types of errors. We accounted for this in the formal facilitator debriefing, with instructions to facilitators to note any unidentified errors. In addition, the patient may have been asked variable questions by learners, which may have led to different teaching points between sessions. Although the organized group debriefing was designed to account for these discrepancies, it is possible that such variability was captured in the postsimulation knowledge assessment.

This activity could be enhanced by modifying the patient’s medication list to allow for more discussion on systematic

deprescribing. The medication list includes many medications that are considered safe for older adults; however, other medications (glipizide, cold medicine, insulin) may not be considered safe. For more advanced learners, the medication list and subsequent pillbox and pill bottles could be altered to include prescribing cascades²⁶ or more high-risk medications.^{24,25,27} The facilitator guide could be modified to include additional teaching on how to deprescribe specific medications in the patient’s pillbox, introducing evidence-based tools for deprescribing.^{22,23,28,29}

This simulation activity also has potential as an interprofessional exercise. For those interested in expanding the simulation to an interprofessional audience, we recommend adding content and faculty representative of each profession involved. Knowledge questions should be adjusted based on learner type and level of training. For example, the standardized patient case could be expanded to include functional deficits that learners in rehabilitation therapy may identify as factors that make medication management physically difficult, socioeconomic factors that require social work learner intervention, cognitive deficits that may be recognized by neuropsychology learners, and so on. It takes a team to care for older adults,^{30,31} and each profession offers important contributions to making medication management simple and feasible for older patients. Although not all members of the health care team directly interact with the medications of older patients, each member plays a key role in

the management of geriatric syndromes that often contribute to an older patient's ability to effectively manage a medication regimen. In line with standards for interprofessional education by the AGS,³² World Health Organization,³³ National Center for Interprofessional Practice and Education,³⁴ and Institute of Medicine,³⁵ innovative methods of teaching safe, effective, and simplified medication management in an interprofessional setting are essential to comprehensive patient care. Expanding our content and evaluation components in a manner that would meet the standards for interprofessional education is one of our future directions for the next iteration of the brown bag medication reconciliation simulation activity.

The main limitation of our evaluation was that the questions we used to assess medical student knowledge pre- and postsimulation did not match our learning objectives. Our simulation was also limited in that learners were not evaluated for enduring changes in knowledge or self-efficacy. The short classroom time was a benefit for this simulation; however, this limitation affects the ability to be comprehensive in identifying errors in medication management and developing solutions. The simulation activity may be conducted with real-life props, including a prefilled pillbox. Since these supplies may be bulky and may require significant preparation time by lead facilitators, we offer printable versions of the pillbox and pill bottles to decrease supply burden and improve scalability. The simulation was also limited in that medical students played the part of the patient without any formal training. We do not know if each student portrayed the patient faithfully according to the patient script.

Conclusion

The brown bag medication reconciliation simulation improved medical student self-efficacy and knowledge related to medication reconciliation and management for older adults. Medical students reported that the hands-on simulation was relevant, effective, and of high quality. This simulation successfully addressed previously published gaps in trainee self-efficacy and knowledge. Effective simulations like this one may be considered for inclusion in health science curricula to improve trainee self-efficacy in medication reconciliation and management for older patients.

Appendices

- A. SP Case Development Tool.docx
- B. Facilitator's Guide.docx
- C. Demonstration Guide.docx

- D. Optional Printable Labels.docx
- E. Handout for Learners.docx
- F. Self-Efficacy and Satisfaction Evaluation.docx
- G. Knowledge Assessment.docx
- H. Knowledge Assessment Answer Key.docx

All appendices are peer reviewed as integral parts of the Original Publication.

Chelsea E. Hawley, PharmD: Advanced Fellow in Geriatrics, New England Geriatrics Research Education and Clinical Center

Laura K. Triantafylidis, PharmD: Clinical Pharmacist, Pharmacy Department, VA Boston Healthcare System

Sarah C. Phillips, MD: Instructor, Division of Geriatrics, Boston University School of Medicine

Andrea Wershof Schwartz, MD, MPH: Geriatrician, Division of Geriatrics and Palliative Care, VA Boston Healthcare System; Educator, New England Geriatrics Research Education and Clinical Center; Assistant Professor of Medicine, Harvard Medical School

Acknowledgments

We would like to thank our needs-assessment interprofessional audience members: the VA Boston visiting "Geriatric Scholars," the internal medicine residents of Brigham and Women's Hospital, and the VA Boston Nurse Resident Program. We would like to thank Harvard Medical School, the HMS Academy, and Alison McGough Holliday, MPH, for their participation in the final simulation.

We would also like to thank our needs-assessment facilitators: Daniella Antolos, PharmD; Jillian Egan, PharmD; Christopher Fagbote, PharmD; Andrew Krevat, PharmD; John Roefaro, PharmD, BCGP, FASHP; and Riza Usta, PharmD. Lastly, we thank Julie Paik, MD, MPH, ScD, and Montgomery Owsiany for their assistance in the data analysis.

Disclosures

None to report.

Funding/Support

None to report.

Ethical Approval

Reported as not applicable.

References

1. Cheng HY, Davis M. Geriatrics curricula for internal and family medicine residents: assessing study quality and learning outcomes. *J Grad Med Educ.* 2017;9(1):33-45. <https://doi.org/10.4300/JGME-D-16-00037.1>

2. Callahan KE, Wilson LA, Pavon JM, et al. Internal medicine residents' ambulatory management of core geriatric conditions. *J Grad Med Educ.* 2017;9(3):338-344. <https://doi.org/10.4300/JGME-D-16-00428.1>
3. Diachun L, Van Bussel L, Hansen KT, Charise A, Rieder MJ. "But I see old people everywhere": dispelling the myth that eldercare is learned in nongeriatric clerkships. *Acad Med.* 2010;85(7):1221-1228. <https://doi.org/10.1097/ACM.0b013e3181e0054f>
4. Phillips SC, Hawley CE, Triantafylidis LK, Schwartz AW. Geriatrics 5Ms for primary care workshop. *MedEdPORTAL.* 2019;15:10814. https://doi.org/10.15766/mep_2374-8265.10814
5. Qato DM, Wilder J, Schumm LP, Gillet V, Alexander GC. Changes in prescription and over-the-counter medication and dietary supplement use among older adults in the United States, 2005 vs 2011. *JAMA Intern Med.* 2016;176(4):473-482. <https://doi.org/10.1001/jamainternmed.2015.8581>
6. Koronkowski MJ, Semla TP, Schmader KE, Hanlon JT. Recent literature update on medication risk in older adults, 2015-2016. *J Am Geriatr Soc.* 2017;65(7):1401-1405. <https://doi.org/10.1111/jgs.14887>
7. Ghimire S, Castelino RL, Lioufas NM, Peterson GM, Zaidi STR. Nonadherence to medication therapy in haemodialysis patients: a systematic review. *PLoS One.* 2015;10(12):e0144119. <https://doi.org/10.1371/journal.pone.0144119>
8. Steinman MA, Miao Y, Boscardin WJ, Komaiko KDR, Schwartz JB. Prescribing quality in older veterans: a multifocal approach. *J Gen Intern Med.* 2014;29(10):1379-1386. <https://doi.org/10.1007/s11606-014-2924-8>
9. Callahan KE, Tumosa N, Leipzig RM. Big "G" and little "g" geriatrics education for physicians. *J Am Geriatr Soc.* 2017;65(10):2313-2317. <https://doi.org/10.1111/jgs.14996>
10. Tinetti M. Mainstream or extinction: can defining who we are save geriatrics? *J Am Geriatr Soc.* 2016;64(7):1400-1404. <https://doi.org/10.1111/jgs.14181>
11. Bensadon BA, Teasdale TA, Odenheimer GL. Attitude adjustment: shaping medical students' perceptions of older patients with a geriatrics curriculum. *Acad Med.* 2013;88(11):1630-1634. <https://doi.org/10.1097/ACM.0b013e3182a7f071>
12. Leipzig RM, Granville L, Simpson D, Anderson MB, Sauvigné K, Soriano RP. Keeping granny safe on July 1: a consensus on minimum geriatrics competencies for graduating medical students. *Acad Med.* 2009;84(5):604-610. <https://doi.org/10.1097/ACM.0b013e31819fab70>
13. Patel D, Prabhu AV, Agarwal N. Geriatrics week: a teaching opportunity to improve the medical education curriculum to care for an aging population. *J Grad Med Educ.* 2017;9(5):669. <https://doi.org/10.4300/JGME-D-17-00390.1>
14. Wachterman MW, Marcantonio ER, Davis RB, et al. Relationship between the prognostic expectations of seriously ill patients undergoing hemodialysis and their nephrologists. *JAMA Intern Med.* 2013;173(13):1206-1214. <https://doi.org/10.1001/jamainternmed.2013.6036>
15. American Geriatrics Society Expert Panel on the Care of Older Adults With Diabetes Mellitus. Guidelines abstracted from the American Geriatrics Society Guidelines for Improving the Care of Older Adults With Diabetes Mellitus: 2013 update. *J Am Geriatr Soc.* 2013;61(11):2020-2026. <https://doi.org/10.1111/jgs.12514>
16. Medication reconciliation to prevent adverse drug events. Institute for Healthcare Improvement website. <http://www.ihio.org/Topics/ADEsMedicationReconciliation/Pages/default.aspx>. Accessed June 22, 2018.
17. Patient Safety Primer: medication reconciliation. PSNet (Patient Safety Network) website. <https://psnet.ahrq.gov/primers/primer/1>. Accessed June 22, 2018.
18. Plaska A, Rosin V, Stalburg C. Role-playing activity exploring the effects of age-related polypharmacy with a focus on interprofessional collaboration. *MedEdPORTAL.* 2015;11:10117. https://doi.org/10.15766/mep_2374-8265.10117
19. Denson K, Kuester J. Pills, pills, and more pills: a pill box exercise to teach barriers to medication adherence and solutions. *MedEdPORTAL.* 2015;11:10262. https://doi.org/10.15766/mep_2374-8265.10262
20. Mueller SK, Kripalani S, Stein J, et al. A toolkit to disseminate best practices in inpatient medication reconciliation: Multi-Center Medication Reconciliation Quality Improvement Study (MARQUIS). *Jt Comm J Qual Patient Saf.* 2013;39(8):371-382, AP1-AP3. [https://doi.org/10.1016/S1553-7250\(13\)39051-5](https://doi.org/10.1016/S1553-7250(13)39051-5)
21. Weiss BD, Brega AG, LeBlanc WG, et al. Improving the effectiveness of medication review: guidance from the Health Literacy Universal Precautions Toolkit. *J Am Board Fam Med.* 2016;29(1):18-23. <https://doi.org/10.3122/jabfm.2016.01.150163>
22. Scott IA, Hilmer SN, Reeve E, et al. Reducing inappropriate polypharmacy: the process of deprescribing. *JAMA Intern Med.* 2015;175(5):827-834. <https://doi.org/10.1001/jamainternmed.2015.0324>
23. Phung E, Triantafylidis L, Zhang HM, Yeh IM. New media, part 5: online deprescribing tools. *J Palliat Med.* 2018;21(2):269-270. <https://doi.org/10.1089/jpm.2017.0688>
24. 2019 American Geriatrics Society Beers Criteria Update Expert Panel. American Geriatrics Society 2019 Updated AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults. *J Am Geriatr Soc.* 2019;67(4):674-694. <https://doi.org/10.1111/jgs.15767>
25. Rudolph JL, Salow MJ, Angelini MC, McGlinchey RE. The Anticholinergic Risk Scale and anticholinergic adverse effects in older persons. *Arch Intern Med.* 2008;168(5):508-513. <https://doi.org/10.1001/archinternmed.2007.106>
26. Gill SS, Mamdani M, Naglie G, et al. A prescribing cascade involving cholinesterase inhibitors and anticholinergic drugs. *Arch*

- Intern Med.* 2005;165(7):808-813.
<https://doi.org/10.1001/archinte.165.7.808>
27. Gallagher PF, O'Connor MN, O'Mahony D. Prevention of potentially inappropriate prescribing for elderly patients: a randomized controlled trial using STOPP/START criteria. *Clin Pharmacol Ther.* 2011;89(6):845-854.
<https://doi.org/10.1038/clpt.2011.44>
28. Deprescribing.org website. <https://deprescribing.org/>. Accessed May 30, 2018.
29. MedStopper beta website. <http://medstopper.com/>. Accessed May 30, 2018.
30. Fulmer T, Hyer K, Flaherty E, et al. Geriatric Interdisciplinary Team Training program: evaluation results. *J Aging Health.* 2005;17(4):443-470.
<https://doi.org/10.1177/0898264305277962>
31. Solberg LB, Solberg LM, Carter CS. Geriatric care boot camp: an interprofessional education program for healthcare professionals. *J Am Geriatr Soc.* 2015;63(5):997-1001.
<https://doi.org/10.1111/jgs.13394>
32. Partnership for Health in Aging Workgroup on Interdisciplinary Team Training in Geriatrics. Position statement on interdisciplinary team training in geriatrics: an essential component of quality health care for older adults. *J Am Geriatr Soc.* 2014;62(5):961-965. <https://doi.org/10.1111/jgs.12822>
33. Health Professions Networks Nursing & Midwifery Office, Department of Human Resources for Health. Framework for action on interprofessional education & collaborative practice. http://whqlibdoc.who.int/hq/2010/WHO_HRH_HPN_10.3_eng.pdf?ua=1. Published 2010. Accessed June 21, 2018.
34. About the National Center. National Center for Interprofessional Practice and Education website. <https://nexusipe.org/about>. Accessed June 21, 2018.
35. *Retooling for an Aging America: Building the Health Care Workforce*. Washington, DC: National Academies Press; 2008.

Received: February 14, 2019

Accepted: July 31, 2019

Published: November 22, 2019