Oregon Health & Science University
School of Medicine

Scholarly Projects Final Report

Title *(Must match poster title; include key words in the title to improve electronic search capabilities.)*

Resident physician perceptions of polypharmacy and deprescribing in aging patient populations before and after a tailored educational session

Student Investigator's Name

Sophia Ver Steeg

Date of Submission *(mm/dd/yyyy)*

3/17/23

Graduation Year

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Project Course *(Indicate whether the project was conducted in the Scholarly Projects Curriculum; Physician Scientist Experience; Combined Degree Program [MD/MPH, MD/PhD]; or other course.)*

Scholarly Projects Curriculum

Co-Investigators *(Names, departments; institution if not OHSU)*

Rebecca Cantone M.D., OHSU; Richard Moberly M.D., OHSU; Harry Krulewitch, M.D., OHSU; Al Baghal, Tarek P.h.D., M.S., University of Essex; Rebecca Rdesinski, M.S.W., M.P.H., OHSU

Mentor's Name

Dr. Rebecca Cantone

Mentor's Department

School of Medicine

Scholarly Project Final Report

Concentration Lead's Name

Dr. David Buckley

Project/Research Question

Assess the understanding of prescribing resident physicians of deprescribing for aging patient populations then provide targeted resources.

Type of Project *(Best description of your project; e.g., research study, quality improvement project, engineering project, etc.)*

Quality improvement project

Key words *(4-10 words describing key aspects of your project)*

Resident education, polypharmacy, deprescribing, multi-morbidity

Meeting Presentations

If your project was presented at a meeting besides the OHSU Capstone, please provide the meeting(s) name, location, date, and presentation format below (poster vs. podium presentation or other).

n/a

Publications *(Abstract, article, other)*

If your project was published, please provide reference(s) below in JAMA style.

n/a

Submission to Archive

Final reports will be archived in a central library to benefit other students and colleagues. Describe any restrictions below (e.g., hold until publication of article on a specific date).

n/a

Scholarly Project Final Report

Next Steps

What are possible next steps that would build upon the results of this project? Could any data or tools resulting from the project have the potential to be used to answer new research questions by future medical students?

Next steps would include the development of a more extensive educational intervention including multiple sessions, case studies and the opportunity to work with a pharmacist with regards to deprescribing for an residents' own patients.

Please follow the link below and complete the archival process for your Project in addition to submitting your final report.

https://ohsu.ca1.qualtrics.com/jfe/form/SV_3ls2z8V0goKiHZP

Student's Signature/Date *(Electronic signatures on this form are acceptable.)*
This report describes work that I conducted in the Scholarly Projects Curriculum or alternative academic program at the OHSU School of Medicine. By typing my signature below, I attest to its authenticity and originality and agree to submit it to the Archive.

X _____

Student's full name

Mentor's Approval *(Signature/date)*

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Report*: Information in the report should be consistent with the poster, but could include additional material. Insert text in the following sections targeting 1500-3000 words overall; include key figures and tables. Use Calibri 11-point font, single spaced and 1-inch margin; follow JAMA style conventions as detailed in the full instructions.*

Introduction *(≥250 words)*

In the United States the median age has been steadily increasing, from 37.2 in 2010 to 38.2 in 2018. [1] As a greater proportion of adults enter into their sixties and beyond, the general physiological changes in addition to pathological changes lead to increased risk of multimorbidity. Many of the conditions that these elderly populations are developing have well proven medication-based treatment. However, as the number of disease processes increase, the number of medications an individual is prescribed also quickly increases; whether the drug is to treat an illness or cover the side effect of a separate medication. Polypharmacy has been defined as the regular use of at least five medications or more and, as of 2022, had an estimated prevalence of 37%[2]. The aging population of patients are now seeing multiple specialists, in addition to their primary care provider which leads to one potential source of over-prescribing. In addition, the electronic medical health record (EMR) is not yet a universally shared piece of information between providers, which can muddy the waters of interprofessional communication.

Polypharmacy in geriatric populations has been a growing concern in the medical community over the past few decades. It has been associated with increased adverse drug events, falls and emergency department visits [3,4]. Polypharmacy has been demonstrated to be a significant burden to patients and while the process of deprescribing continues to be investigated, there is no agreed upon methodology. Certain tools exist such as the Beers Criteria, which identifies mediation or medication classes that should be avoided in nursing homes[5]. However, with a lack of a "gold standard" approach to describing for polypharmacy there exists a space for further growth in resident education on how to best teach this complicated problem. This study will investigate the understanding of polypharmacy and the utilization of deprescribing protocols amongst resident prescribing providers at a small rural care center.

Methods *(≥250 words)*

This quality improvement study consisted of an educational intervention bookmarked by a pre- and post-survey. The participants of the study included the OHSU family medicine residents who were assigned to the Scappoose Family Medicine Clinic. These residents were chosen due to their unique longitudinal care of older patients at the Columbia Care Center. The educational intervention consisted of an hour-long presentation in the form of a PowerPoint during a regularly scheduled didactics session. It was developed with assistance from regional experts and research into the tools for resident education of polypharmacy and deprescribing. The 5M Framework of symptom burden was chosen as the main tool for deprescribing given its prior success and use throughout the OHSU system. In addition, in order to provide relevance for the participants, a chart review of the Columbia Care Center residents assigned to the OHSU medical residents participating in the study was conducted. Data from this chart review was utilized in the PowerPoint presentation to represent evidence of polypharmacy within the participants' patient population. The survey of this project was modified from an existing survey developed by Farrel, et. al in "Self-efficacy for deprescribing: a survey for health care professionals using evidence-based deprescribing guidelines." The survey focused on a provider's self-assessment of their efficacy with deprescribing in the setting of polypharmacy. The majority of the questions utilized Likert scales. The original survey by Farrel et. al was shortened in order to better target the survey to family medicine residents and decrease survey administration time in order to improve adherence and allow for a free response question. The free

response question focused on trying to identify areas of potential improvement future QI projects could address. The survey was administered through the online survey tool, Qualtrics.

Results *(≥500 words)*

The two data sets collected from this study were the chart review and the survey results. The chart review was conducted of the Columbia Care Center residents under the care of the participating OHSU Family Medicine residents. Nineteen individuals were included given this criteria. However, upon chart review, there were two assigned patients that had died and it was decided to exclude their data from the final results. The chart review of the included patients focused on medical history and medication list. As seen in Figure 1. the average age of the residents at the Columbia Care Center was 77 years old, with an average number of items on their medical history of seven. The average number of items on their problem list was higher at 19. There was a wide range of number of medications listed, with a difference of 30 between the lowest number of medications and the highest. All of the total medication counts were above 13. The pre- and post- survey were identical and consisted of twelve questions with nine Likert style questions, two questions based on creating a list, and a free response question regarding perception of potential improvements in the deprescribing pathway. The pre-survey had three total respondents. However, one individual missed a single question out of the Likert scale questions in addition to the two questions requiring a list and the free response question. Given the poor response to the pre- and post- survey, no statistical analysis was conducted of the results. The "self-efficacy score" referred to in Figure 2. was determined by assigning 0-5 to the Likert scale questions that were based on a provider's confidence in their knowledge of deprescribing and confidence in tasks related to deprescribing. The scale ranged from "Not confident at all" to "Completely confident." The participants of the pre-survey had an average self-efficacy score of 3.4, which within the Likert scale would translate to the average response being between participants being "somewhat confident" and "fairly confident." The single responder to the post survey had an efficacy score of 4 which would translate to an average response of "fairly confident." Participants were also provided a list of potential changes to improve ability to discontinue medications and asked to rearrange the list in most in order of most useful. The participants overall listed "improved information exchange with pharmacists located at your facility" and "improved exchange with providers in different hospital and care settings" as their perceived most helpful changes. In response to ranking what resources are most helpful in the process of deprescribing, the resident physicians either listed "Drug specific deprescribing guidelines/guides" or Electronic Clinical Decision Support Systems" as the most helpful. Another notable piece of data that was gathered subjectively from participants was responses to the intervention immediately following presentation during a time for feedback. Some participants described interest in being taught specific scripts for how to talk to patients about specific medication cessation such as working with older patients in tapering and deprescribing a benzodiazepine that is used as a sleep aid.

n=17	Mean	Low	High
Age	77	58	95
Problem List (total count)	19	7	24
Medical history (total count)	7	0	23
Medications list (total count)	24	13	43

Figure 1. Results of chart review of the Columbia Care Center residents under the care of the participating family medicine residents

	Pre Survey (n=3*)	Post Survey (n=1)
Self efficacy score	4, 2.3, 4	4.3

Figure 2. Overall efficacy based on confidence of deprescribing and polypharmacy.
(*one survey was missing a response to a single question of the set)

Discussion *(≥500 words)*

The objective of this project was to assess the understanding of prescribing resident physicians of deprescribing for aging patient populations then provide targeted resources for education. A survey was adapted for the project and a PowerPoint presentation was developed with specific resources and a method for deprescribing. The chart review conducted for the study showed a significant presence of polypharmacy within the patients assigned to the family medicine residents at Columbia Care Center. All of the patients had polypharmacy with the lowest number of prescribed medications being 13 and the average 24. Of note, through the chart review it was determined that a number of these medications were likely prescribed as PRNs for the care center residents and were potentially being taken rarely, or not at all. However, this caveat would not fully account for the significant medication burden. Another notable finding of the chart review was the significant differences in how the medical history tab within the electronic health record was utilized with a wide range of number of items listed in the category, some being overlapping diagnoses. For the project, the pre- and post- survey were administered via email before and after the PowerPoint presentation. Although email was the most efficient survey administration method, there was very little engagement. There were six total residents that fit the target population. The pre-survey had three individual responses and the post-survey had one. The survey primarily utilized the Likert scale in order to determine the participants self-efficacy for deprescribing; each question measured different aspects of the deprescribing process and the results were averaged to represent the self-efficacy score. All of the average responses to the questions ranged between “somewhat confident” and “farily confident.” Of note, the participants ranged between their intern and third year of residency and this factor was not accounted for during the survey. There was no statistical difference between the pre- and post-survey responses with regards to the score for self-efficacy.

There were several limitations and areas for improvement in this study. Limitations included a small sample size of residents and poor engagement with the pre- and post- survey. In addition, the intervention provided was limited at only an hour long during an afternoon didactics session. These limitations could be addressed in a follow up study in many ways. To begin with, in order to ensure a greater understanding and breadth of knowledge surrounding polypharmacy, additional educational models would need to be utilized. The intervention should be expanded to multiple sessions with the inclusion of interactive case studies. It would also be beneficial to incorporate hands on learning by providing time for the residents to work with a pharmacist in developing deprescribing plans for one of the residents’ own patients.

Future directions stemming from this data could also include specifically addressing some of the barriers noted by the survey participants. With regards to perceived most helpful changes in addressing deprescribing for polypharmacy the participants overall listed “improved information exchange with pharmacists located at your facility” and “improved exchange with providers in different hospital and care settings.” These topics could be used in an interdisciplinary quality improvement cycle using the PDSA model.

Conclusions *(2-3 summary sentences)*

Polypharmacy is a growing problem within medicine and residency education surrounding deprescribing will be important to improving patient outcomes within an aging population. The 5M Symptom Framework provides one discrete methodology for residents to utilize along with clinical resources such as BEERS. Further research must be done to determine the best ways to educate future providers.

References *(JAMA style format)*

1. Bureau, U. (2019, July 16). Median Age Doesn't Tell the Whole Story. Retrieved November 10, 2020, from https://www.census.gov/library/stories/2019/06/median-age-does-not-tell-the-whole-story.html
2. Delara M, Murray L, Jafari B, Bahji A, Goodarzi Z, Kirkham J, Chowdhury M, Seitz DP. Prevalence and factors associated with polypharmacy: a systematic review and Meta-analysis. BMC Geriatr. 2022 Jul 19;22(1):601. doi: 10.1186/s12877-022-03279-x. Erratum in: BMC Geriatr. 2022 Sep 12;22(1):742. PMID: 35854209; PMCID: PMC9297624.
3. Koronkowski MJ, Semla TP, Schmader KE, Hanlon JT. Recent Literature Update on Medication Risk in Older Adults, 2015-2016. J Am Geriatr Soc. 2017 Jul;65(7):1401-1405. doi: 10.1111/jgs.14887. Epub 2017 Mar 28. PMID: 28369729; PMCID: PMC5507725.
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5. Marcum ZA, Hanlon JT. Commentary on the new American Geriatric Society Beers criteria for potentially inappropriate medication use in older adults. Am J Geriatr Pharmacother. 2012 Apr;10(2):151-9. doi: 10.1016/j.amjopharm.2012.03.002. PMID: 22483163; PMCID: PMC3381503.