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Cultivating Appropriate Prescribing in a Primary Care House Calls Practice: A Quality Improvement Project

Sarah J. Marzolf
Boise State University

Cultivating Appropriate Prescribing in a Primary Care House Calls Practice: A Quality Improvement Project

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By

Sarah J Marzolf

Committee Chair (Faculty Mentor): Sara Ahten

Committee Member (Second Reader): Ron Ordona

Abstract

Problem Description: Polypharmacy in the frail elderly can lead to suboptimal management of medical issues. Primary Care Providers (PCPs) often lack knowledge of best practices regarding deprescribing and lack a systematic process for assessing mediation appropriateness. A quality improvement project was developed and executed at Housecall Providers, a home-based primary care practice in Portland, Oregon to facilitate the incorporation of deprescribing into daily practice.

Interventions: Following a literature review, a curriculum was developed and utilized during an educational intervention for PCPs regarding deprescribing best practices. A system for introducing new PCPs to evidence-based deprescribing for the frail elderly. This information was translated into materials that are now included in the PCP Handbook. A system for including medication plans in the medical record was developed.

Results: The project showed positive impacts on PCP knowledge and confidence regarding the deprescribing process. Results also demonstrated a strong commitment to practice change as a result of interventions.

Interpretation: Polypharmacy and deprescribing educational efforts should be promoted in primary care to help PCPs gain greater understanding regarding deprescribing best practices and to help PCPs commit to needed deprescribing among their patient panels in order to improve patient outcomes.

Conclusion: Future efforts to help promote safe, effective deprescribing should be a priority for primary care practices. More research is needed on safe and effective deprescribing and policy should follow the evidence as it emerges.

Key Words: deprescribing, polypharmacy, frail elderly

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A Quality Improvement Project

The problem of polypharmacy in community-dwelling, frail older adults leads to multiple issues including increases in adverse drug reactions, falls, disability, and mortality (Wang et al., 2015), as well as poorer physical and mental capabilities (Rawle, Cooper, Kuh, & Richards, 2018). Despite general knowledge of the issue of polypharmacy, primary care providers (PCPs) continue to prescribe potentially inappropriate medications (PIMs). PCPs at Housecall Providers (HCP) lack knowledge of deprescribing best practices and lack a systematic process for assessing mediation appropriateness.

Problem Description

Problem Background

Polypharmacy and PIMs have been recognized as barriers to optimal health care and quality of life for older, frail, multimorbid patients. Page, Clifford, Potter, Schwartz, and Etherton-Beer (2016) noted that by age 70, 75% of people take over five medications per day. Polypharmacy is associated with poor health outcomes, increased frailty, increased geriatric syndromes, and decreased health-related quality of life (Duncan, Duerden, & Payne, 2017; Page et al., 2016; Saum et al., 2016; Sergi, De Rui, Sarti, & Manzato, 2011). Polypharmacy is also associated with an increase in nonadherence, adverse drug reactions, drug-drug interactions, risk of hospitalization, and costs (Rollason & Vogt, 2003).

The obvious solution to the problem of polypharmacy is to decrease the number of medications the elderly receive. First mentioned in 2003, deprescribing has been defined as “the process of withdrawal of an inappropriate medication, supervised by a health care professional with the goal of managing polypharmacy and improving outcomes” (Reeve, 2015). Despite

general knowledge of the issue of polypharmacy and the potential benefits of deprescribing, PCPs continue to struggle with medication list optimization. Anderson, Foster, Freeman, Luetsch, and Scott (2017) claimed that as many as one in five medications taken by the elderly may be potentially inappropriate given age, frailty, comorbidity, and prognosis. Given this complex milieu, many PCPs experience deprescribing as a daunting, time-consuming process that produces confusion and anxiety.

Local Problem

HCP is a local primary care, palliative care, and hospice provider in Portland, Oregon. HCP serves as primary care provider for over 1700 homebound individuals. These patients are medically frail and often are nearing the end of life. Patients at HCP are prescribed an average of 11.4 scheduled medications. They often also have several as needed medications as well. During informal interviews of PCPs at HCP, frustration over lack of clarity surrounding appropriate prescribing practices and deprescribing was demonstrated. Overall, PCPs lack knowledge of deprescribing best practices and lack a systematic method of bringing safe, evidence-based, patient-centered deprescribing to patients. The above information has led to the following PICO question for the Doctor of Nursing Practice Scholarly Project: For PCPs treating multimorbid, community-dwelling adults experiencing polypharmacy, what are the best practices for safe deprescribing?

Available Knowledge

Literature Review

Searches for evidence were performed in various databases in order to determine best practice methods for deprescribing (see Appendix A). A total of 13 articles were reviewed for the project. Overall, data available for deprescribing interventions remains in its infancy. Although

data on the association between polypharmacy and poor outcomes is strong, there is not strong data that prescription optimization efforts improve clinical outcomes (Potter, Flicker, Page, & Etherton-Beer, 2016). However, the evidence supporting the safety of deprescribing is consistently strong.

Available evidence shows deprescribing efforts do improve medication-related outcomes. Deprescribing does result in fewer total medications as well as fewer PIMs (Huiskes, Burger, van den Ende, & van den Bemt, 2017). Interventions with evidentiary support include physician medication review, academic detailing, and the use of a structured deprescribing tool to assist with assessment of medication appropriateness (Tjia, Velten, Parsons, Valluri & Briesacher, 2013).

Both explicit and implicit tools have some evidence for efficacy, however the explicit tools have stronger evidence supporting their use. Evidence for implicit tools is currently less robust; still utilization of implicit tools can help make PCPs' think through a medication list in a systematic way, evaluating each medication's appropriateness given age, comorbidities, and prognosis.

Synthesis of the Evidence

Evidence supporting deprescribing on clinical outcomes is young and the early evidence has not shown a consistently favorable impact on clinical outcomes. However, it has been suggested that the few studies that have been performed were not of sufficient size or duration to detect a positive impact of interventions on clinical outcomes (Gokula & Holmes, 2012; Tjia, et al, 2013). Further research is indicated in order to investigate the most efficacious tools to assist with deprescribing. Still, the available evidence supports decreasing medication burden for

elderly, frail patients given the improvements in medication appropriateness and the safety of doing so.

Rationale

Theoretical Model

Donabedian's 1966 model of Structure, Process, Outcome was utilized in the development of the project structure and outcome goals (see Appendix B). The model asserts that structures in healthcare affect the healthcare process, which affects outcomes for patients. In this model, PCP knowledge is part of the structure of healthcare and this is the target of the project intervention (Santana et al., 2017). It is posited, based on available evidence, that this project intervention will affect the process of healthcare delivery (prescribing habits) and therefore will positively affect patient-related outcomes. According to Santana et al. (2017), the Donabedian model is key to providing patient-centered care and has played a central role in the development of the patient-centered concept in healthcare.

Project Framework – Role of the Logic Model in Project Development

The logic model (Appendix C) was utilized in the development of this project. Based on the Kellogg Foundation's work, the logic model defined the theory-of-change that formed the basis of the project. Outcomes were identified, and appropriate steps needed to achieve outcomes were outlined. The logic model informed stakeholders of proposed resources, activities, and outputs required in order to reach both short-term and long-term goals.

Specific Aims

This project aimed to create a standardized process through which PCPs working with frail older adults can learn best practices in appropriate prescribing and to provide tools to assist in the process of increasing medication appropriateness. The pilot intervention included an

assessment of effectiveness based on participant feedback, pre/post testing, and PCP self-efficacy regarding the deprescribing process. In fulfillment of this aim, an educational intervention and follow-up session were held to increase provider awareness of the problems associated with polypharmacy. The session also provided PCPs with evidence-based tools to help them with the process of prescription optimization for our patients. The provider education will continue into the future in the form of a "train the trainer" session with the PCP team lead who performs all onboarding educational functions. The information from the training is now also included in the PCP handbook for future reference.

Context

The project setting is HCP. HCP is a non-profit primary care and hospice service in Portland, Oregon that has been in existence since 1995. The mission statement of the organization, according to the website (HCP, n.d.), is: "Improving lives by bringing health care home." Primary care services are carried out in patient homes across the city. HCP was acquired by CareOregon in 2017 and is now a subsidiary of CareOregon. CareOregon is a non-profit health plan that serves low-income Oregonians. CareOregon insures approximately one quarter of all Oregon Health Plan members (CareOregon, 2014).

Population

The patients served by HCP tend to be some of the most ill members of our community. On average, 25% of HCP patients die every year. Patients all meet the Medicare definition of homebound. Homebound people, and especially homebound older adults, possess characteristics which make them more vulnerable and marginalized than the non-homebound population. People who are homebound have an average of twice as many chronic conditions as non-homebound individuals (Ornstein et al., 2015). In general, they have lower incomes, less

education, and poorer health status than non-homebound individuals (Musich, Wang, Hawkins, & Yeh, 2015). The homebound also suffer more often from mental health issues such as depression and memory impairment (Namkee, Sirey, & Bruce, 2013). Homebound individuals are 15% less likely to be compliant with medication regimens and 9% less likely to comply with recommended care patterns such as eye exams, annual visits, etc. (Musich et al., 2015).

Setting and Resources

The project took place in a home-based primary care (HBPC) practice. The model for HCP practice includes longitudinal primary care services by visiting primary care providers. In addition, a transition team comprised of registered nurses and social workers is deployed to help facilitate movement between home and acute care settings. Palliative and hospice care teams are also utilized when their services become beneficial for patients.

The project took place in the city of Portland, Oregon, which lies in Multnomah County. Portland is the largest metropolitan area in the state. As a major metropolitan area, the city has some challenges with social determinants of health for some members of the community, although it tends to be a fairly wealthy city when compared to the rest of the state and country. Unemployment is a low 4.7%. Despite a median income that is higher than the rest of the state, Multnomah County has a higher percentage of people requiring public assistance income and a higher rate of Medicaid recipients than the rest of the state. The county also has a high rate of limited English proficiency at 9.15% of the population. Multnomah County tends to score well on indicators of health behaviors and chronic disease burden (Community Commons, n.d.).

Relevant Elements of Project Setting

Serving approximately 1700 patients in the Portland metro area, HCP employs a team of PCPs along with nurses, social workers, chaplain, and other support staff to help meet the needs

of its patients. Total number of employees is approximately 100. Patients tend to be high-contact and high-needs, requiring frequent interaction with their healthcare team. PCPs travel to patients' location, whether a private home, adult foster home, assisted living facility, or memory care unit and provide HBPC services. Each PCP cares for a panel of 100-140 patients. When appropriate, primary care providers refer patients to a palliative care team of nurses, social workers and chaplain who attempt to meet the increasing needs of patients as their diseases progress. Also available to providers are an in-house pharmacist and psychiatrist specializing in geriatrics as well as a robust set of volunteers.

While HCP is an official part of the CareOregon team, it continues to operate as a separate nonprofit care delivery company. CareOregon's mission of serving vulnerable populations with creative solutions to people's health needs is congruent with HCP's history and mission. CareOregon is a "safety net" nonprofit health plan whose members are often affected by social determinants of health. They have approximately 200,000 Medicare/Medicaid members. CareOregon, like HCP, is committed to patient-centered care of the underserved that takes the entire individual into account (HCP, n.d.).

Organizational Culture and Readiness for Change

HCP has been an agile organization since its inception as changes in healthcare have come about over the years. The acquisition by CareOregon has brought about a number of changes in the structure and operation of the company. While the capacity to adapt at HCP is high, there is a limit to the amount of change that can be absorbed by the employees. A concern for change fatigue exists among staff and leadership. This could be a barrier to the effectiveness of the intervention on clinical practice. In effort to combat change fatigue, the project utilized

established weekly educational/meeting times. This helped by not placing increased burden on PCPs as they were already accustomed to an educational component at this time.

Strengths and Weaknesses

Strengths of the pilot included an organizational culture which is dedicated to clinical excellence. PCPs at HCP routinely engage in educational endeavors and clinical improvement measures which are introduced in weekly primary care meetings. The pilot utilized this feature of the practice to which PCPs were already accustomed. HCP also possesses a focus on continuous improvement of practice and is accustomed to a collaborative approach to learning best practices.

Weaknesses of the project included PCP prescribing habits. Although PCPs have a commitment to clinical excellence, many competing demands on time and attention throughout a day can interfere with the focus and attention it may take to carefully consider patient medication lists, especially when PCPs are novices at doing so. Experienced clinicians who have been prescribing in a certain manner may find it taxing to refocus their attention on using their prescription pads in a new way. Also, deprescribing requires conversations with family members and education of families, patients, and caregivers, which can be time consuming.

Memorandum of Understanding

A memorandum of understanding was signed by HCP and the DNP student which outlines both organizational and student commitment to the project (Appendix D).

Interventions

Interventions for the project began with the development of a curriculum to use for PCP education. The curriculum was used to guide an educational session for PCPs and the pharmacist at HCP. A pre/post-test was administered to measure knowledge gain and a commitment to change (CTC) instrument was utilized. A follow-up session was held to discuss barriers to

deprescribing and to troubleshoot solutions. Providers were also instructed on how to incorporate the deprescribing plan into the EHR so that others involved in the care of the patient are clear on the medication plan. Educational materials were also packaged for inclusion in the PCP Handbook. A train-the-trainer session was held with the PCP onboarding trainer so that the information was assured to carry forward to new employees.

Logic Model

A Logic Model served as the guiding logistical structure for the project and included information on resources, activities and outputs needed to accomplish the following objectives:

1. Curriculum for educational session was developed and approved by medical director by May 30, 2019.
2. By July 30, 2019 80% of HCP PCPs attended a deprescribing educational session.
3. PCP knowledge of the problems with polypharmacy and of evidence-based deprescribing tools improved by 30% as measured by pre/post-test by August 30, 2019.
4. PCP self-efficacy surrounding the issue of appropriate prescribing increased by 20% as measured by pre/post-test questions adapted from the EPIC scale by August 30, 2019.
5. PCP feedback on intervention was solicited and obtained via feedback form from 50% of PCPs by September 30, 2019.
6. 80% of program participants completed the “Memo-To-Myself” as a commitment to change measure by July 30, 2019.
7. “Train the trainer” program for one-on-one education with PCP trainer on appropriate prescribing was developed and implemented by October 2019.

Intermediate-term Outcomes

8. HCP PCPs are proficient with deprescribing tools outlined in the educational intervention and are utilizing the tools to evaluate patient medication lists.
9. Mean number of routine patient medications on HCP patient medication lists, defined as medications taken on a scheduled basis with no end date, decreases.
10. PCPs gained confidence in accomplishing appropriate prescribing tasks as they utilize provided tools.
11. Feedback is synthesized, discussed among student, trainer, and pharmacist, and incorporated into educational modules for future iterations of educational intervention for appropriate prescribing.
12. PCPs implement changes in practice habits mentioned on their CTC.
13. New PCPs receive training on deprescribing as part of routine new PCP onboarding.

Long-term Outcomes

14. Patients achieve more appropriate medications, and as a result, better clinical outcomes.
15. PCPs critically evaluate all patient medications lists at least annually and with any significant change in condition.
16. PCPs are confident and proficient with appropriate prescribing tools and utilize them with appropriate patients on their panel.
17. Ongoing improvement of appropriate prescribing intervention.
18. Patients receive appropriate medications, and as a result, better clinical outcomes and QOL.

Outcomes 1 through 7 were addressed within the timeframe of this project.

Correlation of Interventions with the Theoretical Model Elements

The chosen interventions were designed to follow the Donabedian conceptual model of quality improvement in healthcare. In this model, the staff training intervention is part of the structure piece of healthcare delivery. By modifying the structure, that is, the knowledge and tools available to PCPs, we can affect the PCP process of deprescribing and thereby affect patient outcomes.

Timeline

The project timeline (see Appendix E) reflected anticipated needs for the project. Important elements included curriculum development which occurred over the course of three months in early 2019. Approval of curriculum was obtained in May 2019. Project implementation and data collection occurred in Summer 2019 and data analysis was completed Fall 2019. Dissemination of findings occurred Spring 2020.

Measures

Data measures were chosen to evaluate the effectiveness of the interventions in a local practice setting. The Outcome Evaluation Table (Appendix F) details outcome measures. The project was designed as a quality improvement project with the purpose of improving provider prescribing practice and patient outcomes in one particular practice setting. Data gathered were not intended to be generalizable.

Outcome 1

The first outcome was a process outcome which set a goal for the completion of training materials with medical director approval by May 30, 2019.

Outcome 2

Outcome 2 set a goal of 80% participation among HCP PCPs in the deprescribing educational session. The data collected for this outcome was presented in the form of a training report. The training report included the following elements: date of training, educational objectives, educational materials provided, names of staff attendees, and aggregate scores on pre/post-testing.

Outcome 3

Outcome 3 involved a pre/post-test (Appendix G). A pre/post-test design was utilized to measure PCP knowledge gains as a result of educational intervention. This test included 5 multiple choice questions which were developed from curriculum materials with stakeholder input. While more complex data collection may be desired by stakeholders in subsequent iterations of the intervention, the pre/post-test provided initial evidence of the program's efficacy in achieving goals.

Outcome 4

Outcome 4 measured change in PCP self-efficacy surrounding the issue of appropriate prescribing with a goal of a 20% increase in self-efficacy as measured by pre/post-test questions adapted from the EPIC scale (Salback & Jaglal, 2011). The EPIC scale asks participants to rate their level of confidence in performing different evidence-based medicine tasks. The scale is a Likert-type scale. Three of the original 10 items from this tool were utilized and were included on the pre/post-test.

Outcome 5

Outcome 5 set a goal of 50% response rate on an education program evaluation. Items were selected from the Kirkpatrick Blended Evaluation Plan Samples (Kirkpatrick Partners, n.d.) (Appendix H) and were customized according to stakeholder needs and goals. Items on the

evaluation invited respondents to rate responses on a Likert scale. Qualitative data were also collected on the PCP feedback form in the form of open-ended questions. The qualitative data gathered from the feedback form were provided to stakeholders with information on which areas of the educational module PCPs found most useful for their practice. Feedback was requested by stakeholders to help inform future iterations of the education.

Outcome 6

Outcome 6 involved a CTC instrument called Memo-To-Myself (MTM). The MTM tool was used following the educational intervention with a goal of 80% participation among program participants. This portion of the evaluation was aimed at boosting the translation into practice of the information conveyed in the educational intervention. The MTM tool asks participants to list 3 alterations in their clinical practice they will implement as a result of the educational intervention. Participants filled out two identical MTMs. The first list was compiled into a master list of commitments to change. This list served to guide discussion during the follow-up session and was distributed to all PCPs 2 months following the follow up session as a reminder of changes to which the practice committed. The second was placed in the PCP's mailbox 6 weeks following the education as a reminder of the individual PCP's CTC.

Outcome 7

Outcome 7 was a process outcome which aimed to ensure the ongoing training of new PCPs on appropriate prescribing. Typical training of new PCPs at HCP consists of 8 weeks of one-on-one training with the PCP trainer. An appropriate prescribing class session, including training on deprescribing tools, will be included in the future in this established training schedule. In the train-the-trainer sessions, the PCP trainer was instructed on the materials created for PCP training as well and the materials in the PCP Handbook. The sessions with the PCP

trainer described the purpose of the intervention, explained materials, and answered questions/concerns to ensure trainer confidence with the materials.

Budget

Anticipated total cost of the project for the first year was $7,230 with $4,550 donated in the form the project manager's time and equipment. The remaining portion of the budget, totaling $2,680 was to be provided as an in-kind donation by HCP in the form of employee time dedicated to the project, provision of meeting space, and via access to printing and copying capabilities. Subsequent years have a much smaller budget for the updating of curriculum and for ongoing training in appropriate prescribing, predicted to occur annually (see Appendix I). The Expense Report details the actual costs of the project for the first year of implementation (Appendix J). The Statement of Operations summarizes revenues and expenses (Appendix K).

Analysis

Outcome 1

Outcome 1 is a process outcome which did not involve analysis of data. Data reported on this outcome involved a checklist of activities completed by a specified date.

Outcome 2

The analysis of this data occurred via a simple percentage calculation. Comparison between actual participation and goal participation was made with the goal of quantifying the number and percentage of staff participating in the group education component of the project.

Outcome 3

The pre/post knowledge test was analyzed utilizing descriptive statistics, which summarized results from the pilot project educational intervention. The goal was for learners to display a 30% knowledge gain post intervention. Comparison was made between the mean

aggregated pretest scores and the mean post-test scores for each test item and was reported in the aggregate to protect anonymity.

Outcome 4

Analysis of data collected via the EPIC scale questions was performed using descriptive statistics. Median aggregated scores on each question were calculated and paired with pretest scores to determine change in percentage, with a goal of a 20% increase in self-efficacy scores. Scores were reported as aggregated scores for each item to assess port-test improvement.

Outcome 5

Data from the feedback form was compiled into a feedback report, which included aggregated median scores by item for quantitative data and a list categorized by topic for each qualitative question.

Outcome 6

Data analysis for this outcome included a calculation of the percentage of PCPs in attendance at the education who completed the CTC, and a list of proposed commitments to practice change created by PCPs, which was provided to stakeholders.

Outcome 7

Outcome 7 is a process outcome which did not involve analysis of data. Data reported on this outcome involved a checklist of activities completed.

Ethical Considerations

Ethical Considerations and Protection of Participants

Ethical knowledge protects patient and family wishes while balancing care with prognosis. Often in situations arising toward the end of life, conflicts arise between patient wants/needs, family wants/needs, and PCP wants/needs. Some patients and/or families may not

want to participate in the deprescribing process based on their own understanding and desires. The PCP working with this population balances the social, emotional, and physical needs of the patient while utilizing the ethical knowledge gained over a practice career (Moran, Burson, & Conrad, 2017). Along the spectrum from full treatment to comfort measures lies a space for reflection on the benefits and limits of medical care, and medicines often are the space where the struggle of coming to terms with poor prognosis is played out.

No HIPAA protected data was used in the project. The data was collected anonymously. Pre/post-tests were paired via a matching number system. Knowledge tests and surveys were administered in the privacy of the participants' office. Paper copies and answer key are kept in a secure location accessible only to the project manager.

Biases

Potential biases could affect the application of knowledge gained through the project interventions. One such bias involves a selection bias. It is possible that PCPs will select patients on which to utilize the deprescribing tools who are seen as more cooperative or compliant than other patients. Other possible selection biases may involve the ease with which permissions to alter patient medication lists are obtained from legal healthcare representatives. Attempted mitigation of these potential biases occurred through the educational focus on the dangers of over/under prescribing, through an appeal to the PCPs' sense of justice, and through emphasis on the organizational commitment to providing excellent patient care.

Threats to Quality

Threats to the quality of this project included lack of PCP participation in the process of deprescribing. Though the literature supports educational intervention, PCPs may have reasons for not deprescribing which are not accounted for well in the available studies given the unique

practice setting at HCP. The project success may have also been affected by PCP lack of time and by change fatigue among PCPs.

Conflicts of Interest

The author has no conflicts of interest to report but is a PCP at HCP. CITI training was obtained for this project (see Appendix L).

IRB Application and Project Determination

This quality improvement project was submitted to the Boise State University Institutional Review Board for approval. Approval was obtained on April 22, 2019 via an expedited review process (see Appendix M). The project followed the Belmont Report principles for ethics in human research including respect for persons, beneficence, and justice (Harris, Roussel, Dearman, & Thomas, 2016).

Results

Steps of the intervention were completed by August 2019. The results show mixed success in achieving outcomes.

Steps of the Interventions

After receiving approval from stakeholders to proceed with the overall plan for the intervention, a curriculum was developed in accordance with stakeholder needs and best-practice evidence. Curriculum was reviewed by HCP pharmacist, PCP lead, and medical director. Minor changes were made to the curriculum based on feedback and final approval of the teaching materials was obtained. The initial education session occurred on June 20, 2019.

Evaluation tools were designed to measure the efficacy of the intervention and to meet stakeholder needs. Applicable items from the EPIC scale were included as a measure of PCP confidence in the deprescribing process. Out of 11 items on the original instrument, 3 were

chosen as the most relevant to the project. These were included on the pre/post-test. Five knowledge-based questions were also included in pre/post-testing to measure knowledge gain from the educational intervention. These questions were developed by the project manager as a quantitative measure of how the education affected PCP knowledge related to the education objectives agreed upon by the stakeholders. The MTM was included in the intervention as a measure of anticipated prescribing practice changes by PCPs.

As part of the sustainability of the project, in-house information technology and electronic health records (EHR) specialists were consulted to establish feasibility and processes by which deprescribing plans could be included in the EHR. A process was developed, and this process was included during the demonstration portion of the educational intervention.

The initial education session occurred on June 20, 2019. Pre/post-tests were administered the same day. A volunteer assisted with distribution and collection of tests which the project manager left the room to help encourage PCPs to respond honestly. The whole session lasted 75 minutes including time for curriculum delivery, questions, and testing. Materials used during the education were indexed in the shared drive for PCP reference in the future. In addition, printed versions of the deprescribing tools were offered to PCPs who wanted them.

The follow-up session occurred on July 18, 2019. It included a discussion of what tools PCPs have utilized in their practice and successes and barriers to doing so. Items listed on PCPs' MTMs were also discussed.

Materials for the PCP Handbook were developed from the educational materials and were approved in June 2019. The newly developed sections were added to the electronic version of the PCP Handbook at that time and were indexed in the shared drive. This handbook serves as the basis from which training of new PCPs occur.

The train-the-trainer session occurred on August 15, 2019. PCP Handbook materials were reviewed. Information regarding the dangers of polypharmacy was also reviewed and curriculum for PCP onboarding was updated.

Details of the Process Measures and Outcomes

Outcome 1 – met. This process outcome was achieved with the completion and approval of the curriculum for the educational portion of the project.

Outcome 2 – partially met at 98.8% of desired goal. This outcome set a goal of 80% of PCPs participating in the initial educational session. There are currently a total of 19 PCPs at HCP. A total of 16 PCPs were in attendance for a portion of the session. One PCP was only present for a portion of the session and did not complete pre/post-testing. Another of the PCPs was the project manager who ran the session. Fifteen PCPs were present for the entire session making the percentage participating 79%. However, the clinic pharmacist and 2 non-PCP providers also attended the presentation but did not complete pre/post-testing.

Outcome 3 – met. This outcome measured PCP knowledge gain through a series of 5 multiple choice questions. Goal for this outcome was a 30% increase in correct answers on knowledge questions. Calculation of percent change in correct answers revealed a 56.7% increase in correct answers (see Appendix N). The greatest knowledge gains occurred in the areas of polypharmacy risk for older adults and evidence-based PIMs reduction strategies.

Outcome 4 – not met. Goal for this outcome was for PCPs to report a 20% increase in confidence as measured by questions adapted from the EPIC scale. The actual percentage change was 13.41%, which was 67% of desired goal (see Appendix O).

Outcome 5 – not met. The goal for outcome 5 was to have 50% of PCPs complete a session feedback form. Seven out of 15 participants completed the form for a 47% participation rate, 94% of desired goal.

Outcome 6 – met. This outcome aimed to have 80% of PCPs participate in the CTC process. Results revealed that 13 out of 15 participants completed the CTC instrument for a total of 81% participation (see Appendix P).

Outcome 7 – met. This process outcome was completed in August 2019 and involved training the PCP onboarding trainer on deprescribing materials as well as inclusion of those materials in the PCP handbook.

Contextual elements interacted with the interventions in this project in several ways. The first is the practice population. The vast majority of HCP patients are geriatric patients. Thus, PCPs are de facto geriatricians who focus on care of older adults. As providers with this focus, measures of pretest confidence and pretest knowledge may have been inflated when compared to PCPs in general family practice. This likely deflated the change between pre and post-test measures of both confidence and knowledge.

Another contextual element that may have interacted with the results of the intervention is that the education was delivered by a colleague, potentially affecting measures of project success and feedback. Had the education been delivered by an “expert” in deprescribing, there may have been more buy-in from PCPs. Feedback was more limited than expected and may represent a reluctance on the part of PCPs to provide constructive criticism to a peer presenter. Another factor influencing the low rate of feedback is time constraints. PCPs often have visits to make immediately following the education hour and may not have felt there was enough time to provide constructive feedback

The last contextual element that may have affected the project outcomes is the high level of employee engagement in the organization. While this project was quite successful, a practice with a lower level of employee engagement may be less successful. HCP PCPs are committed to best practices care of patients as a top priority. As a mission-driven non-profit, there is less emphasis on productivity and more emphasis on providing quality care. As such, education regarding best practices tend to have more success in this setting than perhaps it would in a more production-driven practice.

Missing Data

All paired pre/post-tests were collected and tabulated under the results section. There were two unanswered pretest knowledge questions and one unanswered post-test knowledge question, which were counted as incorrect answers.

Actual project revenues/expenses

The actual costs of the project differed from the budget in a few ways. The initial budget for the project was $7,230 with $2,680 coming from HCP donation in the form of employee salaries and $4,550 from donated project manager salary and equipment. The total actual cost of the project was $8,270, for a difference of $1,040. The discrepancy between the budgeted amount and the actual amount are the result of differences in the estimated and actual amount of time needed to complete tasks, particularly the project management tasks. The PCP trainer curriculum development and instruction in particular took longer than anticipated.

Summary

Results from the appropriate prescribing intervention revealed several positive outcomes. Review of the literature resulted in the planning of an evidence-based intervention to increase appropriate prescribing for frail older adult patients. Interventions chosen, based on available

evidence, included physician medication review, academic detailing, and the use of structured tools to assist in the deprescribing process.

As such, a deprescribing educational intervention was developed for PCPs at HCP, with the goal of creating a set of standardized tools that PCPs at HCP can use which are evidence-based and relevant for our practice setting. Participation and engagement among PCPs was high. PCP engagement was reflected in a high percentage increase in deprescribing knowledge. However, increases in confidence measures were not as impressive, but may reflect high pretest confidence given the practice setting and previous exposure to deprescribing efforts.

The MTM was quite successful both in terms of participation in the tool and in guiding discussion during the follow-up session. The follow-up session was an important piece meant to encourage translation into practice. Ratelle et al. (2017) describe reflection and CTC as key to behavior change following continuing medical education modules. Revisiting the information-dense material presented in the initial education session via the follow up and MTM discussion allowed a space for troubleshooting and encouragement among PCPs.

Interpretation

Overall, outcomes for the pilot project were positive. For the 16 participants in the educational intervention, there was an increase of 56.7% in knowledge-based questions in pre/post-test measurements. Knowledge of best practices has been shown to positively affect the appropriateness of medications PCPs prescribe (Martin, Tamblyn, Bendetti, Ahmed, & Tannenbaum, 2018).

As knowledge gain does not necessarily reflect practice change, the MTM was used to help with the translation of the evidence into clinical practice. Such CTC instruments have been shown to affect actual practice changes. Drawing on research regarding continuing medical

education (CME), CTC instruments have been shown to enhance behavior change (White, Grzybowski, & Broudo, 2004). Participation in the CTC among the program participants was 81% (n=13), indicating a high likelihood the PCPs will utilize their increased knowledge in future prescribing decisions.

Ratelle et al., (2017) stated that early research regarding the effects of CME failed to show meaningful improvement in practice and showed that critical reflection following CME enhanced practice improvement. As such, the follow up session included discussion of deprescribing successes and failures. Peers presented cases and group problem-solving commenced. PCPs also shared clinical stories of improved health status for patients who have undergone a deprescribing process. The follow-up was seen as quite valuable, particularly because it afforded a space for PCPs to share knowledge and experience in clinical gray areas where the research has not provided clear answers about best practice.

The EPIC scale was also utilized to assess the effectiveness of the intervention at increasing PCP deprescribing confidence. This measure failed to meet the outcome goal of a 20% increase in deprescribing confidence. However, pretest report of confidence on deprescribing tasks was an average of 8 on the 1-10 Likert confidence scale. It is possible that the high pretest score is the result of PCPs' familiarity with the concept of deprescribing due to their focus on geriatrics and through previous education regarding deprescribing. The purpose of including a measure of self-efficacy is that self-efficacy for particular tasks is linked with the ability to perform that task and predicts the actual performance of that task (Salback & Jaglal, 2011). Those providers with higher self-efficacy beliefs surrounding a particular evidence-based task are more likely to perform that task than those with lower self-efficacy (Salback, Jaglal, &

Williams, 2013). Average post-test confidence scores were 9.05, indicating a high likelihood of follow through on the part of the PCP.

Surrogate predictors of behavior change were utilized in the project because, unfortunately, the current project was not able to measure the actual change in the number of PIMs prescribed to HCP patients. Chart reviews were deemed too expensive to perform. Also, the HIPPA requirements for such were not something stakeholders wished to tackle. In addition, the changes desired in PCP prescribing will likely take more time to manifest in patient medication lists than the duration of this project allowed.

Feedback was positive for the project (see Appendix Q). Average PCP scores on the education's relevance was 9.4 out of 10 and on helpfulness was 8.7 out of 10. Generally, PCPs appreciated the introduction to the deprescribing tools. Feedback indicated that PCPs wanted more time to discuss specific cases. This was suggested to the physician who runs routine bi-monthly PCP roundtable discussions as a possible topic for future sessions. Anecdotally, the most useful tool presented was medstopper.com. This is a Canadian web-based tool which is evidence-based, easy to use, and provides patients and PCPs with a step-by-step path to medication optimization. PCPs lamented that this valuable tool is not available with a focus on drugs which are prescribed in the United States.

There are several relevant practice policy implications of the project. Given the significant improvements in provider knowledge and commitment to appropriate prescribing, HCP is planning to continue the deprescribing education. This is slated to occur annually and will be run by the HCP pharmacist. It is also recommended that HCP consider a policy expectation that PCPs complete a formal annual medication review for every patient. It is further recommended that a medication plan be recorded annually during Medicare Annual Wellness

Examinations under the ICD 10 code for medication management. Although a deprescribing plan is not currently a required part of an Annual Wellness Exam, making this a part of the Annual Wellness Exam would help to assure that deprescribing is considered for the majority of our patients on an annual basis. A possible first step may be to have the nurse who already does the Wellness Exam preparation and medication reconciliation also run the patient's medication list through medstopper.com. This way there is already a document which can help to facilitate a conversation with patients and families regarding deprescribing. There is already a system in place to save these reports into patient charts allowing PCPs access during home visits. However, deprescribing is often an iterative process. Utilizing team nurses may help to decrease the PCP follow-up burden at HCP.

At a national level, there is much that can be done to promote deprescribing and to remove barriers which hinder deprescribing efforts. Deprescribing should be taught in educational settings for future prescribers. A similar amount of educational effort should be put into when to stop medications as is put into when to start them.

More broad health policy implications exist for the project. As we move to a value-based health care system, inclusion of annual medication review in Medicare quality measures, such as the Merit-based Incentive Program (MIPs) could help to incentivize consideration of polypharmacy for older Medicare patients. Van Herck et al. (2010) note that there is a large body of evidence that Pay for Performance programs increase effectiveness and quality of care. The evidence shows that a provider medication review improves medication appropriateness. If review of medication lists for appropriateness were included in the MIPs measures, providers would be incentivized to complete a medication review. Eventually, more patients would begin

to experience routine medication evaluations as Berdahl, Esterlin, Ryan, Needleman, and Nuckols (2019) found that primary care practices tend to improve on MIPs measures over time.

Another strategy to increase incentive for PCPs to complete the often lengthy process of making an appropriate prescribing plan could be to create a reimbursable CPT code specifically for medication reviews. This strategy has been successful at increasing the number of Medicare patient who have received counseling for advance care planning. Belanger et al. (2019) reported that early evidence shows that the addition of the advance care planning CPT code increased advanced care planning for patients. A similar CPT code addition has the potential to increase utilization of medication list review.

Limitations

Several limitations of the pilot project are acknowledged. The results of this project are not intended to be generalizable due to the design and purpose of the DNP quality improvement project.

Other limitations include the unique practice setting in which the project occurred. Because HCP is solely a HBPC setting, PCPs at HCP possess a unique set of skills and knowledge gained from working solely in HBPC. The appropriate prescribing intervention may be more or less effective in a traditional brick and mortar clinic setting due to a different distribution of resources, different patient population, and different knowledge focus of PCPs. In addition, the sample size for this project was small at 15 participants.

Another limitation of the results design include some threats to internal validity including social desirability (Issel, 2014). Given that the delivery of the education was performed by a peer, pre/post-test measures of confidence as well as the feedback may have been affected. Efforts were made to mitigate this by having post-testing administered by a third party in the

privacy of PCP's offices. Also, the pre/post-test may not actually reflect all knowledge gained through the education. Pre/post-testing only occurred before and after the formal education intervention. No measures were included in the project to determine the effect of the follow-up session where CTC was reiterated and reflective learning was more likely to have occurred. This would be a suggestion for future iterations of the project.

Conclusions

Polypharmacy can be a barrier to optimization of health and well-being for older, frail adults. Efforts to support deprescribing have been shown to increase medication appropriateness and decrease PIMs. Although evidence on clinical outcomes remains scant, evidence of the effect of deprescribing efforts on medication-related outcomes is solid, resulting in fewer medications and fewer inappropriate medications. This project aimed to educate PCPs about different tools available to them to assist in conversations with patients and families regarding medications. These conversations are an important part of creating a comprehensive plan for end-of-life care.

The project has proven useful for starting conversations among HCP PCPs. Discussions about when to stop medications have been integrated into other routine educational activities on an array of topics. For example, following a recent educational session regarding schizophrenia, a discussion was held about dose tapering toward end of life. Discussion about balancing the benefit of Sinemet for Parkinson's with sedation associated in patients of advancing age was similarly held during a question and answer period following a Parkinson's educational session. This anecdotal uptick in conversation around deprescribing speaks to the usefulness of the project in putting these matters in the minds of PCPs as they go about their usual prescribing.

Currently, the HCP pharmacist is taking on the responsibility of updating the deprescribing educational materials annually and has agreed to lead an annual deprescribing education and update. Organizational support at HCP for this has been demonstrated through agreement to allot one of the weekly education sessions annually.

It is desired that this program will be expanded to include all pharmacists at CareOregon. Discussion with stakeholders has been started about the feasibility of doing so. CareOregon has recently announced an affiliation with Providence Health Systems, set to occur in the next 6 months. At this point it is unclear how the project would be affected by this new affiliation. Given that energies in the organization are now focused on these upcoming changes, the future project timeline is undecided. However, the affiliation with Providence will provide a broader audience for future deprescribing efforts, since Providence employs a far greater number of prescribers.

More research is needed in the field of deprescribing and PIMs. Large, high-quality studies are needed to understand the effects of PIMs and deprescribing on clinical outcomes. Those of us working in geriatrics know that often stopping medications has significant positive effects on patient mentation, balance, and risk of hospitalization, but currently the evidence does not back up this knowledge.

Trends in health care policy are putting a greater emphasis on the role of primary care. Unfortunately, the money has not followed this trend and primary care providers continue to be compensated at a much lower level than their specialist colleagues. This necessitates PCPs continuing to see a high volume of patients, thus shortening appointment times. With an average visit length of 17.5 minutes (Gilchrist, 2019), there is not time enough to do a thorough medication review, discuss options with patients, and create a plan for the future. Pharmacist

support may step into this gap to some extent. However, as we continue to move toward a value-based system of reimbursement in health care, incentives for more attention to the issue of polypharmacy may encourage PCPs to take the extra time to think critically about patient medication lists while simultaneously considering prognosis and goals of care.

References

Anderson, K., Foster, M., Freeman, C., Luetsch, K., & Scott, I. (2017). Negotiating "unmeasurable harm and benefit": Perspectives of general practitioners and consultant pharmacists on deprescribing in the primary care setting. *Qualitative Health Research*, 27(13), 1936-1947. doi:10.1177/1049732316687732

Belanger, E., Loomer, L., Teno, J. M., Mitchell, S. L., Adhikari, D., & Gozalo, P. L. (2019). Early utilization patterns of the new Medicare procedure codes for advance care planning. *JAMA Internal Medicine, 179*(6), 829–830. doi:10.1001/jamainternmed.2018.8615

Berdahl, C.T., Easterlin, M., Ryan, G., Needleman, J., & Nuckols, T. K. (2019). Primary care physicians in the Merit-based Incentive Payment System (MIPS): A qualitative investigation of participants' experiences, self-reported practice changes, and suggestions for program administrators. *Journal of General Internal Medicine, 34*: 2275. https://doi.org/10.1007/s11606-019-05207-z

CareOregon. (2014). http://careoregon.org/AboutUs/FastFacts.aspx

Community Commons. (n.d.) Community health needs assessment. Retrieved from https://assessment.communitycommons.org/CHNA/report?page=1&reporttype=libraryCHNA

Duncan, P., Duerden, M., & Payne, R. A. (2017). Deprescribing: A primary care perspective. *European Journal of Hospital Pharmacy Science and Practice*, 24(1), 37. http://dx.doi.org.libproxy.boisestate.edu/10.1136/ejhpharm-2016-000967

Gilchrist, V. (2019). Physician activities outside the examination room. *Annals of Family Medicine,* 17(5). Retrieved from http://www.annfammed.org/content/3/6/suppl/DC2

Gokula, M. & Holmes, H. (2012). Tools to reduce polypharmacy. *Clinics in Geriatric Medicine*, 28(2), 323-341. DOI: https://doi.org/10.1016/j.cger.2012.01.011

Harris, J.L., Roussel, L., Dearman, C., & Thomas, P.L. (2016). *Project planning and management: A guide for nurses and interprofessional teams*. Burlington, MA: Jones & Bartlett Learning.

HCP. (n.d.). Housecall Providers news. https://www.housecallproviders.org/news-media/

Huiskes, V. J., Burger, D. M., van den Ende, C. M., & van den Bemt, B. F. (2017). Effectiveness of medication review: A systematic review and meta-analysis of randomized controlled trials. *BMC Family Practice,* 181-15. doi:10.1186/s12875-016-0577-x

Issel, L.M. (2014). *Health program planning and evaluation: A practical, systematic approach for community health*. (3th Ed.). Burlington, MA: Jones & Bartlett Learning.

Kirkpatrick Partners. (n.d). Kirkpatrick blended evaluation plan form samples. Retrieved from https://www.kirkpatrickpartners.com/Portals/0/Forms/Blended%20evaluation%20form%20samples%20handout.pdf?ver=2018-01-19-125653-300

Martin, P., Tamblyn, R., Ahmed, S., Benedetti, A., & Tannenbaum, C. (2018). A consumer-targeted, pharmacist-led, educational intervention to reduce inappropriate medication use in community older adults (D-PRESCRIBE trial): Study protocol for a cluster randomized controlled trial. *Trials* 16**,** 266 (2015) doi:10.1186/s13063-015-0791-1

Moran, K., Burson, R., & Conrad, D. (2017). The Doctor of Nursing Practice scholarly project: A framework for success. Burlington, MA: Jones & Bartlett Learning

Musich, S., Wang, S. S., Hawkins, K., & Yeh, C. S. (2015). Homebound older adults: Prevalence, characteristics, health care utilization and quality of care. *Geriatric Nursing*, *36*(6), 445–450. https://doi.org/10.1016/j.gerinurse.2015.06.013

Namkee, C., Sirey, J. A., & Bruce, M. (2013). Depression in homebound older adults: Recent advances in screening and psychosocial interventions. *Current Translational Geriatrics and Gerontology Reports*, *2*(1), 16–23. https://doi.org/10.1007/sl13670-012-0032-3

Ornstein, K. A., Leff, B., Covinsky, K. E., Ritchie, C. S., Federman, A. D., Roberts, L., … Szanton, S. L. (2015). Epidemiology of the homebound population in the United States. *JAMA Internal Medicine*, *175*(7), 1180–6.

Page, A. T., Clifford, R. M., Potter, K., Schwartz, D., & Etherton-Beer, C. D. (2016). The feasibility and effect of deprescribing in older adults on mortality and health: A systematic review and meta-analysis. *British Journal of Clinical Pharmacology*, 82(3), 583-623. doi:10.1111/bcp.12975

Potter, K., Flicker, L., Page, A., & Etherton-Beer, C. (2016). Deprescribing in frail older people: A randomised controlled trial. *Plos ONE*, 11(3), 1-21. doi: 10.1371/journal.pone.0149984

Ratelle, T. J., Wittich, M. C., Yu, C. R., Newman, S. J., Jenkins, M. S. & Beckman, J. T. (2017). Relationships between reflection and behavior change in CME. *Journal of Continuing Education in the Health Professions, 37* (3), 161–167. doi:10.1097/CEH.0000000000000162.

Rawle, M.J., Cooper, R., Kuh, D., & Richards, M. (2018). Associations between polypharmacy and cognitive and physical capability: A British birth cohort study. *Journal of the American Geriatrics Society, 66*(5), 916-923. https://doi-org.libproxy.boisestate.edu/10.1111/jgs.15317

Reeve, E. (2015). A systematic review of the emerging definition of ‘deprescribing’ with network analysis: Implications for future research and clinical practice. *British Journal of Pharmacology*, 80(6), 1254-1268.

Rollason, V., & Vogt, N. (2003). Reduction of polypharmacy in the elderly. *Drugs & Aging*, 20(11), 817-832.

Salbach, N. M., & Jaglal, S. B. (2011). Creation and validation of the evidence-based practice confidence scale for health care professionals. *Journal of Evaluation in Clinical Practice*, *17*(4), 794–800. https://doi-org.libproxy.boisestate.edu/10.1111/j.1365-2753.2010.01478.x

Salbach, N. M., Jaglal, S. B., & Williams, J. I. (2013). Reliability and validity of the evidence-based practice confidence (EPIC) scale. *Journal of Continuing Education in the Health Professions*, *33*(1), 33–40. https://doi-org.libproxy.boisestate.edu/10.1002/chp.21164

Santana, M. J., Manalili, K., Jolley, R. J., Zelinsky, S., Quan, H., & Lu, M. (2017). How to practice person-centred care: A conceptual framework. *Health Expectations*, *21*(2), 429-440. doi:10.1111/hex.12640

Saum, K., Schöttker, B., Meid, A. D., Holleczek, B., Haefeli, W. E., Hauer, K., & Brenner, H. (2017). Is polypharmacy associated with frailty in older people? Results from the ESTHER cohort study. *Journal of The American Geriatrics Society*, 65(2), e27-e32. doi:10.1111/jgs.14718

Sergi, G., De Rui, M., Sarti, S., & Manzato, E. (2011). Polypharmacy in the elderly: Can comprehensive geriatric assessment reduce inappropriate medication use? *Drugs & Aging*, 28(7), 509-518.

Tjia, J., Velten, S. J., Parsons, C., Valluri, S., & Briesacher, B. A. (2013). Studies to reduce unnecessary medication use in frail older adults: A systematic review. *Drugs & Aging*, 30(5), 285-307. Retrieved from http://libproxy.boisestate.edu/login?url=https://search-proquest-com.libproxy.boisestate.edu/docview/1466148070?accountid=9649

Van Herck, P., De Smedt, D., Annemans, L., Remmen, R., Rosenthal, M. B., & Sermeus, W. (2010). Systematic review: Effects, design choices, and context of pay-for-performance in health care. *BMC Health Services Research, 10,* 247-259. https://doi-org.libproxy.boisestate.edu/10.1186/1472-6963-10-247

Wang, R., Chen, L., Fan, L., Gao, D., Liang, Z., … He, J. (2015) Incidence and effects of polypharmacy on clinical outcome among patients aged 80^{+}: A five-year follow-up study. PLoS ONE 10(11): e0142123. https://doi.org/10.1371/journal.pone.0142123

White, M. I., Grzybowski, S., & Broudo, M. (2004). Commitment to change instrument enhances program planning, implementation, and evaluation. *Journal of Continuing Education in the Health Professions, 24*(3), 153–162. Retrieved from http://libproxy.boisestate.edu/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=aph&AN=14558663&site=ehost-live

Appendix A
Literature Review Summary Table

Johns Hopkins Nursing Evidence-Based Practice
Individual Evidence Summary Tool

Question: For PCPs treating multimorbid, community-dwelling adults experiencing polypharmacy, what are the best practices for deprescribing?

#	Author & Date	Evidence Type	Sample, Sample Size & Setting	Study findings that help answer the EBP question	Limitations	Evidence Level & Quality
1	Scott et al. (2017)	Narrative review	15 reports on 7 algorithms	Structured guides better at medication optimization. Available instruments: screening criteria (Beers, STOPP/START), risk scales, clinical prediction tools, and drug (or class) specific guidelines	More qualitative research needed	Level 2, Quality C
2	Tjia et al. (2013)	Systematic review	36 articles (15 RCTs, 4 non-randomized trials, 6 pre-post studies, and 11 case series)	Systematic review of different deprescribing algorithms with summary of evidence for each	Includes some weak studies, no meta-analysis	Level 2, Quality B
3	Frankenthal et al. (2014)	RCT	359 participants (institutionalized)	Demonstrates efficacy of STOPP/START to improve appropriate prescribing; provides some data on secondary outcomes such as cost, falls, and hospitalization	Only institutionalized participants	Level 1, Quality A
4	Ubeda et al. (2012)	Descriptive study	81 residents	STOPP/START superior to Beers in identifying potentially inappropriate prescribing	Small sample size	Level 2, Quality C

#	Author & Date	Evidence Type	Sample, Sample Size & Setting	Study findings that help answer the EBP question	Limitations	Evidence Level & Quality
5	Garfinkel & Mangin (2010)	Cohort study	70 participants	GP-GP shows good results in community-dwelling older adults	Small sample size	Level 332, Quality C
6	Campins et al. (2016)	RCT	503 patients	Improvement in appropriate prescribing. No improvement in ER visits, hospitalizations, or death	Not blinded	Level 1, Quality A
7	Garfinkel et al. (2007)	Cohort study	119 participants	GP-GP reduced medications, improved mortality, lowered costs, and improved QoL	Nor RCT	Level 2, Quality C
8	Page et al. (2016)	Systematic review and meta-analysis	132 papers	Mortality not affected by deprescribing in RCTs, mortality reduced when patient-specific interventions applied	Often not comparing apples to apples	Level 2, Quality A
9	Huiskes (2017)	Systematic review	31 RCT	Medication review improve medication appropriateness but had little effect on clinical outcomes	Lack evidence of effects	Level 1, Quality A
10	Potter et al. (2016)	RCT	47 older adults	Education intervention decreases number of medication but had little effect on secondary outcomes	Small sample size	Level 1, Quality B

Appendix B
Theoretical Model

Donabedian A, Wheeler JR, Wvszewianski L. Quality, cost, and health: an integrative model. Med Care. 1982 Oct:20(10):975-92.

Appendix C
Logic Model Table

Resources/Inputs	**Activities**	**Outputs**		**Outcomes: Short term**	**Outcomes: Intermediate**	**Outcomes: Long term**
What we invest: resources and contributions	**What we do**	**What we accomplish or produce from the activities**	**Who we reach with our activities**	**The expected changes attainable during the DNP Scholarly Project timeline.**	**The expected changes attainable 6 months - 2 years after the DNP Project is implemented.**	**Fundamental changes for participants or community because of project activities, 3-5 years after project implementation.**
The human, financial, organizational, and community resources available to direct toward the project activities.	The processes, tools, events, technology, and actions that are intended to bring about changes	Direct products and services generated from program activities	Intended targets of the program services and activities	Specific changes in program. SMART. **Represent changes in knowledge, attitude, or beliefs**	Specific changes in program. SMART. **Represent changes in behavior or actions**	**Represent changes in status, condition or well-being. Consider: health impacts, economic impacts, environmental impacts, societal impacts.**
-time for development of curriculum -medical director time for review				(1) Curriculum for educational session was developed and approved by medical director by May 30, 2019. (PO)		

-PCP time -PCP attention -AV equipment -Use of weekly PCP didactic time x2 weeks	-Test run to assure technology working optimally for classroom delivery of material -Teach classes (during established PCP didactic time) on optimizing prescription appropriateness	PCPs at HCP spend 2 hours (total) receiving instruction on deprescribing tools	PCPs	(2) By July 30, 2019, 80% of HCP PCPs have completed deprescribing educational session and/or follow-up session. (PO)	(8) HCP PCPs are proficient with deprescribing tools outlined in the educational intervention and are utilizing the tools to evaluate patient medication lists. (CO)	(14) Patients achieve more appropriate medications, and as a result, better clinical outcomes. PCPs critically evaluate all patient medications lists at least annually and with any significant CIC.
-PCP time -PCP didactic hour on TBD date(s) -PCP attention	Teach classes (during established PCP didactic time) on optimizing prescription appropriateness	PCPs at HCP spend 3 hours (total) receiving instruction on deprescribing tool	PCPs	(3) PCP knowledge of the problems with polypharmacy and of evidence-based deprescribing tools will improve by 30% as measured by pre/post-test by August 30, 2019. (CO)	(9) Mean number of routine patient medications on HCP patient medication lists, defined as medications taken on a scheduled basis with no end date, decreases. (CO)	(15) PCPs critically evaluate all patient medications lists at least annually and with any significant change in condition.

-PCP time -copies of form -time for synthesis of information	-Solicit self-efficacy rating via modified EPIC following intervention -Synthesize information provided by PCPs	Report to stakeholders indicating mean change in PCP self-efficacy	PCPs Stakeholders	(4) PCP self-efficacy surrounding the issue of appropriate prescribing increased by 20% as measured by pre/post-test questions adapted from the EPIC scale by August 30, 2019. (CO)	(10) PCPs gained confidence in accomplishing appropriate prescribing tasks as they utilize provided tools. (CO)	(16) PCPs are confident and proficient with appropriate prescribing tools and utilize them with appropriate patients on their panel.
-PCP time -copies of form -time for synthesis of information -trainer time for review	-Solicit feedback following intervention -Synthesize information provided by PCPs on PCP feedback form	Synthesis of PCP feedback on intervention	PCPs Trainer Pharmacist	(5) PCP feedback on intervention was solicited and obtained via feedback form from 50% of PCPs by September 30, 2019. (PO)	(11) Feedback is synthesized, discussed among student, trainer, and pharmacist, and incorporated into educational modules for future iterations of educational intervention for appropriate prescribing by November 2019. (CO)	(17) Ongoing improvement of appropriate prescribing intervention.
-PCP time -copies of form -time for synthesis of information	-Solicit feedback following intervention	Report to stakeholders of percentage completed and	PCPs Stakeholders	(6) 80% of program participants will complete the “Memo-To-Myself” as a commitment to change	(12) PCPs implement changes in practice habits mentioned on their CTC. (CO)	(16) PCPs are confident and proficient with appropriate prescribing tools and utilize them with

	-Synthesize information provided by PCPs	list of responses. CTC reminders to PCPs as well as aggregated list distributed to all PCPs.		measure by July 30. 2019. (CO)		appropriate patients on their panel.
-Trainer time -Evaluation of current literature -Organizational support for trainer time	-Create "train the trainer" materials to supplement and augment material created for PCP onboarding -Discuss aspects of teaching which will be included in routine PCP onboarding	New PCP didactic materials on appropriate prescribing which are appropriate to a one-on-one setting for the PCP trainer to utilize in routine onboarding didactic training	Trainer Future PCPs	(7) "Train the trainer" program for one-on-one education with PCP trainer on appropriate prescribing was developed and implemented by October 2019. (PO)	(13) New PCPs receive training on deprescribing as part of routine new PCP onboarding. (PO)	(18) Patients receive appropriate medications, and as a result, better clinical outcomes and QOL. PCPs critically evaluate all patient medications lists at least annually and with any significant CIC.

Adapted from: Logic Model Foundation Development Guide, pg 4.
http://www.wkkf.org/resource-directory/resource/2006/02/wk-kellogg-foundation-logic-model-development-guide

Appendix D

Memorandum of Understanding

Memorandum of Understanding

Between

Sarah Marzolf, Doctor of Nursing Practice (DNP) student

Boise State University

and

Housecall Providers

This Memorandum of Understanding (MOU) outlines the terms and understanding between Sarah Marzolf, a DNP student at Boise State University, and Housecall Providers, to pilot an educational intervention regarding deprescribing to PCPs.

Background

The problem of polypharmacy in community-dwelling frail elderly leads to multiple issues including nonadherence, adverse drug reactions, drug-drug interactions, increased risk of hospitalization, and increased costs (Rollason & Vogt, 2003). Evidence from the literature supports the use of provider educational intervention, provider medication review, and the use of a structured guide to assist with deprescribing.

Purpose

The purpose of the project is to introduce providers working with the frail elderly population to tools to assist them with the deprescribing process. This will be accomplished during a training session led by the DNP student.

Intended Project Outcomes

- Improve provider knowledge of deprescribing best practices
- Provide PCPs with tools they can use to help with appropriate prescribing

Duration

The education will occur in June 2019. Results reporting will occur in March 2020.

Reporting

The DNP Scholarly Project will include a final report, an abstract, an oral presentation of the report and potential publication. The DNP student will submit a Final Project Report for publication in ScholarWorks. ScholarWorks is a collection of services designed to capture and showcase all scholarly output by the Boise State University community, including doctoral dissertations and doctoral project reports.

No personal identifiers will be included, and all data will be reported in aggregate form. The author welcomes any comments or suggestions from Housecall Providers but reserves the right to publish findings and analysis according to professional standards and principles of academic freedom. For any work of a scholarly nature, the author agrees to follow the organization(s) preferences in how it is to be named (or not) in the work.

Complete the section below:
Agency preferences for referral within the student's work: (For example, by name or solely by general type of agency within a region)

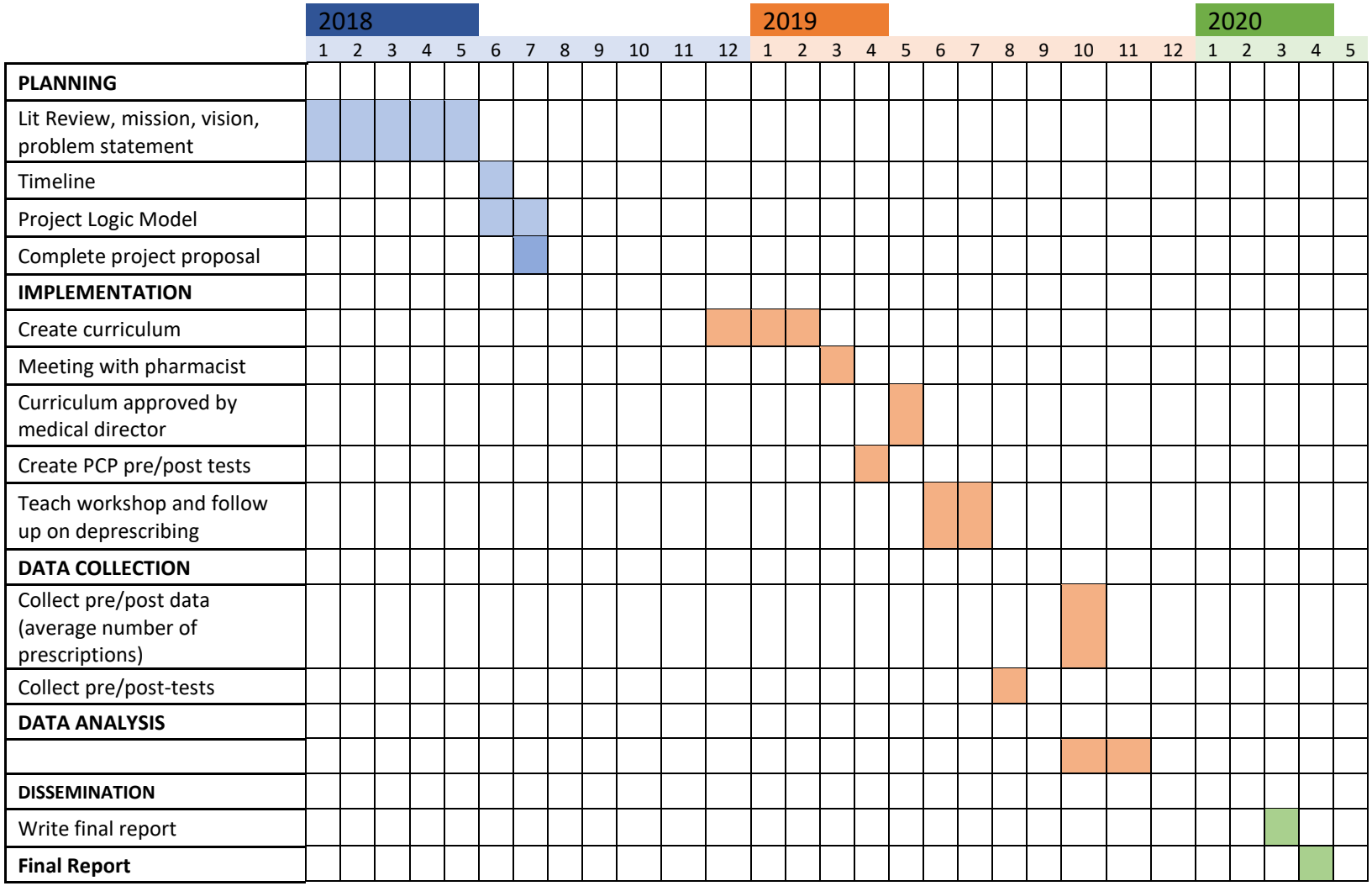
In the student's Final Report? Housecall Providers
In an abstract? Housecall Providers
In professional presentations? Housecall Providers
In professional publications? Housecall Providers
Any restrictions in the discussion of project details? none

Student Contact Information

_____ Date: 4/4/19
(*DNP Student Signature*)
Sarah Marzolf, Boise State University DNP student

_____, Medical Director, Housecall Providers

Timeline



Appendix F

Outcome Evaluation Table

Outcome	Data Collection Instrument / Data	Analysis Goal	Analytic Technique
(1) Curriculum for educational session was developed and approved by medical director by May 30, 2019.	Data collection will include a checklist of tasks to be completed.	n/a	n/a
(2) By July 30, 2019, 80% of HCP PCPs have completed deprescribing educational session and/or follow-up session.	**Instrument**: A training report submitted to HCP medical director, which includes the following elements: Date of training Educational objectives Educational material included in the module Names of staff attendees Scores of staff attendees **Data**: The training report will include data regarding PCP participation to include date of training, educational objectives, educational materials provided, and names of staff attendees.	To quantify the number and percentage of staff participating in the group education component of the project.	Report provides data for determining nominal count and percentage of staff participation in the group education intervention. Comparison between actual participation and goal participation allows comparison between goal and actual participant numbers.

(3) PCP knowledge of the problems with polypharmacy and of evidence-based deprescribing tools presented improved by 30% as measured by pre/post-test by August 30, 2019.	**Instrument**: A pre/post-test design will be utilized to measure PCP knowledge gains as a result of educational intervention. The test will measure the same information from the same group at two different points in time. The pretest will occur before the session and the post-test will occur at the end of the session. The test will include knowledge-based questions which will be based on program content. **Data**: Paired pre/post-test data will be tabulated for each test item to provide a mean difference in knowledge gain.	To quantify PCP knowledge gain surrounding the issue of polypharmacy and to quantify PCP proficiency with deprescribing tool.	Descriptive statistics: median scores will be calculated on both pre and post-test. Goal is for learners to display a 30% knowledge gain post intervention on the post-test.
(4) PCP self-efficacy surrounding the issue of appropriate prescribing increased by 20% as measured by pre/post-test questions adapted from the EPIC scale by August 30, 2019.	**Instrument**: Included in the knowledge pretest will be 3 questions adapted from the Evidence-Based Practice Confidence (EPIC) scale (Salbach & Jaglal, 2010) which are designed to measure PCP self-efficacy in utilizing evidence-based practice. Instrument includes Likert-type questions asking participants to rate their confidence in performing deprescribing tasks. Self-efficacy will be retested at the end of the follow-up session. **Data**: Mean self-efficacy scores will be calculated for each PCP participant on both pre and post-tests.	To measure the increase of PCP self-efficacy in terms of deprescribing as a predictor of actually carrying out deprescribing tasks.	Anonymous paired scores will be analyzed to discover the mean change in PCP perceived self-efficacy.

(5) PCP feedback on intervention was solicited and obtained via feedback form from 50% of PCPs by September 30, 2019.	**Instrument**: A post-intervention feedback form of PCP participants following educational intervention utilizing items selected in conjunction with stakeholders from Kirkpatrick Blended Evaluation Plan as well as open ended questions. **Data**: Questions will focus on the most/least helpful elements of the educational intervention and will ask about ongoing gaps in knowledge.	To understand what type of information PCPs at HCP already possess and to understand where gaps in knowledge might persist in order to improve the quality of education surrounding the topic of appropriate prescribing.	Data will be categorized and presented in list form to stakeholders. Data will be aggregated and categorized by frequency of responses.
(6) 80% of program participants will complete the "Memo-To-Myself" as a commitment to change (CTC) measure by July 30, 2019.	**Instrument**: Memo-To-Myself (MTM) completed by program participants and collected from participants following education. Instrument includes 3 blank lines and asks participants to list 3 alterations in clinical practice they will implement in their practice. Memos will be anonymous. Participants will fill out two identical MTMs and will place one in an envelope with their name on it and seal it. This will be delivered to each participant 3 weeks following the education as a reminder of their CTC. After 6 weeks, a list of items on all participants' MTMs will be distributed to all. **Data**: Data gathered will include percentage of participants who complete the MTM. Will also	1. To provide percentage of completion as evidence of participant engagement in intervention. 2. To provide stakeholders qualitative data regarding the impact of the intervention on PCP practice.	Percentage calculated from aggregate number of MTM forms received from PCP participants. Also will include list of participant responses with enumerated list of participant responses.

	provide stakeholders with aggregated list of items on PCPs' MTMs.		
(7) "Train the trainer" program for one-on-one education with PCP trainer on appropriate prescribing was developed and implemented by October 2019.	**Instrument**: PCP handbook to include new materials developed. Session with PCP trainer to describe purpose of the intervention, explain material, and answer questions/concerns. Additional sessions completed as necessary to ensure trainer confidence with material. Appropriate prescribing class session incorporated into the new PCP training schedule. **Data**: Feedback on material will be solicited and handbook material will be edited based on feedback from medical director, pharmacist, and trainer.		

Derived from W.K. Kellogg Foundation Logic Model Development Guide.
http://www.wkkf.org/resource-directory/resource/2006/02/wk-kellogg-foundation-logic-model-development-guide

Appendix G

Pretest Questionnaire Participant number _____
Participation in this activity is voluntary. All responses are anonymous.

1. How confident are you in your ability to ask your patient or family about needs, values, and treatment preferences as relates to potentially inappropriate medications (PIMs) (circle one).
(least confident) 1 2 3 4 5 6 7 8 9 10 (most confident)

2. How confident are you in your ability to decide on an appropriate course of action based on integrating research evidence, clinical judgement, and patient preferences?
(least confident) 1 2 3 4 5 6 7 8 9 10 (most confident)

3. How confident are you in your ability to continually evaluate the effect of your course of action on your patient's outcomes?
(least confident) 1 2 3 4 5 6 7 8 9 10 (most confident)

4. Which are known reasons why older adults are more at risk of problems with polypharmacy (circle all that apply)?

a. homeostenosis
b. memory problems
c. pharmacokinetics
d. pharmacodynamics
e. swallowing problems

5. Polypharmacy contributes to increases in which of the following (circle all that apply)?

a. nonadherence
b. interactions
c. adverse reactions
d. hospitalizations
e. cost
f. frailty
g. geriatric syndromes
h. mortality

6. The "prescribing cascade" refers to:

a. The practice of using two medications to treat a particular disease when one would work just as well.
b. The practice of treating drug side effects with the use of another drug.
c. When prescribers are not aware of which drugs have been prescribed and add other prescriptions that may have unsafe interactions.

d. The practice of prescribing more medications based on a patient's demand or expectation.

7. Potentially inappropriate prescribing (PIP) means: (circle all that apply)

a. Medications that are prescribed at inappropriate doses.
b. Medications that have increased side effects for a particular patient population.
c. Medications identified on the BEERs list.
d. Medications that have potential risks higher than potential benefits.
e. Medications that should be prescribed given patient diagnosis.

8. The evidence shows that which of the following are effective at reducing PIMs? (circle all that apply)

a. Using a deprescribing tool.
b. Prescriber education.
c. Prescriber review of medications.
d. Prescriber feedback.
e. Pharmacist medication review.

Appendix H

Feedback Form

This education is relevant and applicable to my work

1 = Strongly Disagree 2 3 4 5 6 7 8 9 10 = Strongly Agree

What I learned will help me in my work.

1 = Strongly Disagree 2 3 4 5 6 7 8 9 10 = Strongly Agree

The most important/useful thing I learned was:

_____

_____

What additional information do you suggest be added to the program?

_____

_____

What information do you suggest be removed from the program?

_____

_____

Appendix I

3-Year Budget

Revenues	Year 1	Year 2	Year 3	Rationale
HCP in-kind contribution Salaries	$ 2,595	$ 1,185	$ 1,185	This is a subsidized program with no anticipated organizational revenue, though project is anticipated to improve measures of quality which have the potential to improve reimbursements.
HCP in-kind contribution Administrative Supplies	$ 85	$ 40	$ 40	
DNP in-kind contribution Project Manager	$ 2,400	$ 180	$ 180	
DNP in-kind contribution Educational Intervention	$ 120	$ 60	$ 60	
DNP in-kind contribution Evaluation and Assessment	$ 900	$ -	$ -	
DNP in-kind contribution Train the Trainer	$ 480	$ -	$ -	
DNP in-kind contribution Computer and software	$ 650	$ -	$ -	
Total	$ 7,230	$ 1,465	$ 1,465	
Expenses	**Year 1**	**Year 2**	**Year 3**	
Planning - Project Manager/Educator	$ 2,400	$ 180	$ 180	Year 1 estimate includes 40 hours at $60/hr for literature review, development of curriculum, and meetings to collaborate with organizational stakeholders. Estimate for years 2 and 3 for 3 hours at $60/hr to review new literature and make updates based on new evidence and changes in organizational needs.
Planning - Pharmacist	$ 120	$ 60	$ 60	Year 1 estimate includes 2 hours at $60/hr for collaboration with PM and review of curriculum. Estimate for years 2 and 3 for 1 hour at $60/hr to review curriculum updates.
Planning - Medical Director	$ 200	$ 100	$ 100	Year 1 estimate includes 2 hours at $100/hr for collaboration with PM and review of curriculum. Estimate for years 2 and 3 for 1 hour at $100/hr to review curriculum updates.

Planning - Quality Manager	$ 100	$ 50	$ 50	Year 1 estimate includes 2 hours at $50/hr for collaboration with PM on project alignment with organizational quality goals and organizational reporting needs. Estimate for years 2 and 3 for 1 hour at $50/hr to review curriculum updates and inform educator on organizational quality reporting needs.
Educational Intervention - PCPs	$ 1,800	$ 900	$ 900	Estimated 2 hours for 15 PCPs at $60/hr for the first year and 1 hour for subsequent years.
Educational Intervention - Project Manager/Educator	$ 120	$ 60	$ 60	Year 1 estimate includes 2 hours at $60/hr to deliver educational materials to PCPs. Years 2 and 3 estimate includes 1 hour at $60/hr to deliver update/refresher education.
Educational Intervention - Meeting room rental	$ 60	$ 30	$ 30	Year 1 estimate includes 2 hours of meeting space rental at $30/hr. Years 2 and 3 estimate includes 1 hour at $30/hr.
Evaluation & Assessment	$ 900			Based on $60/hr for an estimated 15 hours in order to administer pre/post surveys, compile and analyze data. Not anticipated to be an ongoing expense.
Train the Trainer - Project Manager	$ 480			Year 1 estimate includes 8 hours at $60/hr to create clinician handbook materials, participate in "train the trainer" sessions, collaborate with clinical lead on handbook materials. Not anticipated to be an ongoing expense.
Train the Trainer - Clinical Lead	$ 375	$ 75	$ 75	Year 1 estimate includes 4 hours at $75/hr to review and collaborate with project manager on curriculum, participate in "train the trainer", review clinician handbook materials. Years 2 and 3 estimate includes 1 hour at $75/hr to provide training to new PCPs.

Administrative Supplies & Support		$ 25		$ 10		$ 10		Cost estimate for printing, copying, toner, pens, staples, other general office supplies to include handouts for providers, copies of surveys, copies of materials for PCP handbook, and copies of reports to stakeholders. Decreased cost in years 2 and 3 because of decreased copying/printing involved in subsequent years since approvals will be completed and because of less rigorous pre/post testing.
Computer and software (in kind)		$ 650						One-time expense. Cost estimate via Office Depot website.
Subtotal Expenses		$ 7,230		$ 1,465		$ 1,497		
Less DNP in kind contribution		$ (4,550)						
Inflation adjustment (2.2%)				$ 32.23		$ 32.94		
Total Organizational Contribution		***$ 2,680***		***$ 1,497***		***$ 1,530***		

Note: Table format adapted from Boise State University NURS 622 course material in module 3 by T. Serratt, 2018. Inflation rates estimated to be an average of 2.2% over the next 3 years. The national inflation rates were taken from Statista (2016), Projected Annual Inflation Rate int he United States 2010-2023, Statistica web site: https://www.statista.com/statistics/244983/projected-inflation-rate-in-the-united-states/

Appendix J
Expense Report (actual)

Source of Expense	Expense Description	Dollar Value	Type of Cost	Description of Cost	Estimated Volume	Expense Per Unit
Planning		**Cost**				
Project Manager	Create curriculum materials, meet with lead, pharmacist, and medical director to discuss curriculum and gain approvals	$2,640	Variable	per hour	44 hrs	$60
Pharmacy	Review and collaborate with PM on curriculum	$120	Variable	per hour	2 hrs	$60
Medical director	Review and collaborate with PM on curriculum	$200	Variable	per hour	2 hrs	$100
Quality manager	Meet to discuss alignment with organizational quality initiatives and plan stakeholder reporting	$75	Variable	per hour	1.5 hrs	$50
Administrative Supplies	Printing and copying	$10	Fixed		100	0.1
	Computer and software	$650	Fixed		1	
	Total	***$3,695***				
Education Intervention		**Cost**				
PCP Salaries	Salary for 15 providers x 2 hours for educational intervention	$2,010	Variable	$60/hr x 33.5 total hours	30 hrs	$60
Pharmacy	Attend sessions	$120	Variable	per hour	2 hrs	$60
Project Manager	Teach education session	$120	Variable	per hour	2 hrs	$60
Meeting room rental	Rental of meeting room	$60	Fixed	Room rental rate	2 hrs	$30/hr
Administrative supplies	Printing and copying of handouts and surveys	$15	Fixed		150	0.1
	Total	***$2,325***				
Evaluation/Assessment		**Cost**				
Evaluation & Assessment	Compilation and analysis of pre/post-test, program evaluation, data entry/analyses, presentation to stakeholders	$1,320	Variable	$60/hr x 15 total hours for Project Manager	22 hrs	$60

	Total	***$1,320***				
Train the Trainer		**Cost**				
Project Manager	Create clinician handbook materials, participate in "train the trainer" sessions, collaborate with clinical lead on handbook materials	$480	Variable	per hour	8 hrs	$60
Clinical Lead	Review and collaborate with project manager on curriculum, participate in "train the trainer", review clinician handbook materials	$450	Variable	per hour	6 hrs	$75
	Total	**$930**				
	Grand Total	***$8,270***				

Appendix K
Statement of Operations

Revenues		
DNP in-kind	$	4,550
HCP contribution (This is a subsidized program without anticipated organizational revenue.)	$	2,680
Total	***$***	***7,230***
Expenses		
Administrative supplies/support, meeting space	$	85
Computer and software	$	650
Project management salary	$	3,900
Clinic staff salaries	$	2,595
Total	**$**	**7,230**
Operating Income	***$***	**-**

Appendix L

CITI Training Certificate

CITI PROGRAM

Completion Date 22-Jul-2018
Expiration Date 21-Jul-2021
Record ID 27921867

This is to certify that:

Sarah Marzolf

Has completed the following CITI Program course:

Human Research (Curriculum Group)
Social & Behavioral Researchers (Course Learner Group)
1 - Basic Course (Stage)

Under requirements set by:

Boise State University

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?wefa57838-c313-4cbb-9adb-d0887d3b585a-27921867

Appendix M
Scholarly Project IRB Approval Letter or Letter of Determination

BOISE STATE UNIVERSITY

RESEARCH AND ECONOMIC DEVELOPMENT
Research Compliance

Date: April 22, 2019

To: Sarah Marzolf **cc:** Sara Ahten

From: Social & Behavioral Insitutional Review Board (SB-IRB)
c/o Office of Research Compliance (ORC)

Subject: SB-IRB Notification of Approval - Original - 186-SB19-047
Appropriate prescribing in a primary care house calls practice

The Boise State University IRB has approved your protocol submission. Your protocol is in compliance with this institution's Federal Wide Assurance (#0000097) and the DHHS Regulations for the Protection of Human Subjects (45 CFR 46).

Protocol Number:	**186-SB19-047**	Received:	2/20/2019	Review:	Expedited
Expires:	**4/21/2020**	Approved:	4/22/2019	Category:	5, 7

Your approved protocol is effective until 4/21/2020. To remain open, your protocol must be renewed on an annual basis and cannot be renewed beyond 4/21/2022. For the activities to continue beyond 4/21/2022, a new protocol application must be submitted.

ORC will notify you of the protocol's upcoming expiration roughly 30 days prior to 4/21/2020. You, as the PI, have the primary responsibility to ensure any forms are submitted in a timely manner for the approved activities to continue. If the protocol is not renewed before 4/21/2020, the protocol will be closed. If you wish to continue the activities after the protocol is closed, you must submit a new protocol application for SB-IRB review and approval.

You must notify the SB-IRB of any changes to your approved protocol and the committee must review and approve these changes prior to their commencement. You should also notify the committee if your activities are complete or discontinued.

Current forms are available on the ORC website at http://goo.gl/D2FYTV

Please direct any questions or concerns to ORC at 426-5401 or humansubjects@boisestate.edu.

Thank you and good luck with your research.

1910 University Drive Boise, Idaho 83725-1139
Phone (208) 426-5401 orc@boisestate.edu

Appendix N

Knowledge test results

Question 4
Pretest score: average 45%
Post-test score: average 78%
Percent improvement: 73%

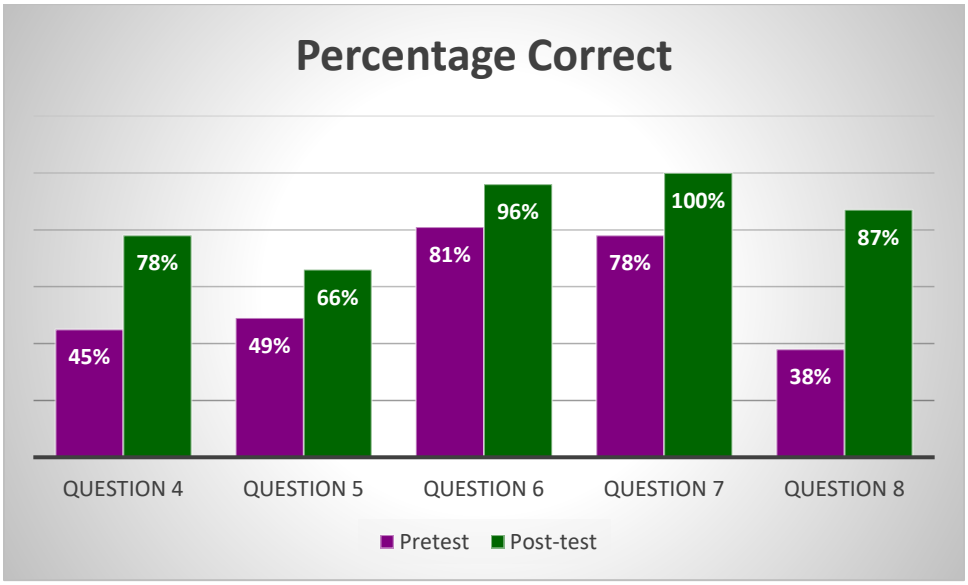
Question 5
Pretest score: average 32%
Post-test score: average 66%
Percent improvement: 34%

Question 6
Pretest score: average 81%
Post-test score: average 96%
Percent improvement: 15%

Question 7
Pretest score: average 78%
Post-test score: average 100%
Percent improvement: 28%

Question 8
Pretest score: average 38%
Post-test score: average 87%
Percent improvement: 129%

Total average percent improvement: 56.7%



Appendix O

EPIC Results

1. How confident are you in your ability to ask your patient or family about needs, values, and treatment preferences as relates to potentially inappropriate medications (PIMs) (circle one)

Pretest score: average 8.14
Post-test score: average 9.07
Percent improvement: 11.43%

2. How confident are you in your ability to decide on an appropriate course of action based on integrating research evidence, clinical judgement, and patient preferences?

Pretest score: average 7.86
Post-test score: average 9.12
Percent improvement: 16.39%

3. How confident are you in your ability to continually evaluate the effect of your course of action on your patient's outcomes?

Pretest score: average 8.00
Post-test score: average 9.00
Percent improvement: 12.5%

Average percentage change 13.41%

Appendix P

Commitment to change list

I will use a tool to help with deprescribing. (x6)

I will use medstopper.com to help evaluate my patients' med lists. (x5)

I will evaluate patient medication lists with a tool at least once a year.

I will include a deprescribing plan in the patient chart.

I will try using the GP-GP on at least 3 patients in the next 3 months.

I will discuss deprescribing with patients during Annual Wellness Exams (x3).

I will try harder to emphasize the importance of deprescribing with families.

I will discontinue unnecessary medications.

I will talk to my patients about discontinuing medicines.

I will learn more about recommendations for deprescribing particular medications.

Appendix Q

Feedback

Relevant (on 1-10 scale)
- 9.4

Helpful (on 1-10 scale)
- 8.7

Most important/useful thing
- The website (medstopper.com) (x2)
- Useful to know that there are so many different lists of no go meds for our patients
- That there is a new Beer's list
- Reminder that we need to be thinking critically about med lists at least yearly
- The tools
- The list of questions (GP-GP) to ask about medicines. Often meds do not have associated indications and we should be reviewing charts to see fi indications exist.

Added
- More case studies (2)
- Time to discuss specific situations with our patients
- Discussion of strategies for patients/families who are resistant to changes
- How to tie med discussions in with ACP discussions since we are already doing these yearly
- Is there a website like the one presented that has a version with U.S. drugs?

Subtracted
- The information on the risks of polypharmacy…we already know this
- The hypothetical case. Would have maybe been more useful to go through the med list of an actual patient
- "nothing" or blank x5