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This article was originally published in JACCP: Journal of the American College of Clinical Pharmacy in 2023. https://doi.org/10.1002/jac5.1769

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Pharmacy student involvement in population health management of statin quality measures

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Abstract

Background: Pharmacists have demonstrated their value in population health management (PHM). With appropriate training, advanced pharmacy practice experience (APPE) students are also well positioned to participate in PHM.

Methods: At Providence Medical Foundation, a PHM workflow was remodeled to be more standardized and incorporate APPE students into the statin quality measure improvement process. This was driven by institutional goals for quality improvement in patient care and creating a better experiential teaching opportunity. APPE students underwent three training sessions and completed clinical review of patient charts, determined statin eligibility, and completed patient outreach. Rates of statin initiation and student feedback were collected. The rates of statins initiated or declined with this new workflow were retrospectively compared to a previous year's workflow, which was pharmacist-led.

Intervention: Review pharmacy student involvement with PHM, including statin initiation rates for quality measure improvement as well as student feedback and learning.

Results: Among the 543 patients included in the remodeled workflow, students started statins for 75 (13.8%) patients while 114 (21%) patients declined statins. Among the 829 patients included in the previous year's traditional workflow, pharmacists started statins for 102 (12.3%) patients while 167 (20.1%) patients declined statins. There was no statistically significant difference in rates of statins started (odds ratio [OR] 0.88; 95% confidence interval [CI] 0.63–1.22; p = 0.41) and statins declined (OR 0.95; CI 0.72–1.25; p = 0.73) between the two groups. Student feedback on this activity was positive with self-reported improvement in confidence, clinical knowledge, and communication skills.

Conclusions: Incorporating pharmacy students into PHM was a valuable learning experience for students and effective for initiating statins to assist with quality measures. Students can be an asset to the team in PHM and help ease resource shortages.

KEYWORDS
ambulatory care, collaborative practice, experiential education, medication management, population health, quality improvement
INTRODUCTION

Healthcare has gradually shifted to a value-based model, placing more emphasis on the quality of care provided to improve health outcomes. In order to measure the quality of healthcare, certain quantifiable standards have been developed, which are also known as quality measures. Many institutions utilize population health management (PHM) and enlist various members of their healthcare team to help improve their quality measures.

The role of the pharmacy team in improving quality measures is constantly evolving with the expansion of collaborative practice agreements. For example, pharmacists have demonstrated value in reducing preventable hospital readmissions and emergency department visits as well as improving chronic disease outcomes, such as hemoglobin A1C and blood pressure. They have also proved to be useful in PHM activities, such as improving statin-related quality measures, including Statin Use in Persons with Diabetes (SUPD) and Statin Therapy for Patients with Cardiovascular Disease (SPC).

Within the ambulatory care clinic at Providence Medical Foundation in Orange County, California, clinical pharmacists actively participate in improving the SPC, SUPD, and Statin Therapy for Patients with Diabetes (SPD) measures from National Committee for Quality Assurance (NCQA) and Pharmacy Quality Alliance (PQA). The patients who are not meeting these SPC, SUPD, and SPD measures are determined by insurance plans. However, pharmacists are just one part of the larger pharmacy team, which also consists of technicians and pharmacists in training, such as residents and students.

Advanced pharmacy practice experience (APPE) students are trained in a wide range of clinical topics, such as diabetes, dyslipidemia, and cardiovascular diseases, both in the classroom and in experiential education. The Accreditation Council for Pharmacy Education (ACPE) Standards also require pharmacy students to learn how population-based care influences patient-centered care. This has already been implemented in other institutions. In one study, McConnell et al. showed that students completing introductory experiential education were able to successfully implement and participate in PHM projects. Meanwhile, Cannon et al. showed that students on their APPE rotations can complete various clinical interventions during PHM activities and offset clinical pharmacist time. These studies included patients with atherosclerotic cardiovascular disease (ASCVD) history and other PHM initiatives like hypoglycemia screening, hepatitis C virus screening, and human immunodeficiency virus screening. However, both studies were descriptive and raise the question of how effective students can be when compared to clinical pharmacists. Also, both studies determined the need for future research to review student perceptions of their participation and impact on their learning.

A new learning activity, which was driven by institutional goals to improve patient care and quality, was developed and implemented in 2021. The activity incorporated APPE students at Providence Medical Foundation into PHM, specifically the statin quality measure improvement process. APPE students are well-positioned at this point of their training to make recommendations on statin therapy and address clinical concerns. This activity aligns with the ACPE Standards for educational outcomes in population-based care. This hands-on practice can also enrich the students’ learning experience and better prepare them for the current job market.

This retrospective study reviews the process of the newly implemented activity and contributes two novel aspects to the literature, including feedback from the participating students and better measurement of student-led work compared to pharmacist-led work. This study shares the lessons learned from this experience, in hopes of helping other individuals who serve as experiential pharmacy preceptors.

METHODS

This retrospective study describes results from a quality improvement initiative that was implemented at Providence Medical Foundation. The study was approved by Providence St. Joseph Health Institutional Review Board. The primary objective of this study was to retrospectively analyze the process and impact of a new workflow, which incorporates pharmacy students into PHM at the institution. The secondary objective was to describe student feedback on the experience. The reporting of this study was guided by the Standards for Quality Improvement Reporting Excellence (SQUIRE) 2.0 guidelines.

Overview

On an annual basis, Providence Medical Foundation receives insurance claims data of patients not meeting the statin quality measures (SPC, SPD, SUPD). The traditional workflow was for clinical pharmacists to review this data from August to December of that year and work to initiate statin medications for eligible patients. This includes a clinical review of patient charts and determination for statin eligibility for each patient. If a patient was deemed eligible to start a statin, clinical pharmacists reached out to the primary care physician (PCP) for approval through email or a message on the electronic medical record (EMR). Once approval was obtained from the PCP, the patients were outreached telephonically to start the statin.

The clinical pharmacists were residency trained with an active pharmacy license. They received instructions on this process from the managed care pharmacist, which included a 1 h meeting to review the statin measures, exclusion criteria, past performance, and how to improve the measure. The pharmacists were familiar with this type of initiative from previous experience. They had 1 day per week dedicated to PHM and some pharmacists utilized some assistance from students to chart review while other pharmacists completed every step independently.

In 2021, members of the clinical pharmacy team remodeled this traditional workflow. The goals were to better standardize this workflow and reach more patients, incorporate APPE students into the core pharmacy team, and enrich their learning with a hands-on activity.
This remodeled workflow is depicted in Figure 1. The steps of the workflow were similar between the 2 years, with some parts gaining more standardization. APPE students were incorporated into each step and received appropriate training and supervision. In the first 3 weeks of their 6-week rotation, students reviewed patient charts and made recommendations for statin eligibility for each patient. This information was then reviewed by a pharmacist, who agreed or disagreed with the recommendations. If appropriate, the patient’s PCP was contacted through email or a message on the EMR for approval to start a statin. During the last 3 weeks of the rotation, students completed telephonic outreach with pharmacist oversight for the approved patients, to either start a new statin or counsel on adherence if they were already taking a statin. Students participated in this experience for 4 h per week for 6 weeks. Each 6-week rotation had 5–7 students participating and there were 3 rotation blocks from August through December. Students documented the outcomes of their chart review and telephonic outreach (as shown in Table 1 and Table 2) in a password protected cloud-based service.

At the end of the rotation, feedback regarding students’ experience and perceptions was also collected in the form of an anonymous free response survey. The survey included 4 questions and was sent via email to all students who participated in this PHM activity. The first question in the survey asked students about their perception of the training sessions and the second question asked their thoughts on how this experience developed their skills as pharmacists. Furthermore, the third question asked them what they enjoyed about the experience and the fourth question asked them to provide feedback on how the experience could be improved for the future.

2.2 | Training sessions for students

Properly training students for this experience was a crucial step as it helps with student understanding of the initiative and helps maintain consistency in student work. Three separate training sessions were designed and implemented. The first session was an overview of PHM, the second was a review of the statin measures, and the third was a clinical refresher and hands-on practice with motivational interviewing. The concepts that were discussed in the training sessions were similar to what the pharmacists reviewed with the managed care pharmacist, but more rigorous and designed for students.

2.2.1 | Training 1: Overview of PHM

The 2 h session was led by a clinical pharmacist on the first day of the APPE rotation. This session reviewed the background of PHM and other related topics, such as value-based care, quadruple aim, quality measures, the role of the ambulatory care pharmacy team in improving quality of care provided to patients, and cost-savings associated with meeting quality measures.

FIGURE 1 Diagram of remodeled workflow in 2021. SPC, statin therapy for patients with cardiovascular disease; SPD, statin therapy for patients with diabetes; SUPD, statin use in persons with diabetes.
2.2.2 | Training 2: Statin quality measures

This 1-h session was led by a managed care pharmacist in the first week of the APPE rotation before starting patient chart reviews. This session focused on the specific statin quality measures, such as inclusion and exclusion criteria for each measure, clinical criteria to evaluate when determining statin eligibility, and instructions for chart review and documentation.

2.2.3 | Training 3: Clinical review of statins and motivational interviewing

This 3 h session was led by two clinical pharmacists during week 4 of the APPE rotation. This occurred after patient chart review was completed and before starting telephonic outreach to approved patients. This session focused on teaching students how to communicate health information to patients in an effective way. This included appropriately relaying the patient-specific need for statin therapy and key counseling points. This training session had a large emphasis on motivational interviewing techniques, with students reviewing these concepts with preceptors and then actively applying them to mock patient scenarios. Lastly, in addition to communication techniques, students also received step-by-step instructions for documenting their findings in the EMR.

2.3 | Data collection and statistical analysis

Claims data, containing age, gender, and statin measure, was provided by the insurance plans. Additional relevant data, such as presence of type 2 diabetes, clinical history of ASCVD, history of previous statin use (if applicable), history of statin intolerance (if applicable) and presence of active liver disease, were collected by students from diagnoses documented by physicians in patient charts (Table 1).

Next, statin initiation rates from 2021 with the remodeled workflow were compared to statin initiation rates from 2020 with the traditional workflow (Table 2). Official exclusion criteria are set for each statin measure by Centers for Medicare & Medicaid Services (CMS) and these criteria were followed by both pharmacists and students. Some of these official exclusions include end-stage renal disease, pregnancy, hospice, and others. Patients were marked as “not clinically appropriate” as determined by the primary care physician or pharmacist for reasons including: the patient was prediabetic (for SPC or SPD), LDL under 40 mg/dL, or had an intolerable gastrointestinal, muscle, or cognitive adverse effect with previous statin use that did not meet an official exclusion.

In 2020, the pharmacists made an average of two outreach attempts for each patient, but this occasionally varied based on pharmacist workload. In 2021, in a more standardized approach, students attempted to reach patients three times prior to marking them as “unable to reach.” Furthermore, some patient charts were marked as “incomplete” if pharmacists and students did not have time to complete the chart review and/or patient outreach by the end of December of that year.

A Fisher’s Exact test using R Project for Statistical Computing version 4.1.2 was used to compare the proportions of statins started and declined between the 2020 traditional workflow and the 2021 remodeled workflow.

3 | RESULTS

Insurance claims data identified 1078 patients in 2020 and 917 patients in 2021 who were indicated for a statin. In 2021, 70 (7.6%) of patients had official exclusions to taking a statin, 262 (28.6%) of patients were not clinically appropriate for a statin, and 42 (4.6%) were not approved for statin therapy by the PCP, leaving 543 patients. In 2020, before this was remodeled to an experiential experience, 110 (10.2%) of patients had official exclusions to taking a statin, 131 (12.2%) of patients were not clinically appropriate for a statin, and 8 (0.7%) were not approved for statin therapy by the PCP, leaving 829 patients. The categories of “official exclusion,” “not clinically appropriate,” and “not approved for statin therapy by PCP” were excluded in the analysis since these patients were not eligible for outreach. This information is depicted in Figure 2.

![Figure 2](https://accpjournals.onlinelibrary.wiley.com/doi/10.1002/jac5.1769)
Demographic characteristics provided by insurance claims and clinical characteristics collected through chart review are summarized in Table 1. In 2020, pharmacists started with more patients who have previously tried at least one statin and had an intolerance to it, when compared to students in 2021. This could be due to different patients being included between the 2 years based on their insurance plan.

Patient outreach results are included in Table 2. Among the 543 patients included in 2021, students started statins for 75 (13.8%) patients while 114 (21%) patients declined statins and 6 (1.1%) patient charts were incomplete. Among the 829 patients included in 2020, pharmacists started statins for 102 (12.3%) patients while 167 (20.1%) patients declined statins and 229 (27.6%) patient charts were incomplete. Reasons for declining a statin included but were not limited to: patients not wanting to take more medications, patients preferring to first speak with their PCP at their next appointment, patients having a negative experience with being on a statin in the past, or patients having a negative perception of statin medications. These reasons were similar between the two groups. When comparing the two groups, there was no statistically significant difference in rates of statins started (odds ratio [OR] 0.88; 95% confidence interval [CI] 0.63–1.22; \( p = 0.41 \)) and statins declined (OR 0.95; CI 0.72–1.25; \( p = 0.73 \)).

Out of 20 students who participated in this experience, 16 students (80%) responded to the student feedback survey upon completion of their rotation. All 16 students (100%) answered that the training was helpful in preparing them for this experience. Among these students, six students (38%) specifically noted the utility of the third session (clinical review and motivational interviewing) in preparing them to speak with patients. The responses also included 13 students (81%) mentioning an improvement in clinical knowledge about lipid management, 9 students (56%) mentioning an improvement in counseling skills, and 7 students (44%) mentioning an improvement in their confidence and/or comfort speaking with patients. A total of 10 students (63%) were included between the two years based on their insurance plan. In 2020, students started statins for 75 (13.8%) students (31%) provided constructive feedback that having more time for working as a team with their peers and pharmacists. A total of 5 students (31%) mentioned that motivational interviewing-based telephone interventions by pharmacy students resulted in significantly improved medication adherence and less medication discontinuation. From the limited studies available, pharmacy students have proven capable of participating in PHM activities and documenting their interventions. But results from students’ work in PHM activities have not been directly compared to results from pharmacists’ work in PHM activities.

4 | DISCUSSION

Ambulatory care pharmacists are incorporated into primary care clinics to help improve patient outcomes, resolve drug information questions, and promote higher quality of care. In addition to these clinical and PHM duties, ambulatory care pharmacists often have to balance student precepting responsibilities.

Previous projects have demonstrated that student pharmacists can effectively participate in PHM alongside their clinical pharmacist preceptors. Cannon et al showed that 46 APPE students were able to make 3774 interventions over the study period and offset 765.6 h of clinical pharmacist time. Another study demonstrated that motivational interviewing-based telephone interventions by pharmacy students resulted in significantly improved medication adherence and less medication discontinuation. From the limited studies available, pharmacy students have proven capable of participating in PHM activities and documenting their interventions. But results from students’ work in PHM activities have not been directly compared to results from pharmacists’ work in PHM activities.

This retrospective study evaluated an institutional initiative that incorporated APPE students into PHM duties and builds on existing research by investigating two new aspects. One aspect was the direct retrospective comparison of how effective students were in the new experiential PHM activity, as compared to pharmacists in the previous year. The second aspect was reporting the value that students find in experiential PHM activity, as compared to pharmacists in the previous year.
Our results show that there was no difference between statins started and statins declined when comparing the remodeled student-led workflow in 2021 to the traditional pharmacist-led workflow in 2020. Furthermore, both groups had similar rates of patients who were already taking a statin and received an adherence reminder. However, it is unclear why students had a greater proportion of patients who were unable to reach despite calling them three times. A possible explanation is more patients being available to answer phone calls during the COVID-19 stay-at-home order in 2020.

The large number of incomplete patient charts in 2020 was a notable finding that led the team to question the traditional workflow. This low completion rate in 2020 was likely due to pharmacists’ demanding and varying schedules. By better utilizing available resources in 2021, such as pharmacy students, the team was able to address the majority of patient charts.

While students in the Cannon et al study spent 50%–60% of their APPE rotation time on the PHM project, our students were instructed to devote only 10% of their rotation time (4 h out of a 40 h week) to this initiative. Over the three rotations, the 2021 workflow required 18 total pharmacist hours to train students, about 2 min per patient of pharmacist time to review student documentation and agree or disagree with their statin recommendations, and 72 total pharmacist hours to supervise telephonic outreach performed by students. When this time was divided among all the pharmacists at the institution, this amounted to less time spent per pharmacist when compared to the workflow in 2020. Our findings suggest that with the appropriate training and supervision, students can offload some of the clinical work that pharmacists and physicians face and possibly reach even more patients than previously possible. However, the direct impact of this new workflow, such as improvement in quality measure scores, prevention of future ASCVD events, and cost reduction, is not immediately evident as this information is not yet available.

The pharmacy students’ feedback regarding this experience was overwhelmingly positive through the formal survey and word-of-mouth. Students reported that this experience contributed to their growth in a unique way, possibly even more so than other rotations, given the extensive hands-on PHM experience. They enjoyed making recommendations based on evidence-based medicine, using time management and motivational interviewing skills to start medication therapy, and playing a role in improving patient outcomes. Their experience with PHM also enhances their curriculum vitae and could positively impact job opportunities. Most importantly, students reported that they felt more independent and confident after this experience, which are often sources of hesitation among APPE students and new graduates. Adding PHM training to the experiential curriculum has multiple benefits—it can improve institutional quality measures, enrich the experiential program, and further develop students’ communication skills.

This study did have some limitations. Parts of the remodeled workflow in 2021 were more standardized than the pharmacist-led one in 2020. This variability in standardization as well as demanding schedules and limited time were likely factors for pharmacists’ high proportion of incomplete patient reviews in 2020. The expectation was to complete proper review and outreach for all patients, but it was not achieved in 2020. In 2021, there was variability among students in regard to comfort and experience speaking with patients as well as patient perception of speaking with a student. The training sessions were designed to address these issues but the foundational difference in students’ communication skills and clinical knowledge may have been a limitation. There is also potential for the same patient being indicated for a statin and reviewed in both years. This is consistent with what happens in a real world setting in which patients may be approached multiple times regarding statin therapy. Furthermore, the focus of this PHM project was limited to statin quality measures and only conducted at one institution, which limits the generalizability of the results.

Future adjustments to this workflow may include increasing time for students to participate in PHM activities and creating an APPE rotation specifically to focus on PHM. Future research with other medication-related PHM measures in a multi-site model is also needed. Additionally, direct impact on health and cost outcomes as well as patient perception and satisfaction around student outreach are other areas for future research.

5 | CONCLUSION

Student involvement in PHM activities can be beneficial for the students, pharmacists, patients, and the institution. There was no difference in statins started or declined between the traditional workflow led by pharmacists and the remodeled workflow led by APPE students. These similar findings between the two groups suggest APPE students can also be valuable members of the healthcare team when reviewing patient charts to assess eligibility for statins and outreaching to eligible patients. This could possibly extend to other medication-related quality measures and future research is warranted in this area. Overall, students found this experience beneficial and had positive perceptions of their contributions to PHM. Incorporating students into PHM can ease the burden of resource shortage within a healthcare team and help train the next generation of pharmacists.

ACKNOWLEDGMENTS

The authors thank the following individuals for their contributions to this project: Angel Ta, Pharm.D., Megan Eclevia, Pharm.D., and Ray Tan, Pharm.D. for assisting with data collection and analysis; Richard Beuttler, PsyD, M.S. for assisting with data analysis; Providence Medical Foundation pharmacy team for assisting with student training.

FUNDING INFORMATION

There was no external funding for this research.

CONFLICT OF INTEREST STATEMENT

Neeloufar Fakourfar and Hindu Rao have no conflicts of interest to disclose.
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How to cite this article: Fakourfar N, Rao H. Pharmacy student involvement in population health management of statin quality measures. J Am Coll Clin Pharm. 2023;1-7. doi:10.1002/jac5.1769