Precepting Tips: Precepting Research Projects for Success

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Research projects are educational milestones in the progression of both students and residents. Designing student and resident research projects can be challenging, as previous research experience (of both the learner and preceptor), time constraints, and departmental goals may affect the research process and ability to carry specific research ideas to completion. Our institution recognized a need to refine our approach to the research process, including the training of preceptors and learners, the utilization of a research committee, the selection of research topics, and the expectations for preceptors and learners. Equipping learners and preceptors to approach the research process in a thoughtful way is a crucial component to success. This article will discuss tips and pearls for pharmacists who precept research projects. Learner training will be addressed in a future publication.

Ensuring pharmacists have the tools and resources to be effective research preceptors is essential to supporting students and residents throughout the research process. As students and residents are likely to come to your institution with little to no research background or knowledge about your department, it is crucial that pharmacist preceptors generate good research ideas

which may be carried out or further developed by students and residents. At a minimum, all preceptors should be taught how to design effective research questions. At our institution, we developed an inservice which taught preceptors how to utilize tools such as PICO (Population-Intervention-Comparison-Outcomes) and FINER (Feasibility-Interesting-Novel-Ethical-Relevant) (see Table 1) to help them think critically about their research ideas to ensure they are proposing quality research questions. In submitting

research ideas, preceptors are now required to submit the research question, PICO criteria, and indicate whether their project idea may require IRB review and approval.

To fairly evaluate the proposed research ideas and arrive at a list of well-developed research questions to present to learners, our institution created a research committee. The research committee is composed of pharmacy preceptors from different specialty areas (see Table 2), as well as interdisciplinary members who have research experience and interest working

TABLE 1. PICO/FINER

Research Question: Can a population management strategy involving patient letters promote eligible DM patients to initiate statin therapy?

Population	• Patients with diabetes:
	  » Total cholesterol >= 135 in past year
	  » No statin therapy in past year

Intervention	• Send eligible patients a letter explaining benefits of statin therapy • Ask patient to pick up prescription for a statin (already ordered) • Include a phone number to ask a pharmacist any questions
Comparison	Patients not receiving this intervention
Outcome	Purchase of a statin prescription within 3 months of letter mail date
Feasible	Postage, ordering prescription, letter, availability of clinical pharmacy specialist, follow-up lab tests
Interesting	How does this impact clinical practice?
Novel	Population-based strategy
Ethical	Is it fair to only do this for half the patients?
Relevant	Does this reflect current guidelines?

TABLE 2. Example of Research Committee Members

Committee Members		
Primary care pharmacists	Pharmacy administration	Mental Health physicians
Mental Health pharmacists	Formulary pharmacists	Mental Health social workers
Inpatient/outpatient pharmacists	Statistics pharmacists	

with our learners. The research committee is responsible for discussing the submitted project ideas and providing feedback to the preceptors. During the review process, committee members consider whether the project is suitable for a learner and the feasibility of completing the project in a defined time period. In reflecting on the success of the research committee—which was initially formed to specifically address resident research projects—we recognized the potential value in including student learner project ideas, as some submitted residency project ideas were identified as being more appropriate for student learners. This has been beneficial in ensuring research project ideas are still able to move forward and not discarded because they are not suitable for a resident learner. Additionally, students may be able provide the needed background research or baseline medication utilization evaluation to determine if a resident project would be feasible in the future.
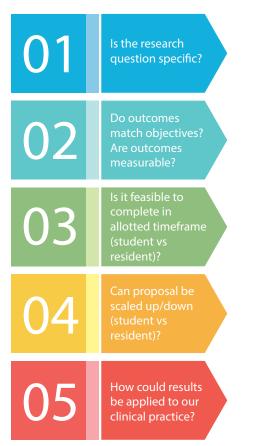
Additionally, the research committee considers the impact of the project on the pharmacy department and prioritizes research projects accordingly. Advancing pharmacy student and resident research projects can help achieve departmental strategic goals. Utilizing the department's strategic plan as an avenue to generate research ideas can help projects gain more support and outcomes may be more sustainable. At our institution, with the call for submission of project ideas, preceptors received a copy of the strategic plan to review to help them generate research ideas. In addition, specific areas of clinical pharmacy were identified where there was a perceived need from the administration and preceptors were asked to consider those areas when generating and submitting research ideas. To create the final list of potential research projects, utilization of a scoring tool can help to prioritize projects. At our institution, we developed a list of questions to aid the research committee's discussion of proposed project ideas (see Figure 1).

As mentioned above, in the process of identifying resident research projects, student research projects may present themselves. Precepting student projects can entail additional barriers including tighter time constraints and need for additional foundational knowledge of the learner. However, these challenges can be overcome with preparation and planning. Successfully precepting student research projects is similar to the process for residents, but must be adapted to the learner level and time constraints. For students who are present at a site for only

six weeks or less, breaking the project into defined scopes across several learners is one method to approach student research projects (see Table 3). For example, one learner completes the background literature review for the project, another completes the pre-data collection to support the need for the project, then the next can develop the protocol or guideline, the fourth student works on the implementation, then the fifth completes the data collection, etc. For larger projects, the steps could be divided further. Depending on the level of intensity of the step and resident availability, some steps could be completed by different levels of students and other steps could be completed as resident rotation projects. Additional steps could be idea generation for projects, IRB approval, or manuscript writing to further divide the project over learners. It is important for these divided projects to define the scope for each learner and show how the learner is providing value and how his or her role fits into the larger project as a whole. This process may work

FIGURE 1. Example Scoring Tool to Prioritize Projects

01 Is the research question specific?

02 Do outcomes match objectives? Are outcomes measurable?

03 Is it feasible to complete in allotted timeframe (student vs resident)?

04 Can proposal be scaled up/down (student vs resident)?

05 How could results be applied to our clinical practice?

06 How might intervention affect other programs?

07 Is intervention sustainable?

08 How well does proposal align with department goals?

09 Will the project require IRB submission?

Total possible points = 9

TABLE 3. Example of a Project Divided Across Learners

Implementation of Extended Interval Infusion Meropenem	
Learner	**Role**
1	Background literature review on extended interval infusion vs intermittent infusion of meropenem and possible barriers to implementation (eg- compatibility issues, procurement, nursing concerns)
2	Medication utilization evaluation describing current use of meropenem and potential for cost-savings by switching to extended interval infusion
3	Development of guideline or protocol to change meropenem infusions to extended interval
4	Approval by Inpatient Pharmacy Committees, Infectious Disease Committee, Nursing Committees, ICU committees, Pharmacy & Therapeutics
5	Implementation including information technology build, IV pump programming, etc
6	Education of staff (pharmacists, nursing, providers, etc) on new process
7	Medication utilization evaluation post-implementation

well for quality improvement projects, such as implementation of a phosphate sliding scale for the intensive care unit or implementation of prolonged infusion meropenem.

If a student is on rotation for several months, such as a summer intern or a student completing multiple rotations at a site, it may be feasible for the student to complete the majority of the project without needing to divide over many learners. Preparation will be very important for this student project due to the still limited timeframe. For example, several steps in the process may need to be completed before the learner is on site. Due to time constraints, the idea generation phase for the project should ideally be completed before the learner arrives. Having the research project idea generated in advance will save time from having to complete this step during the valuable time the learner is on rotation. Additionally, IRB exemption status or IRB approval would also ideally be completed prior to student arrival. Depending on the duration of time it takes to receive requests for data from informatics specialists, requests for data may also need to be completed in advance.

Adapting the project to the level of the learner is another important step in preparing to precept a student project. Students who have completed a drug literature evaluation course should be able to complete background literature reviews and data collection and analysis.

However, these learners may not have covered a particular topic area yet, such as infectious diseases, so background reading on this topic may need to be provided. Keeping their coursework in mind, first or second year students completing a project may need to have the objectives and methods of the project defined for them. In contrast, a fourth-year student completing a longitudinal residency track project could be asked to determine the objectives, methods, and outcomes of the project after literature review. All learners will need a clear timeline of expectations to keep the project on track and set an example for project management.[1] This timeline should include when components should be completed, such as literature review, protocol development, development of data collection tool, completion of data collection, data analysis, etc. Including regularly scheduled meetings in the timeline can also help to keep the project on track.

Despite careful planning and preparation, unforeseen barriers can arise. If possible, the timeline should allow time for guideline revisions and multiple attempts for committee approval or possible committee meeting cancelation that delays the timeline. If a learner is completing a chart review, it is a good idea to walk through the first few patients together to confirm the learner can find the information in the medical record accurately. Next, have the learner complete the chart review on a few patients

independently and record the time it takes to evaluate each patient's chart. Validation of accuracy of data collection will need to be determined. If the data collection process takes longer than anticipated, the sample size of the study may need to be re-evaluated or additional learners may need to be incorporated to complete data collection on the desired number of patients in the timeframe needed.

Most importantly, continue to emphasize the importance of the project and how it fits into the big picture of how the department and patients will benefit from this project (and how the learner will benefit as well!). A review of student pharmacist activities found that student pharmacists provide value to experiential sites in many ways.[2] Specifically, the review noted that student pharmacists can save pharmacist time by completing drug use evaluations. The student benefits from participating in research projects as well through experience gained in problem-solving, interprofessional collaboration, leadership, as well as providing direct research experience and learning through higher order Bloom's taxonomy.[2] In addition to providing departmental benefit and student learning and experience, many student research projects may result in poster abstracts and/or manuscript publication.[3,4] ●

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References

1. Barletta JF. Conducting a successful residency research project. *Am J Pharm Educ*. 2008;72(4):1-7.
2. Mersefelder TL, Bouthillier MJ. Value of the student pharmacist to experiential practice sites: a review of the literature. *Ann Pharmacother*. 2012;46:541-548.
3. Brandl K, Adler D, Kelly C, Taylor P, Best BM. Effect of a dedicated pharmacy student summer research program on publication rate. *Am J Pharm Educ*. 2017;81(3):1-6.
4. Slack MK, Martin J, Worede L, Islam S. A systematic review of extramural presentations and publications from pharmacy student research programs. *Am J Pharm Educ*. 2016;80(6):1-10.