"What common barriers to residency project completion and publication should I be aware of and therefore avoid?"

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When asking residents about to start their training what they are most excited about, the residency research project is rarely named. It might be classified as the one activity that is dreaded the most, but never one that is highly anticipated. If you have a follow-up conversation at the end of the year with those residents about what they would want to go back and do again, this is often listed. Because these are consistent responses that many share, the residency research project never fulfills the potential it has for the resident's growth. In addition, because the final report is not as robust as it can be, others in the profession are unable to benefit because of incomplete results and lack of publication.

After numerous years of residency leadership and sponsoring residency research projects, I would like to provide advice on the common misconceptions of many when entering their residency year and some perspectives on how to make the most of the residency project. Recognizing these at the outset can hopefully change your individual experiences and provide information helpful to other pharmacists.

The drivers for the residency research requirement come from the accreditation standard all programs must follow. For postgraduate year one (PGY1) programs, a 2005 American Society of Health-System Pharmacists (ASHP) document has set an educational goal that each resident must "conduct a practice-related project using effective project-management skills."[1] This is continued in the 2014 competency areas guiding residency programs, which states that each resident must "demonstrate ability to evaluate and investigate practice, review data, and assimilate scientific evidence to improve patient care and/or the medication use system."[2]

Given these statements guiding program design and my experiences mentoring residents on research projects, let me first discuss what is not needed for a resident in order to have a successful research project. Then, I will share some perspectives and tips on how to be successful in this project.

1. **A new resident does not need to have a research project and idea** – Some new residents want to be able to do their own project as opposed to being provided one from their site. This is very difficult to accomplish because of the resident's limited experience in practice and research. Although residents may not be excited to

complete a project provided to them because it is either not their own or not in an area of interest, having success is probably more important than anything at this stage, and these provided projects are better suited for this.

2. **The research project may not change practice** – All of us want to be involved in discovering a new idea, treatment, or concept that can change practice. However, the probability that this will be achieved through a residency research project is slim. If you actually talk to people who have made practice-changing discoveries, they will state that most were built on prior art. What this means is that they have completed numerous projects up to this point with various outcomes. Each conclusion added to the general knowledge and built on the previous project, laying the groundwork for the practice-changing discovery and subsequent publication. In addition, almost all of these involve a research team having diverse experiences and training, where each team can use its insight to contribute to the discovery. Each of us has to start somewhere, and this project could be the foundation that leads to a discovery decades later.
3. **Research is easy** – When asked, everyone will tell you about the frustrations that occur when undertaking research. However, most do not want to discourage others when they start on the journey, so we do not often see these struggles. Some of the frustrations are not getting funded for your brilliant idea, having delays in getting institutional review board (IRB) approval, having slow patient enrollment or all of the patients you expected are not getting admitted, experiencing delayed access to data from your system, not being able to find someone to do your statistics, and having your manuscript rejected from peer review with harsh comments from the reviewers. Most academics have experienced all of these many times. It is not whether you will have disappointment, but how you handle it. Everyone should learn from disappointments, persevere through the obstacles, and have the determination that they will not be defeated so easily. Those who do this are the ones who make the practice-changing discoveries that we long to be associated with in our careers.
4. **Statistics are hard** – Although many of us did not have a statistics class in pharmacy school, the needs of residency research are not that difficult. With a few conversations from faculty members and some advanced planning, you can complete the statistics you need to accomplish. Do not become discouraged if you do not have a statistician involved, as you can do most of what you need at this stage.

Besides recognizing these issues, there are a few tips that can make residency research projects go smoothly, avoiding many of the complications that prior residents have fallen prey to.

- **Procrastination is a killer** – When you have a compressed timeframe like a residency, any delays introduced by not prioritizing the project will only be magnified at the end of the year when you are scrambling to complete the project. When starting a residency, there are many competing priorities, and the whole

experience is new. Things like selecting a research project, writing the research plan, gaining IRB approval, collecting and analyzing the data, and writing the manuscript can add delays. In addition, very few develop a research plan with timelines and end up holding themselves accountable to this plan. Not prioritizing all of these steps as they arise throughout the year will only put you behind later in the year and lead to a rushed project completion.

- **December is not really a great research month** – Many programs schedule December as a research month. Although this makes sense from a programmatic end, it is hard to spend quality time on the project. This is because you have attendance at ASHP Midyear, vacation, and staffing responsibilities and need to prepare for the upcoming recruiting season. When you look at the actual time dedicated for research, it is pretty limited. This is why it is important to find time before this month to be successful in completing the residency project, and not rely on December to do it all.

- **Evaluate the research experience of the mentor** – Although we always want to be involved in a project that is interesting to us, this may not always be a project of appropriate scope with the potential for success. I would recommend that you evaluate the research mentor more than the project. Understanding their experience, their track record of success in accomplishing activities, and their ability to work with you is as important, if not more important, than doing a project in your therapeutic area of interest. Having a successful project will teach you a lot more about the skills necessary for completing and getting you excited about future research than doing it in an area of interest.

- **Submit for publication before completing your residency** – Although all residencies ask for the project to be written in manuscript form before you leave, few programs require submission for publication before graduating. What this means is that not many residency research projects end up being published and thus your hard work is not shared for everyone else to review and use. This is because the discipline for seeing a project through to publication is difficult for many. Especially if you are off to a new residency or job, the last thing you want to do is go back to your residency research project and submit it for publication. However, if your program requires submitting your project to a journal before graduating, it will more likely to lead to a publication. With new journals being created for pharmacy residents and various online journals in existence, the potential for success is great because there are various outlets to use. However, do not get discouraged if one journal rejects your manuscript. Read and learn from the reviewers, incorporate this into your manuscript, and submit it to another publication. There is tremendous satisfaction in seeing all of your hard work result in a publication.

Although the residency research project can be one of those dreadful experiences, it can also be one of the most rewarding, if done correctly. Recognizing some of the potential barriers and preventing chronic concerns that have plagued many, you will find that the research project can lay a foundation for future professional satisfaction and published results that can benefit many in our profession.

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