

Topic of Interest

Developing a program for residents to support training in research

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Setting and Problem

Physicians are expected to be life-long learners and to assimilate and evaluate new knowledge gained from research. Many residencies also require completion of a scholarly project during their residency. However, the majority of residency training is dedicated to enhancing clinical knowledge base and skills. Often, residents are not provided with a structured learning experience and support system for research.

Intervention

Beginning in 2012, the authors implemented a research program with

scheduled deliverables for the obstetrics and gynecology residency program (5 residents per class, 4 year residency) to assist with completion of the resident scholarly project. This program also includes assigning each resident a scholarly project committee for regular feedback, lectures, and interactive research design sessions. The most notable change was the implementation of deadlines for deliverables throughout residency to ensure residents make consistent progress toward the completion of their research project. Yearly, the structure and expectations of the research program are reviewed with the residents.

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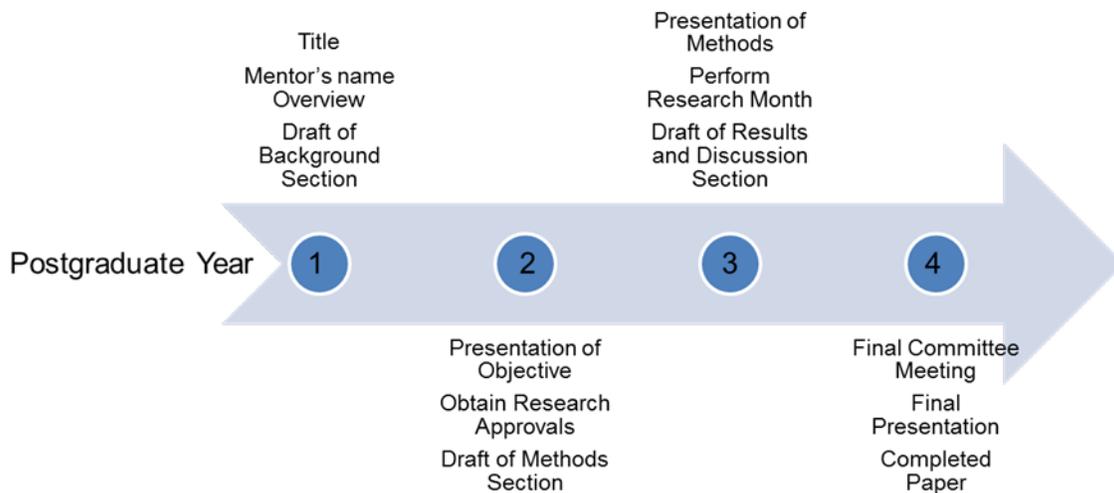
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In the R1 year, residents choose or develop a project with a self-chosen vetted mentor and submit a project title and brief project description. In Spring of R1 year, a draft of the background section is submitted. In addition, the residents also prepare a short (7-10 minute) oral presentation that is given during departmental grand rounds. During these presentations, they present their background and study objectives. All of our faculty and fellows at the presentation complete an evaluation during this presentation. In the R2 year, the residents similarly complete and submit a draft of the method section of their paper. The residents then present their proposed methods in another short presentation which is evaluated by the faculty and fellows. These R1 and R2 presentations

during departmental grand rounds afford the entire department the opportunity to provide feedback and suggestions regarding the project and for the residents to address any questions from the audience. Additionally, we address the feasibility of the projects at these earlier stages to help prevent difficulties in completing their scholarly projects later in their residency. In the second year, the residents acquire any needed for approvals for their study. In May of their R3 year, a draft of their completed paper is submitted to their committee. The committee meets with the resident at the beginning of R4 year to review their final presentation of their project and to provide feedback on their paper. The final presentation of their work occurs in November of their R4 year.



During each year, there are required deliverables that residents must submit toward the completion of their scholarly project.

Figure 1. Schematic of Program Deliverables

In addition to the timeline of deliverables (Figure 1), we added 6-7 resident

education sessions per year that cover research design, statistics, human

subject research, scientific paper writing, and presentation skills. Each year culminates in a capstone session dedicated to the spontaneous development of a project by the residents including study design, power analysis, discussion of needed approvals and ethical considerations, and approaches to the analysis.

Results and Discussion

This program has been very successful and simple to implement. We began this program with all residents in 2012 with variations made based on their residency year. Therefore, it is possible to implement a similar program in residencies of different lengths. The main administration of the research curriculum is performed by two faculty members. There are no direct costs of the education curriculum. Our department policy is to pay for residents to attend one meeting per year at which they are presenting. An increased number of meeting presentations by our residents has resulted in a 50% increase of our residency's travel budget since the program was begun. Over the past two years, our residents have presented 10 research abstracts at regional or national meetings. The success of the program is also evident in the rapid and sustained increase in the number of peer-reviewed resident publications (26 papers from 2016-2017 and 22 papers from 2014-2015 versus 10 papers from 2012-2013). Furthermore, the success of the program is evident in the overwhelmingly positive feedback from both our faculty and residents.

Since we have implemented this program, we have surveyed residents

anonymously each year about their experiences with their scholarly project research and their perceptions of research in the department (IRB# 201104707). From these surveys, we find that 88% of residents agree or strongly agree that research is valued in the Department of Obstetrics & Gynecology at the University of Iowa, 69% disagree or strongly disagree that research is only necessary for people who plan to pursue a fellowship, 85% agree or strongly agree that residents are encouraged to publish their research findings, 93% agree or strongly agree that there is value in receiving education (didactic and hands-on) in research and 89% agree or strongly agree that training in research is important to their future as an Obstetrician/Gynecologist.

From these surveys, we have also identified future areas for improvement. For example, 61% of residents agree or strongly agree that there are a variety of research experiences available to residents. We found this result to be interesting given that we have had a wide variety of projects completed by residents ranging from the development of app-based education modules to basic bench research to randomized control trials. Also notable was that 15% of residents agreed that research interferes with clinical duties. Residents in our program have the opportunity to choose a research block elective during their 3rd year. However, most residents take one week of vacation during this block and also have one full day/week in total dedicated to their personal clinic and education time. As a result, this may not leave sufficient time for their research. Most concerning for our program is that only 46% of residents

agree or strongly agree that mentors provide adequate guidance and feedback in project design. This may reflect that mentors want to give the residents freedom to design a project and/or more experience as the lead in the project. The goal of the program is for residents to take ownership of the project, but this may feel overwhelming as a new experience for residents. In residency training which, although very team-based, can also be viewed as hierarchical and thereby making it a challenge for interns and junior residents to identify themselves as the leader of the project. Thus, we are working to reinforce to residents to seek out their mentors as needed, but not to expect the mentors to be the main drivers of the projects.

Conclusion

Undoubtedly, residency is primarily a time for clinical training. During residency, physicians are expected to gain the skills to continue to be life-long learners. As life-long learners, they need to be able to critically appraise the primary evidence. They can appraise the evidence either as a primary investigator or by learning from literature or seminars. Performing a scholarly project during residency is one way to gain the skills necessary to perform this critical appraisal. Our program utilizes the above-described curriculum to give residents the foundation in designing, performing, and analyzing a research question. In addition, they also have the opportunity to communicate their findings through a manuscript and oral presentations. Because residents are quite busy clinically in residency, the research curriculum is designed to help divide the projects into manageable

pieces to be accomplished each year. Research-centered education sessions and frequent feedback about their scholarly project progress help to bolster their research training. Overall, we find that a structured research curriculum results in generally positive perceptions of research and increases the ability of residents to successfully complete projects that are worthy of presentation at conferences as well as of publication.