Providing Trainees With an Introduction and Decision-Making Framework for Pursuing an Academic Residency Position

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Abstract

Introduction: Medical students are a significant source of the future academic medicine workforce, but surprisingly little is typically done to promote academic medicine career awareness during the early stages of medical education. To raise awareness among medical students of the critical role an academic residency plays in pursuing a future academic career, we developed a workshop that describes what an academic residency entails and what to consider when selecting such a program.

Methods: The six-step Kern model was applied to develop a multimodal workshop to help trainees understand characteristics of and explore their interest in an academic residency program. The 60-minute workshop consists of a PowerPoint presentation, reflection exercise, and case scenarios to help trainees learn and apply new skills in selecting a residency program. The
workshop was offered to diverse medical students at nine different medical schools across the country between July 2016 and May 2017.

**Results:** Of the 115 workshop participants who completed the evaluation form, over 95% agreed or strongly agreed that each of the learning objectives was met. A paired t test of learner responses pre- and postworkshop demonstrated significantly increased confidence in finding an academic residency position.

**Discussion:** This workshop fills an important gap in raising medical students’ awareness of how to pursue an academic medicine career by highlighting the critical role of an academic residency program. Participants liked the use of vignettes and small-group discussion to better prepare them in exploring and benefiting from an academic residency position.

**Keywords**
Career Development; Academic Residency Program

**Introduction**
Traditionally, the primary role of academic medicine was viewed as producing physicians. The focus of medical school and postgraduate leadership was to train effective clinicians who could deliver a standard of medical care. Not until the early 21st century did a consensus build calling for the role of academic medicine to be broadened. The pressure on academic medicine was not only to sustain its current role of training new physicians but to also expand to address other issues such as academic freedom, health equity, public health, training a global health workforce, and most importantly, training future leaders in academic medicine who will appreciate and champion this expanded role.

Research has indicated that among graduates of medical schools accredited by the Liaison Committee on Medical Education, only 18% went on to obtain a full-time faculty appointment, with a statistically smaller proportion of underrepresented minorities choosing such a path. Recognizing that medical students are a fundamental and significant reservoir of talent for the academic medicine workforce, surprisingly little is done to promote academic medicine during the early stages of medical education, especially in the area of targeting diverse trainees.

Focused early career development is hypothesized to provide greater awareness, and potentially can instill greater interest in pursuing an academic medical career. Unfortunately, the pace of undergraduate medical education, the growing volume of material needing to be mastered in this short time frame, and the focus on activities that optimize the chances of being accepted to a desired residency training program limit opportunities for medical students to gain a better understanding of what it means to be an academic physician. Students often lack formal or structured career instruction and may gain misperceptions from faculty or fellow students, such as the belief that academic careers are mostly oriented to basic science research. Additionally, studies have shown that clinician educators at various universities are less likely to be at a higher rank than their colleagues in a traditional research pathway, and this may influence medical students further.
efforts “to provide opportunities for students to engage with inspiring academics, to present their work and to reward excellence in student research” are all effective strategies, the reality is that there remains a gap in time between fostering an interest in academic medicine during medical school and becoming a faculty member. A residency position that offers resources and mentorship to support a resident’s academic interests (i.e., an academic residency program) is a critical and a missing link for the furthering of academic medicine career exploration and completion of academic scholarship.

Specialty-focused initiatives during residency training have been shown to be effective in positively affecting interest in and actual selection of an academic career. Similar to undergraduate medical education, mentorship, role modeling, early exposure to research, and academic productivity are considered effective strategies for greater academic success at the graduate medical education level. Therefore, it is important not only to promote academic medicine via focused initiatives during medical school but also to continue this focus during residency training. To develop such initiatives and identify appropriate role models is far more realistic during medical school than during residency training, since medical students have access to a greater diversity of academic faculty while residents are generally restricted to those within their department. However, the reality remains that even medical students who have a strong interest in academic medicine will lose this interest during residency in the absence of appropriate role models (within and outside their home department).

Hence, medical students who are being encouraged to consider careers in academic medicine need to be guided towards academic residencies that provide the necessary mentorship, role modeling, and opportunities for academic scholarship. Large variation exists between residency training programs based on location, affiliation, and their own inherent focus, as evidenced by their faculty’s academic productivity. Unfortunately, few, if any, resources exist to guide medical students in identifying and pursuing academic residencies in the specialty of their choice. There is a critical void of available instruction for medical students as they determine and chart a path towards pursuing academic residencies. In recognizing this gap, Building the Next Generation of Academic Physicians (BNGAP) developed a workshop to both introduce medical students to what an academic residency entails and cultivate an interest in an academic residency. The workshop uses an overall framework on how to approach different types of residency programs to help students evaluate an appropriate residency program in preparation for an academic career.

The six-step Kern model was applied in the development, implementation, and evaluation of this career development workshop for medical students:

1. **Problem identification and general needs assessment:** To assess medical student perceptions of an academic medicine career, a literature review was conducted on the topic matter, and perspectives were gathered from a group of 25 diverse trainees and educational leaders from across the country. Little was known about igniting and maintaining medical student interest in an academic medicine career.
2. Targeted needs assessment: A set of mixed-methods studies was conducted among a national sample of diverse trainees to assess facilitators and barriers to an academic medicine career and preferred career development activities. Trainees expressed interest in academic medicine careers but lacked instruction on the path to academic medicine, especially regarding what activities to undertake during and after medical school.\textsuperscript{7,16–18}

3. Goals and objectives: Based on the literature review, mixed-methods studies, and committee member input, it was decided to develop a workshop for medical students on considering an academic residency with the following learning objectives: Discuss the characteristics of an academic residency program, explore one’s interest in an academic residency program, and apply steps to assess a potential academic residency program.

4. Educational strategies: The learning objectives were addressed through an interactive workshop consisting of didactics, reflection, and case discussion (via a small- and large-group session formats). This multimodal approach was beneficial for a diverse set of learners due to direct engagement with speakers who are role models, active participation, purposeful activity, and heightened networking.

5. Implementation: The 1-hour workshop was delivered to medical students during an academic medicine career development conference. The conference was implemented at various allopathic medical schools across the country. Participants and speakers were from the host medical school or a nearby academic health center. Medical schools were chosen as the venue because the familiarity of the setting would help participants realize that academic residencies and faculty exist at academic health centers and allow them to network with positive faculty, especially those involved with graduate medical education who could serve as role models, mentors, and champions.

6. Evaluation and feedback: Conference participants were asked to complete a questionnaire gauging their self-efficacy regarding an academic medicine career or academic residency, and to evaluate the workshop design and content.

Methods

The 1-hour workshop included three strategies for trainees to consider when selecting an academic residency program: (1) a didactic component to allow them to compare and contrast types of residency programs (approximately 10 minutes), (2) a reflection exercise to help them list and organize personal and professional factors of greatest importance when selecting a residency program (approximately 15 minutes), and (3) case scenarios to apply new knowledge and skills in selecting a residency program (approximately 25 minutes). The final 10 minutes of the hour were reserved for a question-and-answer segment. Through this process, we expected participants to gain greater insight into whether an academic residency program best suited their personal and professional interests and if so, which one.
This introductory workshop was drafted and edited by the five coauthors, who include two residency program directors (emergency medicine and radiology), an assistant clerkship director (family medicine), an assistant dean for diversity and inclusion, and a clinician-investigator (internal medicine). The workshop was implemented as a part of a conference curriculum with other workshops; however, it can also be offered as a stand-alone educational tool. It was designed for a group of less than 40 individuals to allow for engagement of and discussion among all participants, especially during the case scenario segment.

In preparation for this workshop, facilitators should allot 1–2 hours to review the PowerPoint (PPT) presentation (Appendix A), case scenarios (Appendix B), discussion guide (Appendix C), Train the Trainer video (Appendix D), evaluation form (Appendix E), and takeaway tips handout (Appendix F). Although the PPT, case scenarios, discussion guide, and Train the Trainer video have very good alignment in terms of content, we recommend reviewing the written documents prior to watching the video, which provides a quick overview of the content. Facilitators should conduct at least one complete practice session and consider which personal anecdotes to share per slide. If there is more than one presenter, time should be spent discussing how slides will be divided and practicing how to transition between presenters. This discussion should preferably happen in person.

This workshop can be presented to all medical students but is probably most beneficial to medical students in the second part of their third year or the first part of their fourth year, time periods when selecting a residency program seems more imminent. The ideal facilitator would be an MD or DO faculty member with experience in an academic residency program, irrespective of specialty. A resident or fellow of a department with an academic residency program may be a suitable alternative facilitator and have the added benefits of recent application experience and additional anecdotes.

**Workshop Content by Appendix**

**Appendix A. Academic Residency PowerPoint Presentation:** Both the flow and content of the workshop are featured in this 33-slide PPT presentation. The presentation outlines core content for the participants, including a description of academic residency programs, self-assessment activities to gauge interest in academic residency programs, and questions to pose during the residency program selection process.

**Appendix B. Case Scenarios (Cases 2–5):** This handout includes four cases for an interactive discussion in a small- and large-group format. The cases were developed to have students apply the content learned during the didactic segment. Participants can be broken into groups of three to five to discuss the cases and associated questions. One person per group should serve as the moderator to report the discussion back to the larger group.

**Appendix C. Discussion Guide:** This document gives step-by-step instructions for conducting the workshop along with an explanation of how to discuss each slide. Facilitators are encouraged to include their own personal experiences for authenticity.
Appendix D. Train the Trainer Video: This video is an adjunct to the discussion guide to help visual and auditory learners gain an appreciation of how to implement the workshop. The 11-minute video features Dr. Hector Perez and Dr. Conair Guilliames, coauthors of this workshop, explaining the intent of the slides, describing how to implement interactive exercises, and providing guidance on how they provided anecdotes and experiences. Slide instructions and the video were developed to ensure consistent implementation of the workshop across presentation sites.

Appendix E. Evaluation Form: Participants were asked to complete a series of questions pre- and/or postworkshop. These questions served to assess participants’ awareness of academic residency programs and how effectively the workshop met its objectives. Further, a specific pre- and postworkshop question included the following:

- Using a 5-point Likert scale (0 = *No confidence*, 4 = *Complete confidence*), indicate “How much CONFIDENCE do you have in your ability to find an academic residency program?”

Postworkshop questions included the following:

- Using a 5-point Likert scale (1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Neither Agree nor Disagree*, 4 = *Agree*, 5 = *Strongly Agree*), indicate “To what extent do you agree that the workshop learning objectives were met?”
  - Objective 1: Discuss the characteristics of an academic residency program.
  - Objective 2: Explore one’s interest in an academic residency program.
  - Objective 3: Apply steps to assess a potential academic residency program.
- Open-ended question: What did you like about this workshop?
- Open-ended question: What suggestions do you have to improve this workshop?

Appendix F. Takeaway Tips Handout: A handout was created to give to students at the end of the discussion. It includes tips for additional self-evaluation and evaluation of residency programs.

Materials

- Pens.
- Audiovisual equipment to show the presentation.
- Chairs or chairs and tables to support five to seven participants per table.
- Flip chart and markers to note comments by participants.
- Printed copies of the evaluation form and takeaway tips handout.
- Index cards.
Results

This workshop was implemented at nine regional conferences and facilitated by a total of 12 presenters (six single presenters and three pairs of cofacilitators). Among the facilitators were two residency program directors, one associate clerkship director, one full professor, four assistant professors, two assistant deans (student affairs and diversity and inclusion), one associate dean for graduate medical education, and one resident.

The 115 workshop participants were a diverse sample—56 (48.7%) identified as women, 55 (47.8%) as men, 20 (17.3%) as lesbian, gay, or bisexual, 26 (22.6%) as Hispanic/Latino, 36 (31.3%) as white, 29 (25.2%) as African-American/black, 26 (22.6%) as Asian, and two (1.7%) as American Indian. There were 111 medical student and four resident respondents who were training in 18 different states.

Of the participants from the nine regional conferences, 93.9% (108 out of 115) responded to the following question pre- and postworkshop: “How much CONFIDENCE do you have in your ability to find an academic residency program?” Using the paired-sample t test, there was a statistically significant increase in confidence among participants (preworkshop M = 2.17 vs. postworkshop M = 3.38, p < .001).

One hundred percent (115 out of 115) of learners from the nine regional conferences responded to the following question: “To what extent do you agree that the workshop learning objectives were met?” More than 95% of participants agreed or strongly agreed that all three objectives had been met. For details, see the Table.

Comments for the workshop were positive overall, with a few suggestions for improvement. Responses to the question, “What did you like about this workshop?” included the following:

- **Objective 1: Discuss the characteristics of an academic residency program.**
  - “Excellent and helpful, knowing what questions to ask was very helpful. Also learning about what makes an academic residency was also helpful.”
  - “It focused on aspects of residency. Increased awareness of how to better assess additional pursuits in medicine. Presenter highlighted the quick steps to finding academic (research) types of programs.”
  - “I learned what the differences in various types of residency options (i.e., clinical, clinical + research, research).”
  - “I liked learning about what opportunities are out there.”
  - “This workshop introduced academic residencies and the different opportunities that they provide. I liked that they provided steps to assess these programs.”

- **Objective 2: Explore one’s interest in an academic residency.**
“I thought it was helpful to talk about what kinds of questions to ask when evaluating what programs are a good fit.”

“I thought the tools demonstrated in this workshop would be incredibly useful in identifying a residency program (among many other choices in life) that best meet my interests and goals.”

“I’m not at the residency stage yet, but this provided great information regarding what to consider as you narrow down your options.”

“Very well detailed information and advice on determining which academic residency programs will best suit my personal mission in the future.”

Objective 3: Apply steps to assess a potential residency program.

“Awesome interview tips + advice about what to ask about.”

“Good tips and interview maps.”

“Learned what separates residency programs & what to look for when interviewing and applying.”

“Provided step by step process to the approach on how to narrow down the list on potential residency programs.”

“Provided very helpful information that was practical, like ‘which questions to ask a program’ and ‘what to look for when looking for a program’.”

“Very engaging and informative, gave us a structure for exploring/distinguishing between academic residencies and narrowing list based on your values. Answered many questions related to residency interviews—including suggestions for questions to ask regarding diversity support, where the graduates are, and what the program could improve upon.”

“The instructors gave thorough and honest opinions about what questions we need to ask and what we need to look forward to when we get to residency programs. Thanks for great advice!”

Evaluation also revealed areas in which participants felt changes might enhance the impact:

“Could be more specific with case examples.”

“More information on the actual match process and what factors will help your application would be extremely valuable.”

“More on research track residencies would be very helpful.”

**Discussion**

Focused early career guidance is essential to encouraging a growth in interest in academic medicine careers. While strategies implemented in medical school to foster this interest are
important, the reality is that the period of residency training is often a missing link between initial interest and actually entering an academic career. This workshop fills a gap and provides trainees with strategies to evaluate their own interest in academic medicine and, consequently, potential residency programs that will not only provide necessary clinical experiences but also prepare them for academic careers. Overall, participants found that the workshop was helpful and provided practical and detailed information. Participant comments emphasized the importance of vignettes and reflection throughout the presentation. Our experience with implementation of the workshop at nine regional conferences has provided us with insights regarding how to optimize the workshop, with additional feedback guiding modifications to ensure effective delivery to an audience of diverse medical students.

Based on audience size and availability of qualified facilitators, the initial activity (“What influenced your interest in learning more about an academic residency?”) can be conducted within a large group or in multiple smaller groups. Also, it is recommended that small groups be used to discuss the cases. We found that groups of four to five participants work well for these breakout cases. Facilitators should ideally join individual small groups to encourage discussion but can also walk around if there are concerns regarding their presence actually limiting open discussion. If time permits, the larger group should discuss highlighted points from each case. We recommend closing the session with the index card activity. It helps personalize the workshop for students and gives them concrete future goals to pursue.

The choice of facilitator is important to the success of the workshop. Facilitators should ideally be medically trained fellows or faculty with residency program experience. Medical residents’ proximal experience in applying to residency can make them approachable and reasonable cofacilitators. The facilitator needs to be an effective public speaker who can inspire and positively influence participant interest in a career in academic medicine. During the introductory presentation, we recommend that speakers share their own academic residency path and journey towards academic medicine with the goal of adding a level of humility and practicality to the session.

In preparation for the session, facilitators should review the cases and modify them to meet their audience’s specific interests. Research has shown that medical students want to learn methods to incorporate their interests while concurrently pursing academic careers. Other case scenarios to consider can involve trainees of diverse backgrounds, specific religious identities, balance in personal/professional life, or specific research interests (e.g., basic science, population-based, or clinical research). Case questions can be created to prompt discussion on how to explore these topics in the academic residency selection process.

Brief clarification of the National Resident Matching Program (NRMP) process may be helpful if the audience is not already aware of the process. Presenters may also want to consider providing local or online resources, including the NRMP website, FREIDA Online, the AAMC Careers in Medicine website, and specialty-specific sites with detailed residency information. If time and resources permit, demonstrations of how to use these sites can be included in the presentation.
Next steps in our development of the BNGAP academic medicine career development series include further incorporation and standardization of the workshop based on the above-mentioned input. An additional plan includes performing short-term follow-up with participants to determine effectiveness in placement at academic residencies, with longer term tracking to identify successful career paths.

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Educational Objectives

By the end of the session, learners will be able to:

1. Discuss the characteristics of an academic residency program.
2. Explore their interest in an academic residency program.
3. Apply steps to assess a potential academic residency program.
Table.
Learner Responses to the Question, “To What Extent Do You Agree That the Workshop Learning Objectives Were Met?” (N = 115)

| Objectives                                | No.(% ) | Strongly Agree | Agree | Neither Agree nor Disagree | Disagree | Strongly Disagree |
|--------------------------------------------|---------|----------------|-------|----------------------------|----------|-------------------|
| Discuss the characteristics of an academic residency program. | 88 (76.5) | 25 (21.7) | 2 (1.7) | 0 (0) | 0 (0) |
| Explore one’s interest in an academic residency program. | 90 (78.3) | 21 (18.3) | 4 (3.5) | 0 (0) | 0 (0) |
| Apply steps to assess a potential academic residency program. | 93 (80.9) | 20 (17.4) | 1 (0.9) | 0 (0) | 0 (0) |