

Development and Evaluation of an Interdisciplinary Rotation for Anesthesia Residents in Laryngology

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Abstract: *The medical fields of anesthesiology and otolaryngology (ENT – ears, nose, throat) are defined by overlapping clinical expertise as it relates to the management of airway issues. As a result of this shared clinical domain, interdisciplinary educational experiences provide an opportunity for collaboration and a broadened experience for resident physician learning. Our institution developed a two-week rotation in otolaryngology for first-year anesthesiology interns with the goal of utilizing interdisciplinary coaching to develop both technical and non-technical skills in airway management. The purpose of this project is to perform a formal evaluation of this rotation and share our training methods and processes.*

Keywords: Medical education, anesthesia residency training, interprofessional clinical education, personalized learning

INTRODUCTION

The professional training required to pursue a career in anesthesiology requires four years of medical school followed by four years of post-graduate residency training. Anesthesiology residency programs consist of a clinical base year (CBY) plus 36 months of specialized training in anesthesiology. The CBY is designed to provide broad education in fundamental clinical skills of medicine and surgery relevant to the practice of anesthesiology, including short courses within other medical disciplines. These interdisciplinary rotations facilitate opportunities to establish collaborative relationships with other medical specialties and gain exposure to diverse clinical areas.

Anesthesiologists play an active role on interdisciplinary care teams as airway experts to deliver quality health care and improve patient outcomes (Navedo et al., 2015). In the current healthcare environment, multiple specialties (i.e., emergency medicine, otolaryngology, critical care, and surgery) are also responsible for the management of medical concerns of the airway (Grissom & Samet, 2020). Airway management is the process by which medical concerns of the airway – including the mouth, nose, vocal cords, and lungs – are evaluated and treated in order to restore functional and effective ventilation. With the changes in airway management practices (i.e.,

the growth of video laryngoscopy and flexible intubation scopes), the evolving roles of airway experts, and the introduction of innovative airway management tools, it has been suggested that anesthesiologists rethink not only their training paradigms but also how to include interactions with other specialties as part of an interdisciplinary care team (Grissom & Samet, 2020). Cross-training with otolaryngologists, who specialize in the ear, nose and throat (ENT) during residency, may lead to an increased understanding of individual roles, enrich a collaborative team approach, and provide skill development (Rider et al., 2020). In addition to building lasting professional relationships with ENT physicians, a brief rotation for first-year anesthesia residents includes skill development to relieve the pressure of airway management, which is a common source of anxiety (Kovatch et al., 2019).

Multiple studies assessing short airway management courses have reported increased comfort, confidence, and clinical skills when dealing with airway issues (Cervenka et al., 2020; Kashat et al., 2020; Ritter et al., 2020). These results demonstrate the benefit of incorporating airway management training components early into an anesthesiology residency. Ultimately, this benefit is also recognized and supported by the overseeing body of resident medical education, the Accreditation Council for Graduate Medical Education (ACGME), which has established a specific learning milestone for airway management training (The Accreditation Council for Graduate Medical Education, 2021).

The Otolaryngology Head & Neck Surgery department at our academic institution developed a laryngology rotation for anesthesia interns focused on enhancing and supplementing the education of airway anatomy and management. This style of specialized interprofessional training in airway management provides valuable educational opportunities to these residents that they would not otherwise receive at another point in their curriculum. While this rotation has been in place for several years, it has yet to be formally evaluated and developed beyond its original form. The purpose of this study is to describe and evaluate a two-week rotation for anesthesiology residents within the Otolaryngology Head & Neck Surgery department at our institution.

METHODS

In order to identify the strengths and weaknesses of the rotation, two focus groups were conducted with anesthesiology residents at our institution. The first focus group was centered around the current class of first-year anesthesiology residents, and the second was with the senior residents in their second through fourth years of the program. Discussion questions were designed to assess the rotation's strengths and weaknesses as well as the components of the rotation that were most effective for resident education. The focus groups were moderated and recorded by a professional facilitator from the Academic Affairs office. The recordings were transcribed, and the transcripts underwent a qualitative content analysis to categorize resident experiences.

RESULTS

A content analysis of the transcripts from the focus group revealed four categories describing participants' perceptions of their medical education experience: (1) enhanced recognition of the struggles of patients with medical concerns of the airway; (2) improved abilities with hands-on techniques and procedural skills; (3) better understanding of the downstream consequences of medical complications; and (4) clear appreciation for the health care team and other support staff. These themes were emphasized in both focus group sessions and were important components of the education experience across multiple resident classes.

In addition to major themes, the focus group transcripts were also analyzed for the purpose of identifying both highlights and aspects to improve from this rotation. Positive aspects of the rotation included hands-on procedural experience, applicable and contextual education in airway anatomy, and the observation of healthy collaboration between faculty members of different medical specialties. Additionally, this rotation has room to improve as it regards onboarding logistics and introductory learning materials.

DISCUSSION

Thematic analysis of focus group transcripts resulted in four primary benefits during the ENT rotation. The first was an enhanced appreciation for the patients that the residents cared for on the rotation. These patients were described as having complicated medical concerns that were frequently written off by previous medical providers. However, as the anesthesiology residents integrated into the laryngology team, they gained first-hand experience with providing quality care to these complicated patients. The specific principles that are taught when caring for complicated patients center on self-compassion, vulnerability, and the willingness to demonstrate presence for patients and families who are suffering (Curtis & Levy, 2022).

A second theme that arose from the focus group was procedural observation and participation to enhance technical skill. While otolaryngologists and anesthesiologists act in two distinct medical roles, the two fields share overlapping procedural skills (i.e., utilization of flexible fiberoptic scope for nasal endoscopy in ENT or for intubation in anesthesiology) (Ideker et al., 2019; Woerner et al., 2019). Data in anesthesiology trainees suggests that at least 10 fiberoptic intubations need to be performed to attain a reasonable start at technical proficiency (Collins & Blank, 2014). The trainees on this rotation are able to practice the skills required with over 10 nasal endoscopies on patients who are able to give direct feedback on comfort and preceptors who give ready feedback on positioning and visualization. As a result, the ability for anesthesiology residents to gain significant practice with ENT scoping technique over the two-week rotation helps them to develop their skills for a future career in anesthesiology.

The third major theme was an improved understanding of the complications that can occur with airway management. One of the primary responsibilities of an anesthesiologist, according to the ACGME, is to be involved in patient intubations (The Accreditation Council for Graduate Medical Education, 2021). While it is a common procedure in many medical contexts, intubation and prolonged ventilation is not without its risks. If this procedure inadvertently causes damage to the throat or surrounding airway, then the patient may suffer from symptoms that prompt them to seek future care from an otolaryngologist (Pacheco-Lopez et al., 2014). As a result, this interdisciplinary rotation allows for an increased awareness of the downstream consequences that may arise following an intubation procedure. The residents in the focus group expressed appreciation regarding the ability to interact with these patients, as it helped them to become more conscientious physicians in their future careers.

The final theme of the focus group sessions focused on the communication style of the two laryngologists on this rotation. When different medical specialties have overlapping responsibilities, there is a potential for conflict to arise. Specifically, procedures that share the airway require communication to prevent catastrophe (Woerner et al., 2019). In this rotation, the focus group participants praised the faculty physicians for their ability to communicate with other healthcare professionals in order to provide the best care for the patient. The active modeling of mutual respect and effective airway communication sets a high standard for the future educational and professional career of resident physicians.

In addition to the positive experiences during the rotation, participants were asked to provide areas of improvement. One of the most important areas to strengthen is the materials provided for resident education. Anesthesiology residents enter this rotation with no formal training in otolaryngology and, as a result, it can be difficult for them to accommodate to a new team and clinical environment. The participants in the focus group stressed the importance of providing information in advance, regarding both the logistics of the rotation and some of the medical scenarios that they will interact with throughout the experience. The more that the students are able to understand what is expected of them and review requisite clinical information in advance, the better they will be able to learn throughout the rotation.

The four main themes described above represent a combination of the results of both focus groups, however it is also important to consider the differences in viewpoints between the first-year residents and their more senior counterparts. One of the most important differences was the fact that the first-year residents placed more value in the ability to gain physical exam and procedural skills while older students reported appreciation for aspects related to learning anatomy. This difference primarily results from the educational stages of each of the groups – younger students place high value on being involved in the care team and learning new hands-on skills while older residents value the long-term investment that results from a mastery of anatomy of the upper airway. This difference can also be seen in the students' responses when asked which aspects of the rotation will help them in their current and future clinical practice. The younger cohort of students focused most of their answers around how their newly acquired hands-on skills will make them better physicians, while the older students highlighted aspects of the rotation such as communication skills and understanding airway anatomy. In spite of these differences in priorities in response to a few of the focus group questions, both groups of students conducted nearly identical discussions regarding the value of interprofessional education and the learning experiences of working with otolaryngology patients.

As this interdisciplinary rotation continues to evolve, there will be further opportunities to expand upon the results of this focus group and provide enhanced learning opportunities. One route through which the focus group work can be improved is to conduct interviews with the laryngology faculty responsible for teaching during this rotation. The alternate perspective that these faculty members represent may provide additional insight into the best ways to optimize the rotation. Along with the addition of faculty interviewing, the information and feedback from these focus groups will be utilized to inform the content development phase of this project. Surveys will be conducted to assess pre-post confidence of knowledge and skills. Additionally, there is a need to upgrade the educational materials that are provided to the students on this rotation. Resources such as videos, podcasts, and short disease summaries will be developed for implementation into a more structured educational experience. Once these materials are generated, they will be evaluated by the faculty experts and assessed for their validity in the rotation, ultimately allowing for a more enhanced and streamlined educational experience.

CONCLUSION

Both anesthesiologists and otolaryngologists play important roles as medical experts of the airway. Interdisciplinary training of anesthesiology residents in otolaryngology may lead to enhanced collaboration between medical specialties and sharing of clinical expertise. In addition to interpersonal dynamics, this style of cross-training lays the foundation for hands-on procedural skills that prepare students for their future clinical responsibilities. While there is still room to improve upon the educational resources that are provided throughout this rotation, focus group participants report an overall positive experience. Ultimately, this rotation serves to broaden the educational experience of anesthesiology residents, develop their hands-on skills, and improve their abilities to function as interdisciplinary physicians in their future careers.

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APPENDIX: FOCUS GROUP QUESTIONS

- What did you like most about this rotation?
- How could this experience have been improved during this rotation?
- What do you wish you had learned?
- What did you learn about patients during this rotation?
- What did you learn about interprofessional collaboration between anesthesiologists and laryngologists during this rotation?
- What procedure skills did you learn during this rotation?
- What did you observe about team dynamics during this rotation?
- Where did you access any educational materials for this rotation? What did you find helpful?
- How will, or how has this rotation help you in your clinical practice?