

# Training Surgeon Scholars: Grant Writing Workshops During Residency

Jenny X. Chen, MD, EdM<sup>1,2</sup>, Stacey T. Gray, MD<sup>1,2</sup>,  
 and David H. Jung, MD, PhD<sup>1,2</sup>

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## Abstract

Surgical residents may have limited experience with grant writing even though it is an important skill for academic physicians. We describe a novel curriculum on the conduct of research and grant literacy delivered at a single otolaryngology training program over 5 years. This workshop series included preparing a draft grant and conducting a mock grant review committee. In a survey of past participants (71% response rate), 91% found the workshops useful for grant writing or reviewing, and many used or planned to use the draft grants for real grant applications. The average number of American Academy of Otolaryngology–Head and Neck Surgery Foundation CORE grants submitted and successfully funded increased among residents at this program in the 4 years after the introduction of the workshop series as compared with the 4 years before. Further improvements continue to be made to the curriculum based on resident feedback.

## Keywords

surgical education, grant literacy, grant writing, research funding, research education, medical education, graduate medical education

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Grant writing is an important skill for many who pursue careers in academic medicine but is rarely a part of the formal curriculum of training. Existing studies suggest that surgeons submit fewer grant applications and have lower rates of successful proposals than colleagues in nonsurgical fields.<sup>1</sup> In a study conducted between 2008 and 2018, internal medicine departments were awarded 8.2 times the total grant funding from the National Institutes of Health when compared with surgery departments, and individual grants were smaller for surgeons.<sup>2</sup> The possible etiologies of this disparity are unclear but may include differences in support structures (ie, funding, time, and mentorship) at various career phases, including training and early academic practice.<sup>1</sup> Among surgeons, funding disparities also exist for women<sup>3,4</sup> and young investigators.<sup>2</sup>

Early mentorship and practice in grantsmanship equip trainees to take advantage of resident research grants, paving the way to early success in academic surgery.<sup>5</sup> Herein, we describe a single institution's experience with a novel research curriculum for otolaryngology residents that includes a focus on grant writing.

## Methods

A series of 7 workshops on research and grant literacy was provided to postgraduate year 2 residents from 2016 to 2020 at a single otolaryngology program. In 2016, the postgraduate year 3 class also attended, with a total of 31 residents participating over 5 years. Each session was scheduled on a weekday evening with catered dinner and lasted 1 to 2 hours. Session goals are described in **Figure 1**. Instructors were surgeon-scientists within the department. Some sessions were lecture based while others were interactive. Grant writing was addressed in 2 sessions. First, residents were introduced to the basic grant format and asked to draft an American Academy of Otolaryngology–Head and Neck Surgery Foundation CORE grant. Each resident then reviewed 2 other trainees' drafts. At the second grant writing session, residents gave and received feedback on their drafts in a mock grant review committee. In July 2021, residents who participated in this curriculum were surveyed on their perceptions of the utility of the seminars and whether they had any suggestions for improvements. Internal lists of all trainees who applied for grant funding and their application outcomes were reviewed from 2013 to 2020. The local institutional review board at Mass General Brigham deemed this study exempt from review.

## Results

Seventy-one percent of residents (n = 22 of 31) responded to the survey. Ninety-one percent of trainees (n = 20 of 22)

<sup>1</sup>Department of Otolaryngology–Head and Neck Surgery, Massachusetts Eye and Ear, Boston, Massachusetts, USA

<sup>2</sup>Department of Otolaryngology–Head and Neck Surgery, Harvard Medical School, Boston, Massachusetts, USA

## Corresponding Author:

Jenny X. Chen, MD, EdM, Department of Otolaryngology–Head and Neck Surgery, Massachusetts Eye and Ear, 243 Charles St, Boston, MA 02114, USA.  
 Email: [Jenny\\_chen@meei.harvard.edu](mailto:Jenny_chen@meei.harvard.edu)





**Figure 1.** The 7-session curriculum plan for the seminar series on research and grant literacy. Resident learning goals for each session are expressed as SWBAT statements (“Students will be able to”).

reported that sessions were useful for grant writing. Seventy-seven percent ( $n = 17$  of 22) indicated that sessions were useful for grant reviewing. Forty-one percent ( $n = 9$  of 22) stated that they plan to use (or have already used) their grant drafts in real grant applications. In free responses, residents found that the most useful components of the workshops were the grant draft submission and the mock grant review sessions. Among respondents, the optimal timing of these sessions was controversial. Three residents felt that workshops should be offered in postgraduate year 1, while they had lighter off-service rotations and before they joined the call pool. Conversely, 2 residents recommended holding the sessions later so that trainees could explore research opportunities independently before preparing grants.

This seminar series was associated with an increase in the number of grants submitted by residents: between the 4 years directly after the start of this educational series (2017-2020) and the 4 years directly before (2013-2016), the number of resident submissions for CORE grants from our program increased from an average of 2.75 to 6.75 per year. The average number of awarded CORE grants also increased from 1.25 to 2.25 per year. Unfunded projects were often resubmitted to regional or institutional funding mechanisms.

## Discussion

This represents one of the few examples of resident curricula in the medical education literature with an focus on grant writing.<sup>6-8</sup> While other formal grant writing workshops exist, such as the NIH Grant Writing for Success seminars<sup>9</sup> or the

American Society of Clinical Oncology’s online grant writing course,<sup>10</sup> we described a curriculum designed for otolaryngology residents and customized by surgeon-scientists at their own institution.

Our workshop series will continue to change according to resident feedback. The timing of the workshops may need to be optimized, taking into account residents’ other obligations, their ongoing explorations of research, and the timing of otolaryngology resident grant application cycles. From survey findings, future sessions will strive to be more interactive. In 2022, a new “shark tank” session was introduced where residents pitch their grant ideas to a panel of faculty. With these improvements, this curriculum could be gathered with other novel educational interventions and made publicly available for interested training programs to better support residents preparing for careers in academic medicine. Future prospective studies would assess the ability of these sessions to improve scores in specific grant sections and benefit trainees across institutions.

Although we found that resident grant applications submitted and funded increased after implementation of the workshop series, we are unable to establish a causal relationship between the educational intervention and these outcomes. Other factors may have affected rates of resident grant applications and successful funding. For example, new faculty were hired during these years who may have provided additional research mentorship to trainees. This present study is also limited by its single-center design, which may make it difficult to generalize to other programs and institutions.

## Conclusion

Grant writing is an important component of academic surgery. A practical curriculum to support the development of grant writing skills can be implemented during otolaryngology training.

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## Author Contributions

**Jenny X. Chen**, study conception and design, data collection, data analysis, manuscript writing, approval of final submission; **Stacey T. Gray**, study design, data analysis, manuscript writing, approval of final submission; **David H. Jung**, study conception and design, data collection, manuscript revising, approval of final submission.

## Disclosures

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