

SAAAPM 2018
Approaches to Residency & Research Panel

A Structured Research Program During Residency Increases Academic Productivity of Graduates: The Stanford Experience

VIVIANNE L. TAWFIK, MD, PHD
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Department of Anesthesiology, Perioperative & Pain Medicine
Stanford University School of Medicine

Stanford University

The future of academic anesthesia

THE FUTURE OF ANESTHESIOLOGY IS HIGHLY DEPENDENT ON THE SUCCESS OF YOUNG INVESTIGATORS AS THEY DEVELOP INDEPENDENT CAREERS INVOLVING BASIC AND CLINICAL INVESTIGATION.

A LEADING PRIORITY OF ANESTHESIOLOGY MUST BE TO NURTURE THE ACADEMIC CAREERS OF PHYSICIAN SCIENTISTS WITHIN THE SPECIALTY.

Schwinn DA, Balse JR.
Anesthesiology 2006.
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Anesthesiologist-scientist: Endangered species?

Table 1. Total NIH Funding to Anesthesiology Departments Has risen Steadily since the Mid-1990s in Absolute Dollars but Still Remains < 1.0% Total NIH

Year	Anesthesiology			Total NIH, \$ Millions	Anesthesiology, % Total NIH
	\$ Millions	No. of Grants	No. of Departments Funded*		
1975	6.1	61	26	871	0.7%
1980	8.9	91	25	1,480	0.6%
1985	12.3	96	35	2,480	0.5%
1990	19.8	134	35	3,300	0.6%
1995	34.5	175	43	4,870	0.7%
2000	59.5	248	48	7,440	0.8%
2003	91.2	329	55	10,896	0.9%

Funding to Anesthesia departments represents only 1% of NIH budget
But...Anesthesiologists make up 6% of physician workforce

Only 40% of Anesthesia departments had one or more NIH grants

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Resident research programs at Stanford

- **ABA Clinician-Scientist Track (CST)**
 - 2006-2009
 - Offered up to 6 months of research during residency
- **Research Elective (RE)**
 - 2012-present
 - Offers 1-3 months of research upon approval of mentored proposal
- **Fellowship in Anesthesia Research and Medicine (FARM)**
 - 2009-present
 - Offers up to 9 months research during residency, followed by 1-year research fellowship

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Research Elective

- Requirements for submission:
 - Name of faculty mentor
 - Number of months requested (1-2 months) and preferred block(s) (this should be coordinated with faculty mentor)
 - **One-two page proposal with **specific plan** for research time developed with faculty mentor**
- Please keep in mind that there are very specific requirements to ensure that this time is productive, including **IRB approval** (if needed) before you start the month of research, presenting the project at our weekly research seminar (R&D) to get feedback and submitting an abstract to WARC.

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FARM Expectations

CA-1: Investigate potential labs/projects; excel as an anesthesia resident

CA-2: Begin initial studies; obtain preliminary data; excel as an anesthesia resident

CA-3: Continue research; apply for institutional T32; excel as an anesthesia resident

Fellowship: 80% commitment to research; 1 day/week in OR as attending; apply for funding +/- clinical subspecialty fellowship

And then...work towards independence as an investigator, obtain faculty position, mentor other trainees, apply for funding ☺

Study Aim

For anesthesia residents interested in research, to determine what factors predict increased academic productivity following residency?

Methods of the current study

- IRB exemption obtained
- **Quantitative Study:**
 - Retrospective analysis of 49 residents between 2006 and 2017 who completed anesthesia residency at Stanford and participated in one of three research programs (CST, RE, FARM)
 - Primary outcome was modified scholarly activity point (mSAP)
 - Data obtained from CVs and publicly available information up to July 2018
 - Used one way ANOVA to evaluate statistical significance
 - Multivariable regression to analyze resident and program factors associated with higher post-residency productivity
 - Other data collected includes
 - Gender
 - Practice setting
 - Formal research degrees
- **Qualitative Study:**
 - Conducted structured interviews with FARM graduates to evaluate strengths and weaknesses of program

Scholarly activity points (SAP) offer an objective measure of academic productivity

- Scholarly Activity Points
 - Established by Emerick et al. at University of Pittsburgh
 - Assign points to abstracts, manuscripts, book chapters, grant submissions, and patents
 - Accounts for individual's involvement and project impact

Emerick et al. Br J Anaesth 2013. Glassick Acad Med 2000.

Scholarly activity points (SAP) offer an objective measure of academic productivity

Sample SAP:
 Manuscripts: 150 points
 a) Peer reviewed (x1.0)
 b) Second author (x0.5)
 c) Original research (x1.0)
 d) Impact Factor: 4.14 (x4.14)

SAP TOTAL: 150 x 1 x 1 x 0.5 x 4.14 = 310.5

- Manuscripts and grants account for approximately 88% of the total SAP
- We were unable to obtain records of scholarly activity for many in the Clinician-Scientist Track.
- All SAPs in this study reflect only manuscripts and grant submissions.

Emerick et al. Br J Anaesth 2013. Glassick Acad Med 2000.

Conclusions

- Any research time during residency is associated with
 1. Pursuit of academic practice
 2. Higher levels of scholarly activity throughout career
- Research prior to residency predicts higher post-residency scholarly activity as does participation in a formal research track
 - Additional support/training may be necessary to facilitate scholarly activity in research track residents without previous formal research training (i.e. PhD)

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— ooo —

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