The Ochsner Journal 12:373–378, 2012

Assessment of an Anesthesiology Academic Department Mentorship Program

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ABSTRACT

Background: Mentorship is perceived as important for academic department development. The purpose of this study was to survey physicians in an academic anesthesiology department before and after the initiation of a formal mentorship program to evaluate the impact of the program over a 1-year period.

Methods: The effectiveness of establishing a mentorship program to promote career advancement was prospectively and anonymously evaluated by 52 anesthesiologists in an academic, tertiary care facility with a large residency program (>130 residents). We asked these physicians to complete a questionnaire on mentorship 2 weeks prior to and 3 months and 12 months after the establishment of the mentorship program. We used data from 26 (50%) participants who completed all 3 surveys to evaluate the impact of the formal mentorship program.

Results: Baseline survey results revealed that the majority of anesthesiologists (71%) in our academic, tertiary care facility believed that mentoring was important/very important, but only 46% indicated that mentoring had been an important/very important contribution in their careers. Overall, the respondents' ratings of mentorship importance over the 1-year period did not increase despite the establishment of a formal program.

Conclusion: We present the first known study that sequentially followed physician evaluations of mentorship importance after the establishment of a mentorship program within an academic anesthesiology department. Study participants considered allotted, structured time for the mentors and mentees to focus on mentorship activities as necessary to provide the best opportunity for program success according to the general informal consensus of the participants in the study.

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Keywords: Academic medicine, anesthesiology, mentorship

The authors have no financial or proprietary interest in the subject matter of this article.

INTRODUCTION

A mentor is a person who has acquired experience and seniority; who is more than a teacher or colleague; who serves as a sponsor, advisor, and role model; who has the time to counsel and support junior people; and whose high standards of excellence a protégé can emulate.[1-3] For this study, we surveyed physicians in an academic anesthesiology department to assess the importance of mentoring as a way of promoting professional growth and to evaluate the impact of establishing a formal anesthesiology mentorship program over a 1-year period. The study design was tailored to evaluate the initial impact of a 2-hour faculty development mentorship workshop followed by a more targeted and specific comprehensive mentorship program. Our hypothesis was that the academic mentorship program would improve mentee skills and knowledge in several academic and professional areas.

METHODS

Fifty-two anesthesiologists in an academic, tertiary care facility with a large residency program (>130 residents) were asked to complete a baseline questionnaire on mentorship importance (Table 1) 2 weeks prior to a formal 2-hour mentorship workshop.

Table 1. Mentoring Questionnaire

Please rank the following questions that best fit your opinion using the following scale:

Not Important		Somewhat Important		Very Important
1	2	3	4	5

1. How important do you think mentoring is in General Anesthesiology? _____
2. How important have mentoring relationships been to your career so far? _____
3. How important is mentoring in teaching and learning in the following?
    a. Clinical medicine _____
    b. Clinical approaches and procedures _____
    c. Research skills _____
    d. Humanistic qualities _____
    e. Teaching skills (in OR, lecturing, etc) _____
    f. Leadership strategies _____
    g. Professionalism in anesthesiology _____
    (dealing with stressful situations, ethics, etc)
    h. Interdisciplinary team approach _____
    i. Career promotion _____
    j. Dealing with physician managers _____
    k. Dealing with governmental politics in anesthesiology _____
    l. Dealing with institutional politics in anesthesiology _____
    m. Surviving a career in anesthesiology at this institution _____
    n. Advancing in State and national anesthesiology societies _____
    o. Defining a "balance" between personal, career, and family time _____

We presented the questionnaire after informing all participants of the intended use of the data. Participants completed the survey anonymously on a volunteer basis. The questionnaires were coded so an independent third-party participant could match responses for anonymous individual comparison. Anesthesiologists rated items using a Likert scale (1=not important to 5=very important). We evaluated the internal consistency of the questionnaire by estimating Cronbach's alpha using the baseline questionnaire data. Cronbach's alpha estimated across the 15 items of importance included in question 3 was 0.86, suggesting very good internal consistency.

A 2-hour workshop kicked off the formal mentorship program and sought to further educate anesthesiologists about mentorship. Presentations during the workshop involved departmental and institutional leaders with a commitment for mentorship, provided examples of successful departmental mentorship relationships, suggested pathways for anesthesiologists to identify mentors, and discussed how support for academic appointment applications could be achieved. Specific topics included definitions of

mentor/mentee roles, the institutional vision of mentors, and the achievements of existing mentor/mentee relationships within the department. The mentors' primary goals were to involve mentees in research projects, encourage enrollment in institutional research courses, provide practice oral board examinations for specialty certification, and create specific participation opportunities in state and national anesthesiology societies.

The following programs were implemented after the mentorship workshop: a weekly research department discussion hour, manuscript editorial assistance, opportunities to attend professional development courses, exposure for advancement in professional societies, encouragement for quarterly mentor/mentee interactions, and recognition of mentorship participation in the annual physician review process.

Involvement in the mentorship program was voluntary for mentors and encouraged for mentees and anesthesiologists with less than 5 years' seniority who were not specialty board certified or who had not met criteria to attain the level of full staff within the department. Some mentors were also the mentees of senior mentors. One mentee having multiple mentors was not uncommon. The senior study author (JFO) assigned mentors and mentees with an effort to match those with similar academic and professional interests.

The original questionnaire was given to the respondents again at 3 months and at 1 year after the workshop. Outcomes of interest were the change on the 15 mentorship importance items included in question 3 and on the mean importance score from baseline to follow-up at 3 months and 1 year. The mean importance score for each participant was calculated as the average response over the 15 items at each time point. This score may be interpreted as a summary of the importance the participant gave to mentorship across all the items at the time assessed. We assessed change from baseline to 3 months and to 1 year using paired *t* tests and 95% confidence intervals for each item and for the mean importance score. We did not use repeated measures analysis of variance because the change to each specific time point was the primary interest. A significant *P* value indicates confidence of a true nonzero change from baseline, whereas a nonsignificant *P* value means that analyses detected no change from baseline. Correlation between the change from baseline and both participant age and level of participant (1=clinical associate, 2=associate staff, 3=staff) was assessed with Spearman correlation analysis.

A total of 26 participants completed all 3 surveys, and we had 90% power to detect changes from a baseline of a magnitude of 0.67 standard deviations or more, which represents a moderate amount of change. The significance level for each hypothesis was 0.05. Because we made no formal correction for multiple testing, significant *P* values between 0.01 and 0.05 are to be interpreted with caution. We used SAS statistical software (SAS Institute Inc., Cary, NC) for all analyses.

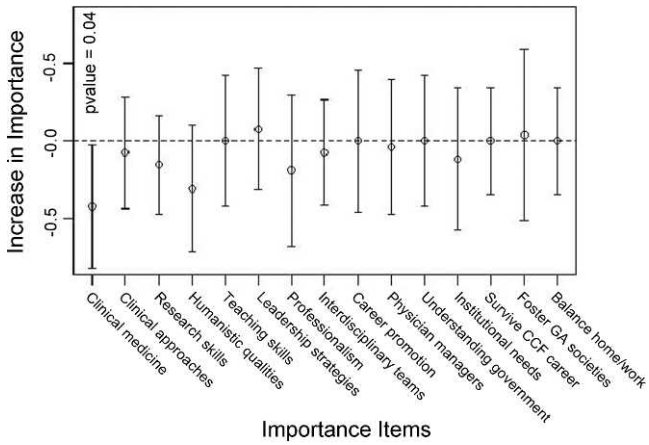

Figure 1. Change in mentorship importance items after first follow-up questionnaire (3 months). CCF, Cleveland Clinic Foundation; GA, general anesthesiology.

RESULTS

The majority (71%) of anesthesiologists in our academic, tertiary care facility had a baseline opinion that mentoring was important/very important, but only 46% indicated that mentoring had been an important/very important contribution to their careers.

A total of 26 participants completed the baseline and the first and second follow-up questionnaires. Table 2 reports the mean and SD for each item at baseline and at each of the 2 follow-up periods, as well as the change from baseline to each follow-up. At the 3-month follow-up, the only statistically significant change from baseline at the 0.05 level was a reduction in the importance of clinical medicine from a mean (SD) of 3.96 (0.77) to 3.54 (0.86), $P=0.04$ (Figure 1). No significant changes from baseline were observed at the 12-month follow-up (Figure 2).

Table 3 reports the correlation between participant age (mean $\pm$ SD of 46 $\pm$ 8, range 34-64) and the change in mentorship importance items and mean score from baseline to the 3- and 12-month follow-up evaluations. In general, age was not significantly correlated with change from the baseline perception of mentorship. The exception was a negative correlation between age and change from baseline to the first follow-up on importance of mentorship in surviving a career at our institution (correlation –0.49,

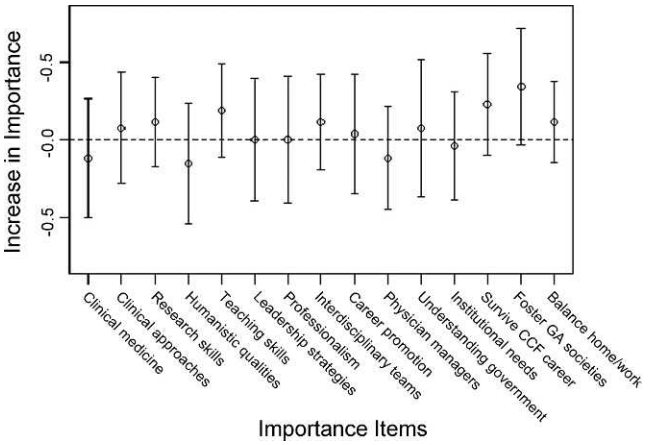

Figure 2. Change in mentorship importance items after second follow-up questionnaire (12 months). CCF, Cleveland Clinic Foundation; GA, general anesthesiology.

P=0.01), although this relationship was not significant for the second follow-up (*P*=0.12).

We found little evidence of correlation between level of participant (1=clinical associate, [n=5]; 2=associate staff [n=4]; 3=staff [n=17]) and either change in mentorship importance items or mean score from baseline to the 3- and 12-month follow-up evaluations (Table 4). An exception was the correlation between participant level and research skills after the first follow-up (Spearman correlation=0.45), *P*=0.022. The correlation was not significant for the second follow-up (*P*=0.98).

We interpret our statistically significant findings with caution because we tested 15 items plus an overall score at each of the 2 follow-up visits.

DISCUSSION

The majority of anesthesiologists in our academic tertiary care facility had a baseline opinion that mentoring was important or very important. Although anesthesiologists ranked the importance of some mentorship attributes differently after participating in a mentoring workshop, their perceptions of mentoring did not change significantly in a comparison of responses to a preworkshop survey and to the same survey 3 months after the workshop. Thus, a single mentorship workshop does not appear to be effective by itself to emphasize the benefits of mentoring. Evaluation 1 year after implementation of a formal mentorship program also did not reveal significant changes in perceptions of mentoring by those participating.

Mentorship is one of the most important tools for professional development[4] and has been linked to greater productivity, career advancement, and pro-

Table 2. Change in Mentorship Items and Mean Score After Follow-Ups 1 and 2 (N=26)

	Stage											
	Baseline (A)		Post Follow-Up 1 (B)		Post Follow-Up 2 (C)		Change (B-A)			Change (C-A)		
Importance Item	Mean	SD	Mean	SD	Mean	SD	Mean	SD	*t* test *P* value	Mean	SD	*t* test *P* value
Clinical medicine	3.96	0.77	3.54	0.86	3.85	0.92	−0.42	0.99	.04*	−0.12	0.95	.54
Clinical approaches	3.96	0.77	3.88	0.59	4.04	0.82	−0.08	0.89	.66	0.08	0.89	.66
Research skills	4.31	0.84	4.15	0.78	4.42	0.64	−0.15	0.78	.33	0.12	0.71	.42
Humanistic qualities	3.92	0.80	3.62	1.02	3.77	0.99	−0.31	1.01	.13	−0.15	0.97	.42
Teaching skills	3.69	0.79	3.69	1.01	3.88	0.95	0	1.06	>.99	0.19	0.75	.20
Leadership strategies	4.12	0.86	4.19	0.63	4.12	0.77	0.08	0.98	.69	0	0.98	>.99
Professionalism	4.04	0.96	3.85	1.01	4.04	0.82	−0.19	1.20	.42	0	1.02	>.99
Interdisciplinary teams	3.69	0.79	3.62	0.85	3.81	0.90	−0.08	0.84	.65	0.12	0.77	.45
Career promotion	4.00	0.89	4.00	0.85	4.04	0.82	0	1.13	>.99	0.04	0.96	.84
Physician managers	3.65	0.80	3.62	1.06	3.54	0.95	−0.04	1.08	.86	−0.12	0.82	.48
Understand government	3.77	0.95	3.77	0.71	3.85	0.92	0	1.06	>.99	0.08	1.09	.72
Institutional needs	3.85	0.88	3.73	0.92	3.81	0.80	−0.12	1.14	.61	−0.04	0.87	.82
Survive CCF career	3.50	1.07	3.50	1.07	3.73	0.96	0	0.85	>.99	0.23	0.82	.16
Foster GA societies	3.92	1.02	3.96	1.00	4.27	0.60	0.04	1.37	.89	0.35	0.94	.07
Balance home/work	3.23	0.86	3.23	1.03	3.35	0.94	0	0.85	>.99	0.12	0.65	.38
Mean score	3.86	0.51	3.76	0.56	3.91	0.60	−0.10	0.51	.35	0.05	0.40	.50

*Significant if $P<0.05$ versus baseline. We interpret statistically significant findings with caution because we tested 15 items plus an overall score at each follow-up.

SD, standard deviation; CCF, Cleveland Clinic Foundation; GA, general anesthesiology.

Table 3. Correlation Between Change in Mentorship Importance Items/Mean Score and Participant Age* (N=26)

	Change to Follow-Up 1 (3 months)		Change to Follow-Up 2 (12 months)	
Importance Item	**Spearman Correlation**	***P* value**	**Spearman Correlation**	***P* value**
Clinical medicine	0.04	.83	0.31	.12
Clinical approaches	−0.08	.69	0.32	.11
Research skills	0.07	.75	0.11	.61
Humanistic qualities	0.08	.70	0.04	.83
Teaching skills	−0.02	.91	0.05	.82
Leadership strategies	−0.24	.25	−0.20	.32
Professionalism	0.01	.96	0.21	.29
Interdisciplinary teams	−0.17	.40	−0.04	.85
Career promotion	−0.05	.82	−0.14	.50
Physician managers	0.02	.94	0.02	.91
Understand government	−0.08	.70	−0.07	.74
Institutional needs	0.00	>.99	0.21	.30
Survive CCF career	−0.49	.01†	−0.31	.12
Foster GA societies	0.09	.66	0.13	.51
Balance home/work	0.01	.98	0.34	.09
Mean score	−0.09	.67	0.13	.52

*Participant age had a mean ± SD of 46 ± 8 years, range 34-64 years.
†Significantly different from Spearman correlation of zero ($P<0.05$). We interpret statistically significant findings with caution because we tested 15 items plus an overall score at each follow-up. CCF, Cleveland Clinic Foundation; GA, general anesthesiology.

fessional satisfaction.[5] In academic anesthesiology, new faculty members can easily become inundated with clinical demands—contemporary pressures for increased productivity—at the expense of desired academic goals. A survey of internal medicine program directors revealed that they positively favored mentoring, with at least half having experienced formal mentoring programs, but they described the

Table 4. Correlation Between Change in Mentorship Importance Items/Mean Score and Level of Participant (N=26)

	Change to Follow-Up 1 (3 months)		Change to Follow-Up 2 (12 Months)	
Importance Item	**Spearman Correlation**	***P* value**	**Spearman Correlation**	***P* value**
Clinical medicine	−0.001	>0.99	0.29	.16
Clinical approaches	−0.16	0.44	0.001	>.99
Research skills	0.45	0.022*	0.004	.98
Humanistic qualities	0.27	0.18	0.20	.32
Teaching skills	0.09	0.65	−0.14	.50
Leadership strategies	0.05	0.81	−0.05	.80
Professionalism	0.31	0.12	0.32	.12
Interdisciplinary teams	0.23	0.26	0.03	.89
Career promotion	−0.07	0.72	−0.05	.82
Physician managers	0.18	0.36	−0.01	.95
Understand government	0.03	0.89	0.14	.49
Institutional needs	0.06	0.76	0.18	.36
Survive CCF career	−0.34	0.09	−0.34	.09
Foster GA societies	−0.16	0.42	0.04	.86
Balance home/work	0.18	0.38	0.38	.053
Mean score	0.16	0.44	0.23	.26

*Significantly different from Spearman correlation of zero ($P<0.05$). We interpret statistically significant findings with caution because we tested 15 items plus an overall score at each follow-up. (Levels of participants: 1=clinical associate, 2=associate staff, 3=staff.) CCF, Cleveland Clinic Foundation; GA, general anesthesiology.

programs as mainly unstructured, loosely monitored, and underevaluated.[6] Our mentorship program involved assigning junior staff to senior faculty with similar interests who agreed to take on the responsibility of a mentorship role. This approach to mentorship has not yet been proven successful, but we anticipated that the successful implementation of a mentorship program would provide academic and professional benefits for the anesthesiologists involved, as well as establish a template that other academic departments could use.

Our study had a number of limitations. One limitation is that we may not have generated the ideal questions to ask (Table 1). Although internal consistency of the questionnaire as estimated by Cronbach's alpha was high (0.86) in our sample, there is no guarantee that consistency would be as high in other populations. However, even moderate internal consistency is good because a Cronbach's alpha that approaches 1.0 may indicate some redundancy in the questions being asked. The questionnaire was not formally validated. Further, the study results might not generalize well to anesthesiologists outside of large academic medical centers. We also did not specifically address potential personality conflicts in the mentor/mentee relationship assignments, compare mentee versus mentor perceptions separately, track nonrespondents, objectively measure the effect of mentorship on research productivity, or evaluate long-term retention in academic anesthesia careers. Also, the importance of a mentorship program likely cannot be addressed over a 1-year time interval but perhaps requires several years. We speculate that formal individual assessment did not reflect mentorship program improvement in part because of the participants' high clinical and academic demands. Many mentor/mentee pairs informally identified the need for appropriate and structured time to remain involved and mature with the process.

CONCLUSION

We present the first known longitudinal before-and-after study that sequentially followed individual physician self-evaluations regarding mentorship after establishing a mentorship program within an academic anesthesiology department. Creating mentee/mentor assignments and implementing a formal program for a period of 1 year did not act as a catalyst to elevate the opinion of the participants regarding a positive benefit of mentorship. Providing regular, allotted time for the mentee/mentor pairs to focus on mentorship activities appears necessary to give the best opportunity for success according to the general consensus of the participants in the study. Further prospective trials are needed to demonstrate the importance of an academic mentorship program and should include separate mentee and mentor evaluations.

REFERENCES

1. Barondess JA. Mentoring in biomedicine. *J Lab Clin Med*. 1997 May;129(5):487-491.
2. Loop FD. Mentoring. *J Thorac Cardiovasc Surg*. 2000 Apr;119(4 Pt 2):S45-S48.
3. Detsky AS, Baerlocher MO. Academic mentoring—how to give it and how to get it. *JAMA*. 2007 May 16;297(19):2134-2136.
4. Levinson DJ. *The Seasons of a Man's Life*. New York, NY: Knopf; 1978.
5. Chew LD, Watanabe JM, Buchwald D, Lessler DS. Junior faculty's perspectives on mentoring. *Acad Med*. 2003 Jun;78(6):652.
6. Castiglioni A, Bellini LM, Shea JA. Program directors' views of the importance and prevalence of mentoring in internal medicine residencies. *J Gen Intern Med*. 2004 Jul;19(7):779-782.

Epitoma

The authors of this study from the Cleveland Clinic and the University of Cincinnati highlight the importance of supervising faculty serving as resident mentors in a large anesthesiology residency program. They report that mentoring within a training program may provide important career satisfaction and development to both trainees and faculty members engaged in the process. This article details a 1-year formal program that attempted to improve the mentorship experience of the mentees and mentors. Informal responses from study participants suggest that protected time for such activities is essential to provide the best opportunity for success of a mentorship program.

—Guest Editor Ronald G. Amedee, MD

This article meets the Accreditation Council for Graduate Medical Education and the American Board of Medical Specialties Maintenance of Certification competencies for Patient Care, Interpersonal and Communication Skills, and Professionalism.