# Faculty Mentoring Practices in Academic Emergency Medicine

Julie Welch, MD, Stacy Sawtelle, MD, David Cheng, MD, Tony Perkins, Misha Ownbey, MD, Emily MacNeill, MD, Robert Hockberger, MD, and Daniel Rusyniak, MD

## ABSTRACT

**Background:** Mentoring is considered a fundamental component of career success and satisfaction in academic medicine. However, there is no national standard for faculty mentoring in academic emergency medicine (EM) and a paucity of literature on the subject.

**Objectives:** The objective was to conduct a descriptive study of faculty mentoring programs and practices in academic departments of EM.

**Methods:** An electronic survey instrument was sent to 135 department chairs of EM in the United States. The survey queried faculty demographics, mentoring practices, structure, training, expectations, and outcome measures. Chi-square and Wilcoxon rank-sum tests were used to compare metrics of mentoring effectiveness (i.e., number of publications and National Institutes of Health [NIH] funding) across mentoring variables of interest.

**Results:** Thirty-nine of 135 departments completed the survey, with a heterogeneous mix of faculty classifications. While only 43.6% of departments had formal mentoring programs, many augmented faculty mentoring with project or skills-based mentoring (66.7%), peer mentoring (53.8%), and mentoring committees (18%). Although the majority of departments expected faculty to participate in mentoring relationships, only half offered some form of mentoring training. The mean number of faculty publications per department per year was 52.8, and 11 departments fell within the top 35 NIH-funded EM departments. There was an association between higher levels of perceived mentoring success and both higher NIH funding ($p = 0.022$) and higher departmental publications rates ($p = 0.022$). In addition, higher NIH funding was associated with mentoring relationships that were assigned (80%), self-identified (20%), or mixed (22%; $p = 0.026$).

**Conclusions:** Our findings help to characterize the variability of faculty mentoring in EM, identify opportunities for improvement, and underscore the need to learn from other successful mentoring programs. This study can serve as a basis to share mentoring practices and stimulate conversation around strategies to improve faculty mentoring in EM.

Mentoring is a fundamental component of career success, engagement, and productivity in academic medicine.[1,2] Successful mentoring relationships have been shown to enhance performance, increase research outcomes, and improve job satisfaction for faculty in academic medicine.[1–6]

Within emergency medicine (EM), mentorship is recognized as an important aspect of individual career development and vital to the growth of academic EM as a whole.[7–10] As such, it is evident that a timely opportunity exists to investigate mentorship for EM faculty researchers and clinician educators. In July

From the Department of Emergency Medicine, Indiana University School of Medicine (JW, DR, TP), Indianapolis, IN; the Department of Emergency Medicine, UCSF Fresno Medical Education Program (SS), San Francisco, CA; the Department of Emergency Medicine, Case Western Reserve University (DC), Cleveland, OH; the Emergency Medicine Residency, Western Michigan University Homer Stryker MD School of Medicine (MO), Kalamazoo, MI; the Department of Emergency Medicine, Carolinas Medical Center (EM), Charlotte, NC; and the Department of Emergency Medicine, Harbor-UCLA (RH), Los Angeles, CA.
Received September 27, 2016; revision received November 10, 2016; accepted November 15, 2016.
The authors have no relevant financial information or potential conflicts to disclose.
Supervising Editor: Deborah B. Diercks, MD, MSc.
Address for correspondence and reprints: Julie Welch, MD; e-mails: jlwelch@iupui.edu or jlwelch@iu.edu.
ACADEMIC EMERGENCY MEDICINE 2017;24:362–370.


ISSN 1069-6563
PII ISSN 1069-6563583

doi: 10.1111/acem.13136

2015, a compelling article was published entitled "Improving the Emergency Care Research Investigator Pipeline: SAEM/ACEP Recommendations." It highlighted the importance of facilitating mentorship for EM faculty and the critical need to address the availability of mentors for research track faculty, specifically to improve the low number of EM applicants for junior funding awards.[8] A previous study of the career development needs of junior clinical faculty in EM also identified mentoring as a critical need. Of the 22 career development topics, junior faculty ranked mentoring as second in importance (78%), closely behind teaching skills (81%). However, after examining available centralized resources for faculty, the authors concluded, "the lack of mentorship in academic EM continues to be a problem in search of a solution."[11]

Currently, there is no national standard for faculty mentoring in EM, nor an abundance of original research published on the subject. Outlining the mentorship practices for faculty within EM departments would be an important resource for the development of recommendations regarding future research and best practices. Therefore, the Society for Academic Emergency Medicine (SAEM) Faculty Development Committee was charged to describe the current state of faculty mentorship in academic EM. The purpose of this descriptive study was to characterize the faculty mentoring programs present in academic EM departments, describe the various structures and practices employed, and identify possible metrics of measuring mentoring effectiveness.

## METHODS

### Study Design and Population

This was a voluntary survey study sent to 135 EM department chairs at U.S. accredited academic institutions. Final study approval from the SAEM Board of Directors and the Association of Academic Chairs of Emergency Medicine (AACEM) was obtained in 2014. The study received institutional review board (IRB) approval from Indiana University. The survey was distributed electronically via the SAEM chairs listserv between April and November 2014. Periodic e-mail reminders were sent to encourage participation. Individual institutions were contacted, thru April 2015, on a case-by-case basis to clarify responses.

### Survey Instrument and Measurements

The survey was created by members of the SAEM Faculty Development Subcommittee on Mentoring and beta tested with five EM chairs who provided feedback on the content, design, and length of the survey. Responses from beta testing were reviewed by three authors and incorporated into the survey by consensus. Examples included clarification of the study purpose, condensing redundant questions, and utilization of branching questions to shorten the survey. In addition, recommendations were made to cross-correlate the survey results with subjective and objective metrics of mentoring program effectiveness. Therefore, a question was included asking chairs to rate the success (or effectiveness) of faculty mentoring in their department. While objective outcomes of faculty academic success include advancement, promotion, and academic productivity, we chose to incorporate faculty academic productivity metrics (i.e., number of faculty publications and National Institutes of Health [NIH] funding data) as surrogate measures of short- to medium-term academic success. We included a question requesting the "total number of faculty publications in the calendar year 2012 (only those in print or accepted)." We also included a broad definition of "publications" to account for faculty scholarship in research, education, and administration. This read, "Publications include manuscripts, textbook chapters, review articles, letters to the editor, electronic publications (e.g., MedEdPortal), etc. Publications submitted by greater than one faculty member author may be counted for each author." NIH funding data for EM departments was obtained from the "Ranking Tables of NIH Funding to US Medical Schools in 2013" compiled from data published in the NIH Research Portfolio Online Reporting Tool (RePORT).[12] The survey included the following areas of inquiry: department demographics; faculty mentoring programs (i.e., structure, practices, training, and expectations); and evaluation, recognition, outcome, and effectiveness measures (Data Supplement S1, available as supporting information in the online version of this paper).

### Data Analysis

Survey study data were collected and managed using Research Electronic Data Capture (REDCap) tools hosted at Indiana University and exported to Microsoft Excel.[13] Two authors reviewed data for completeness. All data analyses were performed using SAS v9.3 software. For demographic data, central tendency

was calculated using the mean with standard deviation (SD). Chi-square tests and Wilcoxon rank-sum tests were used to compare metrics of effectiveness (i.e., publications and NIH funding) and mentoring program types (formal vs. informal) across variables of interest. Predetermined significance was set at $p < 0.05$.

## RESULTS

### Department Demographics

Of 135 academic EM departments surveyed, 39 (29%) responded. Faculty classifications within departments were primarily clinical educators, followed by clinical researchers, and basic science researchers (Table 1). Data was insufficient to report faculty rank.

### Faculty Mentoring Structure and Practices

All respondents used formal (17/39; 43.6%) or informal (22/39; 56.4%) mentoring programs, with the majority overseen by the chair (Table 2). The earliest formal mentoring program was established in 1995 and over half within the past 5 years. Mentoring programs were more commonly departmentally based than institutionally based, and a majority incorporated tailored "individual faculty targeted practices."

Chairs reported that mentor–mentee pairing was based on research interest (53.8%), career niche (53.8%), and/or a skills assessment (48.7%). Less consideration was placed on sex (28.2%) or diversity (10.3%) factors. While departments used both assigned and self-identified mentors, mentor pools were drawn from a combination of internal and external mentors (Table 2).

To augment traditional faculty mentoring structures, departments often utilized project- or skills-based mentoring, peer mentoring (66.7 and 53.8%, respectively), and the majority (71.8%) encouraged mentees to self-identify mentors to expand their mentoring networks. Mentoring committees and assignment of temporary mentors for junior faculty were less commonly employed practices (Table 2).

Table 1
EM Department Characteristics

| | |
|---|---|
| Faculty demographics, mean or % (±SD) | |
| No. years department established | 24.2 (±12.3) |
| No. academic faculty | 36.8 (±20.4) |
| No. female faculty | 13.7 (±9.8) |
| % female faculty | 35.0 (±9.4) |
| No. minority faculty | 3.0 (±3.5) |
| % minority faculty | 9.2 (±16.6) |
| No. tenure track faculty | 2.6 (±7.2) |
| % tenure track faculty | 7.9 (±17.8) |
| Faculty classifications within departments (total *N* = 39), No. (%) | |
| Departments with clinical educators (%) | 36 (92.3) |
| Departments with clinical researchers (%) | 16 (41.0) |
| Departments with basic science researchers (%) | 6 (15.4) |
| Departments with other classifications (e.g., clinicians, administrators, adjunct) (%) | 10 (25.6) |
| Department breakdown by faculty classifications, mean (±SD) | |
| Clinical educators | 27.7 (±20.4) |
| Clinical researchers | 3.2 (±7.4) |
| Basic science researchers | 0.2 (±0.5) |
| Other (e.g., clinicians, administrators, adjunct) | 4.5 (±9.7) |

### Faculty Mentoring Expectations and Training

Although the majority of departments expected junior and senior faculty to participate in mentoring relationships (74.4 and 81.6%, respectively), just over one-third provided specific guidance on mentoring expectations and less than one-half offered some form of mentoring training (Table 2).

### Faculty Mentoring Recognition, Evaluation, and Metrics of Effectiveness

While 30% of chairs perceived their faculty mentoring programs to be successful or extremely successful, the remaining majority reported mixed results (Table 3). Half of departments recognized outstanding mentorship in the form of mentoring awards. Although few had a formal process to evaluate the mentoring relationship itself, the majority of chairs used metrics to evaluate the effectiveness of their mentoring programs. These metrics included academic advancement or promotion (64.1%), funding (43.6%), number of publications (56.4%), and annual evaluations (33.3%). The mean (±SD) number of faculty publications reported per department per year was 52.8 (±51.0). Of the 39 respondents, 11 departments (28.2%) were ranked in the top 35 NIH-funded EM departments in the United States.[12]

### Comparisons Across Variables of Interest

The following associations were noted when we compared surrogate markers of mentoring program effectiveness (i.e., faculty publication rates and NIH funding rankings) across the variables of interest listed in Table 4. EM departments who reported higher levels of perceived mentoring success were associated with higher mean numbers of faculty publications per

Table 2
Faculty Mentoring Structure, Practices, Expectations, and Training

| Survey Response (Total *N* = 39) | % Yes (*n*) |
|---|---|
| Type of mentoring program | |
| Formal | 43.6 (17) |
| Year formal program established (range) | 1995–2014 |
| Informal | 56.4 (22) |
| Faculty mentoring is a part of | |
| Department-based program | 56.4 (22) |
| Institutionally based program | 35.9 (14) |
| Individual faculty targeted practices | 59.0 (23) |
| Participation in faculty mentoring relationships is | |
| Mandatory | 20.5 (8) |
| Voluntary | 59.0 (23) |
| Both | 20.5 (8) |
| Faculty mentoring relationships are | |
| Assigned | 13.2 (5) |
| Self-identified | 39.4 (15) |
| Mixed | 47.4 (18) |
| Mentor/mentee pairing is based on | |
| Research interest | 53.8 (21) |
| Career niche | 53.8 (21) |
| Skills or need assessment | 48.7 (19) |
| Sex | 28.2 (11) |
| Diversity | 10.3 (4) |
| Other determined by faculty member | 20.5 (8) |
| Other | 2.6 (1) |
| Mentors can be from | |
| Within the department | 94.9 (37) |
| Other departments within the institution | 87.2 (34) |
| Outside institutions | 56.4 (22) |
| Mentoring practices utilize | |
| Mentoring committees | 18.0 (7) |
| Assign temporary advisor to find primary mentor | 23.1 (9) |
| Functional mentoring | 66.7 (26) |
| Peer mentoring | 53.8 (21) |
| Faculty self-identified additional mentors | 71.8 (28) |
| Utilization of external academic mentors | 51.3 (20) |
| Other | 5.1 (2) |
| Who oversees mentoring program? | |
| Chair | 74.4 (29) |
| Vice-chair | 35.9 (14) |
| Formal committee | 5.1 (2) |
| Appointed faculty member | 18.0 (7) |
| Other | 12.8 (5) |
| None (i.e., no one) | 10.3 (4) |
| Faculty mentoring expectations include | |
| Expectation that junior faculty have a mentor | 74.4 (29) |
| Expectation that senior faculty willing to serve as a mentor | 81.6 (31) |
| Mentees and mentors provided with specific expectations | 38.5 (15) |
| Mentors and mentees are trained via | |
| Department-provided training | 23.1 (9) |
| Institution-provided training | 46.2 (18) |
| Online resources | 12.8 (5) |
| Other | 5.1 (2) |
| None (i.e., no training provided) | 43.6 (17) |

Table 3
Faculty Mentoring Recognition, Evaluation, and Metrics of Effectiveness

| Survey Response (Total *N* = 39) | % Yes (*n*) |
|---|---|
| Mentoring recognition and awards | |
| Chairman/division chief give awards for faculty mentoring | 56.4 (22) |
| Mentoring relationship (mentor/mentee) | |
| Do you track specific outcomes for the mentoring relationship? | 30.8 (12) |
| Do you offer a formal process to evaluate the mentoring relationship? | 12.8 (5) |
| Rate the success and effectiveness of faculty mentoring program. | |
| Extremely successful | 7.7 (3) |
| Successful | 20.5 (8) |
| Mixed results | 69.2 (27) |
| Unsuccessful | 2.6 (1) |
| Extremely unsuccessful | 0.0 (0) |
| What parameters or metrics do you track to evaluate mentoring program? | |
| Academic advancement or promotion | 64.1 (25) |
| Number of grants | 43.6 (17) |
| Number of publications | 56.4 (22) |
| Annual evaluations | 33.3 (13) |
| Other | 0.0 (0) |
| None | 28.2 (11) |
| NIH funding metrics | |
| No. departments in top 35 NIH-funded EM departments12 | 28.2 (11) |
| Publications (annual), mean (±SD) | |
| No. faculty publications per department | 52.8 (51.0) |
| No. faculty publications per faculty member | 1.4 (1.1) |

NIH = National Institutes of Health.

department ($p = 0.022$) and higher NIH funding ($p = 0.022$). There was also an association found between higher NIH funding and whether mentoring relationships were assigned (80%), self-identified (20%), or mixed (22.2%); ($p = 0.026$). There was no association found between the type of mentoring program (formal versus informal) and publication rates ($p = 0.116$) or NIH funding ($p = 0.158$). Further comparisons noted a significant difference between program types (formal vs. informal) and whether mentoring relationships were assigned (29.4% vs. 0%), self-identified (11.8% vs. 61.9%), or a mixture of both (58.8% vs. 38.1%; $p = 0.002$; Table 5).

## DISCUSSION

This study fills a gap in the literature by describing the current state of faculty mentorship in academic EM as reported by a self-selected sample of department chairs. Our findings highlight the heterogeneous faculty composition in EM departments, which, despite our small sample size, is similar to national data from the American Association of Medical Colleges (AAMC) in terms of sex and race.[14,15] In addition, EM departments nationally are made up primarily of physician faculty, including clinicians educators and clinician researchers, with fewer basic scientists.[14]

All respondents reported either formal (43.6%) or informal (56.4%) faculty mentoring programs. This differs from a recent survey of mentoring practices in departments of surgery in which only 54% of chairs

Table 4
Comparison of Metrics of Effectiveness Across Variables of Interest

| Variable of Interest | No. Faculty Publications per Department, Mean (±SD) | No. Faculty Publications per Faculty Member, Mean (±SD) | Top NIH-Funded EM Departments, %*† |
|---|---|---|---|
| Type of mentoring program | | | |
| Informal mentoring program | 42.2 (±42.1) | 1.3 (±1.0) | 18.2 |
| Formal mentoring program | 66.7 (±59.0) | 1.5 (±1.2) | 41.2 |
| p-value† | 0.116 | 0.479 | 0.158 |
| Participation in mentoring relationship is | | | |
| Mandatory | 95.8 (±76.1) | 1.9 (±1.4) | 50.0 |
| Voluntary | 44.4 (±41.3) | 1.3 (±1.1) | 30.4 |
| Both | 34.2 (±15.2) | 1.3 (±0.7) | 0.0 |
| p-value† | 0.143 | 0.304 | 0.079 |
| Faculty mentoring relationships are | | | |
| Assigned | 106.2 (±90.7) | 2.0 (±1.7) | 80.0 |
| Self-identified | 37.6 (±25.3) | 1.1 (±0.7) | 20.0 |
| Mixed | 52.8 (±47.1) | 1.6 (±1.1) | 22.2 |
| p-value† | 0.233 | 0.206 | 0.026 |
| Mentoring training is provided | | | |
| Yes | 51.9 (±40.7) | 1.4 (±1.0) | 18.2 |
| No | 54.1 (±63.2) | 1.4 (±1.3) | 41.2 |
| p-value† | 0.282 | 0.462 | 0.158 |
| Perceived success and effectiveness of faculty mentoring program | | | |
| Extremely successful | 118.0 (±71.1) | 2.7 (±1.5) | 100.0 |
| Successful | 71.8 (±57.8) | 1.7 (±1.5) | 37.5 |
| Mixed results | 41.4 (±41.4) | 1.2 (±0.8) | 18.5 |
| Unsuccessful | 15.0 (–) | 0.3 (–) | 0.0 |
| p-value† | 0.022 | 0.081 | 0.022 |

*Eleven of the responding departments fell within the top 35 NIH-funded EM departments.
†p-value < 0.05 indicates significance.

Table 5
Comparison of Mentoring Program Type (Informal Versus Formal) Across Variables of Interest

| Variable of Interest | Formal ($n$ = 17), % ($n$) | Informal ($n$ = 22), % ($n$) | p-value* |
|---|---|---|---|
| Participation in mentoring relationships is | | | 0.084 |
| Mandatory | 35.3 (6) | 9.1 (2) | |
| Voluntary | 41.2 (7) | 72.7 (16) | |
| Both | 23.5 (4) | 18.2 (4) | |
| Faculty mentoring relationships are | | | 0.002 |
| Assigned | 29.4 (5) | 0.0 (0) | |
| Self-identified | 11.8 (2) | 61.9 (13) | |
| Mixed | 58.8 (10) | 38.1 (8) | |
| Mentoring training is provided | | | 0.358 |
| Yes | 64.7 (11) | 50.0 (11) | |
| No | 35.3 (6) | 50.0 (11) | |
| Perceived success and effectiveness of faculty mentoring program | | | 0.205 |
| Extremely successful | 5.9 (1) | 9.1 (2) | |
| Successful | 35.3 (6) | 9.1 (2) | |
| Mixed results | 58.8 (10) | 77.3 (17) | |
| Unsuccessful | 0.0 (0) | 4.6 (1) | |

*p-value < 0.05 indicates significance.

reported having established mentoring programs ($n$ = 41/76), most of which were informal and unstructured.[16]

We also found that whether the program was formal or informal, there was no appreciable difference in the subjective or objective outcomes metrics we compared. Research examining the success of formal versus informal mentoring programs, in terms of participant satisfaction, is overall inconclusive, but suggests positive trends. One study found that faculty in academic medicine associated inclusion in a formal mentoring program with higher research productivity.[17] Similarly, Shollen et al.[18] suggested that a formal mentoring program tends to increase academic productivity (i.e., article production) while an informal program tends to increase career satisfaction.

Our study characterized the variability of faculty mentoring practices in EM departments, which can be categorized into practices that either *facilitate* or *augment* the traditional dyad mentoring model. This variability is not uncommon in other departments or institutions and is arguably a necessity to expand the network of mentors available to a faculty member and provide the multidimensional guidance required to be engaged and successful.[5,16]

Mentoring practices that *facilitate* the traditional mentoring relationship, as identified in our study, included assigning a mentor until a primary mentor can be established, self-identifying mentors, and mentor–mentee pairing based on key factors. The literature supports using a combination of assigning or pairing mentors and self-identifying mentors. The mentee

benefits from the mentors' expertise, influence, institutional knowledge (i.e., how to get things done), networking connections, and sponsorship.[3,19] These pairings may also facilitate the mentee's ability to choose a potentially more suited mentor or add complementary mentors.

We found that chairs incorporated several mentoring practices that *augment* the traditional mentoring relationship including functional mentoring (i.e., project- or skills-based mentoring), peer mentoring, and less often, mentoring committees. More than half of chairs reported the use of a functional mentoring model (i.e., project-based or skills-based mentoring) in which the mentee identifies his/her needs and then chooses a mentor with the skills or expertise to match.[20] This mentoring relationship is time-limited and results-oriented, with measurable outcomes. Thorndyke et al.[20] studied of the effectiveness of a functional mentoring program for 165 junior faculty and found that 85% reported enhanced skills in initiating and negotiating a mentoring relationship, 85% believed their mentor made a significant impact on their project, and 92% believed that their project would significantly impact their career. Peer mentoring was also utilized by over half of chairs surveyed. In this model, faculty at the same level meet to work collectively on a project, offer professional or personal support, share advice, or gain feedback. Studies have shown that peer mentoring offers the benefits of mutual support and collaboration,[3] as well as an "enhanced, inclusive, and appreciative culture."[21] In terms of measurable outcomes, facilitated peer mentoring has been shown to have a positive impact on academic skills and publication rates.[22,23] DeCastro et al.[3] interviewed 100 former NIH-mentored career development awardees and 28 mentors and reported the importance of cultivating several mentoring relationships, including peer mentors. The study concluded that due to "the numerous roles and behaviors associated with mentoring in academic medicine" there exists "the improbability of finding a single person who can fulfill the diverse mentoring needs of another individual," which underscores "the importance and composition of mentoring networks."[3]

Although the majority of department chairs in our study expected junior and senior faculty to participate in a mentoring relationship, many did not provide mentoring training or set expectations for the mentors and mentees to follow or offer a formal process to evaluate the mentoring relationship itself. This implies that although mentoring is an expectation, many basic structures to support and cultivate mentorship may not be in place. These findings are similar to those of other studies on faculty mentoring, including those from EM, that have identified similar gaps in mentoring training, establishing expectations, and the evaluation process.[8,11,16,24] This opens up opportunities for EM to learn from more robust programs.

Historically, it has not been the standard for mentors to receive formal mentoring skills training. Instead, mentors typically "learned" by example, trial and error, or peer observation,[25–27] However, several recent studies have described promising approaches to mentoring training. Pfund et al.[28] described a successful competency-based mentoring training program tested as part of a randomized controlled trial at 16 academic sites with 283 mentor–mentee pairs. Results showed a significant improvement in mentors' skills as reported by the mentors ($p < 0.001$) and mentees ($p = 0.003$), as well as positive changes in mentoring practices and behaviors ($p < 0.001$).[28] Another example from the University of Wisconsin Institute for Clinical Translational and Science (ICTS) described a rigorously studied structured mentoring training program that has been transformed into a national resource for building and evaluating mentoring programs for a variety of clinical research niches.[29,30]

In terms of setting mentoring expectations and providing evaluation processes, Huskins et al.[31] reported evidence that underscores the importance of identifying and aligning mentoring expectations while emphasizing the use of mentoring resources and tools to facilitate and maintain the relationship (e.g., mentoring contracts, agreements, evaluations). Many institutions have designed centralized online resources to support local mentoring programs and practices.[32–34] Web-based platforms utilize the benefit of asynchronous technology to reach a dispersed, heterogeneous faculty base. The University of Minnesota offers an online mentor training program designed to be self-paced across five modules including the topics of mentoring models, roles and responsibilities, structure and dynamics, and strategies for facilitating and addressing challenges in the mentoring process.[35] Another example is the Indiana University School of Medicine's "Faculty Mentoring Portal," which provides tailored mentoring toolkits based on universal mentoring principles addressing: 1) qualities for success, 2) roles and

responsibilities, 3) goal setting, 4) mentoring meetings, and 5) evaluation/feedback.[32,36]

Chairs reported tracking traditional metrics of academic success (i.e., publications, funding, and academic advancement or promotion). However, these markers tend to reflect traditional research-based faculty outcomes and have the potential to inadequately represent the full achievements of all faculty types, especially clinical faculty (e.g., clinical educators, administrators, or service line). Hence, we must step back and ask if these metrics encompass all the outcomes we care about when measuring a successful mentoring program in EM? And, if not, tailor these metrics accordingly to account for a heterogeneous faculty experience. The literature offers the following measures to expand mentoring outcomes: faculty retention, the growth and maintenance of a diverse department, mentee and mentor job satisfaction, the level of engagement with the department, individual goal outcomes, and broader definitions of scholarship.[7,37,38] Omission of these important outcomes may explain the high level of ambivalence reported by EM chairs in our study toward their own mentoring programs.

While our data suggest that EM departments with higher publication and NIH funding rates have chairs who perceived greater mentoring success within their own departments, these results must be interpreted with caution and are not meant to imply causality. These surrogate markers reflect traditional research career milestones and potentially exclude other faculty outcomes and are influenced by many variables, of which mentorship is only one.

Finally, although our study did not set out to identify mentoring practices specific to faculty classifications, our results suggest that many EM chairs recognize the unique needs of their diverse faculty and offer targeted mentoring practices. For clinician educators, who make up the vast majority of EM faculty, it is imperative to recognize that a one-size-fits-all approach to faculty mentoring is inadequate. Two studies surveying faculty in large academic medical centers that found clinician-educators were significantly more likely to feel inadequately mentored than clinician-scientists or research faculty at the same institution.[39,40] The literature is replete with articles that underscore the heterogeneous nature of faculty work and the importance of tailoring the structure and intensity of the mentoring practices to the faculty group.[7,8,24] For mentoring clinician educators, Reader et al.[41] described a multilevel approach to mentoring that incorporated senior mentors and peer mentoring. Participants reported increased confidence and ability in research skills and increased academic productivity (i.e., publications and presentations). In another study, junior clinician educators were offered comprehensive mentoring and resources tailored to their needs (i.e., research assistant, IRB preparation, data and statistical support, protected time), and outcomes revealed increased numbers of publications, increased national reputation, and higher promotion rates.[42] Examples such as these serve as potential blueprints for tailoring faculty mentoring in EM departments.

## LIMITATIONS

Our study has several limitations. Although the response rate is low, it is similar to other Web-based surveys[43] and respondents reflected the intended study population. The survey study design is susceptible to response biases that may affect the accuracy of the data. These biases are introduced by the length of the survey (fatigue bias), the small sample size (nonresponse bias), and self-selection (voluntary response bias) by chairs more likely to engage in faculty mentoring practices. Additionally, social desirability bias may have contributed to overstated responses; however, we attempted to diminish the impact of this bias by maintaining confidentiality and verifying data on a case-by-case basis. Recall bias was potentially introduced by the survey content requesting information from past practices and outcomes. Additionally, the estimated time to complete our survey assumed that respondents had ready access to the demographic and faculty publication data, which may not have been true in all cases. Finally, we acknowledge the limitations of using the traditional research metrics (i.e., publications rates and NIH funding) as measures of mentoring success in EM and were cautious to report associations and not causality.

## CONCLUSIONS

Our results characterize the current state of faculty mentorship in a self-selected group of academic emergency medicine departments and highlight the variability with respect to mentoring programs, practices, structures, training, evaluation, and outcome measures. The next steps are to use this information to engage

in conversations around faculty mentorship, learn from other successful mentoring initiatives, and incorporate mentoring practices that support the heterogeneity of the faculty experience.

The authors acknowledge the following for their support of this project: Pam Durant, Megan Palmer, Deb Diercks, Ron Walls, and selected members of the SAEM Faculty Development Committee including Todd Crocco, Ellen Weber, and Esther Chen.

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## Supporting Information

The following supporting information is available in the online version of this paper:

**Data Supplement S1.** SAEM emergency department mentoring practices and programs survey.