

# Faculty mentorship during residency and professional development among practising emergency physicians

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## CLINICIAN'S CAPSULE

### What is known about the topic?

Mentorship is perceived to be an important component of residency education; however, evidence on its influence in emergency medicine is lacking.

### What did this study ask?

We surveyed emergency physicians in Canada to identify the association between mentorship during residency and professional development and attitudes regarding mentorship.

### What did this study find?

While many participants consulted their mentor regarding their first job, fewer contacted their mentor regarding subspecialty training or research.

### Why does this study matter to clinicians?

Mentorship during residency may have a greater association with the location of practice than with academic scholarship or subspecialty training.

and work-life balance. The least common topics included research and finances. While many participants consulted their mentor regarding their first job (56.5%), fewer consulted their mentor regarding subspecialty training (45.1%) and research (41.1%). 71.8% chose to work in a similar centre as their mentor, but few completed the same subspecialty (24.8%), or performed similar research (30.4%). 94.1% stated that mentorship was important to success during residency. Participants in a formal mentorship program did not rate their experience of mentorship higher than those without a formal program.

**Conclusions:** Among academic EM physicians with an interest in mentorship, mentorship during EM residency may have a greater association with location of practice than academic scholarship or subspecialty choice. Formal mentorship programs increase the likelihood of obtaining a mentor, but do not appear to improve reported mentorship experiences.

## RÉSUMÉ

**Introduction:** Le mentorat est considéré comme un élément important de la formation au niveau de la résidence. Toutefois, il existe peu de données probantes sur l'influence du mentorat sur le perfectionnement professionnel en médecine d'urgence (SU).

**Méthode:** Une enquête en ligne a été menée parmi les médecins traitants, membres de l'Association canadienne des médecins d'urgence (ACMU), selon une version modifiée de la méthode de Dillman. Le questionnaire portait en partie sur le mentorat durant la formation au niveau de la résidence et sur les perceptions de son influence sur l'avancement professionnel.

**Résultats:** Le taux de réponse a atteint 23,5 % (309/1314), et 63,6 % des participants ont indiqué avoir été sous la conduite d'au moins un mentor durant leur résidence. La proportion d'étudiants ayant profité d'un programme structuré de mentorat durant la résidence était plus élevée parmi les répondants accompagnés d'un mentor (44,5 %) que dans le groupe n'en ayant pas profité (8,0 %;  $P < 0,001$ ). Les sujets abordés le plus souvent avec les mentors étaient la planification de la carrière et l'équilibre entre la vie professionnelle

## ABSTRACT

**Objective:** Mentorship is perceived to be an important component of residency education. However, evidence of the impact of mentorship on professional development in Emergency Medicine (EM) is lacking.

**Methods:** Online survey distributed to attending physician members of the Canadian Association of Emergency Physicians (CAEP), using a modified Dillman method. Survey contained questions about mentorship during residency training, and perceptions of the impact of mentorship on career development.

**Results:** The response rate was 23.5% (309/1314). 63.6% reported having at least one mentor during residency. The proportion of participants with a formal mentorship component during residency was higher among those with mentors (44.5%) compared to those without any formal mentorship component during residency (8.0%,  $p < 0.001$ ). The most common topics discussed with mentors were career planning

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et la vie personnelle, tandis que les sujets abordés le moins souvent portaient entre autres sur la recherche et les finances. Bon nombre de participants ont consulté leur mentor pour leur premier emploi (56,5 %), mais moins nombreux étaient ceux qui ont fait de même pour la formation en surspécialité (45,1 %) et la recherche (41,1 %). Un pourcentage élevé (71,8 %) d'étudiants accompagnés d'un mentor ont choisi de travailler dans un centre hospitalier comparable à celui de leur guide, mais peu ont choisi la même surspécialité (24,8 %) ou mené le même type de recherche (30,4 %). Enfin, 94,1 % des participants ont indiqué que le mentorat était un élément important de réussite durant la résidence; toutefois, ceux qui ont suivi un programme

officiel de mentorat n'ont pas accordé une cote plus élevée d'appréciation que ceux qui n'en ont pas suivi.

**Conclusions:** Le mentorat durant la résidence en MU, parmi les urgentologues enseignants qui se montrent intéressés par l'accompagnement, serait davantage une affaire de lieu de pratique que de bourse d'études ou de choix de surspécialité. Certes, les programmes structurés de mentorat augmentent les probabilités de trouver un mentor, mais ils ne semblent pas améliorer les expériences vécues par les mentorés.

**Keywords:** emergency medicine, medical education, mentorship, survey

## INTRODUCTION

The classic definition of a mentor is someone of an advanced rank or with experience who guides, teaches, and develops a novice.<sup>1</sup> Across various professional domains, mentorship is viewed as a beneficial endeavour in promoting professional growth.<sup>2</sup> In particular, mentorship has demonstrated benefits in medical education. Mentorship has been associated with benefits in career selection, career advancement, research interests, and publication productivity.<sup>3,4</sup> Similarly, individuals who reported never having a mentoring relationship have implicated it as a major factor hindering their career progression.<sup>5,6</sup> Success in this relationship is believed to require engagement from both mentors and mentees. Ideal mentors are often described as those who exhibit admirable personal qualities, act as a career guide, and display commitment to their mentees.<sup>7</sup> Similarly, mentees are expected to be active participants, demonstrating initiative and appreciation for their mentor.<sup>1,8</sup> In emergency medicine (EM), mentorship is believed to be an important determinant of professional success and development.<sup>9</sup>

Despite these perceived benefits, there is significant variation in the definition and degree of mentorship.<sup>10</sup> Mentorship can be developed spontaneously, based on mutual interests, or set up more formally.<sup>11,12</sup> Formal mentorship programs mandate that residents identify a faculty mentor and meet with that mentor regularly. Such programs are becoming more commonplace in residency training. Because of the lack of a universal structure in this construct, there are no widely shared criteria for the evaluation of effectiveness.<sup>13</sup> This is particularly true in EM. Therefore, these varying definitions of mentorship have led to disparate views regarding the true benefit of this relationship.<sup>4,14</sup> Some sources have cited drawbacks to

mentorship.<sup>15</sup> In EM, there is even less of an understanding regarding the concept of mentorship. In comparison to other specialties, EM is still relatively new. For this reason, it had been commonplace for EM physicians to seek mentorship outside the specialty.<sup>16</sup> As the specialty grows and the number of EM physicians increases, trainees can expect to find more support within the specialty.<sup>9</sup> More recent work shows that EM residents do seem to seek out mentorship, particularly from more senior physicians.<sup>17</sup> The existing evidence also supports the notion that mentorship during EM training does help in developing skills related to professionalism and research.<sup>18,19</sup> However, little is known regarding how mentorship during EM residency training ultimately affects independent practice.<sup>9</sup> Therefore, the impact of mentorship on professional development, particularly in EM, remains unclear.

The goal of this study was to investigate the association between mentorship (and the degree of this relationship) during EM residency and the perceived impact on professional development and career decisions. We chose to survey attending EM physicians across Canada regarding their experiences with mentorship during their postgraduate medical training. We hypothesized that mentorship during EM residency training is associated with decisions regarding research in residency, subspecialty training, and ultimate practice location. A survey methodology was selected to explore these questions and to allow data to be collected from this large and distributed population in a generalizable, cost-effective, and standardized fashion.

## METHODS

This study received ethics approval from the Ottawa Health Science Network Research Ethics Board. Survey results were reported in accordance with previously outlined best practices.<sup>20</sup>

After a thorough review of the literature, a survey was designed by consensus of the five authors. Two of the authors (WJC and JRF) have advanced degrees in medical education, with significant experience specifically in residency education, and two other authors (SBC and LT) have served as program directors of EM residency programs. A pilot version was completed by two faculty EM physicians with experience in medical education and survey development. Their qualitative feedback was used to clarify questions and revise the content. Content domains explored in the survey included subspecialty training, the location of practice, type of practice, and research experience. The survey was hosted by SurveyMonkey. The survey was distributed in English only and is included in Appendix 1.

The survey was administered by the Canadian Association of Emergency Physicians (CAEP). It was distributed three times, in two-week intervals, during May and June of 2017. A survey link was distributed by email from CAEP to all attending physician members (current residents were excluded). Respondents were recruited using a modified Dillman method,<sup>21</sup> with three separate email blasts distributed by CAEP. All responses were anonymous, and completion of the survey was voluntary. For the purposes of the survey, a “mentor” was explicitly defined as “a person who takes a special interest in the professional development of a junior colleague and provides guidance and support.”<sup>9</sup> Questions were followed by a series of potential answers. Some questions (e.g., “Did you complete additional training during/following residency?”) allowed for participants to select multiple answers. Questions related to attitudes regarding the importance of mentorship were answered on a Likert scale (from “strongly agree” to “strongly disagree”). Participants were allowed to skip any questions that they did not want to answer. Entry into a draw for one of five \$50 gift cards was used as an incentive for survey participation.

Statistical analysis was performed using IBM SPSS version 21. A chi-squared test was used to calculate *p* values for categorical variables. A *p* value of  $\leq 0.05$  was considered significant. Data collected from incomplete surveys were included in the analysis.

## RESULTS

### Participant characteristics

Of the 1,314 CAEP attending physician members, 309 (23.5%) participated in the survey. Of the 309 participants,

only three did not complete all survey questions. Further, 209 (67.6%) reported having a mentor during their postgraduate medical training, but 100 (32.4%) did not. The demographics of the participants, with and without a mentor, are presented in Table 1. Participants were predominantly male in both groups (57.3% of those with a mentor; 60.0% of those without a mentor) and worked in academic tertiary care emergency departments (ED; 64.6% of those with a mentor; and 58.0% of those without a mentor). The proportion of participants who had a formal mentorship program during residency training was higher in the mentor group (44.5%) versus the non-mentor group (8.0%,  $p < 0.001$ ). Participants with a mentor during postgraduate training were more likely to be five-year training program (48.8% with a mentor v. 30.0% in the non-mentor group,  $p < 0.001$ ) trained through the Royal College of Physicians and Surgeons of Canada (FRCPC) and within their first 10 years of independent

**Table 1. Baseline characteristics of participants with and without a mentor**

	With a mentor (N=209)	Without a mentor (N=100)	<i>p</i> -value
Certification, <i>n</i> (%)			<0.001
FRCPC	102 (48.8)	30 (30.0)	
CCFP-EM	90 (43.1)	54 (54.0)	
CCFP	17 (8.1)	12 (12.0)	
Other	0 (0)	4 (4.0)	
Years since residency completion, <i>n</i> (%)			<0.001
<5 years	70 (33.5)	11 (11.1)	
5–10 years	43 (20.6)	18 (18.2)	
10–15 years	31 (14.8)	17 (17.2)	
15–20 years	27 (12.9)	20 (20.2)	
>20 years	38 (18.2)	33 (33.3)	
Gender, <i>n</i> (%)			0.65
Male	118 (57.3)	60 (60.0)	
Female	88 (42.7)	40 (40.0)	
Current practice setting, <i>n</i> (%)			0.74
Academic tertiary care ED	135 (64.6)	58 (58.0)	
Non-academic tertiary care ED	4 (1.9)	1 (1.0)	
Academic community ED	33 (15.8)	19 (19.0)	
Non-academic community ED	14 (6.7)	9 (9.0)	
Rural ED	19 (9.1)	11 (11.0)	
Other	4 (1.9)	2 (2.0)	
Formal mentorship program, <i>n</i> (%)			<0.001
Yes	93 (44.5)	8 (8.0)	
No	111 (53.1)	91 (91.0)	
Do not know	5 (2.4)	1 (1.0)	

CCFP = College of Family Physicians of Canada; CCFP-EM = College of Family Physicians of Canada with additional competency in Emergency Medicine; ED, Emergency Department; FRCPC = Fellow of the Royal College of Physicians of Canada.

practice (53.6% with a mentor v. 29.3% in the non-mentor group,  $p < 0.001$ ). Of the participants without a mentor during postgraduate training, 88.8% stated that they felt that having a mentor during this time would have been beneficial.

### Characteristics of mentors

The responses of the 209 participants in the mentor group are summarized in Table 2. The majority of the respondents (63.6%) reported having more than one mentor during residency. In evaluating the qualities of the individuals identified as primary mentors, they were

Table 2. Characteristics of primary mentors during residency, as described by mentees	
	Participants with a mentor (N=209)
Number of mentors during residency, n (%)	
1	75 (36.4)
2	77 (37.4)
3	31 (15.0)
>3	23 (11.2)
Mentor assigned to mentee, n (%)	52 (25.2)
Mentor same gender as mentee, n (%)	143 (69.4)
Mentor's specialty, n (%)	
EM	159 (76.8)
Different specialty	47 (22.7)
Not in medicine	1 (0.5)
For EM mentors, designation? n (%)	
CCFP	14 (6.9)
CCFP-EM	69 (34.0)
FRCPC	86 (42.4)
Other	7 (3.4)
Mentor experience, n (%)	
Program director	43 (20.9)
Department head/chief	21 (10.2)
Junior faculty (<5 years of practice)	23 (11.2)
Mid-level faculty (5–15 years of practice)	90 (43.7)
Senior faculty (>15 years of practice)	53 (25.7)
Frequency of meeting with mentor, n (%)	
Daily	4 (1.9)
Weekly	35 (16.9)
Monthly	76 (36.7)
Semi-annually	47 (22.7)
Annually	4 (1.9)
Not regularly	41 (19.8)

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predominantly self-selected by mentees (74.8%) and of the same gender as the mentee (69.4%). Only 76.8% of the participants reported that their primary mentor was in EM, with 42.4% of primary mentors having the FRCPC designation. The large majority (69.4%) of these primary mentors had been in practice for at least five years before the beginning of the mentorship relationship.

### Topics and impact of mentorship during residency

The most common topics of discussion between mentees and mentors are depicted in Supplementary Figure 1. The most common responses provided by the participants were: career planning and goals (82.8%), clinical skills (75.5%), work-life balance (72.5%), and preparation for examinations (61.3%). The least common topics included: conducting research (26.0%), finances (27.9%), and professionalism (32.8%). The impact of postgraduate mentorship on professional development is shown in Table 3. Less than one-half of the participants consulted with their mentor regarding subspecialty training (45.1%) and research during residency (41.1%). Further, 56.5% consulted with their mentor while choosing their first job following residency. As compared with their mentor, the large majority of participants ultimately chose to work in a similar centre (71.8%), but few completed the same subspecialty as their mentor (24.8%) or completed research in the same field as their mentor (30.4%).

### The importance of mentorship

Participant beliefs regarding the importance of mentorship are shown in Table 4. Again, less than one-half of the participants agreed that their decisions regarding

Table 3. Impact of mentorship on professional development

	Participants with a mentor (N=209)
Consulted with mentor regarding, n (%)	
Subspecialty/fellowship training	93 (45.1)
Research during residency	85 (41.1)
First job post-residency	117 (56.5)
Congruency with mentor, n (%)	
Same subspecialty/fellowship as mentor	51 (24.8)
Same field of research as mentor	63 (30.4)
Practicing in a similar centre as mentor	148 (71.8)

**Table 4. The importance of mentorship during residency**

Statement	Agree, n (%)
My decisions regarding <i>subspecialty/fellowship</i> training were strongly influenced by at least one of my mentors, n (%)	94 (46.5)
My decisions regarding <i>research</i> during residency were strongly influenced by at least one of my mentors, n (%)	81 (39.7)
My decisions regarding <i>location and type of practice</i> were strongly influenced by at least one of my mentors, n (%)	111 (54.1)
I believe mentorship is important to success <i>during</i> residency, n (%)	193 (94.1)
I believe mentorship is important to success <i>following</i> residency, n (%)	182 (88.8)

subspecialty/fellowship training (46.5%) and research during residency (39.7%) were strongly influenced by at least one of their mentors. Further, 54.1% stated that their decisions regarding the location and type of practice were strongly influenced by their mentor. Overall, 94.1% of the participants agreed that mentorship was important to success during residency, and 88.8% stated that it was important for success following residency. In the subgroup of participants who reported that they did not meet regularly with their mentors, most found mentorship to be important for success during (90%) and after (82.5%) residency. Additionally, 51.7% of the participants reported that they continue to solicit advice from their mentors. Moreover, 53.4% stated that they were currently mentoring a junior colleague, resident, or medical student.

Comparisons between participants who completed EM residency training through the FRCPC training program and those who underwent alternative EM training (most commonly as an added competency through the College of Family Physicians of Canada) are depicted in Table 5. FRCPC participants were more likely to have had a formal mentorship program during residency, as compared with their non-FRCPC colleagues (40.5% v. 27.0%, respectively;  $p = 0.04$ ). FRCPC participants versus their non-FRCPC colleagues also more commonly felt that their decisions regarding subspecialty training (57.7% v. 36.9%, respectively;  $p < 0.01$ ) and research (54.1% v. 26.7%, respectively;  $p < 0.001$ ) were strongly influenced by their mentors. Interestingly, fewer FRCPC participants felt that mentorship was important to success during residency, as compared with their

**Table 5. Training certification programs and the impact of mentorship**

	FRCPC (N= 132)	Non-FRCPC (N= 177)	p-value
Years since residency completion, n (%)			0.16
<5 years	44 (33.3)	38 (21.5)	
5–10 years	26 (19.7)	35 (19.8)	
10–15 years	16 (12.1)	32 (18.1)	
15–20 years	19 (14.4)	28 (15.8)	
>20 years	27 (20.5)	44 (24.9)	
Male, n (%)	74 (56.1)	105 (59.3)	0.67
Formal mentorship program			0.04*
Yes	53 (40.5)	48 (27.0)	
No	77 (58.8)	125 (70.2)	
Do not know	2 (0.2)	5 (2.8)	
My decisions regarding <i>subspecialty/fellowship</i> training were strongly influenced by at least one of my mentors, n (%)			<0.01*
Agree	56 (57.7)	38 (36.9)	
My decisions regarding <i>research</i> during residency were strongly influenced by at least one of my mentors, n (%)			<0.001*
Agree	53 (54.1)	28 (26.7)	
My decisions regarding <i>location and type of practice</i> were strongly influenced by at least one of my mentors, n (%)			0.86
Agree	53 (53.5)	58 (54.7)	
I believe mentorship is important to success <i>during</i> residency, n (%)			<0.001*
Agree	91 (58.7)	102 (96.2)	
I believe mentorship is important to success <i>following</i> residency, n (%)			0.40
Agree	86 (86.9)	96 (90.6)	

CCFP = College of Family Physicians of Canada; FRCPC = Fellow of the Royal College of Physicians of Canada.  
\*Significant

non-FRCPC colleagues (58.7% v. 96.2%, respectively;  $p < 0.001$ ) but rated the importance of mentorship following residency similarly (86.9% v. 90.6%, respectively;  $p = 0.40$ ).

**DISCUSSION**

Professionals with strong mentors are more productive and have greater career satisfaction in both the short and long term.<sup>22,23</sup> Specifically, in EM, mentorship is thought to be related to career planning, as well as with research interests and productivity, subspecialty training, and professionalism within the discipline.<sup>9,24</sup> The results from our study seem to suggest that while research and subspecialty training are topics of conversation between mentors and mentees, the relationship may have had less

of an impact on career decisions pertaining to these topics, as compared with others. Only a small proportion of the respondents reported that mentorship had a strong impact on their subspecialty training or their research interests. The notion that mentorship positively impacts research productivity during residency training has been supported by work in some specialties and refuted by work in others.<sup>25,26</sup> While we did not compare research productivity between participants, our work does show that research was one of the least popular topics of conversation between mentors and mentees. Not every Canadian EM residency program has the infrastructure to support research during residency significantly, and there is variability in the infrastructure among programs.<sup>27</sup> Thus, research may not be a major focus for most EM residents and not an issue on which they may seek mentorship support.

Residents were far more likely to work in a location similar to that of their mentor but less likely to partake in similar research or subspecialty training. Recent Canadian evidence suggests that EM residents tend to select mentors based on shared interests and personality.<sup>28</sup> Work in other specialties shows that decisions surrounding practice location are often changed by mentorship influence.<sup>29,30</sup> Thus, while mentees may choose mentors based on their preferred choice of practice location (e.g., choosing a rural EM physician as a mentor based on a desire to one day practice in a rural environment), it does appear that this decision can be formed during the mentorship process. EM residents have reported that their choice of specialty was significantly influenced through mentorship by EM physicians during undergraduate medical education<sup>31</sup>; therefore, the decision to practice in the same location may be related to a similar phenomenon.

The most commonly reported topics of conversation were related to clinical expertise and work-life balance. EM is a specialty that is characterized by a fast pace, shift work, and work intensity, as well as serving an acutely ill population, and often associated with a significant degree of burnout.<sup>32</sup> Mentorship has been demonstrated in other specialties to be associated with the prevention and reduction of burnout, by allowing an outlet for discussion and providing a source of information on work-life balance.<sup>33</sup> The fact that work-life balance appears to be a common topic of conversation between mentors and mentees in EM suggests that this relationship may function as a coping mechanism and play a role in maintaining wellness among residents in the specialty.<sup>34</sup>

Finally, it is worth mentioning the impact of formal mentorship programs. The presumed benefits of mentorship are one of the reasons behind the institution of formal mentorship programs in EM residency. While only a minority of EM departments have such a formal program,<sup>35</sup> whether such benefits are found at the resident level are unclear. We found that residents who were trained in programs that employed formal mentorship programs were far more likely to have a mentor. Participants who were involved in formal mentorship programs were more likely to be more junior in their practice and female (Supplemental Table 1). This is probably because such formal programs are a more recent development,<sup>28,35</sup> and the proportion of females in EM has steadily increased in the last few decades.<sup>36</sup> However, individuals who trained at centres with formal mentorship programs did not rate their mentorship experiences higher than those at centres without a formal program. Therefore, the major benefit of a formal mentorship program seems to be its ability to connect residents with faculty mentors, but it does not appear to improve reported mentorship experiences.

FRCPC participants felt that mentorship more strongly influenced their decisions regarding subspecialty training and research training. They also felt less strongly than non-FRCPC participants that mentorship was important to success during residency. This may be because the FRCPC training program provides residents with more infrastructure and years of training to support their academic careers. Non-FRCPC trainees (particularly those in one-year programs) have a much shorter course; therefore, a strong mentoring relationship may help them navigate the challenges of a condensed training program and early career decisions.

## LIMITATIONS

There are certain limitations that are inherent to a survey-based study. First, such a design creates the possibility of various types of biases, including non-response and recall bias. Our study was distributed through a standardized channel (the CAEP database) to a well-defined population (attending EM physicians). As mentioned, participants may have had difficulty recounting their experiences with mentorship during residency. The response rate (though not the total number of responses) was slightly below what would be expected for a national survey distributed through this database.<sup>37</sup> As there is no existing validated tool for

analyzing the impact of mentorship, our survey was derived using author consensus that has the potential to introduce bias. We did not track the location of response, so it is unclear if responses were concentrated within a specific segment of the population. The vast majority of participants were from academic centres, and many were very early (i.e., <5 years after residency completion) into independent practice. Furthermore, while this study was administered across Canada, it was only distributed in English. Therefore, our results are likely most reflective of academic EM physicians with an interest in mentorship during residency and, thus, cannot be generalized to all practising EM physicians in Canada.

It is important to acknowledge that there are multiple confounders that may have contributed to professional development, aside from mentoring. While it is inherently difficult to quantify the impact that mentorship had on professional development, the vast majority of participants perceived that mentorship was beneficial to their career development, and our findings provide some initial evidence supporting this construct in EM.

## CONCLUSION

Our study suggests that the majority of participating EM physicians did have at least one mentor over the course of their residency training, and mentorship during EM residency was important to career planning and work-life balance but was less integral to academic scholarship and subspecialty selection. Our findings provide some of the first evidence regarding the impact of mentorship during EM residency training on professional development and concomitant perceptions surrounding this construct. Given the potential benefits espoused from this study, EM residency programs should encourage residents to select mentors who can provide guidance during their training and support their career development.

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## SUPPLEMENTARY MATERIAL

To view supplementary material for this article, please visit <https://doi.org/10.1017/cem.2018.42>

## REFERENCES

- Zerzan JT, Hess R, Schur E, Phillips RS, Rigotti N. Making the most of mentors: a guide for mentees. *Acad Med* 2009;84(1):140-4.
- Bhagia J, Tinsley JA. The mentoring partnership. *Mayo Clin Proc* 2000;75(5):535-7.
- Ramanan RA, Taylor WC, Davis RB, Phillips RS. Mentoring matters. Mentoring and career preparation in internal medicine residency training. *J Gen Intern Med* 2006;21(4):340-5.
- Sambunjak D, Straus SE, Marusic A. Mentoring in academic medicine: a systematic review. *JAMA* 2006;296(9):1103-15.
- Maddix T. Mentors and mentoring. Health care workers hope to find integrity in their work, organizations, and leaders. *Health Prog* 2001;82(3):25-7.
- Schor NF. The supportive academic environment: ingredients for success. *Pediatr Neurol* 2003;29(5):370-3.
- Cho CS, Ramanan RA, Feldman MD. Defining the ideal qualities of mentorship: a qualitative analysis of the characteristics of outstanding mentors. *Am J Med* 2011;124(5):453-8.
- Saha S, Saint S, Christakis DA, Simon SR, Fihn SD. A survival guide for generalist physicians in academic fellowships part 2: preparing for the transition to junior faculty. *J Gen Intern Med* 1999;14(12):750-5.
- Yeung M, Nuth J, Stiell IG. Mentoring in emergency medicine: the art and the evidence. *CJEM* 2010;12(2):143-9.
- Berk RA, Berg J, Mortimer R, Walton-Moss B, Yeo TP. Measuring the effectiveness of faculty mentoring relationships. *Acad Med* 2005;80(1):66-71.
- Leslie K, Lingard L, Whyte S. Junior faculty experiences with informal mentoring. *Med Teach* 2005;27(8):693-8.
- Pololi L, Knight S. Mentoring faculty in academic medicine. A new paradigm? *J Gen Intern Med* 2005;20(9):866-70.
- Short JD. Profile of administrators of schools of nursing, Part II: mentoring relationships and influence activities. *J Prof Nurs* 1997;13(1):13-8.
- Kashiwagi DT, Varkey P, Cook DA. Mentoring programs for physicians in academic medicine: a systematic review. *Acad Med* 2013;88(7):1029-37.
- Coates WC. Being a mentor: what's in it for me? *Acad Emerg Med* 2012;19(1):92-7.
- Blumstein HA, Cone DC. Medical student career advice related to emergency medicine. *Acad Emerg Med* 1998;5(1):69-72.
- Okereke CD. Mentoring—the trainee's perspective. *J Acad Emerg Med* 2000;17(2):133-5.
- Larkin GL, Binder L, Houry D, Adams J. Defining and evaluating professionalism: a core competency for graduate emergency medicine education. *Acad Emerg Med* 2002;9(11):1249-56.

19. Blanda M, Gerson LW, Dunn K. Emergency medicine resident research requirements and director characteristics. *Acad Emerg Med* 1999;6(4):286-91.
20. Mello MJ, Merchant RC, Clark MA. Surveying emergency medicine. *Acad Emerg Med* 2013;20(4):409-12.
21. Hoddinott SN, Bass MJ. The dillman total design survey method. *Can Fam Physician* 1986;32:2366-8.
22. Ramani S, Gruppen L, Kachur EK. Twelve tips for developing effective mentors. *Med Teach* 2006;28(5):404-8.
23. Paice E, Heard S, Moss F. How important are role models in making good doctors? *BMJ* 2002;325(7366):707-10.
24. Garmel GM. Mentoring medical students in academic emergency medicine. *Acad Emerg Med* 2004;11(12):1351-7.
25. Miller DR, McCartney CJ. Mentoring during anesthesia residency training: challenges and opportunities. *Can J Anaesth* 2015;62(9):950-5.
26. Smeds MR, Huynh C, Thrush CR, Moursi MM, Amankwah KS. Effects of mentorship on graduating vascular surgery trainees. *Ann Vasc Surg* 2017;44:234-40.
27. Calder LA, Abu-Laban RB, Artz JD, et al. CAEP 2014 Academic Symposium: "How to make research succeed in your department: Promoting excellence in Canadian emergency medicine resident research". *CJEM* 2015;17(5):591-9.
28. Sutherland KA, Pham C, La Riviere C, et al. Mentorship in Canadian emergency medicine residency training programs: a needs assessment. *CJEM* 2017;19:S34.
29. Klingensmith ME, Cogbill TH, Luchette F, et al. Factors influencing the decision of surgery residency graduates to pursue general surgery practice versus fellowship. *Ann Surg* 2015;262:449-55, discussion 454-5.
30. DeLong MR, Hughes DB, Tandon VJ, Choi BD, Zenn MR. Factors influencing fellowship selection, career trajectory, and academic productivity among plastic surgeons. *Plast Reconstr Surg* 2014;133(3):730-6.
31. Dehon E, Cruse MH, Dawson B, Jackson-Williams L. Mentoring during medical school and match outcome among emergency medicine residents. *West J Emerg Med* 2015;16(6):927-30.
32. Wears RL. Change of shift. Worn out by fatigue training. *Ann Emerg Med* 2015;66(3):334-5.
33. Gabbe SG, Webb LE, Moore DE Jr, et al. Can mentors prevent and reduce burnout in new chairs of departments of obstetrics and gynecology: results from a prospective, randomized pilot study. *Am J Obstet Gynecol* 2008;198(6):653.e1-7.
34. DeCastro R, Sambuco D, Ubel PA, Stewart A, Jagsi R. Batting 300 is good: perspectives of faculty researchers and their mentors on rejection, resilience, and persistence in academic medical careers. *Acad Med* 2013;88(4):497-504.
35. Welch J, Sawtelle S, Cheng D, et al. Faculty mentoring practices in academic emergency medicine. *Acad Emerg Med* 2017;24(3):362-70.
36. Choo EK, Kass D, Westergaard M, et al. The development of best practice recommendations to support the hiring, recruitment, and advancement of women physicians in emergency medicine. *Acad Emerg Med* 2016;23(11):1203-9.
37. Yadav K, Gatien M, Corrales-Medina V, Stiell I. Antimicrobial treatment decision for non-purulent skin and soft tissue infections in the emergency department. *CJEM* 2017;19(3):175-80.