A National Faculty Development Needs Assessment in Emergency Medicine

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ABSTRACT

Objectives: Emergency physicians who work in academic settings enjoy an expanding number of roles beyond that of the skilled clinician. Faculty development (FD) encompasses the broad range of activities that institutions use to renew skill-sets and assist faculty members in these multiple roles. This study seeks to define the current FD needs and interests of Canadian academic emergency physicians (AEPs).

Methods: An online survey was administered to 943 AEPs in eight centers across Canada to determine their current FD activities, provide a detailed understanding of their FD needs and interests, elucidate the perceived barriers to and motivation for engaging in FD, and identify preferred methods of delivery for FD activities.

Results: This national, cross-sectional survey was completed by 336 respondents. It shows that need for FD is universally high, particularly in traditional domains of scholarship, leadership and education (79%, 80%, 87% overall interest, respectively). However, the study also suggests that there is increasing need for FD in areas where current participation is lowest, namely research and social accountability (12% and 13% more interest, respectively). Senior and junior faculty evince equivalent overall FD interest ($p > 0.05$), whereas female AEPs expressed greater overall FD needs in leadership (1.82 vs 1.44 activities, $p = 0.003$) than males. Continued participation in FD activities is best promoted by offering relevant topics, at convenient times and locations.

Conclusions: This study reports the first comprehensive national FD needs assessment of Canadian academic emergency physicians.

RÉSUMÉ

Objectif: Les médecins d'urgence qui travaillent en milieu universitaire jouent un nombre croissant de rôles qui vont au-delà de ceux du clinicien qualifié. La formation du corps professoral (FCP) englobe un large éventail d'activités que les établissements offrent aux professeurs pour leur permettre de mettre à jour leurs compétences et pour les aider à assumer leurs nombreux rôles. L'étude décrite ici visait à établir les besoins de formation et les champs d'intérêt des médecins d'urgence (MU) qui enseignent en milieu universitaire, au Canada.

Méthode: Une enquête en ligne a été menée chez 943 MU qui enseignent en milieu universitaire, dans 8 centres, partout au Canada, afin de déterminer l'offre d'activités de formation des professeurs, de recueillir une description détaillée de leurs besoins de formation et de leurs champs d'intérêt, de mieux comprendre les obstacles perçus à la FCP et la motivation pour s'y engager et de cerner les meilleures formules de présentation des activités de formation.

Résultats: Au total, 336 participants ont répondu à l'enquête transversale, menée à l'échelle nationale. Les résultats ont révélé que les besoins de formation étaient grands partout, notamment dans les champs traditionnels de la mission professorale, de la direction et du pouvoir d'influence ainsi que de la formation (79 %, 80 % et 87 % respectivement, dans l'ensemble). Toutefois, l'étude semble également indiquer un besoin accru de FCP dans des champs où la participation est très faible, soit la recherche et la responsabilité sociale (augmentation de l'intérêt: 12 % et 13 % respectivement). Les membres du personnel, chevronnés comme débutants, ont fait état, dans l'ensemble, d'un intérêt comparable en matière de FCP ($p > 0,05$), tandis que les femmes MU qui enseignent en milieu universitaire ont exprimé, dans l'ensemble, des besoins plus grands de formation en matière de direction et de pouvoir d'influence que les hommes (activité: 1,82 contre 1,44; $p = 0,003$). Les activités de FCP qui suscitent le plus de participation, et ce, de manière continue, sont celles qui portent sur des sujets pertinents et qui se donnent au bon moment et au bon endroit.

Conclusion: L'étude décrite ici fait état de la première évaluation globale, menée à l'échelle nationale, des besoins de formation des MU qui enseignent en milieu universitaire, au Canada.

Keywords: Faculty Development, Needs Assessment, Survey

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BACKGROUND

Emergency physicians who work in academic settings enjoy an expanding number of roles beyond that of the skilled clinician.[1] The traditional "clinician-educator" role,[2,3] both in the classroom and in clinical settings, is still a significant component of an academic physician's career[4-6]. However, many administrative, research, scholarly, and advocacy-related roles are increasingly identified as important—if not mandatory—facets to an academic position in emergency medicine.

Yet few opportunities exist during medical training to formally develop these academic and professional skills;[2,7] instead, clinicians pick up skills "on the job" or seek post-residency training specific to their needs. Aside from formal certificate and degree programs, faculty development (FD) is the primary means of expanding beyond existing skill-sets. FD encompasses "the broad range of activities that institutions use to renew or assist faculty members in their multiple roles."[8]

Early forms of FD were offered at an institutional level and tied closely with promotion and tenure.[2,9,10] More recently, the paradigm of FD has shifted; individual medical faculties are now offering FD curricula, the content and format of which is being informed by the faculty members themselves through focus groups and surveys.[4,5,11-23] These needs assessments are useful in identifying the specific gaps in knowledge or training that FD can address.[24,25]

Across the country, several medical faculties have conducted single-center needs assessment surveys,[18-20] though no comprehensive and uniform assessment has yet been completed in Canada. In contrast, a multi-centre European study[23] of medical educators, and multi-centre Australian[26] and American[16] studies of emergency medicine faculty, have been reported. These latter studies are also the only published multi-centre surveys of a FD needs assessment in emergency medicine and highlight a significant mismatch between the FD needs of and resources available to emergency medicine faculty.

However, none of these studies comprehensively evaluates the broader FD required to support the increasingly diverse needs of academic emergency physicians (AEPs), instead limiting research to medical education or topics of continuing professional development (CPD), i.e., clinical acumen. Similarly, the studies provide little insight into the FD needs of important segments of the EM community, such as senior faculty and female AEPs. Moreover, as country-specific differences exist both in the medical education systems and the practice of emergency medicine, identifying the Canadian perspective is important in providing the most relevant FD experience.[2,14]

The goal of the current study was to address the hypotheses that AEPs' interest in FD is expanding from the traditional focus of medical education to satisfy increasingly diverse academic needs; senior faculty have a continued interest in FD; female AEPs may have different FD interests than their male counterparts; and delivery of FD has to be at convenient times and locations. It provides the first nationally-representative, FD needs assessment of Canadian AEPs.

METHODS

We conducted a multi-centre, cross-sectional survey of the current FD needs and interests of Canadian AEPs in order to: 1) determine their current FD activities, 2) provide a detailed understanding of their FD needs and interests, 3) elucidate the perceived barriers to and motivation for engaging in FD, and 4) identify preferred methods of delivery for FD activities.

Study population

The study surveyed AEPs affiliated with eight centres across Canada: The University of British Columbia, The University of Alberta, The University of Calgary, McGill University, The University of Toronto, McMaster University, Queen's University, and Dalhousie University. Eligibility required practice within a university-affiliated faculty, as an emergency medicine physician, having emergency medicine (CCFP and FRCP), pediatric emergency medicine (FRCP), or equivalent training, or certification as a pediatrician (FRCP) with emergency medicine sub-specialization.

Survey instrument and development

Survey development was conducted as an iterative process,[27-29] using feedback from FD leaders and collaborating researchers, with a draft instrument piloted amongst members of the Education Committee of the Department of Emergency Medicine at the University of Calgary. Survey questions were extracted from previous FD surveys[10,16,18,19,29] and evaluated by collaborating experts. The final instrument was then pilot tested in

Calgary prior to national release during December 2011–June 2012.

The five academic areas of interests were also obtained through an iterative process of faculty consultation and literature review, with the final topics refined in the pilot phase of the study. Education, leadership (encompassing both "administrative" and "professional" roles) and research were included as the traditional categories of FD. Scholarship was added to elucidate the broader role of academic communication, beyond the publishing of scientific journal articles, and including the ethical, social, and business aspects of medical practice. Social accountability, as it is used here, refers to the obligation of physicians to direct their educational, research, and service activities towards addressing the health concerns of the community, region, and/or nation they have a mandate to serve.[34] Although elements of scholarship and social account-ability were included in previous surveys under traditional category headings,[16,18-20,23,26] with increasing recognition that these are significant facets of an AEP's career,[7,13,21] these latter two categories were added and expanded to allow for a more comprehensive evaluation.

An online survey instrument, consisting of a series of multiple-response or Likert-scale questions, was implemented through Surveymonkey.com.[30,31] Multiple-selection questions permitted up to five responses. Questions using a 5-point Likert scale employed descriptive anchors for each point on the scale.[32,33] Demographic information was collected using drop-down boxes. Each section also contained a free-form response for additional comments or selections. The survey required 10-15 minutes to complete and was anonymous; names were optionally collected on the consent page to aid with survey administration.

The survey (included in an online appendix) was formatted in five parts: 1) a brief appraisal of current participation in the areas of leadership, research, social accountability, scholarship, and education; 2) an in-depth assessment of interests/needs for future FD activities in these same areas; 3) a trio of questions to explore i) motivation for, ii) barriers to, and iii) methods for encouraging participation in FD activities; 4) a section on the logistics of FD delivery to delineate the optimal timing, location, and format of FD activities; and 5) a final section to capture limited demographic information (department, years of practice, gender, certifying body) for pre-specified sub-group analyses.

Survey administration

Eligible faculty within each of the academic centres were approached using a modified Dillman technique.[35] Subjects were initially recruited using email, where they were informed of the upcoming study and encouraged to enroll. In subsequent email contacts, links were provided to a video requesting participation in the research and to the survey itself. Ethics approval for the study was obtained through the University of Calgary's Conjoint Health Research Ethics Board (CHREB Study #23862).

Data collection and analysis

Responses were automatically collected/collated as the survey progressed, and are reported here as pooled data. Descriptive statistics are used to calculate rates and averages. Multiple-selection questions are reported as the percentage of respondents selecting a particular response (frequency; range 0-100%). Questions using a 5-point Likert scale are reported as both mean and median values between 1 and 5. Pre-planned comparisons were made between demographic subgroups, using the Mann-Whitney U test with a significance level of $p = 0.05$; these include female and male subgroups, cohorts 0-5 years and 20+ years into their careers, CCFP and FRCP training, and Canadian and US emergency medicine population demographics.[36-38]

RESULTS

Demographics

Nationally, 944 AEPs were surveyed, with 336 respondents completing the entire survey (response rate of 36%). As summarized in Table 1, the majority of participants were FRCP-certified, EM-specialized males within the first 15 years of practice. Of female respondents, over two-thirds were within the first 10 years of their careers. For comparison with the Canadian and American emergency medicine populations, demographics are provided from national surveys of the respective physician bodies.[36-38]

Current activities

The current non-clinical activities of AEPs are reported in Table 2, broken down by academic area. Most AEPs

Table 1. Respondent demographics and comparison with Canadian[36] and American[37,38] EM physician populations: data from the National Physician Survey (NPS) and Society for Academic Emergency Physicians (SAEM)

Demographic		Respondents	Canadian Emergency Physicians (NPS)	p value*	American Emergency Physicians (SAEM)
N		336 n (%)	985 n (%)		1,728† n (%)
Certification	FRCP	197 (58.6)	802 (85)	<0.001	1,503 (87)
	CCFP	130 (38.6)	141 (15)	<0.001	–
	Other	9 (2.8)	–		225 (13)
Specialty	Pediatric Emergency Medicine	48 (14.4)	–		–
	Emergency Medicine	288 (85.6)	–		–
Years of Practice	0–5	88 (26.2)	131 (13.9)	<0.001	438 (36.2)
	6–10	78 (23.1)	127 (13.4)	<0.001	263 (21.8)
	11–15	65 (19.3)	116 (12.3)	0.053	207 (17.1)
	16–20	36 (10.6)	81 (8.6)	0.494	301 (24.9)
	20 +	70 (20.9)	444 (47.1)	<0.001	
Gender	Female	110 (32.8)	210 (21.3)	<0.002	528 (31.5)
	Male	222 (66.2)	766 (77.8)	<0.002	1,183 (68.5)
	Other	4 (1.0)	–		–

*Comparison between the sample and the target Canadian population.
†N = 1,209 for SAEM Years of Practice (based on 2004–5 survey).

participated in bedside teaching, the teaching of small groups, and in rounds presentations, with nearly universal participation in the supervision of medical trainees. Formal lecturing and educational leadership activities, such as curriculum or simulation development, were substantially less common. Scholarly participation showed high overall participation (76.5%); the most popular individual activities included participating in journal clubs, presenting at conferences, and guest lecturing. Overall participation in leadership activities was also high (81.0%), although this result was driven primarily through committee work (66% participation); no other activity in this category had more than 27% participation. Only half of respondents reported participation in research (50.9%) or activities related to social accountability (49.7%), with less than a third engaging in any one particular activity.

The major differences in the current non-clinical participation by demographic subgroups are illustrated in Figure 1. Despite their paucity of clinical experience, junior faculty participated more in educational activities (mean participation in 3.52 vs 2.76 activities, $p < 0.002$) compared with senior faculty having 20 + years of experience. In contrast, junior faculty were significantly less active in leadership activities than their senior counterparts (1.05 vs 2.13, $p < 0.001$). Whether this trend is the result of being closer to the educational experience at the start of a career or because entry into

other academic areas requires more experience is unclear. A similar dearth of female AEPs in leadership positions was evident, compared with their male counterparts (1.35 vs 1.93, $p = 0.025$). Aside from the 0-5 year cohort, where both males and females were underrepresented compared to senior faculty, this was independent of seniority (female 1.57 vs male 2.16 activities, $p = 0.015$). As a cohort, CCFP-trained AEPs were less likely to be involved in all non-clinical academic domains than FRCP-trained AEPs (average difference 0.77 activities; all $p < 0.012$), a gap most pronounced in educational (2.78 vs 3.84, $p < 0.001$) and scholarship (1.25 vs 2.58, $p < 0.001$) domains.

Interest in future FD

The need for, and interest in, FD was determined by asking AEPs which future activities they would be willing to attend (from a list of 14 possible choices). Table 3 outlines the results for each of the five non-clinical domains. Canadian AEPs continued to have a significant interest in improving their educational skill-set, with 87% of respondents willing to participate in at least one of the suggested FD activities. Perhaps owing to the changing technological nature of education, senior faculty reported greater need to develop computer skills (26.9% vs 4.8%, $p < 0.001$) and

Table 2. Current participation by AEPs in non-clinical academic activities

Domain	Activity	Participation	Overall
Education	Supervising residents/medical students	97.3%	98.2%
	Rounds presenter	75.3%	
	Small group instructor	63.4%	
	Course lecturer	37.8%	
	Developing/running simulations	33.6%	
	Curriculum development	29.2%	
Leadership	Committee member	66.4%	81.0%
	Quality assurance and management	26.2%	
	Administrator, manager	25.6%	
	Conference, symposium or seminar organizer	19.9%	
	Program director, department head	19.3%	
	Budgeting and finance	15.5%	
Scholarship	Attending journal club	56.3%	76.5%
	Conference presenter	43.2%	
	Invited speaker/lecturer	42.6%	
	Writing journal article(s)	32.1%	
	Writing book(s) or book chapter(s)	15.8%	
	Editor of a journal/book	10.1%	
Research	Education/professional development research	31.8%	50.9%
	Conducting clinical trial(s)	17.6%	
	Systems and process research	15.5%	
	Population health/epidemiology research	10.4%	
	Basic science research	0.9%	
	Operating a research lab	0.9%	
Social Accountability	Medical volunteerism	22.9%	49.7%
	Local community outreach	17.9%	
	Advisory body member (CMA, AMA, CAEP)	15.2%	
	Global health	14.3%	
	Political advocacy	11.3%	
	Research ethics board	1.2%	

Participation is rank ordered within each academic domain and reported as a percentage. Overall participation, defined as the total percentage of respondents selecting one or more of the listed activities in each domain, is also reported.

improve their use of technology in the classroom (23.9% vs 4.8%, $p < 0.001$). However, senior faculty reported that they were much less in need of skills to help the "resident in difficulty" (16.4% vs 42.9%, $p < 0.001$).

In contrast, the areas of research and social accountability continued to see lower levels of interest compared to the domains of education, leadership, and scholarship. Moreover, the interest in research was skewed towards the interpretation of research and its application to clinical or educational settings, rather than in conducting the research itself. In the area of social accountability, AEPs preferred to deliver health care to marginalized populations, particularly in an international setting, more than developing policy development, advisory, or advocacy skill sets.

Though variations in current practice existed between junior versus senior, and CCFP-trained versus FRCP-trained AEPs (as mentioned above), there were few differences in their FD interests—all subgroups had consistently high ($\geq79\%$) overall interest. Of the subgroups, the only statistically significant differences were greater interest shown by females than males in pursuing educational (2.19 vs 1.87, $p = 0.016$), leadership (1.82 vs 1.44, $p < 0.01$), and research activities (1.32 vs 0.99, $p = 0.01$). In leadership, this gender difference was independent of seniority: although female respondents to our survey were generally more junior than their male counterparts, female AEPs showed statistically greater interest in leadership activities, even when compared to males in the 0-5 year cohort (1.82 vs 1.50 activities, $p = 0.037$). This is illustrated in Figure 2.
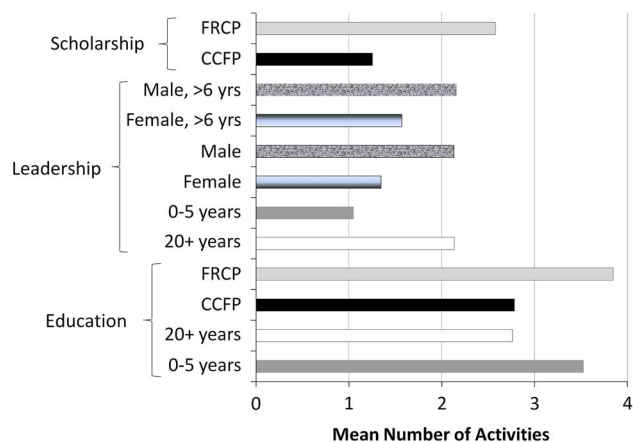
Figure 1. Comparison of current participation in non-clinical activities (mean) by different subgroups of AEPs in the areas of scholarship, leadership and education. Under leadership, subgroups of those with six or more years of experience are included, revealing statistically different participation between males and females.

Motivation for and barriers to FD

In addition to delineating the specific topics AEPs are most interested in, the survey explored which factors inhibit and promote participation in FD activities (Table 4).

Delivery of FD activities

The preferred timing, location, and format of future FD activities is summarized in Table 5. Table 5A presents a rank-ordered list of the preferred FD activity formats. Table 5B lists the percentage of respondents who would attend an activity in a given location. Table 5C highlights that AEPs favoured activities of moderate duration, with two-thirds of respondents desiring activities between two hours to half a day in duration. Lastly, Table 5D reveals that normal business hours were the preferred time for FD activities, and that minimal support was found for weekend activities.

Regional/institutional variation

In this multi-centre study, regional and institutional variability was found, though in most instances the heterogeneity was minor/statistically insignificant. The major outliers are detailed below: in research, need was highest in the Eastern and lowest in the Western institutions (University of Calgary, University of British Columbia, University of Alberta), based both on the average number of topics each respondent was interested in (0.95 topics vs 1.15) and the overall desire to participate in research-related FD (52.7% vs 69.2%). This did not correlate with demographic trends. In the area of social accountability, interest in future faculty development was weakest in McGill and Queen's Universities, where AEPs were interested in 0.61 topics (vs 1.25 topics for the remaining sites) and had an overall interest of 37.0% (vs 69.2%). This difference correlated with seniority (the respondents in both schools had a higher rate of participation from senior faculty when compared to other schools), and was supported by the subgroup analysis showing junior AEPs had greater need for FD in this area than senior faculty. Institutional differences were found in leadership-oriented FD activities, with Queen's and the University of Toronto expressing the greatest overall interest (1.95 activities, 86.7% interest) and Dalhousie and the University of Calgary showing the least overall interest (mean of 1.46 activities, 73.0% interest), though these were not correlated with any demographic differences. In contrast, interest in scholarly FD activities was quite uniform across the country, although Queen's University exhibited much lower interest than other centres (1.35 vs 1.53 activities and 65.0% vs 81.1% overall interest).

DISCUSSION

This survey of Canadian academic emergency physicians, with a 36% response rate significantly weighted towards faculty with under 15 years of experience, and with a higher proportion of female respondents when compared to current demographics, suggests that traditional domains of education, leadership, and scholarship remain strong, but there is a growing need for FD in research and social accountability. Furthermore, as in previous studies,[4-6,16] our results show that medical education was the core of an AEP's non-clinical duties in the population sampled, with respondents reporting over 98% participation in this activity. AEPs expressed a need for better individual and bedside teaching skills, including teaching around cases and providing effective feedback. This differs from a European study of medical educators,[23] which found greater interest in curriculum development and evaluation, learning research methodologies in medical

Table 3. The needs and interests of Canadian AEPs

Domain	Proposed Activity	Response (%)	Overall (%)
Education	Providing constructive feedback	47.6	86.6
	Techniques for teaching around cases	47.3	
	Supervising residents and clerks	41.1	
	Assessing and evaluation	35.1	
	Teaching to different learning styles	33.6	
	Dealing with residents in difficulty	33.3	
	Developing and running simulation scenarios	27.1	
	Developing a teaching portfolio	21.4	
	Online learning and teaching	17.6	
	Technology in the classroom	17.3	
	Curriculum development	16.4	
	Computer skills	16.1	
	Teaching within the CANMeds framework	13.1	
	Interdisciplinary teaching	11.3	
Leadership	Mentoring and counseling	41.4	80.4
	Negotiation and conflict management	40.2	
	Managing teams and teambuilding	37.5	
	Quality assurance/management	36.9	
	Strategic planning	24.7	
	Stress management	23.8	
	Developing sustainable practice	23.5	
	Interpersonal skills	20.5	
	Project management	19.3	
	Health care finance	19.0	
	Budgeting and resource allocation	18.8	
	Goal planning	14.3	
	Dealing with the media	13.4	
	Professionalism committees	12.5	
Scholarship	Public speaking and presentation skills	43.2	79.2
	Effective powerpoint presentations	42.0	
	Evidence-based medicine	41.7	
	Preparing for grand rounds	30.7	
	Conducting literature reviews	28.6	
	Writing journal articles	23.8	
	Organizing a sabbatical	20.8	
	Preparing CVs and resumes	20.2	
	Dealing with the media	16.1	
	Grant writing	12.8	
	Editing manuscripts	12.5	
	Writing for the media	11.3	
	Running a journal club	8.6	
	Creating posters for presentation	8.0	
Research	Evidence-based medicine and epidemiology	33.9	63.1
	Techniques for critical appraisal	28.6	
	Conducting literature reviews	28.0	
	Common pitfalls in clinical research	24.1	
	Study design for research	19.0	
	How to supervise research	19.0	
	Biostatistics and analysis	18.5	
	Data collection and management	15.2	
	Securing research funding	14.3	
	Approaches to collaborative research	14.0	
	Developing research protocols	11.0	
	Ethics of pharmaceutical funding	8.9	
	Navigating ethics applications/review	8.6	
	Operating a research lab	1.5	
Social Accountability	Global health/health missions	35.4	62.5
	Serving vulnerable/marginalized populations	26.8	
	International development	23.5	
	Developing professional practice guidelines	23.5	
	Preparing professional practice guidelines	19.9	
	National public and health policy	19.6	
	Health law	18.8	
	Local community outreach	18.5	
	Disease prevention	17.0	
	Health care finance	16.4	
	Serving with professional bodies (CMA/AMA/CAEP)	16.1	
	Working on advisory committees	13.1	
	Remote and rural medicine (national)	12.5	
	Political advocacy	12.5	

The percentage of respondents indicating they would attend each of the 14 proposed FD activities in each non-clinical, academic domain, listed in rank order of most interest to least interest.
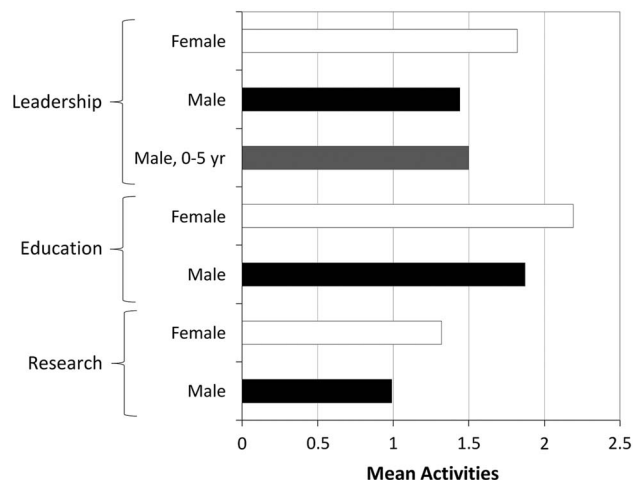
Figure 2. Comparison of the overall FD needs and interests of female versus male AEPs in the areas of leadership, education and research; bottom axis represents the average (mean) number of activities interested in. No significant difference was found between females and males in the first five years of practice in education or research.

education, and the use of computer-based training. This difference in focus likely reflects that most Canadian AEPs are clinicians who regularly interact with medical trainees, as compared to the aforementioned study, with a surveyed population heavily weighted towards academics.

At the same time, our results are also congruent with the recognized need for FD support of academic roles beyond the "clinician-educator."[5,7,13] The trend in these areas is towards the acquisition of skills translatable between all academic domains, primarily communication and people skills. For example, AEPs' interests in scholarly activities were centered on improving public speaking and oral presentation skills, rather than writing for journal publication or other print media. For future leadership activities, we found that AEPs preferred to improve their ability to facilitate groups and manage teams, rather than engage in learning more narrow topics, such as financial or strategic planning. The results suggest a desire to participate in a breadth of activities, more than simply

Table 4. Factors that motivate or are barriers to FD participation			
A) Please indicate how important the following considerations are when deciding on whether to participate in faculty development activities:	**Consideration**	**Mean**	**Median**
	Topic/subject matter	4.7	5
	Your current workload	4.5	5
	Duration of the activity	4.1	4
	Location of the activity	4.0	4
	Cost of the activity	3.6	4
B) Please indicate the extent you agree or disagree with the statement: "The following would motivate me to participate in faculty development activities."	**Motivation**	**Mean**	**Median**
	Personal satisfaction	4.4	4
	Results in enhanced bedside teaching	4.1	4
	Provides career diversity & variety	3.9	4
	Results in enhanced leadership skills	3.9	4
	Career advancement	3.4	4
	Results in enhanced administration abilities	3.4	4
	Financial compensation	3.3	4
	Reduced clinical load	3.3	3
	Being awarded a degree (i.e., MBA, MEd)	3.2	3
	Recognition by faculty	3.2	3
	Recognition by peers	3.1	3
C) To what extent would you support the following methods of encouraging faculty development?	**Method of Encouragement**	**Mean**	**Median**
	Ensure faculty development activities are integrated into career goal discussions with administration	3.7	4
	Create awards for faculty development achievements	3.5	4
	Link faculty development to financial remuneration	3.3	4
	Have yearly faculty development requirements (like CME credits)	3.2	4
	Have mandatory faculty development activities	2.8	2

Mean and median Likert values on a 5-point scale are reported: for question A, topics are considered 1 = very unimportant and 5 = very important; for question B, 1 = strongly disagree and 5 = strongly agree with the statement; for question C, 1 = strongly oppose and 5 = strongly support the listed methods.

Table 5. Summary of the preferences of AEPs for the format and delivery of future FD activities

A) Please indicate the extent you agree or disagree with the following statement: "I AM WILLING to participate in the following faculty development activities..."	**Format of FD activity**	**Mean**	**Median**
	Conference	4.0	4
	Workshop	3.9	4
	Grand rounds	3.9	4
	Lecture/lecture series	3.8	4
	Group retreat	3.6	4
	Online course	3.6	4
	Individual consultation	3.5	4
	Sabbatical	3.4	4
	Degree program	2.8	2
B) Please indicate ANY of the following times you would be willing to attend a faculty development activity:	**Timing of FD Activity**	**Weekday**	**Weekend**
	Early morning	35.5%	10.1%
	Morning	67.8%	23.1%
	Lunchtime	68.7%	27.4%
	Afternoon	65.1%	18.9%
	Evening	37.5%	11.1%
C) Please indicate any of the following locations where you would be willing to participate in faculty development activities:	**Location of FD Activity**	**Mean**	
	The hospital where you work	94.7%	
	Within your city	88.4%	
	Other hospitals in the area	79.2%	
	Your affiliated medical school	76.4%	
	Nationally	43.4%	
	In a nearby city (within 100 km)	40.9%	
	Provincially	38.7%	
	Internationally	32.4%	
D) How much time in an average month ARE YOU WILLING to devote to faculty development (i.e., rather than other, non-clinical work)?	**Duration**	**Mean**	
	>1/2 day	17.2%	
	1/2 day	32.3%	
	2 hrs	34.7%	
	1 hr	11.4%	
	<1 hr	4.4%	

Willingness to participate was scored on a balanced, 5-point Likert scale, where 1 = very unwilling and 5 = very willing. Other responses are the percentage of participants willing to participate/attend for each activity format, location, or time.

the committee work that most AEPs are currently involved with.

In these three traditional domains, our results parallel those in Dent et al.'s survey[26] of fellows of the Australian College, with an emphasis on applying teaching acumen in everyday practice, managing conflict, and utilizing research results, more than conducting the research itself. However, much of their paper was oriented strongly towards CPD, whereas our results expand on the FD needs of AEPs outside of the retention/development of clinical skills.

Complementing the interest in the traditional FD domains, our results also suggest a growing need for FD in research and social accountability. This is detailed in Figure 3, where we compare the current overall participation in non-clinical activities with the FD needs in each domain. For example, in this sampling of AEPs,

current participation in educational pursuits was 98%, while overall interest in educational FD activities was 87% (roughly 11% *less*); current participation in research activities was 51%, whereas 63% of AEPs had an interest in future research-related FD (roughly 11% *more*). A similar difference was found in social accountability (roughly 13% *more* interest). Unlike other studies, which present a paucity of data in these domains, this work indicates that there is proportionately more interest in research and social accountability than current practice suggests, and hence there is a gap in knowledge or training that FD can address. Table 3 delineates the needs of AEPs in these domains for those administering FD programs. However, the lack of particularly strong interest in any single topic suggests that a multifaceted approach to building FD in these areas may be required.
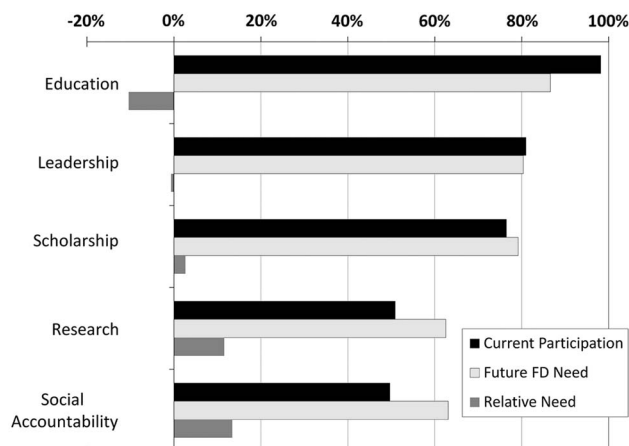
Figure 3. Current overall participation by AEPs in each of the non-clinical domains (solid bars), compared with the needs and interests for future FD activities in these same areas (white bars), showing relatively less need in the domain of education and relatively increased need in research and social accountability domains (grey bars).

Senior faculty, female AEPs, and CCFP-trained AEPs all have important FD needs

An important finding in this study was that few differences existed between the demographic subgroups analyzed. More specifically, the results suggest that senior AEPs continue to have a need for FD despite their accumulated experience. With the evolution of a career, the FD needs of senior AEPs shift from educational activities towards those in leadership and social accountability. This supplements the information provided by Farley et al.[16] about junior emergency medicine physicians.

Similarly, CCFP-trained AEPs participated less in non-clinical activities than their FRCP-trained colleagues. While the trend towards limiting academic emergency medicine positions to FRCP training may obviate this discrepancy, our results show that the FD interests of CCFP-AEPs were the same as those for FRCP-AEPs. As currently one-third of Canadian AEPs are CCFP-trained, this represents an under-utilized resource for academic programs. Furthermore, though some CCFP-AEPs working in academic centers may not wish to participate in non-clinical work, the results of our survey suggest otherwise.

In contrast, female AEPs expressed greater need for FD to develop their leadership skill-set. Farley et al.[16] suggested gender differences exist by providing three FD topics of particular interest to female emergency

physicians at the start of their careers. Our results show that this is a trend across the academic domains of leadership, education and research. However, as shown in Figure 3, these trends are statistically significant only for FD in leadership; in research and education this increase is accounted for by a greater proportion of junior faculty amongst the female cohort. A likely contributor to the increased desire for FD in leadership is the reported underrepresentation of women in leadership activities/positions (Figure 1).

FD activities need to be relevant and convenient

In the past, the need for FD was frequently under-estimated by clinicians, and the benefits of FD equally unrecognized.[2,39] However, this study illustrates that AEPs find value in FD participation. AEPs were motivated to participate in FD activities because it was personally satisfying, provided career diversity, and enhanced both teaching and leadership skills. Unlike Huwendiek et al.'s study,[26] which suggested that a lack of academic recognition is a barrier to FD participation, Canadian AEPs were ambivalent about peer or faculty recognition for FD participation. Moreover, AEPs opposed making FD activities mandatory (Likert response: 2/5).

In contrast, the importance of delineating the content of future FD activities is well understood: AEPs rated subject matter as the most important factor when considering whether or not to participate in FD (Likert response: 5/5). Convenience was also of great importance. Most AEPs preferred to attend FD activities on weekdays, particularly during "business hours." This is intuitive, when AEPs have a preponderance of evening shifts. More than two-thirds of those surveyed preferred activities between two hours and half a day in duration, with only 15% seeking activities an hour or less in duration, suggesting that traditional lunchtime rounds may not be as effective for AEPs compared to, for example, an afternoon workshop (though both formats are supported). Additionally, AEPs wanted activities to occur in the hospital where they work (97%) rather than farther afield.

LIMITATIONS

This study is a cross-sectional survey and has several limitations inherent to this design. It also represents the opinions of AEPs during the period of October 2011–June 2012 (including the Calgary pilot), and may

no longer be a valid representation of their current FD needs and interests. However, given that most of the respondents are likely still in practice and that similar results regarding FD needs/interests have been reported in the literature,[16,17,26] our results are likely still very relevant. Moreover, the demographics of our respondents make it unlikely that this interval will change the relevance of our results. Most respondents are EM-specific, FRCPC-trained AEPs, and academic centers are increasingly recruiting AEPs with these credentials. More than two-thirds of the respondents were in the first 15 years of their careers, and only respondents from two centers (McGill and Queens) had significant participation from senior faculty. This suggests a participation bias towards those early in their careers, where perhaps the need for faculty development is greater. There was a disproportionately higher response from female AEPs, compared to the demographics of the target population. This may reflect a gender bias towards an interest in faculty development; however, our sub-group analyses show that females generally had the same FD interests as males, and the results highlight the specific gender differences that are likely to be more relevant now than at study initiation.

One area that was not broadly addressed in this survey, and has since become popular, involves the use of social media. The rapidity with which sessions on podcasting, tweeting, and providing online content fill up suggest that this is a new need that FD can address, and that it should be further investigated.

Across the eight centres surveyed, both regional and institutional heterogeneity was evident, which may reflect local culture/practices or be evidence of selection bias. However, this typically did not correlate with demographic differences between faculties, nor was there consistency in the institutional heterogeneity (i.e., no one centre had more or less need across all the academic domains).

The survey was administered in an online format only; this provided rapid, cost-effective dissemination, but may have obviated participation by those of low computer literacy, which is more likely to bias the responses towards those of junior faculty.

In addition, the survey was administered to over 950 AEPs nationally, of which 36% responded, meaning that the results may be affected by sampling bias and not represent FD interests across the country. This may reflect an under-appreciation of FD by senior faculty,

whose participation was lowest (those with 20+ years seniority had a 16% response rate, compared with the most junior faculty, who had a 67% response rate) or simply greater survey burnout. Moreover, when interpreting this low response rate, it may be argued that respondents to a FD survey were more likely to have an interest in FD participation. Hence, these results are more likely to be reflective of the needs and interests of future participants and less biased by the views of those with no intention to participate. Lastly, though low, the response rate (RR) is comparable to other multi-centre studies. Farley et al.[16] surveyed approximately the same number of people (roughly 950), with a 25% RR (vs our 36% RR). Dent et al.[26] had a 58% RR, although this was the Australian College's sponsored survey of its members, its survey was far shorter than ours, and financial incentives were provided for completing the study, all of which may account for the higher RR. Huwendiek et al.'s study[23] of European medical educators had a purview much broader than ours (both in terms of multidisciplinary medical faculty and dozens of countries included), and thus it had a higher overall number of respondents, yet its RR was far lower than ours (4.8%).

CONCLUSIONS

This study is the first comprehensive national FD needs assessment in a sample of Canadian academic emergency physicians. It demonstrates that in addition to their clinical work, AEPs who responded to the survey were engaged in educational activities, and this suggests the greatest FD needs remain in the educational domain. However, our results highlight that AEPs who responded to the survey were increasingly interested in developing their other, non-clinical skill-sets, particularly for activities in research and social accountability. Moreover, this study details these FD interests across a broad range of academic pursuits and provides insight as to where FD resource allocation and programming efforts should be focused.

APPENDIX

Emergency Medicine Faculty Development
1. Study Information and Consent

STUDY: A National Faculty Development Needs Assessment for Emergency Medicine

SPONSOR: Research Division, Department of Emergency Medicine, University of Calgary

INVESTIGATORS:
Principal Investigator: Dr. Eddy Lang, MDCM, CFPC
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THE CONSENT PROCESS
This consent form is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about anything mentioned, or information not included here, please ask. Take the time to read this carefully and to understand any accompanying information.

BACKGROUND
Over the last 30 years, faculty development has been increasingly used to assist academic clinicians in their expanded roles as scholars, researchers, leaders and administrators. As faculty practicing in the field of Emergency Medicine, you have diverse responsibilities and continued professional growth depends on the need for new skills, enhanced knowledge and innovative approaches to your clinical and academic work portfolios.

WHAT IS THE PURPOSE OF THE STUDY?
This needs assessment survey will lay the groundwork for the creation of faculty development curricula that are both relevant and considered important by you – a practitioner of Emergency Medicine.

WHAT WOULD I HAVE TO DO?
This survey can be completed online; it will take 10-15 minutes to complete. If you agree to participate, you will be asked questions relating to your current faculty development activities, identifying your interest for future faculty development activities, and assessing motivation for and/or perceived barriers to engaging in faculty development. The survey is anonymous and only non-identifying, demographic information will be collected.

WHAT ARE THE RISKS?
There are no risks to participation in this study.

WILL I BENEFIT IF I TAKE PART?
If you agree to participate in this study there may or may not be a direct benefit to you. Information collected will be used to direct future faculty development in Emergency Medicine as well as serving as the basis for national standards for Faculty Development in Emergency Medicine.

DO I HAVE TO PARTICIPATE?
Your participation is entirely voluntary and you may withdraw from the study for any reason, without penalty of any sort, by not completing the survey. However, as the survey is anonymous, once submitted your responses cannot be extracted from the general data pool. Please contact any of the investigators prior to starting the survey for any questions or concerns.

WILL I BE PAID FOR PARTICIPATING, OR DO I HAVE TO PAY FOR ANYTHING?
Participants will incur no costs in completing the survey.

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WILL MY RECORDS BE KEPT PRIVATE?
The survey is anonymous; the only demographic information to be collected includes i) type of licensure (FRCPSC or CFPC), ii) years of practice (ranged data), iii) practice population (peds/adult/both) and iv) current faculty development activities. Your name will not be linked in any way to survey responses and will be kept only for proof of consent and survey administration. The survey data will be stored separately from respondent names on the investigator's computer in a password protected file. The online survey tool will make use of 128-bit encryption and store respondent identifiers separately from survey answers. Data analysis and reporting will be conducted without access to this list.

1. You will be asked to enter your name below and will then be able to click " NEXT " to access the survey. Entering your name on this form and clicking "NEXT" indicates that you have understood to your satisfaction the information regarding your participation in the research project and agree to participate. You are free to withdraw from the study at any time.

If you have further questions concerning matters related to this research, please contact Dr. Eddy Lang at 403-606-0590 or Mark Brown at 403-809-9804.

If you have any questions concerning your rights as a possible participant in this research, please contact The Chair of the Conjoint Health Research Ethics Board at the Office of Medical Bioethics, 403-220-7990 or the Ethics Resource Officer, Internal Awards, Research Services, University of Calgary, at 403-220-3782.

The University of Calgary Conjoint Health Research Ethics Board has approved this research study.

PLEASE ENTER YOUR NAME:

Emergency Medicine Faculty Development

2. Current Faculty Development Activities

This section inquires briefly about the faculty development activities you are currently involved in.

1. Please indicate which TEACHING activities you are currently involved in:

☐ small group instructor   ☐ lecturer

☐ rounds presenter   ☐ curriculum development

☐ bedside teaching   ☐ simulations

2. Please indicate which SCHOLARLY activities you are currently involved in:

☐ conference presenter   ☐ editor of a journal/book

☐ attending journal club   ☐ writing book or book chapter

☐ invited speaker   ☐ writing journal article

3. Please indicate which SOCIAL ACCOUNTABILITY activities you are currently involved in:

☐ volunteering   ☐ political advocacy

☐ global health   ☐ community outreach

☐ advisory body member (CMA, AMA, CAEP)

4. Please indicate which RESEARCH activities you are currently involved in:

☐ basic science   ☐ epidemiology

☐ operate a research lab   ☐ clinical trial

☐ primary investigator

5. Please indicate which LEADERSHIP activities you are currently involved in:

☐ budgeting/finance   ☐ program director

☐ manager   ☐ quality assurance/management

☐ administrator   ☐ department head/chief

☐ committee member

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3. Areas of Interest

This section covers your faculty development interests in the following areas:
leadership, scholarship, teaching, research and social accountability

1. LEADERSHIP
Indicate up to 5 topics you would be interested in learning about:

☐ management skills   ☐ negotiation and conflict management

☐ project management   ☐ stress management

☐ budgeting   ☐ mentoring

☐ resource allocation   ☐ administration

☐ emotional intelligence   ☐ health care finance

☐ interpersonal skills   ☐ quality assurance/management

☐ professionalism committees   ☐ strategic planning

☐ developing sustainable practice   ☐ goal planning

☐ team building   ☐ counseling

2. SCHOLARSHIP
Indicate up to 4 topics you would be interested in learning about:

☐ editing manuscripts   ☐ preparing for grand rounds

☐ writing for the media   ☐ running a journal club

☐ writing for publication   ☐ grant writing

☐ dealing with the media   ☐ accessing medical literature

☐ presentation skills   ☐ conducting literature reviews

☐ organizing sabbaticals   ☐ creating posters for presentation

☐ evidence based medicine   ☐ public speaking

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3. TEACHING
Indicate up to 4 topics you would be interested in learning about:

- ☐ developing a teaching portfolio
- ☐ small group facilitating
- ☐ bedside teaching
- ☐ technology in the classroom
- ☐ assessing and evaluation
- ☐ interdisciplinary teaching
- ☐ online learning
- ☐ peer review

- ☐ evidence-based medicine
- ☐ communication skills
- ☐ curriculum development
- ☐ providing constructive feedback
- ☐ computer skills
- ☐ learning styles
- ☐ simulation and simulation environments

4. RESEARCH
Indicate up to 4 topics you would be interested in learning about:

- ☐ corporate/pharmaceutical funding
- ☐ ethics applications and review
- ☐ securing research funding
- ☐ collaborative research
- ☐ conducting a clinical trial
- ☐ operating a research lab
- ☐ research ethics
- ☐ supervising research

- ☐ techniques for critical appraisal
- ☐ biostatistics and analysis
- ☐ developing research protocols
- ☐ evidence-based medicine and epidemiology
- ☐ conducting literature reviews
- ☐ data collection
- ☐ study design for research
- ☐ data management

5. SOCIAL ACCOUNTABILITY
Indicate up to 4 topics you would be interested in learning about:

- ☐ health law
- ☐ political advocacy
- ☐ community outreach
- ☐ international development
- ☐ disease prevention
- ☐ working on advisory committees
- ☐ vulnerable/marginalized populations

- ☐ global health
- ☐ public and health policy
- ☐ health missions
- ☐ healthcare finance
- ☐ remote and rural medicine
- ☐ professional bodies (CMA/AMA/CAEP)
- ☐ professional practice guidelines

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4. Participation

This section explores your motivation for participation in faculty development activities and identifies potential barriers to future participation.

1. To what extent do you perceive the following as a potential barrier to your participation in faculty development activities?

	Significant Barrier	Moderate Barrier	Minimal Barrier	Not a Barrier
cost of activity	○	○	○	○
your current workload	○	○	○	○
topic/subject matter	○	○	○	○
location of activity	○	○	○	○
timing of activity	○	○	○	○
duration of activity	○	○	○	○

2. To what extent would the following motivate your participation in faculty development activities?

	Not a Motivator	Mild Motivator	Moderate Motivator	Significant Motivator
financial compensation	○	○	○	○
recognition by faculty	○	○	○	○
being awarded a degree	○	○	○	○
provides career diversity & variety	○	○	○	○
achieving certification	○	○	○	○
recognition by peers	○	○	○	○
improved clinical skills	○	○	○	○
career advancement	○	○	○	○
personal satisfaction	○	○	○	○

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3. To what extent would you support the following methods of encouraging faculty development?

	Strongly Against	Against	Neutral	Support	Strongly Support
Have yearly faculty development requirements (like CME credits)	○	○	○	○	○
Ensure faculty development activities are integrated into career goal discussions with administration	○	○	○	○	○
Have mandatory faculty development activities	○	○	○	○	○
Link faculty development to financial remuneration	○	○	○	○	○
Create awards for faculty development achievements	○	○	○	○	○

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5. Logistics

This section identifies your preferences for the time, location and format of faculty development activities

1. How much time in an average month are you willing to devote to faculty development?

[____ ▾]

2. How likely are you to participate in each of the following faculty development activities?

	Unlikely	Not Sure	Possibly	Definitely
guest lecture	○	○	○	○
grand rounds	○	○	○	○
group retreat	○	○	○	○
lecture series	○	○	○	○
individual consultation	○	○	○	○
conference	○	○	○	○
workshop	○	○	○	○
online course	○	○	○	○
fellowship program	○	○	○	○
sabbatical	○	○	○	○
degree program	○	○	○	○
certificate program	○	○	○	○

3. Please indicate any of the following times you would be willing to attend a faculty development activity:

	Early a.m.	Morning	Lunch	Afternoon	Evening
Weekday	☐	☐	☐	☐	☐
Saturday	☐	☐	☐	☐	☐
Sunday	☐	☐	☐	☐	☐

4. Please indicate any of the following locations where you would be willing to participate in faculty development activities:

☐ The hospital where you work   ☐ In a nearby city (within 100 km)

☐ Other hospitals in the area   ☐ Provincially

☐ Your affiliated medical school   ☐ Nationally

☐ Within your city   ☐ Internationally

Emergency Medicine Faculty Development

6. Demographics

This section will collect non-identifying information to allow improved delivery of faculty development opportunities.

1. Which faculty are you affiliated with?

[▼]

2. What is your licensing body?

[▼]

3. How many years have you been in practice?

[▼]

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