Administration and leadership competencies: establishment of a national consensus for emergency medicine

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ABSTRACT

Introduction: The Royal College of Physicians and Surgeons of Canada requires emergency medicine (EM) residency programs to meet training objectives relating to administration and leadership. The purpose of this study was to establish a national consensus on the competencies for inclusion in an EM administration and leadership curriculum.
Methods: A modified Delphi process involving two iterative rounds of an electronic survey was used to achieve consensus on competencies for inclusion in an EM administration and leadership curriculum. An initial list of competencies was compiled using peer-reviewed and grey literature. The participants included 14 EM residency program directors and 43 leadership and administration experts from across Canada who were recruited using a snowball technique. The proposed competencies were organized using the CanMEDS Physician Competency Framework and presented in English or French. Consensus was defined a priori as $>$ 70% agreement.
Results: Nearly all (13 of 14) of the institutions with an FRCPC EM program had at least one participant complete both surveys. Thirty-five of 57 (61%) participants completed round 1, and 30 (53%) participants completed both rounds. Participants suggested an additional 16 competencies in round 1. The results of round 1 informed the decisions in round 2. Fifty-nine of 109 (54.1%) competencies achieved consensus for inclusion.
Conclusions: Based on a national modified Delphi process, we describe 59 competencies for inclusion in an EM administration and leadership curriculum that was arranged by CanMEDS Role. EM educators may consider these competencies when designing local curricula.

RÉSUMÉ

Introduction: Le Collège royal des médecins et chirurgiens du Canada exige que les programmes de résidence en médecine d'urgence (MU) contiennent des objectifs de formation en matière d'administration et de pouvoir d'influence. L'étude visait à établir un consensus national sur les compétences à inclure dans un programme d'études concernant l'administration et le pouvoir d'influence en MU.
Méthode: Une enquête électronique fondée sur une version modifiée de la méthode Delphi et comptant deux tours a servi à établir un consensus sur les compétences à inclure dans un programme d'études concernant l'administration et le pouvoir d'influence en MU. Une première liste a été dressée à l'aide de la documentation évaluée par les pairs et de la documentation parallèle. Les participants comprenaient 14 directeurs de programme de résidence et 43 experts en administration et en pouvoir d'influence, qui provenaient de toutes les régions du pays et qui avaient été sélectionnés selon la technique de «boule de neige». La liste des compétences proposées suivait la structure du Cadre des compétences CanMEDS et avait été dressée en français et en anglais. L'atteinte d'un consensus a été fixée, a priori, à un taux d'entente supérieur à 70%.
Résultats: Presque tous les établissements (13 sur 14) offrant un programme en vue de l'obtention du titre de FRCPC en MU comptait au moins un représentant qui s'était rendu jusqu'à la fin des deux enquêtes: 35 représentants sur 57 (61%) avaient achevé le premier tour et 30 représentants (53%) les deux tours. Les participants ont suggéré d'ajouter 16 autres compétences au premier tour. Les résultats du premier tour ont permis d'éclairer les décisions prises au deuxième tour. Au total, 59 compétences sur 109 (54.1%) ont fait l'objet de consensus quant à leur inclusion dans le programme.
Conclusions: Seront présentées 59 compétences retenues dans une enquête menée selon une version modifiée de la méthode Delphi, à l'échelle du pays, en vue de leur inclusion dans un programme d'études concernant l'administration et

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le pouvoir d'influence en MU, et établies selon les rôles CanMEDS. Les éducateurs en MU peuvent tenir compte de ces compétences dans l'élaboration de leur programme local d'études.

Keywords: administration, CanMEDS, education, emergency medicine, leadership

The Royal College of Physicians and Surgeons of Canada (RCPSC) accredits Canada's 5-year emergency medicine (EM) residency programs. In 2008, the Objectives of Training for EM residencies were updated to call for a minimum of 4 months of the residency program to be dedicated to developing competence in emergency medical services, education, research, and administration.[1] This change corresponded to a new specialty training requirement that EM residents "serve in administrative and leadership roles, as appropriate," "chair or participate effectively in committees and meetings," "identify priorities for change in emergency health care," and "plan relevant elements of health care delivery (e.g., work schedules)."[2] Many EM residency programs have independently developed administrative rotations or courses in response to this change. More recently, the RCPSC collaborated on a national, multiorganization project intended to establish a future vision for postgraduate medical education in Canada. "Foster leadership development" was one of its eight recommendations.[3]

Significant work on incorporating administration and leadership competencies into EM curricula has been done in other countries. The American Board of Emergency Medicine (ABEM) used a task force to create a model of the clinical practice of EM, which included nontherapeutic core competencies in areas such as administration.[4] In 2011, American academic chairs of EM were surveyed to identify the key managerial skills desired.[5] The 2012 Emergency Medicine Milestones Project of the Accreditation Council for Graduate Medical Education and ABEM also incorporate administrative competencies, including team management, patient safety, and systems-based management.[6]

The College of Emergency Medicine in the United Kingdom developed a general curriculum and assessment system for EM training that includes several administrative and leadership objectives.[7] Also in the United Kingdom, the National Health Service and Academy of Medical Royal Colleges has created a "Medical Leadership Competency Framework" and corresponding curriculum.[8] Despite this work, a recent *BMJ* editorial called for greater managerial training in medical undergraduate and postgraduate training programs.[9]

Several recent publications describe residency programs addressing health care administration competencies in various domains, including management and administration,[10,11] medicolegal issues,[12] health policy,[13,14] and quality improvement and patient safety.[15] Textbooks have also been published on emergency department management.[16,17]

Although this work provides a significant body of knowledge to build on, the competencies for these programs are not sufficiently descriptive and were not developed or validated in the context of the Canadian health care system. As the RCPSC EM specialty requirements prescribe that all trainees acquire administrative competence, regardless of their intended practice niche,[2] the available literature has not provided sufficient guidance in this respect to develop an appropriate evidence-informed administrative curriculum. This gap was noted by the Royal College EM program directors at their annual meeting in St. John's, Newfoundland (June 2011). This issue was then brought forward to the Royal College EM Specialty Committee, and the discussions resulted in the initiation of this study.

This study aimed to define national administration and leadership competencies for specialty emergency physicians in Canada to enable them to contribute effectively to clinical, research, and education programs.

METHODS

The methodology was closely adopted from a study conducted by Penciner and colleagues.[18] All 14 EM Royal College program directors and 43 administrative/educational experts were recruited via a snowball method.[19] Each program director was asked to nominate three EM academic or administrative leaders at their institutions who would be available to complete the survey during the study period (fall 2012). One program director nominated four participants. Participants were instructed to identify the core competencies informing an ideal administration curriculum for all Royal College EM trainees. Consensus

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was achieved using a modified Delphi process.[20] This methodology received ethics approval from the Research Ethics Boards at both the University of Saskatchewan and the University of Alberta.

Competency development

A comprehensive list of competencies for an EM administration/leadership curriculum was developed by the authors. The initial list was informed via multiple sources, including the Emergency Medicine RCPSC Objectives of Training,[1] the ABEM Model of Clinical Practice of Emergency Medicine,[4] the curricula of EM fellowships,[21] a review of the grey literature on administration rotations and curricula found using a Google search, references suggested by the authors, and the administrative curricula of the FRCPC EM residency programs at the University of Saskatchewan, Queen's University, Université Laval, and McGill University. The competencies were mapped to the CanMEDS 2005 framework[22] by consensus of the authors. Additions were made until a comprehensive list was achieved.

The survey consisted of a description of each proposed competency organized by CanMEDS role and, for each competency, either a 7-point Likert scale that ranged from strongly disagree to strongly agree (round 1) or a single rating, "include/do not include" (round 2). It was pilot tested with an author (B.R.H.), a program director, an EM educator, and an EM administrator from the University of Alberta.

Round 1

The program directors and each of the physicians nominated were invited to complete the survey. The participants were asked to indicate the strength of their agreement with each competency's inclusion in an EM administration and leadership curriculum and encouraged to add additional competencies that they felt were missing. The survey was distributed to the participants using a Web-based tool (www.surveymonkey.com) and was available in French and English. In round 1, each participant received an initial e-mail and two reminder e-mails at weekly intervals.

Round 2

The results of round 1 were used to categorize the competencies by the proportion of Likert scores of "must include" (7), "for consideration" (4–6), or "do not include" (< 4). The participants who completed round 1 in its entirety were invited to complete round 2. In round 2, each participant received an initial e-mail and two reminder e-mails at weekly intervals. In round 2, those competencies ranked "do not include" by > 75% of round 1 respondents were removed and the additional competencies that were suggested in round 1 were

Table 1. Participant demographics

Sex	
Male	31
Female	6
Age (yr)	
20–29	0
30–39	8
40–49	13
50–59	15
60–69	1
Years in practice	
0–2	0
2–5	1
5–10	8
10–15	4
> 15	24
Practice environment	
Academic centre	33
Urban community	4
Rural community	0
Location of associated medical school	
Western Canada	16
Ontario	9
Quebec	10
Maritimes	2
Certification*	
CCFP	0
CCFP(EM)	8
ABEM	2
FRCPC(EM)	28
FRCPC (other)	0
CSPQ (EM)	3
Current/previous administrative and leadership roles	
ED chief	21
Program director	11
Other university leadership role	12
Other hospital leadership role	20
Professional organization leadership	10
Professional college leadership role	3
Other	1

ABEM = American Board of Emergency Medicine; CCFP = Canadian College of Physicians; CSPQ = Collège des médecins du Québec EM Specialist; ED = emergency department; EM = Emergency Medicine; FRCPC = Fellow of the Royal College of Physicians of Canada.
*Four participants listed two certifications.

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added. The competencies were rearranged in decreasing order by the proportion of "must include" responses within each CanMEDS role, and the results of round 1 (i.e., the proportion of "must include," "for consideration," and "do not include" responses) were indicated. For round 2, respondents selected "include" or "do not include" for each competency. Candidate competencies that received < 70% "include" responses were removed to generate the final list.

RESULTS

Table 1 provides the demographics of the study participants who completed round 1. The participants represented a broad geographic distribution and significant administrative and leadership experience.

Figure 1 shows the progression of participants through the study. Of the 57 participants invited to complete round 1, 37 started the survey and 35 completed it (61%). Thirty of 57 participants completed both rounds (53%). Nearly every medical school with a Royal College EM residency training program (13 of 14) had at least one participant complete both surveys.

Figure 2 shows the refinement of competencies through the study process. The pilot survey clarified and reclassified two competencies in different CanMEDS roles. Round 1 identified 16 additional competencies for inclusion. No competencies were rated "do not include" by > 75% of the round 1 participants, so none were removed prior to round 2. Of the 109 competencies included in round 2, 59 were identified by consensus of > 70% of participants to be included as core competencies for an administration curriculum for Royal College EM trainees (Table 2).

DISCUSSION

This study used a modified Delphi process to develop a national consensus of core administration and leadership competencies for specialists in EM. Although the Delphi process generally includes three or four rounds, a similar two-round process was successfully used by Penciner and colleagues.[18] Due to survey fatigue, we felt that it would be unlikely that the participants could be recruited to fill out additional surveys. Although administration may seem to fit exclusively the "Manager" CanMEDS role, it was noted that consensus was reached around administrative and leadership competencies that map into each of the CanMEDS roles.

The Delphi process is meant to develop consensus among a group of experts; however, the qualifications of an expert have not been defined in the literature. The use of a "snowball technique"[19] allowed the

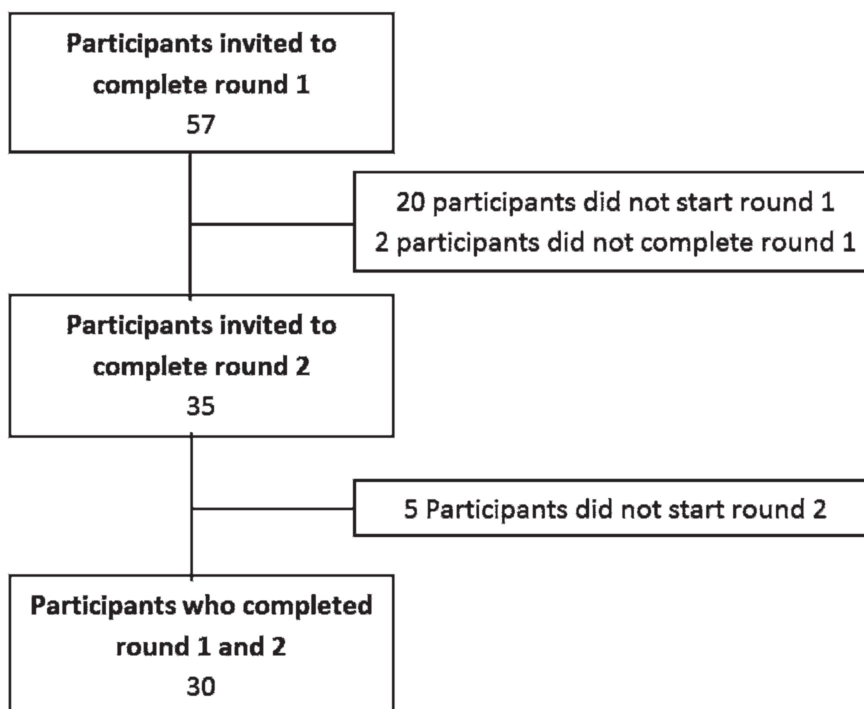

Figure 1. Progression of participants through the study process.

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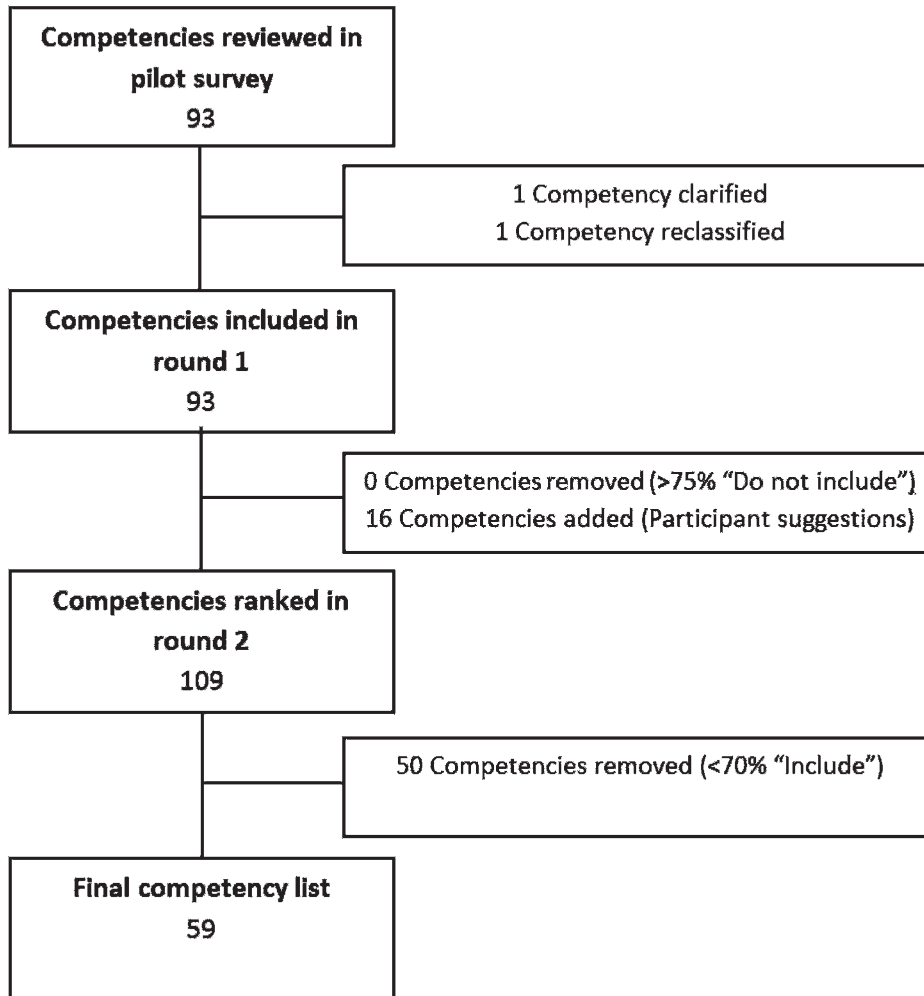

Figure 2. Refinement of competencies through the study process.

recruitment of a group of physicians who are acknowledged as experts by their peers. There were several notable characteristics of the expert group. Females appeared to be underrepresented; however, to our knowledge, the proportion of females in EM administrative roles in Canada has not been determined. There was also a larger proportion of participants with the Royal College EM specialty certification than with other EM credentials, likely resulting from the participation of the Royal College program directors and the survey's focus on competencies for the Royal College program. A proportion (21.6%) of the participants did have CCFP(EM) certification.

The modified Delphi technique has proven to be a rigorous methodology capable of developing consensus among a group of experts who are geographically dispersed. We expanded on Penciner and colleagues' study in medical education[18] by making the surveys available in French and English to facilitate the involvement of participants from Quebec, enhancing the generalizability of the results by including every province with Royal College EM trainees. However, our focus on recruiting from academic centres with Royal College EM training programs limited the number of participants from regional and rural sites and may impact the generalizability of the results to these settings.

Despite the facts that this initiative evolved from a need communicated by the program directors, that the participants were recruited by the program directors in advance of survey distribution, that participants were made aware of the study period, and that participants were given three notifications during each round to complete the survey, the overall response rate was only 53%. Penciner and colleagues were able to achieve a 96.7% response rate by directly

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Table 2. Consensus list of administration and leadership competencies

Competencies	Proportion of ''include'' responses
Medical Expert (20)	
Discuss the principles of process improvement as they relate to the delivery of emergency care—including continuous quality improvement and quality assurance	1.00
Discuss principles involved in the function of an emergency department related to standard clinical processes	1.00
Explain the triage process and principles	1.00
Define patient safety as pertaining to emergency medicine	0.97
Describe the management structure/organization of an ED	0.93
Describe the management structure/organization of a hospital	0.90
Discuss principles involved in the function of an ED related to links with emergency medical services	0.87
List the role and responsibilities of an ED medical director/head/chief	0.87
Describe the principles and process of delegation of medical acts	0.83
Define leadership	0.83
Discuss principles involved in the function of an ED related to the physical design of the ED	0.80
List the principles of patient safety recommendation generation and implementation	0.80
Discuss principles involved in the function of an ED related to links with primary care	0.79
Describe the role/interaction of an ED with its health region/organization	0.77
Describe different types of leadership	0.77
Discuss principles involved in the function of an ED related to infection control	0.76
Discuss principles involved in the function of an ED related to specialty/task-specific zoning of an ED	0.73
Discuss principles involved in the function of an ED related to patient follow-up	0.73
List criteria for triage to resuscitation room, monitored bed, or ambulatory care	0.70
Discuss principles involved in the function of an ED related to security	0.70
Communicator (5)	
Describe a nonconfrontational approach to addressing patient complaints with patients	1.00
Develop an approach in using communication tools to promote a change/an idea/a prevention strategy	0.90
Discuss possible pitfalls in answering questions from the media pertaining to ED care	0.90
Develop an approach to discussing crises with the media	0.83
Develop an approach to discussing adverse events with the media	0.77
Collaborator (9)	
Discuss principles of conflict resolution	1.00
Describe strategies used to communicate change across an ED	1.00
Describe strategies used to communicate change initiatives to physicians	1.00
Demonstrate a nonconfrontational approach to addressing patient complaints with staff involved in the complaint	0.97
Describe how to chair and participate effectively in committee meetings	0.97
List positive and negative factors affecting team building	0.93
Identify specific situations where a Critical Incident Stress Debriefing program in the ED should occur	0.93
Discuss principles of negotiation	0.83
Identify which outside parties (senior hospital management, College of Physicians and Surgeons, etc.) must be involved with patient/staff complaints	0.73
Manager (14)	
Describe strategies used to implement change across an ED	0.97
Describe the retention factors for ED physicians	0.93
Describe methods to assess ED patient experience/satisfaction	0.93
Discuss principles of career planning	0.93
Describe the legal issues surrounding alteration or termination of physician privileges	0.93
Demonstrate the ability to use reports and statistics to evaluate ED operations	0.90
Describe a system of performance review for physicians	0.90
List strategies for optimal time management in the ED	0.83
Describe a strategic planning process	0.80
Describe models to optimize clinical organization, including lean management	0.80
Discuss considerations that affect the development of an emergency physician schedule	0.77

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Table 2. Continued

Competencies	Proportion of "include" responses
Describe the recruitment process for ED physicians	0.73
Describe the hiring process for ED physicians	0.73
List strategies for personal time management	0.70
Scholar (4)	
Outline common causes of ED overcrowding as described in the academic literature	1.00
Outline effective strategies to address ED overcrowding as described in the academic literature	1.00
List evidence-based recommendations for physician scheduling that optimize patient safety	0.93
Demonstrate how to use evidence-based medicine to solve management problems	0.87
Health Advocate (2)	
Discuss principles of resource allocation in an ED (monitored beds, staff coverage, etc.)	0.93
Describe how care plans can be used to benefit the care of patients that frequently seek care in the ED	0.77
Professional (5)	
Outline principles of confidentiality and obligatory reporting as related to emergency medicine in Canada	0.93
Explain the legal, ethical, and human implications in responding to a complaint regarding patient care	0.90
List specific signs that would suggest a colleague is depressive/is in burnout/needs assistance	0.80
List health issues that affect emergency physicians as a result of their profession	0.73
Describe the regulatory role of provincial colleges of physicians and surgeons as it relates to emergency physicians	0.70

recruiting 30 participants prior to distributing the survey.[18,23] Despite the low response rate, the emergency physicians who did complete the survey represented leaders of EM in Canada.

The methodology allowed for the development of a large list of potential competencies. By drawing from existing curricula, published literature, and grey literature and allowing the addition of competencies, we decreased the likelihood of missing an important competency.

The cutoffs for exclusion and inclusion criteria were made a priori, a standard part of the Delphi process.[18,20,23] Notably, none of the competencies met the exclusion criteria after round 1. The round 2 inclusion criteria were set slightly lower than those of similar studies[18,20] to favour inclusivity.

Although these competencies were not intended to be prescriptive, the development of a consensus list raises the possibility of a national curriculum. The adoption of a formal curriculum for Royal College EM residents would ensure that each graduate has the skill set to function effectively in the "real world," where administrative and leadership challenges are commonplace. Although multiple publications have recognized the importance of fostering physician leadership skills for this reason,[24–28] to our knowledge, no Royal College program has developed a national curriculum in this specific area.

CONCLUSION

This list of competencies may allow program directors to refine leadership and administrative curricula for Royal College EM trainees. The successful use of a modified Delphi process for this purpose may provide a model to develop consensus on curricula in other areas.

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