Off-service residents in the emergency department: the need for learner-centredness

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ABSTRACT

Objectives: Standard learning objectives enable residency directors to develop effective programs and evaluate residents based on key goals and parameters. While standards are important for ensuring basic competence, the usual process has little flexibility to address the unique needs and desires of a given resident. Our objective was to determine whether the expectations of off-service residents rotating through an emergency department (ED) rotation were being met.

Methods: We developed a 144-item questionnaire using a 5-point Likert scale and surveyed 25 off-service residents at the beginning and end of their ED rotation. The survey was divided into 3 sections: presentations, skills and diagnoses.

Results: The results demonstrate that certain expectations are consistently underachieved while others represent individual variations.

Conclusion: We propose a learner-centred approach to ensure an optimal emergency educational experience for all trainees.

Key words: learner-centred, medical education; postgraduate education

RÉSUMÉ

Objectifs : Les objectifs d'apprentissage normalisés permettent aux directeurs des programmes de formation en résidence de mettre au point des programmes efficaces et d'évaluer les résidents en fonction de buts et de paramètres clés. Les normes sont importantes dans la vérification de la compétence de base, mais le processus habituel n'offre guère de souplesse pour répondre aux besoins et aux souhaits particuliers de chaque résident. Cette étude visait à établir si les attentes de résidents sans service d'attache qui étaient en rotation dans un service d'urgence (SU) étaient satisfaites.

Méthodes : Nous avons élaboré un questionnaire de 144 questions au moyen d'une échelle de Likert de cinq points et avons sondé 25 résidents sans service d'attache au début et à la fin de leur rotation dans un SU. Le questionnaire était divisé en trois sections : exposés, compétences et diagnostics.

Résultats : Les résultats démontrent que certaines attentes sont régulièrement insatisfaites, tandis que d'autres font l'objet de variations individuelles.

Conclusion : Nous proposons l'adoption d'une démarche axée sur l'apprenant pour veiller à ce que tous les stagiaires aient une expérience de formation optimale en service d'urgence.

Introduction

The planning of educational programs in medicine has traditionally followed a standard format: objectives are laid out by program directors or derived from a national set of standards. Defined objectives and standards facilitate the development of an efficient and effective program by clarifying goals, training needs and evaluation measures.[1,2]

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Standards are important for ensuring basic competence, but the usual process has little flexibility to address the unique needs and desires of any given resident. Ende and Atkins argued strongly against relying only on educational objectives, noting that a list of objectives fails to account for the richness of personal interactions with patients, colleagues and consultants as part of the learning experience.[2] Standard educational objectives also fail to take into account the individual goals of the learner, and the expectations of residents are often ignored when considering the success of a given rotation. It is difficult for supervisors of these "off-service" (i.e., not emergency medicine) residents to know if the educational experience meets the needs of both the trainees and the training program.

Our objective was to determine the degree to which off-service residents attained their educational expectations during their emergency medicine (EM) rotation, and thereby whether it is likely that a learner-centred approach would enrich the experience.

Methods

Setting and subjects

The London Health Sciences Centre (LHSC) is a tertiary care facility in London, Ont., serving a catchment area of approximately one million patients. The emergency department (ED) operates out of 2 principal sites, seeing a predominantly adult patient volume of approximately 72 000 patients per year. LHSC is affiliated with the Faculty of Medicine and Dentistry at the University of Western Ontario (UWO), London, Ont., and the LHSC ED is the primary site for postgraduate year (PGY) 1 and 2 EM experience. Each year, about 80 trainees rotate through the ED for 1 to 4 months each, working approximately 15 twelve-hour shifts per month under the supervision of staff emergency physicians. During their rotations, they undergo a brief ED orientation, receive regular bedside teaching and attend weekly didactic seminars.

Survey design

Our survey was modeled after similar surveys used by other services for their residents[2–5] and was based on the EM educational objectives for undifferentiated physicians,[6] for residents in the College of Family Physicians of Canada EM program (CCFP-EM)[7] and for those in the Royal College of Physicians and Surgeons of Canada emergency specialist program (FRCPC).[8] The first section asked respondents, for a series of *Presenting Complaints*, to "indicate the degree to which you would like to be able to independently assess and initiate management by the end of your emergency medicine rotation." The second section asked respondents to "indicate the degree to which you would like to be able to independently perform the following *Skills/Procedures* at the end of your emergency medicine rotation." The third section asked respondents to indicate, for a series of *Diagnoses*, "the degree to which you would like to be able to independently make the diagnosis and initiate management by the end of your emergency medicine rotation." Each item was scored on a 5-point Likert scale, with 1 being "no expectation to independently assess/initiate management," 3 being "neutral" and 5 being "high degree of expectation." Examples of the 144 survey items are seen in Table 1. (Copies of the survey are available from the corresponding author.)

Survey application

After development, several members of the department piloted the survey. It was then distributed to all off-service residents who rotated through the ED from July 1 to Nov. 30, 1998. To determine expectations for the EM rotation, each trainee was asked to complete the survey during their ED orientation. To determine whether the rotation met their expectations, they were asked to complete a similar survey at the end of their rotation; however, the end-of-rotation survey differed in the wording of the stem questions — each asking each resident to indicate the degree to which they "*now feel comfortable*" with the specified presentations, skills and diagnoses. Non-responders were telephoned and later sent a second survey if they failed to reply to the first.

Data analysis

The trainees were recorded by specialty and by an assigned ID (identification) number (e.g., 1, 2, 3) within that specialty. Each trainee's before and after results were compared for the 3 subsections: Presenting Complaints, Skills/Procedures, and Diagnoses. We assessed the individual trainee's satisfaction with the ED experience by calculating the differences or delta values between their post-rotation "outcome" scores and their pre-rotation "expectation" scores. Negative delta values reflect areas where expectations were higher than outcomes, in other words, where residents' expectations were not met.

Results

During the study period, from July 1 to Nov. 30, 1998, 25 residents from 11 different programs were surveyed; there was a 92% response rate. Ten residents were from family medicine, 7 from medical specialties and 8 from surgical spe-

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cialties. Of these, 9, 7 and 7 (respectively) returned completed surveys. All trainees were PGY-1 except those from family medicine, who undertake their EM rotation in PGY-2.

Individual trainee profiles show many areas where there were differences between expectations and outcomes. Table 2, Table 3 and Table 4 present delta values for 8 of the 23 residents who completed pre- and post-surveys. These 8 profiles were selected because they illustrate typical response patterns. Shaded cells in the tables highlight areas where delta values were at least –1.0, our threshold for "significant dissatisfaction." Tables 2 to 4 show that areas of unmet expectations are extremely variable from one trainee to another, and do not correlate with residents' specialty training area. Most trainees met the majority of their expectations; although a few trainees (e.g., neurology trainee no. 3) failed to meet expectations in most of the areas surveyed. Unmet expectations may be concentrated in one main area like Presenting Complaints (e.g., family medicine trainee no. 6), or they may be distributed through 3 main areas (e.g., family medicine trainee no. 5). With two exceptions — orthopedics and resuscitation — the training areas that did not meet expectations were trainee-specific. Resuscitation generally failed to meet expectations in the Presenting Complaints category, and orthopedics generally failed to meet expectations, except in the Presenting Complaints category.

Table 5 summarizes the results in the 3 categories for all 23 subjects, in order of the overall level of met expectations. The first 2 trainees (from the same program) listed in the table were clearly dissatisfied with their EM rotations,

Table 1. Sample items from each of the stem categories

Section	Presenting complaint	Skill/Procedure	Diagnosis
Cardiorespiratory system	Chest pain Shortness of breath	n/a	Acute pulmonary embolus Airway obstruction — upper/lower Angina Asthma
Central nervous system	Confusion Headache Seizure Weakness	Lumbar puncture	Cerebral/cerebellar aneurysm Seizures and status epilepticus
Orthopedics	Ankle injury Knee injury	Dorsal slab Volar slab Circumferential cast Collar and cuff	Fracture Sprain Dislocation
Resuscitation	Cardiac arrest Multiple trauma	Performing CPR Defibrillation Rapid sequence intubation Central line: femoral, subclavian or internal jugular Arterial catheterization	n/a

Table 2. Delta values (outcome minus expectation) for Presenting Complaints categories

Trainee's specialty, ID no.	Cardiovascular and Respiratory	CNS	ENT/Eye	Metabolic	Orthopedic	Resuscitation	Soft tissue	Mean
Family, 5	0.0	–0.4	–0.3	0.0	–0.2	–1.0	–0.8	–0.4
Family, 6	–1.0	–1.8	–0.8	–1.0	–1.0	–1.5	–1.8	–1.3
Family, 9	0.0	0.9	1.8	–0.5	–0.3	–1.0	0.7	0.2
Family, 10	–1.0	0.5	2.3	1.0	–0.7	–2.0	0.0	0.0
Neurology, 2	4.0	2.8	3.0	4.0	1.5	1.0	1.5	2.5
Neurology, 3	–1.0	–1.3	–0.8	–0.5	0.3	–0.5	–1.5	–0.7
Urology, 1	0.0	1.1	0.3	0.0	–0.3	–2.0	–1.0	–0.3
Ophthalmology, 1	1.0	–0.1	–0.5	–1.0	0.0	–2.0	–0.5	–0.4

Highlighted boxes show areas where delta values were at least –1.0.
ID = identification number; CNS = central nervous system; ENT = ear, nose and throat

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but a third trainee from the same program was the most satisfied of all residents. The next 6 trainees were somewhat dissatisfied, with many unmet expectations, but the remaining 15 met or surpassed most expectations. There is no obvious relationship between the trainee's program and the level of satisfaction. Once again, for most candidates, the level of satisfaction varies amongst the 3 categories surveyed.

Discussion

The learner-centred approach explores not only prescribed "learning needs" (defined by the learning objectives) but the individual aspirations of the students. Stewart and collegues[9] suggested that the learner-centred approach is a parallel of the patient-centred approach we are more familiar with, and is based on 6 principles: exploring the learner's needs and differentiating prescribed needs from aspirations; understanding the whole person; finding common ground in terms of learning priorities and teaching methods; incorporating prior knowledge; enhancing the teacher–learner relationship; and being realistic with respect to the time and team building required (Fig. 1). In addition they explain that by focusing on the aspirations of the individual learner, priorities and roles can be defined

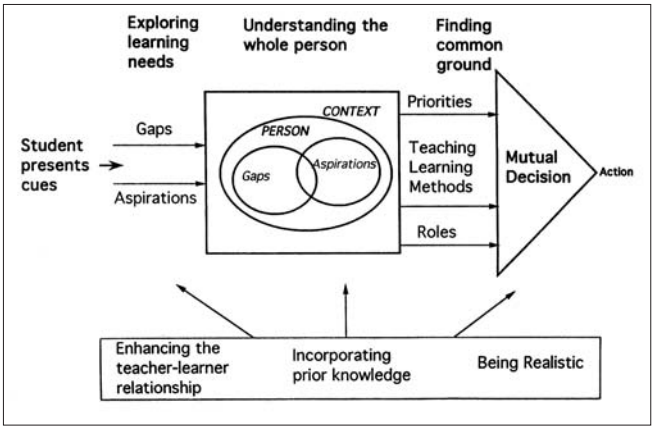

Fig. 1. The Learner Centered Model.<9> © 1995 by Sage Publications. Reprinted by permission of Sage Publications Inc.

Table 3. Delta valuves (outcome minus expectation) for Skills/Procedures categories

Trainee's specialty, ID no.	CNS	ENT/ Eye	Orthopedics	Resus-citation	Wound manage-ment	Anesthesia	Toxicology	Abscess	Mean
Family, 5	–1.0	–1.1	–1.2	–0.8	0.0	–0.8	0.5	0.0	–0.5
Family, 6	0.0	–0.3	0.3	0.4	0.0	0.2	0.0	0.0	0.1
Family, 9	–1.0	–0.8	–1.3	–0.5	0.0	–1.0	–0.5	–3.0	–1.0
Family, 10	–1.0	1.2	–1.3	–0.2	4.0	0.5	0.0	2.0	0.7
Neurology, 2	3.0	–0.7	–1.2	2.3	4.0	1.3	1.5	1.0	1.4
Neurology, 3	2.0	0.2	–0.9	–2.3	–4.0	–2.8	–3.0	–3.0	–1.7
Urology, 1	1.0	–0.4	–1.1	–1.1	0.0	0.1	–0.5	0.0	–0.3
Ophthalmology, 1	1.0	–1.0	–0.3	–0.9	1.0	–0.2	–1.0	0.0	–0.2

Highlighted boxes indicate areas where delta values were at least –1.0.
ID = identification number; CNS = central nervous system; ENT = ear, nose and throat

Table 4. Delta values (outcome minus expectation) for Diagnoses categories

Trainee's specialty, ID no.	Cardiovascular and Respiratory	CNS	ENT/Eye	Metabolic	Orthopedic	Soft tissue	Mean
Family, 5	–0.6	–0.2	–1.5	–0.4	–1.0	–0.6	–0.7
Family, 6	0.2	0.6	1.0	0.1	–1.0	–0.3	0.1
Family, 9	–0.7	–0.6	–1.0	–0.4	–2.0	–0.3	–0.8
Family, 10	0.1	0.6	0.0	1.0	0.0	1.6	0.5
Neurology, 2	3.1	2.6	2.5	2.4	0.7	3.3	2.4
Neurology, 3	–1.9	–1.2	–3.0	–2.4	–1.7	–1.1	–1.9
Urology, 1	0.8	0.6	1.0	0.7	1.3	–0.1	0.7
Ophthalmology, 1	–1.4	–1.2	–1.5	–0.7	–0.7	–0.6	–1.0

Highlighted boxes show areas where delta values were at least –1.0.
ID = identification number; CNS = central nervous system; ENT = ear, nose and throat

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such that the learning experience is both successful to the educator and satisfying to the learner.

Teachers often oversimplify students' educational needs by concentrating on major learning deficiencies, in the same way that physicians concentrate on disease and leave out the illness experience. This ignores the learner as a whole person, as well as differences in learning styles, previous life experiences, willingness to take risks, and self-confidence. It also fails to identify areas of strength, so that time is not wasted on skills that have already been mastered.[10]

This study attempted to look at whether or not residents were achieving their own expectations of a rotation in EM. This is not to understate the importance of defined, program-based learning objectives, but rather to emphasize the importance of learner-centredness in the provision of an optimal learning experience. Our data suggest that, for the most part, the EM rotation meets the residents' objectives. Because each resident acted as their own control, we did not compare expectations or outcomes between groups or absolute numbers.

The fact that some residents identified shortfalls in areas where others did not may relate to differing expectations, but more likely to the fact that, during a short rotation, trainees will see different types of patients, make different diagnoses, and perform different skills by chance alone. In areas like resuscitation presentations and orthopedic skills, which generally failed to meet expectations, this may reflect the low frequency of such patients, insufficient exposure to the relevant procedures or lack of time to practise them. Importantly, there is no mechanism in place to ascertain what the residents' expectations are or to ensure that these expectations are being met during the rotation.

Where discrepancies are noted, this information can be used in 2 important ways. Looking at the overall picture for a trainee, one may find the entire rotation is less than satisfactory. This underscores the importance of understanding the whole person and being realistic. If results consistently suggest failure in specific areas (e.g., resuscitation presentations and orthopedic skills), these can be

Table 5. Level to which trainees' overall expectations were met according to Presenting Complaints, Skills/Procedures and Diagnoses categories

Trainee's specialty, ID no.	Presenting Complaints*	Skills/ Procedures*	Diagnoses*	Total	Mean
Neurology, 3	–5.2	–13.8	–11.3	–30.3	–1.4
Neurology, 1	–7.0	–7.3	–6.4	–20.7	–1.0
Family medicine, 9	1.5	–8.2	–5.0	–11.7	–0.6
Internal medicine, 1	–1.6	–6.0	–3.8	–11.3	–0.5
Family medicine, 5	–2.6	–4.4	–4.3	–11.2	–0.5
Ophthalmology, 1	–3.1	–1.3	–6.1	–10.5	–0.5
Urology, 2	–2.8	–4.7	–2.9	–10.4	–0.5
Family medicine, 6	–8.8	0.6	0.6	–7.6	–0.4
Ear, nose and throat, 2	–0.9	–0.1	–2.8	–3.8	–0.2
Family medicine, 1	2.1	–2.3	–2.4	–2.7	–0.1
Family medicine, 3	–1.5	0.4	–0.5	–1.6	–0.1
Plastic surgery, 1	–0.6	–0.8	0.6	–0.7	0.0
Family medicine, 2	0.1	–1.6	0.9	–0.7	0.0
Orthopedics, 1	0.6	–2.5	1.5	–0.3	0.0
Ear, nose and throat, 1	3.7	–3.5	0.0	0.3	0.0
Urology, 1	–2.0	–2.0	4.3	0.3	0.0
Radiology, 1	–0.9	0.1	1.3	0.5	0.0
Internal medicine, 2	4.4	–2.8	–0.8	0.8	0.0
Family medicine, 8	1.1	2.4	1.6	5.1	0.2
Family medicine, 10	0.1	5.2	3.2	8.5	0.4
Anesthesia, 1	2.9	4.4	2.7	10.0	0.5
Family medicine, 4	2.6	6.4	3.7	12.7	0.6
Neurology, 2	17.8	11.2	14.6	43.5	2.1

*Total of trainee's delta values.

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employed to change the rotation for subsequent trainees.

Results should also be used at the individual "learner-centred" level. For example, educators might consider having a pre-rotation interview or questionnaire to assess the learner's past experience and expectations, assigning a preceptor, arranging a mid-rotation meeting (or even daily evaluations) to track the success of the rotation, looking at each category that is failing to meet expectations, and making appropriate adjustments. This process could apply equally to the trainee's clinical competencies and personal objectives. Depending on areas of success and failure, learning tools other than direct patient interaction could be explored (e.g., procedure labs). Alternate teaching methods could be applied for all trainees in areas where widespread dissatisfaction is expressed, or on an individual "optional" basis for areas where specific trainees express high interest or need. For example, mock resuscitation sessions could allow trainees to develop their skills not only to the satisfaction of their program directors but to the satisfaction of the trainees themselves. Didactic teaching, either spontaneous, as part of a formal series, or as computer modules, may be used to cover certain topics. Employing the learner-centred method in this way will ensure that, in addition to the prescribed needs of the rotation, the expectations of the resident and his or her past experience as a whole person are incorporated, thereby providing a richer and more satisfying educational experience.

Limitations

The results of this pilot may serve as a basis for further investigation into the issue of meeting residents' expectations in their ED rotations. The survey was designed for this study and is not a validated tool. Because the data were gathered at a single site, they may not be generalizable to other sites, which are likely to have different areas of strength and weakness. Obviously there may be other factors beyond the lack of learner-centredness that could impact on the satisfaction with a rotation, some of which may be beyond the control of both the educators and the trainees. Future work should include surveying a larger group of residents across multiple sites, and repeating the survey after implementation of targeted educational interventions. One might also focus the survey on a shorter list of items based on areas identified in this pilot.

Conclusions

Different learners have different needs and expectations of their EM rotations. Although trainee expectations are mostly being met, a learner-centred approach will help EM educators identify areas where they are not and teaching alternatives to address these. In order to ensure a consistently meaningful and satisfying educational experience for our residents, it is critical that we consider individual aspirations in addition to "prescribed" learning objectives.

Competing interests: None declared.

References

1. Kassebaum DG, Eaglen RH, Cutler ER. The objectives of medical education: reflections in the accreditation looking glass. Acad Med 1997;72:648-56.
2. Ende J, Atkins, E. Conceptualizing curriculum for graduate medical education. Acad Med 1992;67:528-34.
3. Taylor AS. Emergency medicine educational objectives for the undifferentiated physician. JEM 1994;12:255-62.
4. College of Family Physicians of Canada. The report of the working group in emergency medicine to the postgraduate education joint committee of the College of Family Physicians of Canada in collaboration with the Royal College of Physicians & Surgeons of Canada. 1992; Feb.
5. Farion KJ, Morrison LJ. Redefining the procedural skills of an emergency medicine specialist based on frequency of performance and maintenance of competence. Acad Emerg Med 2001; 8(7):731-8.
6. Graduate Medical Education Committee. Prerequisite objectives for graduate surgical education: a study of the graduate medical education committee American College of Surgeons. J Am Coll Surg 1998;186:50-62.
7. Task force on the core content for emergency medicine education revision: core content for emergency medicine Acad Emerg Med 1997;4(6):628-42.
8. York NL, Da Rosa DA, Folse R. The learning needs of first year surgical residents in the intensive care unit. Am J Surg 1996; 171:608-11.
9. Stewart M, Belle Brown J, Weston WW, McWhinney IR, McWiliam CL, Freeman TR. Patient centered medicine: transforming the clinical method. Sage Publications: Thousand Oaks; 1995.
10. Guilbert JJ. How to devise educational objectives. Med Educ 1984;18:134-41.

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