

CONTROVERSIES**Subspecialization in emergency medicine:
Where do we go from here?**

Douglas Sinclair, MD

As emergency physicians, our principal mission is evaluating, managing, treating and preventing unexpected illness and injury.¹ In contrast to most subspecialties, which developed to serve patients with discrete, single-system problems, the specialty of emergency medicine (EM) grew out of the premise that high quality medical care should be available to the public 24 hours a day, and that the broad range of injuries and undifferentiated illnesses that can pose immediate life and limb threats require the skills of a generalist physician. Emergency medicine bridges the gap between family physicians and subspecialty services and functions at the interface of community and hospital-based care.² Emergency medicine also has an important role in health advocacy and health system reform.

The rise of a new specialty is driven by patient need, a distinct body of knowledge and a unique field of research. Emergency medicine developed as the result of the increasing demand for around-the-clock primary and acute care, and through advances in cardiac resuscitation and trauma care. A collaborative group of organizations in the United States recently proposed a 3-dimensional matrix model of EM practice that includes a listing of clinical conditions based on presenting complaints, physician tasks and patient acuity frames.³ The striking finding from this analysis is the richness and variety of EM practice. The emergency physician roles vary from primary assessment of individual patients with undifferentiated disease to multi-tasking and team management in a complex emergency department (ED) environment.

During the last 20 years, EM has made dramatic advances in terms of acceptance as a specialty. A recent US analysis documented a significant increase in the number of academic EM departments and residency programs between 1991 and 2001.⁴ At the same time, the International Federation of Emergency Medicine has grown from 4 founding members in 1984 to over 20 members in 2005, reflecting the international development of the specialty.

Technological advance and the exponential growth of medical knowledge have spawned numerous new disciplines. The Royal College of Physicians and Surgeons of Canada now recognizes 60 specialties and subspecialties. The Royal College defines a specialty as a specific body of knowledge and skills used by a group of physicians and applicable in community and tertiary settings. The definition of a subspecialty is less clear, and the Royal College has addressed subspecialty development on a case-by-case basis, but the basic requirement is certification in an existing core specialty.⁵

As EM has matured as a specialty, many physicians have focused on discrete areas of practice and research. Some of these are shared with other specialties, and some are unique to EM. Some of these subspecialties are now recognized with certification examinations and certification in conjunction with other specialty groups. These areas of subspecialty interest include pediatric EM, sports medicine, toxicology and emergency medical services (EMS). Today, many emergency physicians hold dual certification in family medicine, anesthesia and, more recently, critical care medicine.

From the Department of Emergency Medicine, Dalhousie University, Halifax, NS

Submitted: Nov. 27, 2004; revisions received: Aug. 1, 2005; accepted: Aug. 6, 2005

Can J Emerg Med 2005;7(5):344-6

Pediatric emergency medicine

Pediatricians and emergency physicians have long recognized the special needs of children who require emergency care. In most general EDs, 20%–30% of visits involve patients under 16 years of age, and most children's hospitals have EDs that see only children.⁶ Visit acuity analysis indicates that urgent and life-threatening conditions are less common in pediatric than adult populations;⁷ thus there is greater need for enhanced education and continuing professional development in pediatric EM for both adult and pediatric EM practitioners.

To achieve educational and research goals, pediatric EM fellowship programs, supported both by EM and pediatric colleges, have been developed in the US (1992) and Canada (1998), and they are currently under development in Australia and the United Kingdom. Although access to these fellowship programs is either through residency training in pediatrics or EM, over 90% of the fellowship candidates have their primary training in pediatrics. The vast majority of these fellows practise in pediatric EDs and have a significant role in the education of both pediatric and EM residents.

Since the number of pediatric EM specialists is limited, most pediatric emergency care will continue to be provided by general emergency physicians.⁸ Reflecting this reality, there have been recent improvements in pediatric EM training for all EM residents. Subspecialists in pediatric EM have a unique role in advocacy, education and research for the pediatric population.⁹

Emergency medical services and prehospital care

Emergency medical services (EMS) has always been a core function of EM and one of the knowledge and research areas that defines the specialty. Many emergency physicians have a special interest in EMS and have made substantial contributions to the field. As "system thinkers," we have been largely responsible for the development of EMS systems worldwide, and no other specialty groups have specific interest in this area.¹⁰ As a result, many EM-based EMS fellowships have appeared across North America, and both the American College of Emergency Physicians and CAEP have EMS sections, but EMS lacks official subspecialty recognition or certification.

Toxicology

Historically, pediatricians led in the development of poison centres and toxicology fellowships, but toxicology is also a core knowledge area for emergency physicians. The Amer-

ican Board of Toxicology has a 2-year fellowship with certification, accessible through EM and pediatrics. There is no Canadian equivalent, although many Canadians have achieved US certification. In the UK and Australia, extended electives in toxicology are available but there are no formal fellowship programs.

Critical care

Rotations in critical care are regarded as some of the most valuable by EM residents. Developing a close working relationship with critical care teams is important for the continuum of care and the ongoing education of EM residents and staff.¹¹

Reduced intensive care unit (ICU) bed availability has resulted in prolonged lengths of stay for ICU patients in the ED. This new reality underscores the need for improved ICU expertise for ED physician and nursing staff. Emergency physicians who are dually certified in EM and critical care will help lead the development of new care protocols and research studies involving this patient population.

In Canada, EM is one of 5 specialties, along with anesthesia, surgery, medicine and pediatrics, that can recommend residents for a 2-year fellowship program in critical care. In the US, EM residents may be accepted into critical care fellowships, but there is no American Board of Emergency Medicine (ABEM) examination in critical care, so no official recognition of added qualification. In Australia, negotiations with the College of Anesthesia are nearing completion for a similar program.

Other subspecialties

Other areas of interest, including sports medicine, observation medicine, hyperbaric medicine, wilderness and remote medicine, disaster medicine, and acute cardiology have the potential to be recognized as EM subspecialties. Of these, the ABEM has examinations in sports medicine and undersea and hyperbaric medicine.

Subspecialization in emergency medicine: the wrong direction

The evolution from "area of interest" into true subspecialty depends on a critical mass of physicians with the vision to articulate a unique clinical role and the development of supporting education and research programs. In other specialties, subspecialization has been a natural development, paralleling the expansion of knowledge and techniques in a certain discrete area of practice. A clear example of sub-

specialization improving care has been in cardiac services. Research has shown that processes and outcomes improve for discrete groups of patients who receive subspecialty care¹² and there has been acceptance of the need for subspecialization, but concerns have been raised about the increasing number and narrow scope of some of these fields.

General medicine and general surgery have important lessons to teach us about subspecialization. Over 80% of medical admissions now come through the ED, many with multiple undifferentiated acute problems. The management of these patients has become problematic for subspecialty services, and specialists in teaching hospitals have become increasingly dependent on trainee physicians to cover emergency admissions; yet the role of the general internist is not seen as attractive to upcoming residents.¹³ In general surgery, the situation is even more critical. The range of surgical services available in community hospitals is shrinking because new trainees are less comfortable with the broad spectrum of surgical emergencies that may present. Indeed, many general surgeons have limited their practice to subspecialty areas of interest, such as head and neck, hepato-biliary or anorectal disease.¹⁴

On a daily basis, emergency physicians see examples of how subspecialization has fragmented patient care. Should the myocardial infarction patient with diabetes and chronic obstructive lung disease be admitted to cardiology or respiratory? And, once that issue is resolved, who will take care of the patient's diabetes? What do we do when a trauma patient arrives with a small bowel perforation and splenic injury — and a thyroid surgeon is on call? How long can the patient with penetrating chest trauma wait for a cardiac anesthetist to be called in?

Many emergency physicians feel (and at least one recent survey shows) that, after 20 years of development, there is still some stigma that EM is not a “real” specialty.¹⁵ For some, these attitudes may drive the desire for subspecialization. However, it is important to understand EM as a complex system or matrix that crosses multiple areas of content, attitude and skill.¹⁶ Educational theory supports the concept that cross-linking themes improves the performance of complex tasks.¹⁷ The emergency science around medical error and patient safety also supports the need for metacognition or “thinking about thinking” as a key strategy for decision-making.¹⁸ Experienced emergency physicians acquire skills of pattern recognition and use heuristics (shortcuts or abbreviated thinking strategies) in order to make decisions in an uncertain environment. An important component to this skill set is the ongoing exposure to a wide variety of clinical experiences to achieve further refinements in cognitive processing.

As the specialty of “the first five minutes of everything,” we need to embrace, support and protect the concept of the generalist. Emergency physicians face a high volume of patients with undifferentiated illness and a significant degree of pathology on a daily basis. Our education and research agendas should address this reality. Specialized expertise is important, and effective emergency physicians will have advanced knowledge and skill in pediatric EM, toxicology, EMS and critical care, but formal EM subspecialties will play a limited role in the future of the specialty.

Competing interests: None declared.

References

1. Rainer TH. Emergency medicine — The specialty. *Hong Kong Med J* 2000;6:269-75.
2. Schneider SM, Hamilton GC, Moyer P, Stapczynski JS. Definition of emergency medicine. *Acad Emerg Med* 1998;5:348-51.
3. Hockberger RS, La Duca A, Orr NA, Reinhart MA, Sklar DP. Creating the model of a clinical practice: the case of emergency medicine. *Acad Emerg Med* 2003;10:161-8.
4. Gallagher EJ. Evolution of academic emergency medicine over a decade (1991-2001). *Acad Emerg Med* 2002;10:995-1000.
5. Committee on Specialties, Royal College of Physicians and Surgeons of Canada. Policy Statement, April 2004.
6. Wagner D. Pediatric emergency care: Where do we go from here? An emergency physician's perspective. *Pediatr Emerg Care* 1986;2:261-2.
7. Pena ME, Snyder BL. Pediatric emergency medicine: the history of a growing discipline. *Emerg Med Clin North Am* 1995;13:235-53.
8. Baker MD. Physician coverage in the pediatric emergency room: a national survey. *Am J Dis Child* 1986;140:755-7.
9. Chande VT, Krug SE. Practitioners of pediatric emergency medicine: a 5-year longitudinal study. *Pediatr Emerg Care* 2001;17:237-9.
10. Willoughby PJ, Suter RA [corrected to Suter RE], Williams D, Perin D. Resident perspectives of EMS as a subspecialty [published erratum appears in *Prehosp Emerg Care* 1998;2(3):205]. *Prehosp Emerg Care* 1998;2(1):47-51.
11. The future of critical care medicine within emergency medicine. American College of Emergency Physicians. *Ann Emerg Med* 1990;19:832-5.
12. Cram P, Rosenthal GE, Vaughan-Sarrazin MS. Cardiac revascularization in specialty and general hospitals. *N Engl J Med* 2005;352:1454-62.
13. Turnberg L. Survival of the general physician [editorial]. *BMJ* 2000;320:438-40.
14. Loeffler IJP. Are generalists still needed in a specialized world? [editorial]. *BMJ* 2000;320:436-8.
15. Smith S. Is a career in emergency medicine associated with stigma? *Eur J Emerg Med* 2003;10:13-5.
16. Cameron PA. Emergency medicine: Are we the system specialists? *Emerg Med* 2003;15:1-3.
17. Mann KV. The role of education theory in continuing medical education: Has it helped us? *J Contin Educ Health Prof* 2004;24:522-30.
18. Croskerry P. Cognitive forcing strategies in clinical decision making. *Ann Emerg Med* 2003;41:110-20.

Correspondence to: Dr. Doug Sinclair; douglas.sinclair@iwk.nshealth.ca