

### Simulating severe sepsis: see one, do one, teach one

To the editor: Mortality following severe sepsis and septic shock frequently exceeds 30% and depends largely on how quickly evidence-based therapies are administered.<sup>1-3</sup> As such, emergency physicians can improve outcomes enormously; however, optimal care requires not only factual knowledge and procedural dexterity, but also numerous practical strategies—notably the ability to recognize a disease, to identify impending crises, to communicate effectively, to run a team, to work under stress and to simultaneously coordinate multiple tasks. Medical simulation offers a way to practice this essential skill set, known as crisis resource management,<sup>4</sup> without risk to patients.

These skills are difficult to teach using didactic methods; therefore, following lectures on severe sepsis, we trained 20 emergency medicine (EM) residents on a portable Laerdal Patient Simulator using pre-programmed sepsis scenarios. To maximize realism, this was performed in the acute care area of the emergency department of the University of Alberta Hospital and included a pre-briefed respiratory therapist and nurse. We videotaped resident performance and provided non-punitive feedback, focusing on the comprehensiveness of therapy (e.g., whether broad-spectrum

antibiotics were given) and crisis resource management strategies (e.g., whether tasks were appropriately allocated). Evaluation using a 5-point Likert scale demonstrated that participants found this very useful (4.5/5), that lessons were complementary and supplementary to those learned from lectures (4.5/5) and that medical simulation was realistic (4/5). Participants specifically valued the chance to observe and practice crisis resource management skills, which they felt had not been previously addressed. In addition, despite prior sepsis lectures, comparison of pre- and post-tests showed that more EM residents would use low-dose corticosteroids within 1h (10/20 pre-test, compared with 13/20 post-test), would favour norepinephrine as a vasopressor (8/20 pre-test, compared with 12/20 post-test) and would administer broad-spectrum antibiotics as soon as possible following hypotension (14/20 pre-test, compared with 16/20 post-test). In other words, simulation appears to be an effective way to change both behaviours and knowledge.

The Royal College of Physicians of Canada expects all trainees to become not only content experts, but also effective communicators, collaborators, resource managers and advocates. These laudable goals, summarized as the CanMeds objectives,<sup>5</sup> are difficult to capture with traditional lectures but are comparably easy using medical simula-

tion. We hope others will consider medical simulation as a complementary teaching and quality-assurance strategy and will maximize both knowledge and practical expertise in the fight against sepsis.

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#### References

1. Rivers E, Nguyen B, Havstad S, et al. Early goal-directed therapy in the treatment of severe sepsis and septic shock. *N Engl J Med* 2001;345:1368-77.
2. Dellinger RP, Carlet JM, Masur H, et al. Surviving sepsis campaign guidelines for management of severe sepsis and septic shock. *Crit Care Med* 2004;32:858-72.
3. Kumar A, Roberts D, Wood KE, et al. Duration of hypotension before initiation of effective antimicrobial therapy is the critical determinant of survival in human septic shock. *Crit Care Med* 2006;34:1589-96.
4. Kim J, Neilipovitz D. Crisis Resource Management. In: Neilipovitz D, ed. *Acute Resuscitation and Crisis Management*. Ottawa (ON): University of Ottawa Press; 2005:11-16.
5. Royal College of Physicians and Surgeons of Canada. CanMEDS framework. [Internet] Available: <http://rcpsc.medical.org/canmeds/index.php> (accessed 2006 Nov 30).

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