Surgical Critical Care Training for Emergency Physicians: Curriculum Recommendations

Samuel A Tisherman, MD, FACS, FCCM, Hasan B Alam, MD, FACS, William C Chiu, MD, FACS, Lillian L Emlet, MD, MS, Michael D Grossman, MD, FACS, Fred A Luchette, MD, MSc, FACS, Evie G Marcolini, MD, Julie A Mayglothling, MD

Critical care is best defined as the management of patients with life-threatening illnesses or injuries, regardless of the patient's location. Ideally, this level of care begins in the out-of-hospital setting and continues through the emergency department, operating room, and ICU. Such a continuum was the vision of Peter Safar, MD, when the specialty of critical care medicine (CCM) began.[1] In fact, when he began the Freedom House Ambulance Service in Pittsburgh in 1967, the ambulances were called "mobile intensive care units."

Drs Safar, Max Harry Weil, William Shoemaker, Ake Grenvik, and others founded the Society of Critical Care Medicine (SCCM) as a multidisciplinary organization focused on the care of all critically ill patients. During Dr Safar's presidency, SCCM established a formal alliance with the American College of Emergency Physicians and the University Association of Emergency Medical Services to form the Federation of Societies of Emergency and Critical Care Medicine.[1]

Having specialized providers involved with the care of critically ill patients improves outcomes as espoused by the founders of SCCM. In addition, injured patients with life-threatening injuries cared for at verified trauma centers by trauma specialists have a survival advantage when compared with similarly injured patients admitted to a nontrauma center.[2] Consequently, criteria for verification of trauma centers require that trauma surgeons are certified by the American Board of Surgery (ABS) in Surgical Critical Care (SCC). This survival advantage is also cost effective.[3] Providing adequate intensivists for surgical ICUs and trauma centers is challenging because of the current and projected shortages of both intensivists and trauma surgeons. The concept of training emergency physicians in SCC has been proposed as one possible solution to the manpower shortage of intensivists.[4,5] In fact, the Residency Review Committee (RRC) for Surgery has recently revised the program requirements for SCC training (www.acgme.org/acgmeweb/Portals/0/PFAssets/2013-PR-FAQ-PIF/442_surgical_critical_care_07012012_f07012013_1-YR.pdf), making emergency physicians eligible to train in SCC.

This white paper will explore the potential advantages, challenges, and new pathways for critical care training for emergency medicine (EM) specialists. Although EM and CCM specialists must learn how to manage life-threatening illness and injury, the specialties have, for the most part, diverged in the United States, although training and access to CCM is available for emergency physicians in other developed countries, for example, the United Kingdom, Australia, and Canada. This divergence in training program accreditation and specialty board certification might have negatively impacted intensivist manpower in the United States. Potential solutions have been proposed previously.[4,5]

The Surgical Critical Care Program Directors Society (SCCPDS) assembled a Task Force on Emergency Medicine-Surgical Critical Care Training to consider new pathways for EM trainees in SCC and make curricular recommendations. Membership of the Task Force included surgeons who have been involved in training emergency physicians in SCC and emergency physicians who have previously trained in SCC. All Task Force members are coauthors of this paper. The recommendations presented here were developed by consensus of the members of the Task Force. The final curriculum was approved by the SCCPDS Board of Directors.

MANPOWER

The number of critically ill patients seen in emergency departments and in ICUs has been increasing.[6] As the

Disclosure Information: Nothing to disclose.

Received March 16, 2013; Revised May 28, 2013; Accepted May 28, 2013.
From the Departments of Critical Care Medicine (Tisherman, Emlet), Surgery (Tisherman), and Emergency Medicine (Emlet), University of Pittsburgh, Pittsburgh, PA, Department of Surgery, University of Michigan, Ann Arbor, MI (Alam), Department of Surgery, University of Maryland, Baltimore, MD (Chiu), Department of Acute Care Surgery, Southside Hospital/Northshore LIJ Trauma Network, Bay Shore, NY (Grossman), Department of Surgery, Loyola University, Maywood, IL (Luchette), Departments of Emergency Medicine and Neurology, Yale University New Haven, CT (Marcolini), and Departments of Surgery and Emergency Medicine, Virginia Commonwealth University, Richmond, VA (Mayglothling).

Correspondence address: Samuel A Tisherman, MD, FACS, FCCM, Department of Critical Care Medicine, University of Pittsburgh, Suite 1215, Lillian S Kaufmann Bldg, 3471 Fifth Ave, Pittsburgh, PA 15213. email: tishermansa@upmc.edu

ISSN 1072-7515/13/$36.00
http://dx.doi.org/10.1016/j.jamcollsurg.2013.05.029

Abbreviations and Acronyms

ABEM = American Board of Emergency Medicine
ABIM = American Board of Internal Medicine
ABS = American Board of Surgery
CCM = critical care medicine
EM = emergency medicine
RRC = Residency Review Committee
SCC = surgical critical care
SCCM = Society of Critical Care Medicine
SCCPDS = Surgical Critical Care Program Directors Society
SEPSEP = Supplemental Educational Program in Surgery for Emergency Physicians

population ages, the incidence of critical illness will likely increase. At the same time, patient outcomes in the ICU are improved when care is directed by a dedicated intensivist with appropriate training, credentialing, and staffing.[7] As a result, organizations such as the Leapfrog Group (www.leapfroggroup.org) have encouraged hospitals to adopt a 24/7 intensivist model of critical care in which the intensivist must be able to give undivided attention to the critically ill patient. Similarly, SCCM "envisions a world in which all critically ill and injured persons receive care from integrated teams of dedicated experts directed by trained and present intensivist physicians." Both the Leapfrog group and SCCM have recognized emergency physicians that have completed critical care fellowship training as intensivists.

Studies by both the Committee on Manpower for the Pulmonary and Critical Care Societies[8] and the Health Resources and Services Administration[9] suggest that the demand for intensivists will exceed supply by the year 2020. Recruiting physicians into critical care is challenging, as lifestyle and reimbursement issues seem to direct career selection into predominantly daytime fields with more lucrative salary ranges. On a positive note, the number of SCC fellowships and fellows has been increasing during the past several years, although the pace remains too slow to meet future needs. Consequently, intensivists from any primary specialty, including EM, should be welcomed and appropriately trained to help meet future demands.

TRAINING

As ICUs developed, Dr Safar and others recognized that physicians in these units should be specifically trained to manage critically ill patients and he initiated a training program at the University of Pittsburgh in 1963. Although the first trainees were anesthesiologists, the program soon included providers from other specialties, including internal medicine, surgery, and EM.[10,11] Most institutions have not taken this multidisciplinary approach, instead creating separate, specialty-specific training programs, in part to facilitate compliance with ACGME requirements (www.acgme.org).

Emergency medicine trainees graduate with a broad base of knowledge that enables evaluation and diagnosis of numerous undifferentiated symptoms, such as abdominal pain, chest pain, and shortness of breath. Most importantly for critical care practice, they become experts in the initial management and stabilization of critically ill, adult and pediatric, medical, surgical, and trauma patients. These trainees gain competency in the following procedural and resuscitative skills: airway management (including endotracheal intubation and cricothyroidotomy), lumbar puncture, pericardiocentesis, temporary transvenous cardiac pacing, placement of thoracostomy tubes, central venous and arterial catheter placement, point of care ultrasound in the diagnosis and management of shock, ultrasound for procedural guidance, procedural sedation (moderate, deep, and some regional), and management of toxicological emergencies.

Emergency medicine training program requirements also include exposure to the care of critically ill patients, including at least 2 months of inpatient ICU rotations (although most programs do more). Four-year EM programs have the same requirements as 3-year programs, but usually include time for elective and research experiences.

The knowledge base and skill set are consistent with those recommended for critical care training of residents by the American College of Critical Care Medicine.[12] From this perspective, there is no doubt that they are as well prepared as graduates of internal medicine, surgery, or anesthesiology residencies for critical care training. In fact, Chiu and colleagues have demonstrated that emergency physicians trained in a SCC fellowship program scored at least as well as, if not better than, their surgical counterparts on the Multidisciplinary Critical Care Knowledge Assessment Program of SCCM.[13] Each major specialty has strengths and weaknesses related to critical care, but none of the weaknesses preclude learning all aspects of critical care during fellowship training.

The barriers to critical care training for emergency physicians in the United States have included limited access to fellowship programs and the absence of a certification pathway.[4] For nearly 30 years, the American Board of Emergency Medicine (ABEM) has tried without success to obtain approval to certify emergency physicians who complete critical care fellowships. Along the way, there have been discussions with the American Board of Internal Medicine (ABIM), ABS, and the American Board of Anesthesiology. Biases within each specialty