The Successes and Challenges of Integrating Emergency Medicine With Critical Care Medicine

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During the past 40 years, significant progress has been made with integrating the practice of emergency medicine and critical care medicine. Since 1976, a small number of US emergency physicians have pursued training in critical care medicine.[1] Growth has been steady and relatively slow, mostly because of a lack of fellowship opportunities and board certification. In 2005, the neurocritical care board certification pathway was opened to emergency physicians[2]; in 2013, the American Board of Emergency Medicine negotiated a board certification pathway through agreements with internal medicine, surgery, and anesthesia. Since 2013, many emergency physicians have successfully completed critical care medicine training and passed the critical care medicine boards.[3] Today, emergency physicians enjoy the opportunity to train and practice in several settings.[1]

Despite this progress, significant barriers still exist for emergency physicians interested in critical care medicine. Training opportunities remain limited despite increased interest and a projected intensivist shortage.[4] Challenges include multiple prerequisites required by surgical and medical programs[5] and the challenges of balancing the responsibilities and schedules of 2 departments[1] after completing training. We review the strides made toward integrating emergency medicine with critical care medicine, and explore the challenges that remain in regard to training opportunities and in combining the 2 fields into a unified career.

BENEFITS OF PURSUING A CRITICAL CARE MEDICINE FELLOWSHIP

Critical care medicine training is a natural fit for the emergency physician. Emergency physicians are uniquely exposed to the earliest stages of both medical and surgical illness and are trained to aggressively resuscitate these patients. Because of daily exposure to the critically ill patient, emergency physicians acquire diagnostic skills and procedural competence that uniquely harmonizes with other specialties involved in critical care medicine. With the predicted shortfall in the intensivist workforce,[4] emergency physicians bring an important skill set to the field of critical care medicine.

Critical care medicine training has numerous benefits for the motivated emergency physician. Besides enhancing resuscitative and procedural skills, fellowship training creates opportunities to work in an additional practice environment, has the potential to strengthen partnerships between departments, and may allow staffing in novel practice modalities such as emergency department (ED)–based ICUs.[6] Additionally, with increasing numbers of critical care admissions and boarding of ICU patients in the ED,[7] emergency medicine intensivists may facilitate more longitudinal care as these patients await transfer, thereby preventing deterioration in clinical status.

CRITICAL CARE MEDICINE FELLOWSHIP PATHWAYS

Four critical care medicine pathways exist for emergency physicians[8] (Figure): internal medicine, surgery, anesthesia, and neurocritical care. Each program requires 2 years of training. Some fellowship programs have a multidisciplinary focus and feature rotations in several ICUs. Acquiring a critical care medicine fellowship position is competitive[9]; trainees must complete multiple ICU rotations and show interest in critical care medicine, which may include development of educational curricula, research, or administrative projects involving the ED and ICU interface. Audition rotations can further enhance competitiveness. An overview of fellowship pathways is outlined below; for a detailed guide, please refer to the Emergency Medicine Residents' Association fellowship guide.[10]

INTERNAL MEDICINE–CRITICAL CARE MEDICINE

Most critical care medicine programs available to emergency physicians are sponsored by the American Board of Internal Medicine,[8] and therefore most trainees will apply

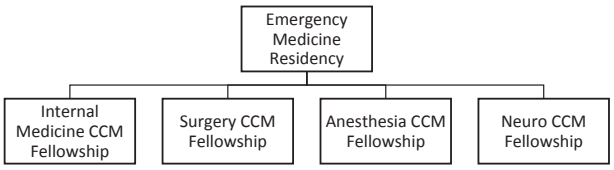

Figure. Critical care medicine fellowship pathways for emergency physicians. *CCM*, Critical care medicine.

through internal medicine–critical care medicine. Although one may expect these programs to train exclusively in the medical ICU, there is significant heterogeneity among them. Several programs are multidisciplinary and feature rotations in mixed medical-surgical units, neuro-ICUs, and cardiothoracic ICUs. This multidisciplinary training may especially appeal to emergency physicians because it synergizes with their practice in the ED and would create opportunities to work in several different ICUs; data suggest that nearly 60% of ICUs in community hospitals are mixed medical-surgical units.[1] Internal medicine–critical care medicine fellowships generally feature several months of elective and research time, allowing the fellow to tailor the program to his or her interests.

Despite significant flexibility among several internal medicine–critical care medicine programs, specific challenges exist. Historically, the American Board of Internal Medicine allowed only 25% of internal medicine–critical care medicine fellowship spots to be filled by specialties other than internal medicine.[11] This rule appears to have been revoked as of July 2016.[12] Additionally, medical fellowships require 6 months of prerequisites in internal medicine rotations[5] before emergency medicine fellows can independently supervise internal medicine residents and be allowed to independently staff the medical ICU. Completing these prerequisites before fellowship may be challenging for residents from 3-year programs because of their relative lack of elective time compared with that of 4-year programs; fellowships can overcome this challenge by scheduling additional medicine rotations early on, however. Interested applicants can apply through the Electronic Residency Application Service in the June before the fellowship starts.

SURGICAL–CRITICAL CARE MEDICINE

Surgical–critical care medicine programs were among the first to train emergency physicians before board certification was available.[13] These programs are focused on the care of postoperative or trauma patients. The first year of fellowship is generally an advanced preliminary year that features 12 months of surgical rotations (eg, abdominal, vascular, trauma),[14] often featuring time in the operating room. Only 3 months are spent in the surgical ICU the first year. Year 2 is dedicated exclusively to the surgical ICU and elective or research time.

This fellowship is designed for the individual interested in surgical disease and trauma. Surgical fellowships provide opportunities to develop mastery in traumatology, cardiothoracic pathology, surgical monitoring, and resuscitative technologies such as extracorporeal membrane oxygenation. Additionally, surgical programs will have overlap with diseases observed in the medical ICU because surgical patients develop similar complications (eg, sepsis, renal failure). For some emergency medicine trainees, the first year of fellowship may be challenging because of the limited amount of ICU time and the time spent on mandatory surgical rotations. Data are lacking about the expertise this year provides compared with additional ICU time.[5] Interested applicants can apply through the Surgical Critical Care and Acute Care Surgery Fellowship Application Service or through paper applications in the July before the fellowship.

ANESTHESIA–CRITICAL CARE MEDICINE

Anesthesia–critical care medicine is the latest critical care medicine track to become available to emergency physicians. These programs are focused on surgical disease and trauma,[15] but several programs are multidisciplinary and feature medical ICU rotations. Emergency physicians must complete 4 months of ICU training before matriculation.[16] Although these programs require emergency medicine trainees to have a robust background in surgical disease, an advanced surgical year is not required; instead, these fellowships feature core surgical rotations early in the fellowship.

This program will appeal to the resident interested in gaining expertise in surgical or multidisciplinary critical care. The unique advantages of this pathway include learning advanced airway and ventilator management techniques, transesophageal echocardiography, and management of cardiothoracic surgery patients, as well as providing experience with extracorporeal membrane oxygenation. These programs feature several clinical rotations and generally have limited research and elective time, often no more than 2 to 4 months.

The most significant challenge of this track is funding. Although emergency medicine trainees must complete a 2-year critical care medicine fellowship, anesthesiology trainees require only a 1-year fellowship. Several programs have funding for only 1 year, and many are unable to fund a second year of fellowship. Surgical programs face similar challenges. Additionally, there is significant geographic disparity because few programs are located on the East