When he's teaching emergency medicine residents about airway management, Jeffrey Ho shows them how it's done under optimal conditions. "We teach in a room with good light, with the patient at the correct height, where there's access to resources and nurses," he says. But as the medical director of emergency medical services (EMS) for Hennepin County Medical Center (HCMC) knows, the conditions in which prehospital responders work are never like that. So when he teaches airway management to his EMS fellows, Ho shows how it can be done on the floor, outside, alone and with portable equipment.

Back in the mid-1990s, when Ho was the first fellow in HCMC's EMS program (today, he heads it) and EMS was not yet a formal subspecialty of emergency medicine, it was already becoming clear that there was a separate body of knowledge pertaining to EMS. It gained official subspecialty status in 2010.

EMS is one of several emergency medicine subspecialties to be formally recognized by the American Board of Emergency Medicine (ABEM) in recent years. (See box for full list.) A number of others are seeking that status. As the specialty, which emerged in the 1970s, is “hitting its stride,” Ho says, it would appear emergency medicine is branching out.

“Subspecialties tend to emerge when there are a sufficient number of passionate physicians attempting to meet a specific patient care need,” says Earl Reisdorff, MD, executive director of the American Board of Emergency Medicine (ABEM). He points out that pediatric emergency medicine, the oldest of the emergency medicine subspecialties (it dates back to 1991), emerged when sick and injured children were beginning to be treated at children's hospitals rather than at general hospitals and there was awareness of the special knowledge and equipment needed to treat them. The newest subspecialty, pain medicine, was created after emergency physicians recognized that pain was the chief complaint of more than 70 percent of the patients they saw.

Physicians at an academic medical center then begin offering training in the area of need, and that evolves into a fellowship. As the body of knowledge grows, so does the number of people with that knowledge, who work to gain approval for their subspecialty from the American Board of Medical Specialties (ABMS). Then appropriate specialty boards (in the case of most emergency medicine subspecialties, the ABEM) begin offering certification and fellowship programs become accredited.

Gaining that recognition is not only good for the physicians who want to become board-certified, it’s also good for the field itself. “Once a subspecialty is recognized by the ABMS and a certification opportunity exists, the subspecialty area tends to become a more sophisticated field of medical knowledge and practice,” Reisdorff says, “and research in the field tends to more rapidly evolve.”

All this is occurring in Minnesota, where there are now fellowships both in well-established subspecialties and in fields that are still evolving. Here's a look at a few.
INTERNATIONAL EMERGENCY MEDICINE

The international emergency medicine fellowships at Regions Hospital and HCMC are designed to help trainees gain the ethical framework for working in other countries as well as skills for clinical practice. During their two years, fellows also earn a master’s degree. What that degree is in is up to the individual—as long as it relates to emergency medicine and global health, says Amy Walsh, MD, program director at Regions Hospital.

As the first fellow in that program in 2012, Walsh, who wants to develop emergency systems in countries that don’t have them, did hers in international development through the University of Minnesota’s Humphrey Institute. Most international fellows earn a master’s in public health.

Walsh is now working on her program’s curriculum, hoping to ensure that it can remain flexible enough to allow fellows to follow their interests yet still meet standards that she and 30 or so other directors of similar programs are trying to establish. “I think if it’s standardized more, it’s going to be a lot easier to go down the path toward board certification,” she says.

PEDIATRIC EMERGENCY MEDICINE

Most of those looking to subspecialize in pediatric emergency medicine come not from the ranks of emergency medicine but from pediatrics, according to Robert Sicoli, MD, emergency services co-medical director for Children’s Hospitals and Clinics of Minnesota, which with Regions Hospital offers one of the nation’s 60-plus fellowship programs.

The need for specialized pediatric training is twofold. The types of illnesses and injuries affecting children differ from those affecting adults, Sicoli says. “We’re not going to see a lot of cardiovascular disease. On the other hand, we see many diseases that are primarily diseases of childhood.” In addition, the equipment used on children is much different than that used on adults, and medications are prescribed based on the weight of the child in kilograms.

The fellows at Children’s spend three years learning about pediatric emergency medical services, toxicology, ultrasound, advanced airway skills and sedation. They also have significant time for research.

UNDERSEA AND HYPERBARIC MEDICINE

It may seem incongruous that one of the nation’s few fellowship programs in undersea and hyperbaric medicine is located about 1,500 miles from the nearest ocean, but that’s the case. Hennepin County Medical Center has had a hyperbaric chamber since 1964 and offered a fellowship in the emergency medicine subspecialty since 2008.

The two-year program trains emergency physicians to use hyperbaric (100 percent oxygen) treatments for a long list of conditions including diabetic ulcers, radiation injuries, nonhealing wounds and acute traumatic ischemia. It also equips them to handle problems related to being underwater. Program coordinator Mary Hirschboeck says fellows sometimes attend conferences near a coast to get more training in the undersea part of their subspecialty. “We’re competing with San Diego and Miami, where there’s lots of diving,” she notes.

AMERICAN BOARD OF EMERGENCY MEDICINE-CERTIFIED SUBSPECIALTIES*

<table>
<thead>
<tr>
<th>SUBSPECIALTY</th>
<th>YEAR ADOPTED</th>
<th>NUMBER OF CURRENT DIPLOMATS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pediatric Emergency Medicine</td>
<td>1991</td>
<td>264</td>
</tr>
<tr>
<td>Sports Medicine</td>
<td>1992</td>
<td>156</td>
</tr>
<tr>
<td>Medical Toxicology</td>
<td>1992</td>
<td>404</td>
</tr>
<tr>
<td>Undersea and Hyperbaric Medicine</td>
<td>2000</td>
<td>197</td>
</tr>
<tr>
<td>Hospice and Palliative Medicine</td>
<td>2006</td>
<td>114</td>
</tr>
<tr>
<td>Emergency Medical Services (EMS)</td>
<td>2010</td>
<td>225</td>
</tr>
<tr>
<td>Internal Medicine – Critical Care Medicine</td>
<td>2011</td>
<td>69</td>
</tr>
<tr>
<td>Anesthesiology Critical Care Medicine</td>
<td>2013</td>
<td>12</td>
</tr>
<tr>
<td>Pain Medicine</td>
<td>2014</td>
<td>5</td>
</tr>
</tbody>
</table>

*Additional subspecialty opportunities are available for emergency physicians. Certification is offered through other boards.
A growing need for education about quality and patient safety in all specialties is what prompted Andrew Zinkel, MD, to start the nation’s first emergency medicine fellowship focused on those topics at Regions Hospital. “I had a background in quality improvement and patient safety and residents interested in more advanced learning on the topic, so I decided to create a fellowship program that would educate fellows more deeply about the field,” he says.

Zinkel, associate medical director of quality for HealthPartners, says only some of what is covered is specific to emergency medicine. “Ninety percent is generalizable to all of medicine,” he explains, adding that it prepares trainees for academic or administrative positions in health plans or hospitals. So far, one fellow has graduated from the one-year program; another is midway through the two-year version which includes an MBA.

Minnesota’s medical toxicology fellowship is based at Regions Hospital but is a collaborative effort involving HCMC and Hennepin Regional Poison Center. The ACGME-accredited fellowship trains physicians to handle emergencies ranging from spider bites to drug overdoses to chemical exposures caused by industrial accidents.

Although ultrasound is not yet an “official” emergency medicine subspecialty, HCMC’s emergency ultrasound fellowship is in demand. “We have a strong ultrasound training program here, and we have had multiple fellows in it for the last several years,” Ho says.

The role of ultrasound in the ER has expanded with the advent of portable ultrasound equipment. It is now used to diagnose problems ranging from internal bleeding from gunshot wounds to gallstones. “It’s not accredited yet,” Ho says of HCMC’s fellowship, “but I think it’s on its way.”

The goal of the AGCME-accredited fellowships at HCMC and Regions Hospital is to prepare physicians to be medical directors of EMS agencies. To accomplish that, fellows work with those agencies. They teach, do research, provide medical oversight and get involved in disciplinary processes—“all the things that go along with running an EMS service,” says HCMC’s Ho. They also get hands-on experience caring for patients away from the hospital, teach paramedics, write academic papers, and receive specialized training in such things as patient extrication.

The need for physicians with this background is not necessarily new. “As long as there have been 911 ambulance service providers, the call for physicians trained in EMS work and who have knowledge of EMS principles has always been there,” Ho says. “Now that this has evolved into a new subspecialty, the demand for subspecialty training and certification is going to go up.”

Although the number of emergency medicine subspecialties is increasing, the number of emergency medicine subspecialists is still quite small. Only 4.3 percent of American Board of Emergency Medicine (ABEM) diplomats hold a subspecialty certificate, according to Earl Reisdorff, MD, executive director of the ABEM. He adds that all of the emergency medicine subspecialties are in demand.

One thing sets emergency medicine physicians apart when it comes to subspecializing: They tend to maintain a general practice in an emergency department. “In this way, the general population’s needs are met and there is no siphoning of important resources away from safety net services provided in the emergency department,” Reisdorff says. “In addition, unlike some specialties, where subspecialization results in higher physician wages and health care costs, this tends not to be the case for emergency medicine subspecialties.” –CP
In 2011, the ABEM began offering certification in internal medicine-critical care medicine. In 2013, it certified anesthesiology critical care medicine. The route to these subspecialties is similar for emergency medicine physicians. They can do an internal medicine-sponsored critical care medicine fellowship or an anesthesiology-sponsored critical care medicine fellowship.

Emergency medicine and critical care overlap to some extent. Both require expertise in resuscitation and handling critically ill or crashing patients, for example. Physicians dually trained in emergency medicine and critical care usually end up practicing both disciplines following fellowship training. And that meets a big need, according to Reisdorff, who notes there’s a shortage of critical care specialists. "By allowing emergency physicians access to advanced fellowship training and certification, more intensivists can be trained, and the quality and cost of care to critically ill and injured patients improves." MM

Carmen Peota is one of the editors of Minnesota Medicine.

Call for Papers

Dreaded diagnoses | AUGUST

SPECIAL OPPORTUNITY: Submit case studies highlighting diagnoses that you dread—either because they are difficult to make or treat—or because they are so devastating to patients.

Case studies are DUE JUNE 8.
Other articles DUE JUNE 20.

Minnesota Medicine regularly publishes poetry, essays, commentaries, research reports and clinical updates on a wide array of topics. Send your submissions to mm@mnmed.org.

For more information, go to www.minnesotamedicine.com or call 612-362-3724.

Glorious Hugs is a social benefit startup delivering curated care packages of handmade art and other items as a single gift or as a subscription service. Each themed package is carefully curated with a different art form, poetry and food from local artists. The goal is to bring joy, comfort and opportunities to connect with the art and others.

Mother Earth package includes:
- A gorgeous, easy-to-open box covered in colorful art
- A handmade mug from one of three local professional potters
- Two commissioned poems from a local poet
- Mocha Bars from Mackenthun’s bakery to share
- A sunny Hello letter with artist bios and discussion questions on the art and poetry
- A stamped postcard to send
- A picture of your handwritten note to the recipient (optional)

Visit www.GloriousHugs.com for details and to place your order.