EMRA Fellowship Guide 2016

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DISCLAIMER
This guide is intended only as a general resource providing information about subspecialty fellowships available to emergency medicine residents. It is intended as a supplemental source of details, not to replace information provided by the fellowship programs themselves. The publisher, authors, editors, reviewers, and sponsoring organizations specifically disclaim any liability for any omissions or errors found in this guide or for any actions stemming from it.
Foreword

It is not without the help of support of many physicians that I would have been able to achieve my dreams of attending a critical care fellowship. It was my pursuit of this endeavor and keeping track of all the advice that I received that led me to create a guide to help future critical care applicants. It occurred to me through my involvement with EMRA that other applicants of other fellowship processes also seek and need mentoring and advice similar to that which I had sought for critical care. Thus, the idea of this fellowship manual was born and has happily come to fruition. It is my hope that this manual helps many emergency physicians find their niche within the fellowship community.

Thank you to my mentor, Dr. Lillian Emlet, for encouraging me to dream big and giving me the wings to take on such a large project.

Thank you to the staff at EMRA for approving this project and providing me with all the support and resources necessary to create this fellowship manual. Thank you especially to Valerie Hunt who has helped me with all the unforeseen small details of this project and has been by my side every step of the way.

Thank you to all the many authors and faculty editors for all of your hard work with each of your respective fellowship chapters. Your time, dedication, and expertise are very much appreciated, and it is because of you all that we are able to deliver a reliable product for future fellowship applicants to utilize.

Thank you to my senior editing team: Drs. Bob Stuntz, Nick Mohr, Lillian Emlet, Danish Malik, and Jenelle (Holst) Badulak for helping me with the massive task of editing all 34 fellowship chapters and getting them ready for publication.

Thank you especially to Jenelle Badulak and Danish Malik, my former co-vice chairs of the EMRA Critical Care Division, for supporting this dream of mine. You guys went above and beyond in helping me with every step of this project, from the initial idea planning phases all the way to the very end with publication. You both always volunteered to help pick up the loose ends and never batted an eye when I needed a helping hand. I could not have completed this project without you.

Finally, thank you to my husband Nick, for all your love and support with not only this project, but with all of my dreams and aspirations.

Krystle Shafer, MD

Editor-in-Chief
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INTRODUCTION

Description of the specialty Addiction medicine physicians work in clinical medicine, public health, educational, and research settings to advance the prevention and treatment of addiction and substance-related health conditions, as per the American Board of Addiction Medicine (ABAM) Scope of Practice.

The 2014 National Survey on Drug Use and Health demonstrated that of the 21.2 million Americans who needed treatment for substance use disorders, only about 10% had received specialized treatment services. Though many barriers to treatment exist, one barrier to adequate treatment opportunities is a shortage of physicians with specialized training in addiction medicine. Other challenges arise from insufficient training in medical schools and graduate medical education, leading to limited appreciation of the biological mechanism of addiction and its foundation in the bio-psycho-social framework. Currently there are 3,889 ABAM certified physicians, of which 73% have active ABMS certification. There are 40 approved addiction medicine fellowships, and this number continues to grow.

Emergency departments are often the only point of contact with the health care system for many out-of-treatment patients with active substance use and with substance use disorders, which highlights the importance of ED-based programs that provide screening, brief intervention, and referral to treatment (SBIRT), overdose prevention education, or otherwise facilitate treatment enrollment.

History of the specialty/fellowship pathway Addiction medicine has had a seat in the American Medical Association House of Delegates since 1988, and it was recognized as a “self-designated specialty” in 1990. The American Society of Addiction Medicine (ASAM) supervised
certification in addiction medicine from 1984-2008. In 2009, the ABAM assumed supervision of the certification, and it transitioned from being a certification by specialty society to a board certification. In March 2016, the American Board of Medical Specialties recognized addiction medicine as a subspecialty under the American Board of Preventative Medicine, beginning the final step to becoming an ACGME approved specialty. Addiction psychiatry was recognized by ABMS as a subspecialty in 1991 and maintains an independent board certification process through the American Board of Psychiatry and Neurology.

Why residents choose to follow this career path
Emergency physicians with an interest in prevention of unhealthy substance use and the treatment of substance use disorders are most likely to pursue this pathway. Addiction medicine fellowships provide specific training for clinicians regarding the knowledge and skills required to provide clinical care for patients with substance use disorders. The current specific requirements can be found online http://www.abam.net/.

As addiction medicine transitions to an ACGME recognized subspecialty under preventive medicine, a full 1-year training program will be required after completion of a primary specialty such as EM. Some fellowships offer an additional year of research or other scholarly training in addiction medicine in an effort to train the next generation of leaders in the field. A subsequent exam under the auspices of preventive medicine will be required for board certification. Additional training avenues exist today, but these will be closed after the traditional grandfathering period.

Other options to gain research training in addiction medicine include institutional K awards such as Yale University’s NIDA-funded Drug Abuse, Addiction and HIV Scholar K12 Program (DAHRS) or individual K awards. One would need to investigate how to integrate this training into the clinical requirements to be able to apply for the board examination.

How do I know if this path is right for me? If you have a specific interest in providing care for and improving the lives of patients affected by substance use and substance use disorders, and you are considering additional training, this path may be for you.

Career options after fellowship Depending on specific skills and training obtained during your fellowship, you may work in a variety of clinical, policy, and research settings. Many academic EDs prefer to hire fellowship-trained faculty, and if you are drawn to addiction medicine, a fellowship can provide you the skills and experience to establish your niche in EM. Other opportunities can be found at specialized treatment centers, private practice, government agencies, consulting, and in health policy.

Splitting time between departments This can likely be arranged if desired, depending on departmental funding and staffing. Training in addiction medicine will equip you to provide clinical care for patients at a variety of inpatient and outpatient addiction treatment settings.

Academic vs. community positions Many physicians taking this route will take academic positions, although the need for addiction specialists is significant, and community/private practice options will be available.

IN-DEPTH FELLOWSHIP INFORMATION

Number of fellowship programs There are 40 ABAM certified fellowship programs as of 2016, each with 1-4 training slots per year. ABAM addiction medicine fellowships focus on the clinical care of patients with substance use disorders and many have an additional research component.

The Yale Drug Abuse, Addiction and HIV Scholar program is a National Institute of Drug Abuse funded interdisciplinary career development award that is collaboratively supervised by emergency and internal medicine physicians. DAHRS is a flexible training program that provides protected time for rigorous research training and education, including a Master’s of Health Science. The goal of this fellowship is to train clinicians to become independent investigators in the field of substance use, addiction, and HIV research.

The National Clinician Scholars Program (NCSP) is the next phase of the recently discontinued Robert Wood Johnson Clinical Scholar program. This program provides rigorous training in health services research, public policy, and community based health research, which can be used as a jumping off-point for research or policy work in addiction medicine.

Another option is to pursue a general research fellowship with a focus on substance use or addiction medicine. If choosing this pathway, establishing appropriate mentorship will be key. Additional information can be found in the chapter on research fellowships.

Injury prevention fellowships are another option for those wishing to pursue additional training with a focus on intervening in substance use and substance use disorders. See the chapter on injury prevention.
fellowships for more details.

**Differences between programs** Within ABAM certified addiction medicine programs, variation exists with regard to specific rotations, clinical training opportunities, and research requirements, although all programs provide a firm foundation in clinical addiction medicine. Individual program requirements will vary based on how the fellowship is funded and structured, as well as the clinical needs of the affiliated program. Core rotations include outpatient treatment, inpatient treatment, and detoxification. Many fellowships offer a special focus on adolescent substance use prevention.

If you pursue a research fellowship, the DAHRS or NCSP program, or an injury prevention fellowship, you may not receive significant training in clinical addiction medicine, and will likely not be eligible to sit for board certification.

**Length of time required to complete fellowship** Most are 1-2 years.

**Skills acquired during fellowship** This is highly variable across types of fellowships. The clinical addiction medicine fellowships focus on the clinical care and treatment of substance use disorders. Many fellowships also offer research or education training skills.

**Typical rotations/curriculum** Traditional addiction medicine fellowships likely will focus on in- and outpatient management of substance use disorders. Research-focused addiction medicine fellowships may be largely research, with clinical EM, and little to no time working in specialized treatment centers.

**Board certification afterwards?** The American Board of Medical Specialties has recently recognized addiction medicine as a multidisciplinary subspecialty. The process of board certification is currently transitioning from ABAM to the American Board of Preventative Medicine, at which point you will only be eligible to take the addiction medicine boards if you have completed an ABPM accredited addiction medicine fellowship. If you pursue another avenue for addiction medicine training, you may be eligible to sit for the boards before the window closes to be “grandfathered” into the specialty.

**Average salary during fellowship** Salary varies depending on the program, but may be less than traditional EM based fellowships. Some programs may allow moonlighting.

**PREPARING TO APPLY**

**How competitive is the fellowship application process?** Traditional addiction medicine fellowship slots may go unfilled, although competitiveness varies by program. DAHRS and NCSP are small programs that usually have a very competitive application pool.

**Requirements to apply** Graduation from an ACGME approved residency is required, although some programs will consider AOA trained applicants. Some addiction medicine programs may not be open to residents trained in EM, although most will consider EM trained applicants.

**Research requirements** Research expectations will vary by program. Prior research experience and publications will be expected for most research-based fellowships.

**Suggested elective rotations to take during residency** Rotations in toxicology, addiction medicine, injury prevention, at the Centers for Disease Control and Prevention, or a research elective with a substance abuse focus may be helpful.

**Suggestions on how to excel during these elective rotations** You will find allies who can foster specific exposures, experiences, and connections if you pursue these rotations as a motivated learner with a focused interest in addiction medicine.

**Should I complete an away rotation?** Away rotations are not necessary, but may be helpful for gaining experiences that are not available at your own institution.

**What can I do to stand out from the crowd?** Performing relevant away rotations and electives, publications in the realm of addiction medicine, and involvement in national organizations will make you an exceptional candidate.

**Should I join a hospital committee?** This is not necessary.

**Publications other than research** Publications are generally viewed favorably, but not necessary for most addiction medicine fellowships.

**How many recommendations should I get? Who should write these recommendations?** Requirements will vary by program. Plan to provide 3 letters of recommendations from individuals who have worked with you, who support your choices to pursue additional fellowship training, and who can attest to the qualities that will make you successful in research, policy or providing clinical care for patients with
substance use disorders. One of these should be from your EM residency program director or chair.

**What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship?** Yes, although you should use that time to expand on this interest and further explore this field of medicine.

**What if I'm a DO applicant?** AOA trainee acceptance may vary from program to program; check with programs prior to applying.

**What if I am an international applicant?** There are no current barriers to international applicants.

### APPLICATION PROCESS

**How many applications should I submit?** This will be highly variable depending on which types of programs you choose. As a general rule, apply to as many programs as you can. Don’t apply to programs in locations where you don’t want to live or whose curriculum does not fit your career goals.

**How do I pick the right program for me?** Talk to mentors, people in your field, and physicians who do the kind of work you are interested in pursuing. This route is a bit off the beaten path, so it’s about knowing what you want and finding a program whose needs fit with your goals.

**Common mistakes during the application process**

Contact program directors early and ensure eligibility prior to applying. Be sure to have your application submitted as soon as possible.

**Application deadlines**

Deadlines vary, but it is best to start researching potential programs 1-2 years prior to start date.

**Tips for writing your personal statement**

This is your chance to convey who you are and why you are interested in addiction medicine. Explain not only what sparked your interest in this field, but also how you plan on contributing to this specialty as a whole.

**Is this a match process?** No.

**What happens if I don't obtain a fellowship position?** Depending on your exact interest, there is always another way to get involved. Reach out to your mentors, program directors, and physicians doing the kind of work you are interested in pursuing.

### INTERVIEW PROCESS

**How do I stand out from the crowd?** Your background in EM already sets you apart. Your job is to communicate how that can be an asset to the fellowship program and your career in addiction medicine.

**What types of questions are typically asked?** Expect to discuss your past clinical training and interest in addiction medicine, and your goals/expectations for fellowship training and beyond.

**How many interviews should I go on?** At least a handful, but this will vary based on your geographic preferences as well as the kind of program you are interested in.

### PREPARING FOR FELLOWSHIP

**Textbooks to consider reading**


**Important skills to practice while in residency to prepare for fellowship**

Patient communication, motivational interviewing, empathy, and patient advocacy.

**Tips on how to succeed as a fellow**

Similar advice as with residency: show up early, work hard, be enthusiastic, and treat others as you would like to be treated.

### CONCLUSION

**Additional resources**

- **Websites:** cdc.gov, drugabuse.gov
- **Journals:** Addiction, Drug and Alcohol Dependence, Substance Abuse, Journal of Substance Abuse Treatment, Addiction Science & Clinical Practice

**National organizations**

- American Society of Addiction Medicine
- Association for Medical Education in Substance Abuse
- College on Problems for Drug Dependence

**Conferences**

ASAM, AMERSA, and CPDD are all excellent annual meetings that offer competitive travel awards for those in training. These travel awards are an opportunity not only to offset the costs of attending the meeting, but also put you on the radar of experts in the
field and provide additional mentorship opportunities. Applications for these are often due up to 6 months prior to the meetings.

**How to find a mentor** This is crucial to your success in finding a fellowship. Look for experts who are doing the type of work or research you want to learn. If you are still defining your interests, cast a broad net and talk to several people with different backgrounds and foci in addiction medicine to see what appeals most. Use the internet, PubMed, and NIH Reporter to identify potential mentors. If your goal is to become an independently funded NIH researcher, find a mentor who has NIH funding. Remember that mentors do not need to be in the field of EM. Most people with expertise in addiction medicine are passionate about their work and improving patient outcomes, and are highly invested in the development of the field.

**To submit updates or to assist with future revisions, please email fellowships@emra.org.**
Administration/ED Operations/ Patient Safety & Quality Improvement Fellowships

INTRODUCTION

Description of the specialty Successful physicians have long known that the practice of medicine is equal parts art and science, but today’s physicians also must be knowledgeable about the business of medicine. Administrative and operations fellowships in emergency medicine were designed to prepare residency graduates with the administrative, quality, health policy, patient safety, research, and operational skills necessary to lead an emergency department, hospital, or health care system, and to research the best approaches to ED operations. At some academic medical centers, institution-wide fellowships focused solely on patient safety and quality improvement have also been created.

History of the specialty/fellowship pathway The first administrative EM fellowship was created by EPMG in California in 1990 and was followed by two more in 1993, one in Chicago founded by EMSCO Management Service and another at Orlando Regional Medical Center co-sponsored by EmCare. These first three fellowships were described in a 1995 publication of Physician Executive by Dr. Byron Scott, one of the earliest graduates of Orlando’s Administrative Fellowship Program. Since that time, nearly 30 EM administration and operations fellowships have come into existence, in addition to a dozen non-EM-specific patient safety fellowships.

Why residents choose to follow this career path EM residency graduates interested in addressing patient care from a systems perspective, becoming a researcher in ED operations, and/or pursuing departmental or hospital-wide leadership roles may consider this career path.

Although a fellowship is not required to pursue this career path, fellowship training can lead to earlier opportunities to take ownership...
over impactful projects in an emergency department, creation of scholarship in this area, and mentorship to help cultivate your leadership and research skills. Fellowships may also help subsidize the cost of your graduate degree as a trade-off for the decreased salary you may make during your time as a fellow.

How do I know if this path is right for me? If you are the type of person who sees challenges as opportunities and enjoys thinking about the way patients flow through your department and how their care can be made more streamlined and safe, and are interested in the art and science of ED operations, an administrative fellowship may be right for you.

Career options after fellowship There are a number of career options available after fellowship, including medical director, patient safety & quality improvement officer, director of physician group practice, director of observation medicine, chief medical officer, payer leadership positions, health policy leadership positions, or research leadership positions.

Splitting time between departments Unlike clinically based fellowships, splitting time between departments is not applicable for the majority of EM administrative fellows.

Academic vs. community positions Emergency departments need policies and protocols to run smoothly in both academic and community settings. The administrative and operational needs of each department will depend upon the patient population, local resource availability, and relationships between the emergency department and other services in the hospital.

IN-DEPTH FELLOWSHIP INFORMATION

Number of programs As of June 2016, there are nearly 30 EM admin fellowship programs; 23 are based out of academic medical centers. Additionally, there are 14 patient safety & quality improvement fellowships available to EM residency graduates.

Differences between programs There are significant differences between programs advertised as administrative fellowships. Programs vary from a series of leadership lectures and hospital committee appointments offered by large contract management groups to traditional fellowship models at academic centers requiring peer-reviewed research and involvement with resident education.

Length of time required to complete fellowship Fellowships vary in length from 1-2 years. Most 2-year fellowships will include a graduate degree such as a Master’s of Business Administration (MBA), Master’s of Health Administration (MHA), or a Master’s of Public Health (MPH), although some do not. Some fellowships may result in advanced-level work (PhD), particularly those that focus on the science of ED operations.

Skills acquired during fellowship Fellows should gain training in quality improvement, research, patient safety, economics/finance, billing/coding/reimbursement, health policy, risk management, process improvement, leadership, operations, staffing, utilization management, patient satisfaction, and medical informatics, as well as other areas that may be relevant to their interests and capstone projects.

Typical rotations/curriculum Clinical Responsibilities: Clinical responsibilities again vary across fellowships. Typically, the fellow will work as an attending physician in the clinical environment, either seeing patients primarily or supervising learners. It is important to balance protected time (not having a full clinical workload) to develop fellowship interest, but to work clinically enough to have a sense of operations and frontline staff.

Obtaining Advanced Degree: Fellowships have a broad spectrum of options. Some do not require an advanced degree, some may offer it but the curriculum is not linked, and some may have a fully integrated curriculum with the degree program. Obtaining an advanced degree helps to demonstrate that one has expertise in an academic content area. While more health care leaders have a second degree in addition to their medical degree, it is not necessary for credentialing or appointment.

Administrative Responsibilities: These vary significantly from fellowship to fellowship, and it is vitally important to ask details about what your responsibilities will be. Be sure the fellowship’s area of focus, and the areas of expertise of the core fellowship faculty, match your areas of interest.

Board certification afterwards? Administrative, quality improvement/patient safety, and operations fellowships are non-ACGME accredited and there is no additional board certification. However, other advanced credentials are available, such as the American Association for Physician Leadership’s Certified
Physician Executive (CPE) program or by becoming a Fellow of the American College of Healthcare Executives (FACHE) or the American College of Medical Quality (FACMQ).

**Average salary during fellowship** Most fellowships pay on a PGY scale; however, some programs pay physicians an hourly attending rate. Some may offer bonuses or moonlighting opportunities to supplement salary. In addition, other benefits may include free tuition or tuition credit as part of an advanced degree.

**PREPARING TO APPLY**

**How competitive is the fellowship application process?** As a non-ACGME fellowship that does not use a centralized application process, there are no data available regarding the competitiveness of administrative fellowships.

**Requirements to apply**
- Letter of interest/intent
- Updated CV
- Completion of ABEM-certified EM residency program
- 3 letters of recommendation (program director, administrative mentor)
- Some programs may require a GMAT score
- Ability to obtain a medical license in the state where you’d like to complete your fellowship

**Research requirements** Research is generally not required to apply, but demonstrating some evidence of scholarship in the area is helpful for your application, particularly for research-focused operations fellowships.

**Suggested elective rotations to take during residency** Many residency programs offer administrative or medico-legal rotations where residents can spend time with department/hospital leadership leaning the nuts and bolts of how the hospital/department is run or with risk-management specialists to learn more about ways to reduce patient harm, as well as reduce your risk of future liability. Residents may also consider completing the Institute for Health Care Improvement’s Open School “Basic Certificate in Quality and Safety” course, which can be completed free of charge if your institution already has a subscription.

**Suggestions on how to excel during these elective rotations** Several qualities are important for any administrative fellow. First, you must demonstrate leadership potential and the ability to manage change. Second, be sure that any projects you are involved in are executed fully. Delivering a polished final project is far more important than loose associations with many failed change efforts.

**Should I complete an away rotation?** Away rotations are generally not necessary, especially given the length of time it takes to complete most administrative projects. That being said, if you have a fellowship that particularly interests you, see if you can visit or shadow for a couple of days.

**What can I do to stand out from the crowd?** Demonstrate the ability to take an idea from conception to execution. This can be at the residency, department, or hospital level.

**Should I join a hospital committee?** Any involvement with relevant administrative, research, quality, operations, IT, etc., is helpful. If you do join a committee, make sure to have an active role, and be able to describe your particular efforts for that committee.

**Publications other than research** Any publication that shows that your contribution to a project or an area of expertise that you have is helpful.

**How many recommendations should I get?**

**Who should write these recommendations?** Most fellowship programs require 3 letters of recommendation. One letter should be from your residency program director and another should be from an administrative mentor.

**What if I decide to work as an attending before applying?** Can I still be competitive when I apply for fellowship? Yes, as long as you continue to demonstrate interests in relevant content areas.

**What if I’m a DO applicant?** There are no data to suggest this will limit your opportunities so long as you can fulfill the standard application requirements defined by the fellowship program.

**What if I am an international applicant?** There are no data to suggest this will limit your opportunities so long as you can fulfill the standard application requirements defined by the fellowship program.

**APPLICATION PROCESS**

**How many applications should I submit?** As a non-ACGME fellowship that does not use a centralized application process, there is no data available regarding the competitiveness of administrative fellowships. Thus, it is hard for us to make recommendations about how many programs an applicant should apply to. Our general advice is that you should only apply to programs that you would seriously consider accepting.
a fellowship offer from. Look also for programs that will best help you meet your future career goals.

The number of programs an applicant should apply to will be influenced by many factors, including geography and the areas you hope to gain expertise in during your fellowship training. For example, if you know you want to stay in a certain geographic area or stay on as faculty at a particular institution or there are only a few programs with an emphasis on what you’d like to be your area of focus, your options are limited. If you’re open to relocating anywhere in the country and want to be on a fast track to becoming a medical director, you may consider applying more widely or looking at programs offered by contract management groups.

**How do I pick the right program for me?** There are a number of questions that an applicant must answer before deciding which program is right for them, including whether they want to be academic faculty – teaching residents and publishing peer-reviewed research – or whether they want to work in the community as part of a private group.

Applicants with specific interests in patient satisfaction, research, health policy, patient flow, observation-medicine, clinical pathways, resource utilization may find that certain programs offer faculty expertise or mentorship in these areas.

**Common mistakes during the application process**

Common mistakes include not being aware of important application deadlines for each program, not having a clear idea of what you hope to gain by completing the fellowship program, and not understanding the differences between degree-granting and non-degree granting fellowship programs.

**Application deadlines**

Deadlines are highly variable by program. Applicants should begin researching programs at least 1 year prior to completing their training to identify programs they may be interested in, making note of each programs application deadlines.

**Tips for writing your personal statement**

Be able to briefly explain your background, how it shaped you into the person you are today, what your future goals are, and how the program will help you get to where you hope to be.

**Is this a match process?** No.

**What happens if I don’t obtain a fellowship position?** If you don’t obtain a position during your first attempt, get a job with a group that will allow you opportunities for early leadership within your department. Become involved with hospital committees.

Reach out to programs that you were interested in and ask what you could do to become more competitive in the future. Reapply during the next application cycle if you are still interested.

**INTERVIEW PROCESS**

**How do I stand out from the crowd?** During your interview, stand out from the crowd by being able to highlight your ongoing interest in this field by providing concrete examples of your prior leadership and accomplishments in terms of projects completed and your specific contributions.

**What types of questions are typically asked?** In addition to typical interview questions, expect to answer focused questions regarding your leadership style, conflict management, and your 5-year plan.

**How many interviews should I go on?** Similar to the number of programs you should apply to, consider where you are geographic and academic interests overlap. Since there is not a match process and many programs may offer rolling acceptances, start interviewing at places which you are most interested in first.

**PREPARING FOR FELLOWSHIP**

**Textbooks to consider reading**

- Mayer TA, Jensen K. *Hardwiring Flow: Systems and Processes for Seamless Patient Care*. Gulf Breeze,
Important skills to practice while in residency to prepare for fellowship

The most important thing a resident can do to become a leader in any capacity is to become clinically excellent. Without this, you will not have credibility to be a leader in your department.

Take advantage of opportunities to become involved with resident process improvement projects. Demonstrate ongoing commitment & complete projects in a timely manner.

Tips on how to succeed as a fellow

As a new fellow, it is important to clarify expectations with your program director and other members of the leadership team early and often. Be proactive. Tackle areas of knowledge deficiency. Find a balance between doing things you’re good at and taking on projects that you can learn from.

CONCLUSION

Additional Resources

Journals:
- The American Journal of Medical Quality
- BMJ Quality
- BMJ Quality and Safety
- Health Affairs
- Health Care: The Journal of Delivery Science and Innovation
- Implementation Science
- The International Journal of Quality in Health Care
- The Joint Commission Journal on Quality and Patient Safety
- Journal for Healthcare Quality
- The Journal of Clinical Outcomes Management
- Journal of Graduate Medical Education
- The Journal of Healthcare Risk Management
- Patient Safety and Quality Healthcare
- Quality Management in Health Care

Podcasts:
- AAEM Podcasts
- AAEM Podcasts: EM Operations Management
- New Directions in Health Care by The Commonwealth Fund
- Urgent Matters
- WIHI – A Podcast from the Institute for Healthcare Improvement

Twitter Resources:
- @AmericanMedicalAssn

National organizations

- American Association for Physician Leadership
- American College of Emergency Physicians (ACEP)
- ACEP EM Practice Management & Health Policy Section
- ACEP Freestanding Emergency Centers Section
- ACEP Observation Medicine Section
- ACEP Quality Improvement & Patient Safety Section
- ACEP Committees
  - CEDR - Clinical Emergency Data Registry Committee
  - Clinical Policies Committee
  - Coding & Nomenclature Advisory Committee
  - Medical-Legal Committee
  - Public Relations Committee
  - Quality and Performance Committee
  - Reimbursement Committee
- ACEP 911 Network
- American College of Healthcare Executives
- American College of Medical Quality
- Emergency Medicine Residents’ Association
- Society for Academic Emergency Medicine
  - Academy of Administrators in Academic Emergency Medicine
  - Observational Medicine Interest Group
  - Operations Interest Group
  - Patient Safety Interest Group
  - Medical Quality Management Interest Group
Conferences

- ACEP Scientific Assembly
- Emergency Department Directors Academy*
- Leadership & Advocacy Conference*
- Reimbursement and Coding Conferences
- ACMQ Medical Quality Meeting
- Emergency Department Practice Management Association (EDPMA)
- Solutions Summit*
- Institute for Healthcare Improvement Annual National Forum on Quality Improvement in Health Care
- The Academy for Emerging Leaders in Patient Safety: The Telluride Experience
*Travel scholarship available from EMRA

How to find a mentor
Residents should seek mentorship from their academic department chair or vice chair, medical directors of the departments where they work, and/or other research faculty and hospital administrators involved in emergency department operations, patient safety, quality improvement, clinical pathways, clinical decision support, observation, or other areas of mutual interest.

To submit updates or to assist with future revisions, please email fellowships@emra.org.
Aerospace Medicine Fellowship

INTRODUCTION

Description of the specialty  Aerospace medicine is a specialty that resides within preventive medicine and focuses on the promotion of the health of pilots, astronauts, flight crewmembers, passengers, and patients being transported.

History of the specialty/fellowship pathway  Paul Bert, a French physiologist in the 19th century, is considered the father of aviation medicine. He observed the effects of high and low pressure on balloonists, and these observations are considered the catalyst for further research in the field. In 1918 four physicians became the first American “flight surgeons” after attending aviation school. By 1948, the first center for space research was established in the United States, and the term space medicine was coined the same year. In 1953 the specialty was officially recognized within the medical community. With almost one-quarter of the world’s population traveling by air yearly and also with the explosion in interest and exploration of aerospace environments, this specialty of physicians are experts in maintaining the health and safety of the population in such environments.

Why residents choose to follow this career path  Residents who are interested in discovering, preventing, and managing adverse physiologic responses to an individual in a hostile aerospace environment pursue this career path.

How do I know if this path is right for me?  Are you interested in the effects of low barometric pressures and oxygen tension on the human body? How about the short- and long-term effects of microgravity? Are you interested in learning about topics such as microgravity-induced bone loss, space adaptation syndrome, galactic and cosmic radiation exposure, G-induced loss of consciousness, or desynchronosis? Would
you like to participate in the prevention and investigation of aircraft/spacecraft accident investigations? If you answered yes to these questions, this may be the career path for you.

Career options after fellowship/residency
Physicians who have completed this training program have found employment in (but not limited to) the following agencies: National Aeronautics and Space Administration (NASA), Federal Aviation Administration, National Transportation and Safety Board, airline medical department/clinic, aerospace manufacturing, commercial spaceflight operations, military or other government aviation departments, etc.

Splitting time between departments
Traditionally, the physicians who complete this training primarily take positions solely within the field of aerospace medicine. However, this is not to say that splitting time between a position within emergency medicine and within aerospace medicine is not possible. Some may choose to have 2 part-time jobs, whereas others may have 2 appointments within the same hospital system. It will take a bit of negotiation on your part to convince different departments to hire you and agree on a schedule where you split time (including holidays and vacations). When you enter such negotiations, remember that your training in both fields makes you a valuable and unique physician.

Make sure you protect your time so you are not caught working overnight for one department and then working a day shift the very next day for your second department. Also, consider how much time you wish to spend in each position (50-50 between EM and aerospace medicine?). Finally, seek advice from other physicians (such as emergency medicine-critical care physicians) who had to negotiate similar contracts between two departments.

Academic vs. community positions
Those who are interested in research and/or resident/fellow education typically seek out academic or community academic positions. This field in general typically offers more positions for physicians in the community, private, and government sector.

IN-DEPTH FELLOWSHIP INFORMATION

Number of fellowship programs
There are 3 civilian programs, as well as 2 military options:
- Mayo Clinic
- Wright State University
- The University of Texas-Medical Branch in Galveston
- USAF Aerospace Medicine Education at Wright-Patterson Air Force Base
- Army/Navy program in Pensacola, Florida

This chapter will solely focus on the 3 civilian programs.

Differences between programs
The Mayo Clinic is a true fellowship and only accepts applicants who have completed a residency program. However, Wright University and the University of Texas will accept applicants with a minimum of 1 year of internship completed and thus are considered more of a residency program. (Note: Wright University gives preference to those applicants who have completed residency training.)

The Mayo Clinic offers an opportunity to obtain a pilot’s license if inclined and qualified. The Mayo Clinic program includes obtaining a Master’s of Public Health; the Wright State University program includes a Master’s of Science in Aerospace Medicine; the University of Texas offers either a Master’s of Public Health or a Master’s of Science degree. Wright State University offers an Aeromedical Transport Operations pathway within their aerospace medicine that is specifically designed for those with emergency medicine training who are interested in the administrative aspects of aeromedical transport.

Length of time required to complete fellowship
All of the civilian programs are 2-year training programs.

Skills acquired during fellowship
Fellows will gain the skills to become an aerospace specialist and will be leaders, educators, researchers, administrators, and master clinicians in this field. They will learn how to manage and optimize the health of those in aerospace environments. They will be able to promote aerospace operational safety and apply ergonomic concepts to this environment. They will also be trained in facilitating optimum care of patients transported in aerospace environments.

Typical rotations/curriculum
- Research
- Master’s degree coursework
- Aerospace Medicine basic flight surgeon training
- Flight familiarization
- Military and civilian aviation experiences
- Space medicine experiences
- Hypobaric and hyperbaric experiences
- Basic and advanced aerospace and aeromedical sciences
- Electives such as travel medicine, administration, etc.
- Flight Medicine clinic
Board certification afterwards? This fellowship is accredited by the Accreditation Council for Graduate Medical Education (ACGME) and those who complete this training will be board eligible for certification in aerospace medicine by the American Board of Preventive Medicine (ABPM).

Average salary during fellowship Resident compensation and ancillary expense coverage varies from program to program. Interested candidates are encouraged to inquire about each program.

PREPARING TO APPLY

How competitive is the fellowship application process? The Mayo Clinic only takes 1 applicant per year. Wright University and The University of Texas both take 1-4 applicants per year.

Requirements to apply The Mayo Clinic requires a minimum 3-year accredited residency and board eligibility or board certification. Wright State University and the University of Texas require a minimum 12-month internship at an accredited residency, where 11 of these months must have included direct patient care. Both programs encourage completion of a prior accredited residency program.

Research requirements Research is not required to apply for this fellowship but is strongly encouraged. Research should ideally be within the field of aerospace medicine if possible and also should be near publication and/or submitted for publication.

Suggested elective rotations to take during residency Suggested rotations to take during your elective time include the following: hyperbaric medicine elective, research elective, NASA aerospace medicine elective, flight medicine clinic, EMS rotation focusing on flight exposure, global health, and travel medicine, aerospace toxicology, health policy, etc.

Suggestions on how to excel during these elective rotations Be interested and engaged during your rotations and demonstrate your happiness and willingness to be a part of the team. You should strive to arrive early and stay late. Be courteous to everyone, all staff and patients alike. Read every night and continue to expand your knowledge base. Your electives are excellent opportunities to find colleagues to write letters of recommendation. With this in mind, it is important to treat every clinical day as if it is an interview day and strive to place your best foot forward.

Should I complete an away rotation? While you do not need to complete an away rotation, it may be helpful for you to gain exposure in the field and also to help you network. Because this is a small and unique field, chances are your residency program offers limited exposure. There are 2 away electives to consider:

- Wright State University offers a 4-week rotation for both medical students and residents. This rotation is available in October only and includes didactic sessions and various site visits and clinical exposure.
- NASA offers a semi-annual 4-week aerospace medicine clerkship during April and October and accepts both residents and fourth-year medical students.

What can I do to stand out from the crowd? To stand out from the crowd, the first thing you need is a stellar application. Most important, your CV should include activities that display your interest in aerospace, demonstrate your leadership skills, and indicate your research experience. Top applicants will have demonstrated interest in aerospace in multiple areas, including having completed an aerospace medicine elective rotation or clerkship, and may even have obtained a private pilot’s license. The worst thing you can do is to have a CV that shows no involvement and only lists your residency and Advanced Cardiac Life Support certifications. Seek opportunities such as writing blog posts on topics relative to the field, reviewing literature within the field, giving lectures on aerospace medicine at your residency, or attending national aerospace conferences. Becoming chief resident would also be helpful (but is not required). It may also be worth considering joining one of the national organizations as listed at the end of this chapter to demonstrate your interest in the field.

Should I join a hospital committee? If your hospital offers you a position on a committee where you would have meaningful contribution, especially in a leadership capacity, then we highly recommend that you join. For this fellowship in particular, transport medicine and/or safety committee involvement may be useful exposure.

Publications other than research Publications other than research are highly encouraged. Use FOAMed to your advantage and become active in blog posts and podcasts. Seek out writing opportunities in magazines and journals. EM Resident, published by EMRA, is always looking for authors. Twitter and Facebook, while not traditionally considered publications, may be a great way to network and also to increase the EM community’s knowledge about aerospace topics.

How many recommendations should I get? Who should write these recommendations? Each program has its own requirements about the number...
of recommendations required (typically 3 letters). However, all programs at minimum require a letter of recommendation from either your program director or your department chair.

What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship? You can absolutely still be competitive when applying for fellowship. Clinical experience is highly valued in applicants to the field, especially those who wish to eventually work as a NASA flight surgeon. The key for applying after residency is to make sure you continue to be involved in leadership and publication activities. You do not want 5 years to pass without adding something new to your CV.

What if I'm a DO applicant? All 3 civilian programs accept USMLE and/or COMLEX scores.

What if I am an international applicant? The Mayo Clinic will accept J-1 visas and occasionally an H1B visa. Wright State University's program is NASA-funded and thus can only accept U.S. citizens. University of Texas receives government funding and thus can only accept U.S. citizens as well.

APPLICATION PROCESS

How many applications should I submit? Applicants should apply to all programs they would seriously consider attending if offered a fellowship position.

How do I pick the right program for me? Applicants should pick a program in a location where they can imagine living for 2 years, where they feel comfortable, and where they can be successful. Your fellowship program should clearly and strongly believe in you and be supportive of your future goals. Do not ignore your inner voice; if you feel uncomfortable at the program during an interview, this may not be the fellowship for you. If you have a spouse or significant other, do not forget their opinion, especially when it comes to program location. If your spouse is unhappy, you will eventually become unhappy at work as well, which would make for a miserable experience.

Common mistakes during the application process Be truthful on your CV and be cautious of listing too many projects, especially those that are incomplete. It is better, for example, to have 1 complete research project than 3 projects in data collection phase. Your letters of recommendation should be from writers who are strongly supportive of you. If your letter writers seem a bit uncertain when you ask them to write a letter for you, take this as a sign to find someone else. Pay attention to the details, such as making sure there are no grammatical errors and meeting all deadlines. Be courteous to all those with whom you interact, both via email and in person. Being rude to a program coordinator is a guarantee to sink your chances at that program.

Application deadlines Both the Mayo Clinic and Wright State University have their own application processes, for which additional information can be found on their websites. The University of Texas uses ERAS. Please contact each program and inquire about whether an additional application is required for their master's programs as well.

Tips for writing your personal statement Your personal statement should express your personality and, more important, express your interest in aerospace medicine. Do not fall into the trap of simply repeating what you have already listed in your CV. The best personal statements read as a story and grab your attention from the beginning to the end. Write about that life experience or perhaps patient encounter that initially sparked your interest in the field. Finally, consider explaining how this fellowship would help you attain your long-term career goals.

Is this a match process? No.

What happens if I don't obtain a fellowship position? If you do not obtain a fellowship position, do not become discouraged. Many applicants who complete the programs have had to apply 2 or more times before being accepted because of the limited available positions. We also recommend taking a hard look at your application. Talk to the programs that rejected you and gently ask for reasons why so you can address these gaps. It also may be wise to ask someone in a leadership position, such as your program director, to look at your application with you to help identify weaknesses.

Take steps to increase your activities and also exposure within the aerospace medicine field. Practice your interview skills. Attend national conferences in the field to help you network with physicians and prepare to apply again next year. Worst-case scenario, there are physicians who are involved in this field without completing a fellowship. Seek out these physicians so they can help you build your niche in aerospace medicine.

INTERVIEW PROCESS

How do I stand out from the crowd? To stand out from the crowd during your interview, strive to appear
confident in yourself and your abilities without sounding arrogant. Know your application well and be ready to discuss anything listed on it. Be engaging with your interviewer. Be careful not to talk too much or dominate the conversation, but also do not be disengaged or overly quiet. Let your enthusiasm for aerospace medicine and also for their program shine. Make sure to send thank-you letters to all of your interviewers and to the program coordinator afterwards.

What types of questions are typically asked?
- Why are you interested in aerospace medicine?
- Why are you interested in specifically attending our program?
- Tell me more about “blank” that you have listed here on your CV.
- What are your 5- and 10-year career goals?
- Do you have any flight experience?
- Tell me more about your research experience.
- Describe to me your dream job.

How many interviews should I go on? Applicants should attend all interviews offered (assuming you applied only to the programs you want to attend).

PREPARING FOR FELLOWSHIP

Textbooks to consider reading

Important skills to practice while in residency to prepare for fellowship First and foremost, you should strive to become an excellent clinician during residency. Strive to expand your knowledge base of aviation and space medicine if possible. Seek activities that will build your skills in leadership, administration, clinical education, and research.

Tips on how to succeed as a fellow Fellowship is a unique opportunity for you to gain experience, skills, and expand your knowledge base while under the guidance of mentors and attending physicians. Take advantage of every opportunity and purposefully seek out opportunities beyond the usual course and clinical work. Take time to read every day, and strive to be a master clinician within this field. Remember to always be considerate, dedicated, courteous, and compassionate.

Work hard at your master’s degree and excel at your coursework. Continue to network and build rapport with those within the field and work toward achieving your dream job after fellowship.

CONCLUSION

Additional Resources

Journals: Aerospace Medicine and Human Performance

Blogs:
- Aerospace Medicine Safety Blog
- Go Flight Medicine

National organizations
- Aerospace Medical Association
- Space Medicine Association
- American Society of Aerospace Medicine Specialists
- Society of NASA Flight Surgeons
- Airlines Medical Directors Association

Conferences
- Aerospace Medical Association Annual Scientific Assembly
- American College of Preventive Medicine annual meeting

How to find a mentor There is no central website that we are aware that assigns mentors to those interested in the field of aerospace medicine. We encourage you to network with physicians in this field via conferences, away rotations, and email.

To submit updates or to assist with future revisions, please email fellowships@emra.org.
Cardiovascular Emergencies Fellowship

INTRODUCTION

Description of the specialty The cardiovascular emergencies fellowship gives emergency medicine physicians additional knowledge and skills related to cardiovascular emergencies, including advanced echocardiography, advanced electrocardiography interpretation, caring for the patient in advanced heart failure, dysrhythmias, acute coronary syndrome, and any other cardiovascular emergencies. These skills will allow the fellow to teach other emergency medicine physicians, residents, and medical students about echocardiography, ECG interpretation, and cardiovascular emergencies. The fellowship also provides a foundation for research in the field.

History of the specialty/fellowship pathway Cardiology fellowships traditionally are a pathway exclusively available for internal medicine graduates as a 3-year fellowship. However, within emergency medicine, there has been a growing interest in this field. In the early 2000s, cardiovascular emergencies fellowships designed specifically for the emergency physician arose, and there are currently 4 fellowship opportunities available. These fellowships are currently not accredited by the ACGME.

Why residents choose to follow this career path Residents have chosen this career path to develop an academic niche, to further expand echocardiography skills, to become the director of clinical decision units, and to become the emergency department spokesperson during collaboration with cardiology.

How do I know if this path is right for me? This is the right path if you have a strong academic interest, if you are interested in teaching, and if you have a passion for all things related to cardiovascular emergencies.
Career options after fellowship Academic teaching positions, as well as administrative or director position in a clinical decision/general observation/ chest pain observation unit.

Academic vs. community positions This fellowship prepares the cardiovascular emergencies fellow to work in both the academic as well as the community setting. Physicians who are interested more in research and/or education of medical students/residents/fellows tend to gravitate toward academic positions.

IN-DEPTH FELLOWSHIP INFORMATION

Number of programs There are 4 programs currently:
- University of Maryland Medical Center
- Stanford University
- University of Virginia
- Virginia Commonwealth University Health System

Differences between programs The curricula will vary, but most are similar in that they contain clinical, research, and educator responsibilities. Some focus more on observation unit management and overall clinical skills while others have more of a research focus.

Length of time required to complete fellowship 1-2 years.

Skills acquired during fellowship Clinical management of cardiovascular emergencies, cardiovascular emergency related research, echocardiography, stress test interpretation, advanced electrocardiography interpretation, pacemaker/AICD interrogation and interpretation, LVAD management, and chest pain observation unit operation.

Typical rotations/curriculum Curriculum traditionally includes: echocardiography, cardiology consult service, nuclear cardiology, stress electrocardiography, cardiac critical care unit, arrhythmia/electrophysiology service, pediatric cardiology, and research. The didactic curriculum will often include emergency medicine lecture series, cardiology lecture series, and joint emergency medicine/cardiology conferences.

Board certification afterwards? No.

Average salary during fellowship This will vary at different institutions. Most fellows get paid as a clinical instructor/fellow.

PREPARING TO APPLY

How competitive is the fellowship application process? There are limited positions currently available. However, the application pool is also traditionally small.

Requirements to apply Candidates must have completed an ACGME approved residency in emergency medicine and be ABEM board certified or board eligible in emergency medicine.

Research requirements Research is not required but can strengthen your application especially if the research is related to the field of cardiovascular medicine. Strive to have a project near completion prior to the submission of your fellowship application.

Suggested elective rotations to take during residency Rotations to consider include cardiac anesthesia, ultrasound elective with focus of TTE and TEE, chest pain observation units, inpatient cardiology services, research electives, and pediatric cardiology services.

Suggestions on how to excel during these elective rotations During your elective rotations, treat every day as an interview day and strive to make the best impression possible. Arrive early, stay late and strive to be a team player. Read daily to expand your knowledge base. Make sure you are courteous to everyone and provide the best patient care possible.

Should I complete an away rotation? Because there are only a few fellowship programs, it may be worth considering an away rotation at one of these institutions to get a better feel for their program and to “audition” there. This is not required, however, and plenty of physicians have obtained fellowship positions without completing an away rotation.

What can I do to stand out from the crowd? The best way to stand out from the crowd is to build a CV with activities that clearly demonstrate your interest in this field and also demonstrate your leadership abilities.

Should I join a hospital committee? Hospital committees can be an excellent way to develop your leadership skills, assuming you have meaningful contribution to the committee.

Publications other than research Publications other than research – such as chapters, case reports, blog posts, podcasts, etc., especially regarding cardiovascular topics – can certainly support your application. These are excellent opportunities to further educate both yourself and your fellow emergency medicine physicians.
How many recommendations should I get? Who should write these recommendations? Traditionally 3 letters of recommendation are requested, one of which should be from either your program director or department chair. The other 2 should be from faculty members who are strongly supportive of you and can attest to your interest in this field of medicine.

What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship? Yes, this should not be an issue.

What if I’m a DO applicant? No foreseen issues, but this might be program-dependent.

What if I am an international applicant? International applicants are encouraged to contact each program directly to inquire.

APPLICATION PROCESS

How many applications should I submit? An applicant should apply to all places s/he would seriously consider a fellowship position if offered.

How do I pick the right program for me? When choosing a fellowship program, it is best to look at the curriculum and assess if it matches your interests and career goals after fellowship. Location is also an important consideration, because if your spouse is unhappy, this will eventually permeate into your life as a fellow.

Common mistakes during the application process
- Missing application deadlines.
- Submitting an incomplete application.
- Failure to demonstrate interest in cardiovascular emergencies on your CV.
- Submitting letters of recommendations from faculty members who are weakly supportive of your decision to pursue this fellowship.

Application deadlines Each program has its own application and deadlines. Candidates are encouraged to contact each program directly. Generally, candidates should start the process roughly 1 year prior to their planned fellowship start date.

Tips for writing your personal statement Do not make the mistake of simply repeating your CV in your personal statement. Instead, focus on writing about what sparked your interest in cardiovascular emergency fellowship and end your statement with a summary of your proposed career goals after completing fellowship.

Is this a match process? No.

What happens if I don't obtain a fellowship position? If you do not obtain a fellowship position, take a step back and examine your application with a critical eye to identify weakness. It may be worth asking the programs that did not offer you a position for tips on how to improve your application. It may be worth asking your program director from residency to review your application for weakness as well. Once you have identified these areas, spend the next year working on improving your application and re-apply. Worst-case scenario, it is possible to build your niche within this field without attending a fellowship.

INTERVIEW PROCESS

How do I stand out from the crowd? The best way to stand out from the crowd during your interview is simply by being yourself: be sociable and easily engaging. Come prepared with questions about the fellowship that cannot be easily found on the program’s website. Finally, make sure you can clearly voice why you wish to complete fellowship and your plans for a career post-fellowship training. It may be worth practicing with a member of your residency leadership team prior to attending your fellowship interview.

- What types of interview questions are typically asked?
  - Why are you interested in a cardiovascular emergency fellowship?
  - Why are you specifically interested in attending our program?
  - What are your strengths and weakness?
  - Tell me more about “blank” that you list here on your CV.

How many interviews should I go on? You should attend all interviews offered, assuming that you only applied to programs that you would seriously consider attending if offered a fellowship position.

PREPARING FOR FELLOWSHIP

Textbooks to consider reading

Important skills to practice while in residency to prepare for fellowship Focus on ECG interpretation skills, as well as echocardiography skills. It will also be helpful to gain research experience during residency, because many programs also focus on cardiovascular emergency-related research opportunities.
Tips on how to succeed as a fellow Fellowship is a unique time to expand your skillset under the guidance of mentors. Take advantage of all opportunities offered, such as with research, course work, certifications, and/or advanced degrees. Read every day and strive to become an expert within this niche of medicine. However, make sure to also stay balanced and make time for your friends and family to prevent burnout.

CONCLUSION

Additional Resources

Journals:
- Journal of Cardiovascular Emergencies
- Cardiovascular Ultrasound

Blogs:
- R.E.B.E.L EM
- ECGWEEKLY

Podcasts:
- http://www.ultrasoundpodcast.com

National organizations
- American Society of Echocardiography
- American College of Chest Physicians
- American Heart Association

Conferences
- American College of Cardiology Annual Scientific Assembly
- American Society of Echocardiography Annual Scientific Assembly

How to find a mentor There is no central website that helps link interested candidates with leaders in this field. To find a mentor, consider networking by reaching out via email, attending national meetings, etc.

To submit updates or to assist with future revisions, please email fellowships@emra.org.
Anesthesia-Critical Care Medicine Fellowship

INTRODUCTION

Description of the specialty Anesthesia critical care medicine (ACCM) is a critical care subspecialty fellowship offered to graduates of residency training in anesthesiology or emergency medicine. The focus of ACCM is care of the critically ill patient with a specific focus on trauma and surgically related critical care pathology, although a variety of focused and broad-based critical care training models exist. After completing fellowship training, candidates sit for the anesthesia critical care examination to become a board-certified critical care physician (intensivist).

History of the specialty/fellowship pathway ACCM started with the improved care of the critically injured trauma patient during World War II. The anesthesiologist who took care of the patient during the initial stabilizing surgery continued to care for them as they left the operating theater and proceeded to newly designed shock and recovery units. The American College of Anesthesia began offering the critical care medicine exam in 1986. There are now more than 50 ACCM ACGME-approved fellowships that offer critical care medicine training.

In 2013 the anesthesia pathway became the newest option for EM-trained physicians to enter a critical care fellowship. Currently, EM physicians entering an ACCM fellowship must complete 2 consecutive years of fellowship training at an ACGME accredited ACCM fellowship that has an American Board of Anesthesiologists (ABA)-approved EM/CCM training curriculum.

Why residents choose to follow this career path The educational goals for emergency physicians entering an ACCM fellowship are to assure competency in all realms of critical care medicine, including the care of trauma and surgically related conditions. This is appealing to
many applicants who want their training to be focused on the critical care management of a broad range of patients.

**How do I know if this path is right for me?** ACCM is a great option for people who would like to be proficient in the care of both medical and surgical intensive care unit (ICU) patients. Depending on your program’s EM/CCM curriculum, you will receive multidisciplinary exposure to the care of surgical ICU, medical ICU, and specialty ICU patients. Additionally, you will be exposed to advanced airway techniques and gain advanced experience in hemodynamic monitoring and management.

**Career options after fellowship** Career options are broad, with intensivists working in mixed multidisciplinary intensive care units, surgical ICUs, cardiothoracic ICUs, neurosurgical ICUs, and medical ICUs.

**Splitting time between departments** ACCM physicians with a core residency background in anesthesiology often split clinical time between the ICU and operating room (OR) in academic settings or in managed health care corporations. In large academic centers, this model works well for EM physicians as well (substituting ED time for OR time). In the community setting, this may be more difficult, because most private EM groups don’t staff ICUs. But with creativity and flexibility, a variety of career options can be created (ie, splitting time between staffing groups, institutions, or clinical areas).

**Academic vs. community positions** Academic institutions generally have more academically diverse patients, strictly because of the increased number and variety of specialties caring for patients. Academic centers may also have additional educational and research opportunities that community centers may not have. Community-based fellowships, however, may allow for more autonomy when it comes to caring for patients, as some subspecialties may not be as readily involved in daily care.

**IN-DEPTH FELLOWSHIP INFORMATION**

**Number of fellowship programs** According to EMRA Match, more than 20 ACCM programs have approved EM/CCM curriculum tracts. ABA and EMRA Match each offer a list of approved 2-year curriculum ACCM training programs.

**Differences between programs** ACCM fellowship programs are structured around the 1-year fellowship that anesthesia trained fellows complete: 12 months long, 9 of which must be spent caring for ICU patients, but not necessarily in the surgical ICU. ACCM programs differ in the surgical subspecialties that are available, medical ICU (MICU) experience, and opportunities for elective time. Programs also differ in how they fulfill the required ICU time.

**Length of time required to complete fellowship** All ACCM fellowships with an approved EM/CCM tract have a 2-year training cycle.

**Skills acquired during fellowship** During fellowship, you will become an expert in resuscitation, procedures, and the long-term management of critically ill patients.

**Typical rotations/curriculum** Curricula vary in both the core ICU time and elective time. Most ACCM fellowships offer the EM trainee multidisciplinary clinical exposure with required clinical ICU time in various settings (surgical ICU, medical ICU, cardiothoracic ICU, neuro ICU, coronary care unit, etc.). Similar to residency, you will have a block schedule. Typical elective rotations options might include nutrition, palliative care, bronchoscopy, advanced airway management, trauma, ultrasonography (transthoracic echocardiogram and transesophageal echocardiogram), extracorporeal membrane oxygenation (ECMO), hematology/blood bank, and other pertinent critical care electives, depending on the location.

**Board certification afterwards?** After successful completion of the 2-year fellowship (and completion of your primary EM certification process), you are eligible to sit for the ACCM boards. Once passed, you will obtain board certification as an intensivist through the American Board of Emergency Medicine. This is similar to the IMCCM certification process.

**Average salary during fellowship** Salaries for fellows will vary. Since you are in an ACGME-accredited program, your salary will generally follow the same structure as resident salaries and benefits at that institution. Fellows are generally paid at their corresponding postgraduate year level (PGY-4s, 5s, 6s), established by the local GME office. Most programs will allow you to supplement your income with moonlighting (under standard ACGME duty hours regulations).

**PREPARING TO APPLY**

**How competitive is the fellowship application process?** It is competitive to get accepted into a critical care fellowship. Since this is a relatively new specialty for EM physicians, there are a growing number of ACCM programs approved for emergency physicians,
yet it remains competitive.

**Requirements to apply** Emergency physicians must have completed 4 months of critical care training during residency (this is a standard EM Review Committee requirement).

Anesthesia CCM Fellowship programs use the San Francisco Match (SF Match). It is important for you to register with the match! You should also contact the program coordinator at the programs of your interest ahead of time (remember, the program coordinator is often your first and potentially last contact person at the program; be respectful).

There is no centralized application process for ACCM; however, there is a common application form found on the Society of Critical Care Anesthesiology (SOCCA) website and on the SFMatch website. All programs require this common application form.

You will need to polish your resume, write a personal statement, request letters of recommendation (1 should be from your program director; at least 1 should be from a practicing intensivist), gather medical school diploma, USMLE reports, in-training exam reports, etc. You will have to email or mail your application package to individual programs. Your letter writers will likely need to email the program coordinator directly. Please also be aware that the application process starts early, 1.5 years prior to your expected July start date.

**Research requirements** There is no specific research requirement. However, having a strong research experience in critical care medicine can make your application highly competitive, and may be more strongly considered for research-heavy fellowship programs.

**Suggested elective rotations to take during residency** It is important to be a well-trained and competitive resident in order to get into a fellowship program. You should experience various ICU settings at the beginning of residency. You should understand the positives and negatives of being an Intensivist and solidify your interest in critical care. Rotations in the medical ICU, cardiac ICU, surgical ICU, neurological ICU, and pediatric ICU will allow you to witness the daily routine of an intensivist. As you approach your senior year, you may plan to do an elective month in an ICU.

**Suggestions on how to excel during these elective rotations** Books, articles, and podcasts can improve your knowledge in the care of critically ill patients (see list of additional resources at end of this chapter). It is also important to be a good team player with all members of the critical care team. Thoroughly know your patients and their current issues on rounds. Be willing to do procedures, show up early to pick up patients, and excited to learn about your patients.

**Should I complete an away rotation?** It is neither common nor required to do an away elective in ICU. If you would like to get a different set of ICU experience than what your residency program offers, you may contact the fellowship program of your interest. You should however plan this well ahead of time.

**What can I do to stand out from the crowd?** Your application should demonstrate you as a competent, well-rounded, and reliable physician. You should have meaningful activities in critical care. You might get involved in a research project starting early in your intern year. Almost all fellowship programs will ask for your research experience and competitive applicants have research abstract presentations or publications. It is also worthwhile to reach out to a mentor in critical care medicine (strong letters of recommendation are paramount). Consider attending a national conference that offers an EM/CCM section. Getting involved in hospital committees can be worthwhile. You should have strong board exam scores, in-training exam scores, and letters of recommendation.

**Should I join a hospital committee?** Getting involved in hospital committees related to ED and ICUs can expose you to the administrative side of hospitals and allow you to understand the roles of intensivists/ED physicians beyond the patient care.

**Publications other than research** It is good to have publications, including blog posts, podcasts, book chapters and magazine articles.

**How many recommendations should I get? Who should write these recommendations?** You will need at least 3 letters of recommendations. One letter from your program director is a requirement for all programs. You will also need 1-2 letters from intensivists. You can get one from your research mentor as well. These should be strong letters from authors who know you well.

**What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship?** Yes, but you need to make this time after residency valuable. Get involved in writing and/or research in critical care. Join a critical care committee at your hospital. Become involved in national critical care organizations. Unplugging from critical care will not look good on your application. In general, working as an attending is not a bad idea and will help your skills as
a clinician. Make sure you have a critical care medicine mentor that will help ensure that you make this time productive and demonstrate your interest in critical care medicine.

What if I’m a DO applicant? For those residents who are in a DO residency, there is an osteopathic pathway in critical care. It is possible to “jump the divide” even if you went to an osteopathic residency but it can be difficult and we recommend that you email individual programs to ask if they accept DO candidates (and COMLEX scores). If you are a DO but trained in an allopathic program, it is easier to apply to allopathic CCM programs.

What if I am an international applicant? Applicants are encouraged to contact programs directly to inquire whether or not they accept international applicants.

APPLICATION PROCESS

How many applications should I submit? You should apply only to programs you are interested in working as a fellow. However, if your goal is to get accepted into any program or if you are concerned about the strength of your application, then you should plan on applying to many programs.

How do I pick the right program for me? The program of your interest should offer multidisciplinary critical care that matches your career goals, train you to be a well-rounded intensivist, and complements your future career goals. Look at individual programs and evaluate whether they have trained emergency medicine graduates in the past or if they have emergency medicine-critical care faculty, as prior experience may make your fellowship training more valuable.

Common mistakes during the application process
• Being late. Don’t wait; apply early.
• Give your letter writers plenty of time.
• Be honest with yourself and be truthful on your application.
• Request advice from mentors early. A personal connection from your mentor to a program of your interest is extremely valuable.
• This will be a stressful process. Be flexible and have a positive attitude.

Application deadlines ACCM programs typically start accepting applications in December/January (1.5 years prior to the fellowship start date). Individual programs have their own deadlines. Interviews are on a rolling basis (check with individual programs), with the interview season between December and May. The SFMatch takes place in May (13 months prior to fellowship start date).

Tips for writing your personal statement Your personal statement should be a professional and eloquent explanation of your interest in critical care medicine, your career goals, and accomplishment. Rather than describing your resume, you should explain things that set you apart from others. You should request feedback on your personal statement from your mentors.

Is this a match process? Yes. ACCM participates in a match process. You will need to register with SFMatch. The match happens in May (13 months prior to your fellowship start date).

What happens if I don’t obtain a fellowship position? Since ACCM match happens in May, you will still have time to explore options. If you are still interested in a specific ACCM program, it may be beneficial to reach out to them and express your continued interest (and that you didn’t match). Training spots do open up due to unforeseen issues. You may also decide to apply through other pathways: Surgery or Medicine. You should honestly review your application together with your mentor. If needed, consider a year of strengthening your application by gaining further experience in critical care medicine or a skill-set pertinent to this specialty (i.e., Ultrasound), prior to applying again. Remember, you are still going to be a well-trained emergency medicine physician with a good job market and a good life style.

INTERVIEW PROCESS

How do I stand out from the crowd? Get to know any alumni from that program, as it may be brought up during interviews. Read about the program prior to the interview and be ready with questions. Review their website so you can speak intelligently about the program and the curriculum (any flexibility), relationships with other services, etc. Additionally:
• Be a member of SCCM, ACEP critical care section, SAEM critical care section, and/or EMRA – critical care committee. Also consider joining SOCCA.
• Have publications in critical care literature.
• Make sure you have recommendation letters from other intensivists and not only from EM faculty.
• Compile ample experience in critical care through rotations and elective rotations.

What types of interview questions are typically asked?
• What are your career goals?
• How are you planning on incorporating EM with CCM?
• State your goals/reasons for pursuing a career in critical care or emergency care.
• List and describe the 3 most challenging aspects you see as a critical care and emergency care physician.
• What do you see as the differences between your current role and your role in critical care or emergency care?
• Explain how you interact with a multidisciplinary team.
• How did you deal with a bad interaction that you have had?

How many interviews should I go on? Typically try to go to all of them so you will have all options. Do not rank a program that you didn’t visit; you never really know a program until you are actually there.

PREPARING FOR FELLOWSHIP

Textbooks to consider reading

Important skills to practice while in residency to prepare for fellowship
• Be the best emergency physician you can to serve as a foundation for fellowship.
• Be ready to pass your boards, because you will take them in the fall of your first year in fellowship. Both SCCM and Chest have board-review style critical care medicine questions available.

Tips on how to succeed as a fellow
• Sort out life-matters early: You will be busier than you were in residency.
• Set up moonlighting opportunities ahead of time – medical license, DEA, and approval from your fellowship program.
• Do not be afraid to ask attending questions for your understanding.
• Be cordial with all the support staff.

CONCLUSION

Additional resources
• SCCM Guidelines - http://www.learnicu.org/Pages/Guidelines.aspx
• SCCM RICU - http://www.learnicu.org/Fundamentals/RICU/Pages/default.aspx
• SCCM LearnICU - http://www.learnicu.org/Pages/default.aspx
• Surviving Sepsis Campaign - http://www.survivingsepsis.org/Pages/default.aspx
• Bronchoscopy Simulator - http://www.thoracic-anesthesia.com/?page_id=2
• EMCrit Blog - http://www.emcrit.org
• Life in the Fast Lane - http://lifeinthefastlane.com/
• Board prep for anesthesia
• Chest SEEK Questions
• http://www.chestnet.org/Publications/CME-Publications/CHEST-SEEK
• SCCM Critical Care Board Review – live courses and self-directed learning.
• http://www.sccm.org/Education-Center/Adult-Board-Review/Pages/default.aspx

National organizations
• SCCM
• ACEP – Critical Care Section
• EMRA Critical Care Committee
• SAEM - Critical Care Section
• SOCCA

Conferences
• SCCM and SOCCA all have annual conferences.
• SCCM also offers an ECMO course that is worth considering.
• ACEP/SAEM offer critical care medicine section/committee meetings, which are all fantastic ways to network and get more involved with this specialty.

How to find a mentor Any EM-CCM physician at your program would be your best option. Also check out this CCM virtual mentorship website, which links interested EM physicians with EM-CCM mentors.

To submit updates or to assist with future revisions, please email fellowships@emra.org.
Internal Medicine-Critical Care Medicine Fellowship

INTRODUCTION

Description of the specialty On Sept. 21, 2011, the American Board of Subspecialties voted to allow critical care medicine as the 7th subspecialty for emergency medicine physicians. This means completion of a critical care fellowship is officially recognized as a pathway for the emergency physician. The American Board of Emergency Medicine (ABEM) and the American Board of Internal Medicine (ABIM) have reached an agreement that EM trained physicians who complete an Internal Medicine-Critical Care Medicine (IM-CCM) fellowship are allowed to sit for the CCM board certification. Thus, the EM physician who completes a fellowship and passes the boards will become a board certified medical intensivist. This was truly an historic victory resulting from countless hours and dedication.

Of special note, there is a current shortage of intensivists – it is estimated that only 1 in 3 patients admitted to the ICU are treated by an intensivist. At the same time, the demand for intensivists is increasing as our population ages. The emergency physician whose training uniquely prepares them for critical care fellowship will help bridge this gap.

History of the specialty/fellowship pathway Despite multiple hurdles, since the early 1980s, more than 140 emergency medicine physicians have trained and are practicing critical care medicine today. University of Pittsburgh and University of Maryland Shock Trauma Center both have a rich history of training emergency physician in critical care medicine for years prior to the official recognition as a subspecialty for EM. In the past, EM physicians would take the European Society of Intensive Care Medicine board certification, which was accepted as an equal standard. It was these successful physicians who chose to pursue critical care medicine despite not having an officially recognized pathway or board certification within the U.S. that paved the way for the current
acceptance of the subspecialty.

**Why residents choose to follow this career path**
Residents choose to follow this career path when they desire to become a medical intensivist, which is defined as a physician who by virtue of training is consulted in the care of critically ill patients. This pathway trains physicians to treat patients primarily with non-surgical causes of their critical illness, although many fellowships offer exposure to surgical patients as well.

**How do I know if this path is right for me?**
If your goal is to improve at resuscitation as an emergency physician, this fellowship is not for you. There are a handful of resuscitation fellowships geared toward that goal. IM-CCM fellowship is meant to train you to be a medical intensivist. If you are the type of resident who not only enjoys your ICU experiences but also envisions yourself leading the team as the attending during rounds, planning patient admissions and discharges, and being involved with patients and their families beyond the initial 2 hours of their care, then this is the fellowship for you. This specialty requires one to be meticulous in their knowledge about their patients and ensuring that all their needs are met but also demands efficiency, as you will be expected to manage multiple unstable patients at once.

**Career options after fellowship**
Some physicians after fellowship may want to practice only critical care medicine or only emergency medicine (EM). However, many physicians prefer splitting their time between two departments. Plenty of hospitals have allowed EM-CCM physicians to split time between two departments, but there are also plenty of hospitals unaware of such a model. You may need to sell yourself and the model to potential employers, and show how this arrangement would benefit the hospital system. Be aware that once you pave the way, you are setting the example for future EM-CCM physicians in that health system. However, some hospital systems may not be ready and you might not get the deal you are looking for. The best thing to do is solicit help from others who have already paved the way and can give you firsthand advice. Focus on finding a place where you can grow as faculty, with the infrastructure to support your professional goals. Do not be afraid to cold-call programs, as job openings are not always openly advertised. Send your CV to employers and ask for time to chat. Make your goals clear – both to yourself and to your employer – from the onset.

**Splitting time between departments**
You can decide that you want to practice both emergency medicine and critical care as an attending, and it is important decide what mix you would like. Some physicians are contracted for a 50-50 split between the two departments, some are contracted for 75-25, etc. Many physicians find working in both fields highly satisfying and helpful in preventing burnout. It is possible to have a dual career in both academia and in community hospitals.

Be aware that the hours of a full-time EM physician are different from the hours of a full-time intensivist. Thus, try and avoid having one department “buy your time” from the other in terms of hours, because each department has separate ideas of what full-time means. The best way to do this is to figure out the expectations in terms of hours, salary, productivity, and clinical time for full-time physicians within each individual department, and then take percentages from that.

Make sure the kind of split you choose is sustainable, with flexibility in your contract to make alterations if needed. Hospital employee groups are the easiest to be hired in because otherwise you are trying to convince two independent groups to hire you. When independent groups are unavoidable, sometimes you may be hired primarily within EM and then fight for ICU time, or you may be hired primarily by ICU and then later obtain time in the ED (perhaps via moonlighting). Sometimes you may need to be employed by two different institutions to get your goal job, but this is not ideal.

**Academic vs. community positions**
There are many things to consider when deciding between academic and community practice. A true community hospital would have much more limited teaching opportunities, whereas in academics or community academic institutions, you will have multiple opportunities to teach students, residents, and fellows. If you have a heavy interest in research, an academic institution will likely be more beneficial, whereas most community programs generally have limited research infrastructure. Academic centers have ICUs that are highly segmented, whereas in the community the patients are often grouped only into medical or surgical, or in a combined med-surg ICU. If you have trained in a well-rounded fellowship, you should be able to join any group.

**IN-DEPTH FELLOWSHIP INFORMATION**

**Number of programs**
According to ERAS, 34 programs offer CCM fellowship opportunities. EMRA also has a list of IM-CCM fellowship opportunities.

**Differences between programs**
All programs will train you to be an excellent intensivist. Some programs have trained EM residents for years, while in others you may be the first EM-trained fellow. In some fellowships
you will have a more supervisory role, whereas in others you have a “worker” role in patient care. There are some variations among the curricula in terms of number and kind of elective months and types of ICU experiences offered. Emphasis placed on research and other administrative activities will vary as well.

Length of time required to complete fellowship IM-CCM based fellowships are 2 years in length.

Skills acquired during fellowship All programs will train you to provide high-quality care to critically ill patients. You will become a master of resuscitation and of providing advanced life support, both in the ICU and during transport to the ICU. Through didactic sessions and clinical training, you will obtain in-depth knowledge about the physiology, clinical presentation, and treatment of disease states that lead to life-threatening illnesses. You will also become an expert at many technical skills, especially central line placement, airway management, bronchoscopy etc.

Typical rotations/curriculum during fellowship Per ABIM requirements, 12 months of the 24 total months must be clinical experiences, with 6 months being critical care-based. All programs contain a mixture of elective months with critical care months. The critical care months will contain both medicine and surgical experiences. As stated previously, programs will vary in the number of elective months, the electives offered, and ratio of medicine vs. surgical ICU experiences.

Board certification afterwards? Yes, you will be board eligible at the end of your fellowship. Current pass rate for EM-CCM trained graduates is 100%.

Average salary during fellowship Salary will be essentially that of a PGY-4 or 5, which varies based on institution.

PREPARING TO APPLY

How competitive is the fellowship application process? This is one of the more competitive fellowships. There are EM applicants every year who apply and are not offered a position.

Requirements to apply The only requirement to apply is that applicants must complete a residency in either emergency medicine or internal medicine. Be aware that you will need to upload your medical school transcript and dean’s letter into ERAS. All of your USMLE step scores will also need to be uploaded (do not forget to take Step 3!)

Research requirements Research is certainly helpful for your application, especially if the project is based in critical care medicine, but it is not required. Make sure you complete your research project during residency, have meaningful involvement, and are able to speak about the project during interviews. Focus on completion and strive to publish in peer-reviewed journals. One project seen all the way through is better than 3 projects still in various stages of completion. Research in quality improvement and/or education can be helpful as well. Ideally, your research projects should be submitted for poster presentations at national conferences.

Suggested elective rotations to take during residency ABIM requires that emergency medicine trained physicians must have 6 months of internal medicine rotations (of which 3 months must be MICU) before they can supervise internal medicine residents. For most fellowships, it is not required that you have all 6 months completed prior to the onset of fellowship, but you should strive to have as many completed as possible. Most fellowships have rotations in place to fulfill this requirement during the first 3-4 months of your fellowship, as the majority of residents enter with only 3 months completed. During residency you should have multiple MICU months and at least 1 of those months should be in a senior resident supervisory role. Consultation services do not count for this total – you must be part of the primary care team in order for a rotation to count. Be careful with Coronary Care Unit (CCU) rotations, as occasionally they do not count as internal medicine based but rather surgery based. However, it is important to note that surgical/trauma ICU, CCU and Neuro-ICU rotations are considered helpful in making you a well-rounded resident who is prepared for fellowship. Other electives to consider include renal, infectious disease, and pulmonary.

Suggestions on how to excel during these elective rotations Make sure you are well-versed in the fundamentals of critical care and are also up to date on the latest research in the field. You should plan to arrive early and stay late daily and be a dependable team member. Make it a point to know all the patients on the service well. During rounds, your presentations should be polished, thorough and medically sound. You should update families without being asked and should adeptly coordinate care for the patients with other specialties as indicated. Make it a point to lead the team during resuscitations and be proficient with your procedural skills.

Should I complete an away rotation? If your home institution does not have a critical care fellowship or a faculty member who is well-known in the critical care community and/or a strong intensivist group, it is worth
considering an away rotation. Assuming that you do well during this rotation, this would help you gain a strong letter for your fellowship application. It can be difficult to fit an away rotation into your schedule as a second-year resident. Sometimes it is easier to find an away rotation at a competing health system within your city or state than to travel far for a rotation.

**What can I do to stand out from the crowd?** Your application should demonstrate multiple meaningful activities in critical care. It is better to show significant involvement in a couple of projects than minimal involvement in multiple projects. A common theme among your activities (ie, administrative, educational, or research-based) is recommended instead of having a smattering of projects that are unrelated. Show evidence of leadership and self-starter mentality. While being chief resident is certainly advantageous, you should focus primarily on being a well-rounded, excellent emergency physician. There should be no concerns about you academically, and you should clearly be a hard worker and enthusiastic resident. If you do not do well during residency, finding a position as a fellow will be difficult.

**Should I join a hospital committee?** If your hospital has committees that are based in critical care, consider joining them. The goal would be to have meaningful contribution to the committee with resulting positive impact on patient care. These committees can potentially expose you to leaders in critical care within your hospital, some of whom could potentially be your future letter writers.

**Publications other than research** Other opportunities include, but are not limited to book chapters, blog posts, magazine articles, and podcasts.

**How many recommendations should I get? Who should write these recommendations?** All programs require a letter from either your program director or department chair. This should be your only EM-based letter. You will need at least 2 additional letters, and it is strongly recommended that both of these are from intensivists, and preferably medical intensivists. Letters from MICU directors and/or letters from physicians who are well known in the field are ideal. It goes without saying that these should be strong letters from authors who know you well. Letters from away rotations that are IM-CCM based can be very useful.

**What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship?** In general, working as an attending is not a bad idea and will help your skills as a clinician, but you need to make this time after residency meaningful. Get involved in writing and/or research in critical care. Join a critical care committee at your hospital. Become involved in national critical care organizations. Make sure you have a critical care mentor that will help ensure that you make this time as productive as possible.

**What if I’m a DO applicant?** There is an osteopathic pathway in critical care. It is possible to “jump the divide” even if you went to an osteopathic residency, but it can be difficult. Email individual programs to ask if they accept DO candidates. If you are a DO candidate but trained in an allopathic program, it is easier to apply to allopathic CCM programs. You will have to take all three USMLE steps. Be aware that some institutions are biased and are not DO-friendly regardless of your residency training.

**What if I am an international applicant?** You will need to demonstrate the same requirements and interest as other applicants, including taking USMLE. The biggest challenge will be gaining a program’s support for your visa. It would be best to ask programs about this prior to applying.

**APPLICATION PROCESS**

**How many applications should I submit?** Apply only to those places where you would honestly consider working. That being said, it is better to get too many offers for fellowship than to have no offers at all. Unlike residency, there is no specific number of interviews that you need to shoot for to gain a position, but it is recommended to apply to at least 10. Be aware that the majority of these programs use ERAS, but there are a handful of programs that do not. You can find out which programs use ERAS by referring to their website as listed in section 2a. There is a bit of a loophole in that Pulmonary-CCM programs are allowed to apply for a critical care track within their program and could potentially take you as a fellow. There are only a handful of programs that will do this, and there is no current way of tracking them. If you are interested in a specific area of the country, email the Pulmonary-CCM programs to see if they would be willing to consider you under a critical care pathway. It is possible to “jump the divide” even if you went to an osteopathic residency, but it can be difficult. Email individual programs to ask if they accept DO candidates. If you are a DO candidate but trained in an allopathic program, it is easier to apply to allopathic CCM programs. You will have to take all three USMLE steps. Be aware that some institutions are biased and are not DO-friendly regardless of your residency training.

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**How do I pick the right program for me?** Your goal is to find a program that has a sick patient population, exposes you to different critical care environments, and has a curriculum that matches your needs/interests/goals. Remember that in some programs, the fellow is in more of a supervisory role, while in others the fellow is the worker of the team. You need to decide in which environment you learn better; if you learn by doing, then you should pick a program that allows you to do the work. During your interview, try to get a feel for the
How do I stand out from the crowd? As it was for your residency, your goal in the interview process is to come off as a strong candidate. The difference, however, is that this is more a job interview than residency interviews were. You want to highlight your strengths and things you can add to the program without being too aggressive or self-absorbed. Make sure you have good reasons for why you want to attend that specific program. Find out as much about the program as you can, and treat it as if it is your No. 1 choice. Articulate how that program can help you achieve your career goals but also what you can bring to the program as well. We would strongly recommend having a mock interview prior to the actual interviews to ensure you present your best self. The goal is to be yourself and let your personality shine, show your passion for critical care medicine, and demonstrate what you can bring to the program of interest.

What types of questions are typically asked? Be prepared to discuss your interest in critical care medicine and your career goals. You will likely be asked to tell specific experiences that you had during your ICU rotations. You will be expected to demonstrate that you have good clinical knowledge and understanding of the field. Know some of the hot topics within the field. Be sure to know your application inside and out, as questions about your leadership experience, publications, research projects, etc., are all fair game. Be prepared to discuss your research projects as if you were presenting an oral poster presentation; not knowing your research makes it seem as if you played a superficial role. You should be enthusiastic about your projects, critical care, and the program at which you are interviewing. Be prepared with a list of questions to ask about the program. These questions should be thoughtful and not something easily answered by the institution’s website.

How many interviews should I go on? There is no recommended number of interviews that you should attend. Because of the competitive nature of this fellowship, the general advice is the more interviews that you attend the more likely you are to obtain a position. Ideally, you should attend any interview offered at programs that you would seriously consider an acceptance offer from.

**PREPARING FOR FELLOWSHIP**

**Textbooks to consider reading**
Wilkins; 2009.

Important skills to practice while in residency to prepare for fellowship
- Procedural skills including (but not limited to) central lines, arterial lines, intubation, thoracentesis, and paracentesis
- Ultrasound skills, especially echocardiograms and lung exams
- Bronchoscopy
- Leading a team and managing multiple sick patients
- Running resuscitations
- Ventilator management

Tips on how to succeed as a fellow
Work hard but stay balanced. Fellowship will have longer hours as compared to the emergency medicine schedule, and it can be easy to burn out if you do not make time for things outside of fellowship, such as friends and family.

Read and expand your knowledge base every day
Take advantage of every opportunity offered to you by your fellowship program. Get involved in hospital committees, research projects, etc.

CONCLUSION

Additional Resources

Journals:
- Circulation
- NEJM
- Chest
- Journal of Trauma
- Anesthesiology
- Critical Care
- Critical Care Medicine
- Intensive Care Medicine
- JAMA
- Lancet
- American Journal of Respiratory and Critical Care Medicine

- Podcasts:
  - EMCrit
  - iCritical Care podcast by SCCM
  - SMACC Gold
  - Intensive Care Network
  - Medscape Critical Care podcast

Clinical Resources/Websites/Blogs:
- http://www.learnicu.org/Pages/default.aspx
- http://intensivecarenetwork.com
- http://marylandccproject.org
- http://lifeinthefastlane.com/research-reviews-fastlane-064/
- http://pulmccm.org/main/
- http://www.wessexics.com/The_Bottom_Line/
- http://resus.me
- www.thoracic.org

National organizations
The EMRA Critical Care Division is a great resource, is resident- and fellow-based, and offers multiple opportunities for involvement. The ACEP Critical Care Section connects all EM physicians interested and/or trained in critical care medicine. SAEM recently created a Critical Care Interest Group as well. The Society of Critical Care Medicine connects critical care physicians regardless of their initial residency training.

Other organizations to consider: ACCP, ATS, EAST, and the American Heart Association

Conferences
- The EMRA Critical Care Division has biannual meetings in conjunction with the SAEM Annual Conference and ACEP Scientific Assembly, and the critical care sections of SAEM and ACEP have annual meetings during their respective conferences. SCCM has annual meetings in January. There are multiple other meetings, including but not limited to:
  - SMACC Gold conference
  - UPENN Therapeutic Hypothermia conference
  - UMMC Critical Care Conference
  - Weil/UC San Diego Symposium on Critical Care and Emergency Medicine
  - Northern New England Critical Care Conference
  - Rocky Mountain Regional Critical Care Conference

How to find a mentor
Within your home institution, mentors to consider would be your program director and the director of your medical intensive care unit. You should establish a mentor early during residency and do your part to foster this relationship by bringing questions and scheduling regular meetings. Search out feedback from your mentor and apply it. A virtual mentorship program has been established to help guide interested residents through the decision to apply and through the application and interview process. This website is
unique in that it connects you to faculty who are both EM and CCM trained.

To submit updates or to assist with future revisions, please email fellowships@emra.org.
Neuro-Critical Care Fellowship

INTRODUCTION

Description of the specialty Neurointensivists provide care to patients who are critically ill from neurological and neurosurgical conditions, due to both acute presentations as well as perioperative care. This includes application of traditional medical and cardiac critical care techniques to manipulate cerebral perfusion and metabolism as well as managing systemic complications of neurologic diseases (cardiogenic shock, septic shock, acute respiratory distress syndrome, etc.).

Additionally, neurointensivists use and interpret advanced specialty-specific neuromonitoring techniques, including continuous electroencephalogram (EEG), transcranial dopplers, intracranial pressure and tissue oxygenation monitors, and microdialysis catheters. Neurocritical care units are growing quickly, and have been demonstrated to improve patient outcomes and limit costs as compared to caring for neurocritical care patients in general intensive care units (ICU).

History of the specialty/fellowship pathway Neurocritical Care Society (NCS) formed in 2003. Board-certification pathway first opened in October 2005. This fellowship pathway has always been open to emergency medicine physicians.

Why residents choose to follow this career path Neurocritical care has always been a multidisciplinary specialty and has actively sought involvement of emergency medicine (EM) physicians. Outcomes for neurocritical care patients presenting to the emergency department (ED) are sensitive to initial care, and EM trained neurointensivists are uniquely positioned to bridge this transition in care from one setting to the next. Even as critical-care trained emergency medicine providers become more common, neurocritical care-trained emergency medicine
providers still represent a small niche and as such have significant specialty value to many organizations from both an EM and neuro-ICU perspective. For those interested in understanding and manipulating physiology, neurologically injured patients have significantly more variables and subtleties than many other critical care patients. Lastly, for those interested in research, neurocritical care is a young and dynamic field, particularly regarding therapies during the first few hours, and as such there are still large areas for defining/refining care and making significant academic contributions.

How do I know if this path is right for me? If you find yourself wanting to know more about the downstream implications of the choices you make when caring for neurologically-injured patients in the emergency department, (traumatic train injury, subarachnoid hemorrhage, stroke, status epilepticus, etc.), are interested in a deeper understanding of systemic and cerebral physiology, and want a second practice environment in which you care for more critically ill patients in a longer-term way, this fellowship is for you. Completion of this fellowship will also open a wide variety of career options and leadership roles in both fields after fellowship. Because this specialty and particularly its intersection with emergency medicine is young, you may have both the opportunity and necessity of defining your own career path. Therefore, you will need a good idea of what you want to do with your career after completing this fellowship and why.

Career options after fellowship There are opportunities for practice either in community practice or academics. Smaller community and even academic hospitals may be lacking in existing resources for a neuro ICU (NICU), so assisting in creating one or at least taking a leadership role in education of other providers in a mixed ICU may be possible. If you continue to provide care in the ED as well, except at very large institutions containing EM providers who have completed stroke fellowships, you will likely become the de facto “stroke expert” and possibly even general critical care expert (or one of several) for your colleagues and/or residents. Research opportunities and consulting/working with industry regarding device development, monitoring techniques, and computer-aided interpretation of the tremendous amounts of data generated by multimodality real-time monitoring are all possibilities as well. Even at large academic centers, there will likely be a variety of quality-improvement projects in the ED-based care of neurocritical care patients which you will have the opportunity to lead.

Splitting time between departments As with many EM-critical care medicine (EM-CCM) providers, you will be able to split time between the two departments, and many choose different ratios depending on individual interest and departmental staffing needs. Depending on the degree of cross-training you receive during your fellowship (as programs differ significantly) and the structure/patient mix in various ICUs, you and your institution may also have interest in splitting time between general medical and trauma/neurosurgical ICUs. This is also an area of negotiation between you and your department chair(s) and there is no one right answer (although generally speaking spending time in both for the start of your career may be valuable to clarify interests and leave options open). Consider that some institutions contract with groups for ED coverage rather than employing all physicians, which may complicate or benefit schedule splitting between multiple departments.

Academic vs. community positions This is a personal decision, but it is wise to consider before starting fellowship that while neuro ICUs are growing rapidly, they do require a certain volume to maintain adequate support staff and services (neuro IR, continuous EEG, real-time MRI availability) and as such, finding fully capable neuro ICUs may require larger hospitals than general medical ICUs. Clearly, all the usual considerations regarding tradeoffs between academics and community, including salary, workload, liability, research opportunity, etc., still apply to neurointensivists.

IN-DEPTH FELLOWSHIP INFORMATION

Number of programs The United Council for Neurological Subspecialties lists 60 accredited programs in neurocritical care.

Differences between programs There is in general greater program-to-program variability in NCC than other critical care specialties, although all meet accreditation requirements. One of the most important considerations is where emergency medicine falls in their conceptualization of neurocritical care. Most fellowships are open to neurology, EM, internal medicine, anesthesia, and neurosurgery-trained applicants; however, they often fall into one of several categories:

Some have a strong history of training EM providers and may be better equipped to recognize your unique needs (ie, less procedural/resuscitation training and more focus on neuroimaging, neuromonitoring, etc.).

Some do not have a strong history of EM involvement
but recognize the unique strengths and viewpoints of EM-trained providers and are excited/actively recruiting EM applicants.

Some are fairly rigid and accept largely neurology applicants. These are still excellent programs, but you will have to make your career interests and needs very clear early on in the process to ensure they are understood and will be met.

While there may be an initial bias toward going somewhere more “EM-friendly” it is important to also recognize that this runs the risk of less detailed training in neurology-specific topics. Ideally you want a program where you are a respected team member, not viewed as a less-trained neurologist, but also one that pushes you to excel in neurology/neurosurgery specific topics. If you don’t feel “behind” in some areas when you start, the program probably isn’t pushing these areas hard enough (since you will be competing with people who have spent several years learning these topics).

Other differences between programs include:
- Open vs. closed vs. cooperative ICUs
- Extent of cross-disciplinary training
- Acuity in neuro ICU
- Who owns “joint” patients, for example traumatic brain injury patients (trauma ICU vs. neuro ICU). Do you get to manage medical/surgically sick patients in your neuro ICU or in other ICUs during training?
- Degree to which you will be involved in “routine”/less acute cases such as low-risk perioperative monitoring, small strokes, neurointact IPH, etc.
- Extent of procedural training/availability (ie, does neuro ICU do bronchoscopy, chest tubes, and intubations? Or do you maintain currency with these procedures elsewhere?)
- Availability of moonlighting – primarily for skill maintenance as you will be out of the ED for a prolonged period of time.
- Role on non-NICU blocks (ie, primary fellow vs. observer)

Length of time required to complete fellowship 2 years

Skills acquired during fellowship The skills you will hone include (but are certainly not limited to):
- Patient management
- Implications of cardiovascular and ventilator management on intracranial pressure/cerebral perfusion pressure/cerebral metabolism
- Understanding indications for procedural vs. operative vs. medical management of neurologic and neurosurgical patients, including those presenting to the ED
- Managing infectious and cardiac complications

- Understanding of multiple therapies to manage intracranial pressure and optimize cerebral perfusion
- External ventricular drain (EVD) management
- Antiepileptic management
- Management of multiple neurologic conditions rarely discussed in EM curriculum, including uncommon central nervous system infections, motor neuron disease, etc.
- Diagnostic skills
- Continuous EEG
- Transcranial Doppler use
- Multimodality monitoring interpretation
- Varying degrees of ultrasound usage
- Procedural skills
- General critical care skills: (variable by program) airway management, bronchoscopy, venous access (most NICUs prefer subclavian central lines and many require central access for administration of hypertonic saline, providing a large volume of these procedures), chest tubes
- Neuro-specific procedures such as EVD/bolt placement are uncommonly taught to neurointensivists. Most attendings do not find maintaining credentialing and liability coverage to be financially viable based on volume and prefer that neurosurgery perform these procedures, although some programs will teach them to neurocritical care fellows. Often insertion of modified central lines for targeted temperature management will be taught, although some institutions prefer surface cooling only.

Typical rotations/curriculum Contact individual programs for details; rotations are highly variable, especially regarding non-NICU blocks and the amount of clinical/ICU vs. research/elective time.

Board certification afterwards? Yes, through UCNS. Please note that many neuro subspecialties are not ACGME-accredited, and this is generally NOT perceived in a negative light.

Average salary during fellowship PGY 4, 5 vs 5, 6 as per your number of resident years.

PREPARING TO APPLY
How competitive is the fellowship application process? There are often a few unfilled spots in the country, although not many. Some programs prefer neurology resident applicants and consequently applying from EM is quite competitive, while others are actively recruiting EM applicants and therefore much
more open.

**Requirements to apply** There are no specific requirements other than completion of training in one of the approved specialties (EM, IM, neurology, neurosurgery, anesthesiology). Each program has individual requirements and should be contacted directly (many will require USMLE Step 3, for example).

**Research requirements** There are no formal research requirements, but clearly research is beneficial to your application, particularly if in an area that spans the intersection of emergency medicine and neurocritical care.

**Suggested elective rotations to take during residency** This will be dependent on your total amount of elective time, but rotations to consider include:

- Neuro ICU – an absolute must!
- Other critical care rotations for broad critical care skill base
- Helpful more neuro-based rotations: EEG/neurophysiology monitoring, stroke, epilepsy – in general these are very useful for rounding out your education and demonstrating interest but consider them only if you have time.

**Suggestions on how to excel during these elective rotations** Keep an open mind. Remember that in general you will be learning from a specialist in an area in which you have fairly limited experience and information; pay attention to what they’re saying, and if they are managing patients differently than you might choose to, try to understand why.

As usual, show up on time, know your patients, read about your patients and try to gain more in-depth knowledge regarding the specialties involved (epilepsy, for example).

Learn the personalities and communication styles/preferences of your various consultants. This will also benefit you greatly in the future for learning the type and order of information that different consultants (interventional neurology, for example) would like.

**Should I complete an away rotation?** Dependent on the quality of your home NICU if it exists. If not, then an away rotation is a must. If you already have a NICU block in your residency training, then your elective time would be better spent on more neuro-focused activities and not “another” NICU month, since you will be doing many of these in your fellowship and ideally should already have excelled in your month at your home institution.

**What can I do to stand out from the crowd?** The usual activities: Join professional societies, go to conferences, and essentially demonstrate both that you have specific exposure to the field (so you know what you’re involving yourself in) and a commitment to it.

**Should I join a hospital committee?** Joining hospital committees, in particular surrounding ICU-based topics like ethics, palliative care, and especially brain death and organ donation may be helpful if you are interested. Certainly stroke committees may be helpful as well.

**Publications other than research** Publications other than research, such as opinion pieces, are always helpful as well.

**How many recommendations should I get? Who should write these recommendations?** Generally, most programs require 3 letters, and many will accept additional letters. One will come from your program director, and ideally one should come from the director of your NICU month (whether that be home or away rotation). Additional letters can come from a faculty mentor, research advisor, or an EM-based intensivists or stroke team liaison.

**What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship?** This depends on the length of time spent as an attending and what you do during that time. The goal should be to demonstrate your time was spent on neurocritical care-related activities and fits into an overall career plan, including what you want to do post-fellowship. It shouldn’t look like you’re applying for a fellowship position because you’re bored/frustrated with your current position. That said, fellowship can be a valuable road back into academics for those who have been practicing in the community and find themselves less competitive for academic positions. If you are returning to fellowship training after being an EM attending, spend free time with projects, research, committee-work with neurologists, neurosurgeons, and neurointensivists at your hospital. Letters attesting to your growth and contributions to neurocritical care as faculty are important.

**What if I’m a DO applicant?** In order for an EM physician to sit for UCNS boards, one must be ABMS certified/eligible in emergency medicine. This means that as a DO applicant you must have gone to an ABEM residency (not ABOEM) and completed a UCNS-accredited fellowship to sit for boards.

Some fellowships may still allow applicants from ABOEM residencies – however, one would not be board-eligible in neurocritical care. Contact specific programs for details if interested in pursuing this route.
What if I am an international applicant? Visa issues may become a concern and this will again be very program-specific. However, similar to its history of significant interest in multidisciplinary contributions, NCS has a strong history of international involvement and is historically very welcoming of those with significant contributions to make.

APPLICATION PROCESS

How many applications should I submit? Generally, you should try to find as much information regarding programs initially (attendings from your home program, either EM or neuro, may be able to facilitate this) as possible and then apply only to the ones in which you have significant interest. Unlike some critical care specialties, most spots in neurocritical care are filled using a “match” process through SF Match similar to residency, so it is unlikely that you will be offered on-the-spot jobs, and having too many interviews isn’t necessarily a problem. Don’t waste time and effort applying to places you would not want to attend.

How do I pick the right program for me? Figure out your career goals and then try to match them with a program. The personalities of the people in the program are very important. How well do you get along with them? Are they supportive of your goals? Do they understand your goals and why someone from EM would be applying? Fellowships in general and in neurocritical care in particular are much smaller than residencies, so your interactions, positive or negative, with a handful of attendings will define your experience to a significant extent.

It also may be valuable to ask program directors what they want to see their graduates doing or what they have done in the past to determine how well the program’s priorities match yours. Ensure that you have read the papers and research of some of the key faculty you are interviewing with, as that will determine the slant of the department and skew of their clinical exposure and connections within neurocritical care.

Common mistakes during the application process

- Applicants who try to change their goals or personality to match a program: Even if this gets you in, it will not make you happy, there will be constant friction, and neither you nor your institution will have their needs met during your 2 years. If a program doesn’t offer what you want and won’t be flexible, don’t go.
- Being overly positive or negative about your EM background: Remember, this puts you in a significant minority as compared to most applicants, but you have unique strengths and weaknesses. Don’t see yourself as a less-well-trained candidate, but also don’t underestimate the amount of neuro/critical care background that you lack. See yourself as a differently-trained candidate. Make sure the program knows you see yourself as this.
- Asking obvious questions: If the answer to your question is on the website, it proves you haven’t bothered to do even basic research into the program.
- Asking small-picture questions: You are investing half a million dollars of lost income and 2 years of your life into furthering your career. Ask big-picture questions regarding your training and the future. Questions such as what the call schedule is like or how many weeks of vacation you have are not appropriate attending-level questions and really don’t matter on this scope (however, discussing these questions with the fellows during dinner is fine).
- Not attending the dinner: Meeting the existing fellows in an informal setting to gauge their personalities and goals and determine whether you could see yourself as one of them is incredibly important (remember that it’s informal but still part of the interview process – on both sides).

Application deadlines Registration is incredibly early! You may register October 2015 for matching for a July 2017 position (no, this is not a typo – 21 months!) Match results are available in June, 13 months prior to your start. Match process is through SF Match since 2009.

Tips for writing your personal statement Be genuine. Make it clear why you are interested in doing what you want to do. Legitimate interest and passion is usually obvious in your statement, and many program directors recognize that will carry you through difficult months and make you successful in the long term.

Highlight relevant interests or activities that aren’t already on your CV. This is your chance to express yourself as an interested, committed, and thoughtful person.

Your personal statement is also a great chance to make it clear what strengths you bring to the table as an EM applicant, and express in writing why an EM applicant is interested in this career path.

Is this a match process? Yes, through SF Match.

What happens if I don’t obtain a fellowship position? Your options include finding one of the spots that are available after the match (there usually are a few) vs. applying again for the next cycle (ideally working on enhancing your CV in the interim) or working as an
emergency medicine attending (which can also be quite rewarding). If you have a strong interest in neuro, critical care, and neurocritical care, you can often supplement that through informal training and still position yourself, particularly at medium-sized institutions, as the local “expert” in the topics that interest you.

**INTERVIEW PROCESS**

**How do I stand out from the crowd?** Make sure you read your personal statement before your interview and use the interview as a way to highlight important points/make points that are related or supportive. Don’t contradict your personal statement and don’t make it seem irrelevant!

Make it clear what you bring to the table for the organization rather than focusing on things from your perspective. Many may have only a vague idea of the skills you have obtained during residency but would be interested in topics such as general critical care/ resuscitation skills (which they can fine-tune from a cerebral protection perspective) as well as general knowledge of how to make neurocritical care concepts “work” in a real-life/chaotic ED to improve the care of patients closer to their injuries. Often EM providers may have ultrasound-training of interest to neurocritical care departments also.

**What types of questions are typically asked?** You will get all the standard questions for any interview, but overall the most prevalent one is why an emergency medicine physician would want to be a neurointensivist. Have a true/passionate answer ready and don’t react defensively; people are genuinely interested and curious! They are spending 2 years of time training you to be their colleague, and they expect that some portion of your practice should be alongside other neurointensivists.

**How many interviews should I go on?** Many people try to maximize their total number of interviews, but often stratifying may be a better strategy: interview with a couple programs from each tier. Your home institution may be able to provide insight on how competitive a candidate you are (often this may come from your neurosurgeon or neurointensivist). Whether the attending of record at your institution is the neurosurgeon or neurointensivist.

**Tips on how to succeed as a fellow** The biggest factor is a significant change in mindset from traditional emergency medicine thinking. In addition to correcting problems, critical care is partially about anticipating and preventing them with a good understanding of a patient’s longitudinal course. This requires greater attention to detail and many patients have more complex interrelated issues that may not be emergencies but still must be addressed to productively move their care forward.

The critical care arena also often involves significant adjustment to the presence of additional consultants with their own, differing opinions. In the Emergency Department, consultants usually do not come unless you ask them to – however, in neurocritical care they may be following the patient longitudinally or have been consulted by a previous team. This increases the number of political issues which you may need to manage. This is particularly true regarding neurosurgical patients; once an attending has operated on them, they have their own opinions on care and a vested interest in seeing that they do well, regardless of whether the attending of record at your institution is the neurosurgeon or neurointensivist.

All the usual residency skills regarding being on time, courteous, professionally, and having good communication skills certainly still apply.

**PREPARING FOR FELLOWSHIP**

**Textbooks to consider reading** You will know early enough – again, greater than a year in advance – where you will be matching that it is probably best to directly contact your future program director and find out what you should be reading. That said, any general neurocritical care textbook would be valuable. If you have extra time, background reading of a general hospital neurology textbook may be helpful to better understand some of the neurology “zebras.”

**Important skills to practice while in residency to prepare for fellowship**

- General critical care skills, both procedural and cognitive
- Neurology exam: This will probably not be as detailed as a real “neurologist” neurology exam – and often can’t be due to patients’ clinical status or acuity of their condition – but you should gain an understanding of how to examine patients who are intubated/critically neurologically injured. Focus on things like cranial nerves, brainstem reflexes, and abnormal posturing. Understanding of the NIHSS as well as a good posterior circulation exam is also a must for EM neurointensivists. Subtle findings in seizures and understanding of clinical localization of lesions in critically ill patients are also helpful.

Do not stop learning, both through reading and especially through discussions with your consultants. There will be a large amount of neurology and neurosurgery literature with which you are unfamiliar; seeking out information and opinions from the (many)
consultants with whom you interact is incredibly valuable.

Seek out mentorship and career advice. This potentially includes those outside of your institution, particularly if you do not have attendings from an Emergency Medicine background. Your neurology-trained attendings will have very valuable advice for you, but are likely less familiar with the competing priorities you will need to manage for the EM half of your career (assuming you plan to retain clinical time/appointments in the ED).

CONCLUSION

Additional resources
- The Neurocritical Care Society (strongly consider joining) and their publication, Neurocritical Care
- Any journals specific to your area of interest, i.e., journals regarding TBI, stroke, cardiac arrest, etc.

National organizations
- NCS
- SCCM Neurocritical Care Section
- ACEP Critical Care Section
- EMRA Critical Care Division

Conferences
- NCS
- SCCM
- ACEP Scientific Assembly
- AAN (especially if interested in more “neuro” as opposed to neurocritical care topics)
- SAEM (newly formed Critical Care Interest Group)

How to find a mentor
Ask anybody and everybody you know! EM neurointensivists are a small but rapidly growing group – and as such are hard to find but are very interested in expanding and increasing our numbers. Do not forget this specialty exists all on its own but spans neuro, critical care, and EM – and valuable mentors and professional contacts may exist in any of those departments (plus “harder” basic neuroscience nonclinical specialties if you have a particular interest in research).

To submit updates or to assist with future revisions, please email fellowships@emra.org.
INTRODUCTION

**Description of the specialty** Critical care medicine became an ACGME-approved subspecialty for emergency medicine physicians in 2011. In 2012, the surgical critical care fellowship pathway was approved for emergency physicians who are interested in becoming board-eligible intensivists. As of 2016, EM physicians can become board-certified intensivists by pursuing one of the three pathways: surgery, internal medicine, and anesthesia. Given the growing acuity within emergency departments and persistent shortage of intensivists nationwide, pursuing a board-eligible critical care training pathway has become an attractive career option for EPs.

**History of the specialty/fellowship pathway** In 2012, the American Board of Surgery (ABS) broadened its eligibility criteria to allow ABEM diplomates board certification in surgical critical care (SCC). This is the result of the approval by the American Board of Medical Specialties (ABMS) of a resolution submitted by the ABS. This pathway requires 2 years of training. The first year is described as a preparatory year during which EM physicians will gain clinical experience in the foundations of surgery and the management of complex surgery conditions. This includes pre-operative and post-operative management of surgical patients, advanced care of injured patients, management of complex wounds, and minor procedures related to critical care. The exact composition of this year is at the discretion of the SCC program directors, and each SCC program must submit a proposal for the first-year curriculum to the ABS for approval. The second year is a traditional SCC fellowship, during which 8 months must take place in a surgical critical care unit.

**Why residents choose to follow this career path** The EM physicians who may want to consider additional critical care training are those who
have enjoyed treating critically ill patients beyond their initial resuscitative phase in the emergency department. These physicians thrived in their ICU rotations during residency and are interested in improving the care of critically ill patients from the moment the patients enter the emergency department to their transition to (and care within) the ICUs to hospital discharge. They enjoy learning about relevant critical care topics such as ventilator management, sepsis, shock, acute lung injury, parenteral nutrition, pain management and sedation, and goals-of-care discussions. Those who pursue the SCC (or anesthesia critical care) fellowship pathway instead of internal medicine programs have enjoyed taking care of the surgical patients, as these two pathways usually put more emphasis on pre- and post-operative management and complications, trauma, and hemorrhagic shock.

**How do I know if this path is right for me?** Most EM residencies have established ICU rotations, but consider setting up additional rotations through surgical ICUs as a senior resident so you are given more responsibilities. Get in touch with current EM-trained intensivists about their careers, clinical activities, and lifestyle, to see whether this career path fits with your personal goals. A great way to meet many EM-intensivists in one setting is to attend the critical care section meetings at ACEP and SAEM, through EMRA’s mentorship program, and the emergency medicine section of the Society of Critical Care Medicine (SCCM). You may also want to follow intensive care related podcasts or blogs listed at the end of this chapter.

**Career options after fellowship** There are many career options available after SCC fellowship. Fellowship-trained intensivists will be able to work in many types of ICUs, including SICU, trauma ICU, neurosciences ICU, cardiac surgery ICU, transplant ICU, and even medical ICU. They may want to split time between the emergency department and the ICU, with varying ratio based on their interests and the institutional need. They can work in a community setting or an academic institution. They may also want to pursue research, educational, or administrative roles in addition to their clinical duties.

**Splitting time between departments** Many fellowship-trained physicians choose to split their time between the ICU and the ED. Some spend more time in the ICU or in the emergency department, while others also mix in time on the trauma service. While you must have fellowship training to work in a surgical ICU, it does not have to be an SCC fellowship. Those who have trained with multi-disciplinary IM-CCM programs with adequate exposure to surgical patients have had successful career in surgical ICUs.

Those looking for jobs in institutions without precedence of EM-intensivists may need to negotiate with two or more departments to create a suitable employment agreement. It is important to determine what each department’s full time employment means, as different departments will have different requirements. Clear expectations need to be agreed upon up front.

**Academic vs. community positions** Academic institutions tend to have more specialized ICUs, whereas community hospitals tend to have mixed units. In general, there is more research infrastructure and greater education focus within academic institutions.

**IN-DEPTH FELLOWSHIP INFORMATION**

**Number of programs** As of 2016, SCC programs accepting EM applicants include:

- University of Maryland R Adams Cowley Shock Trauma Center
- University of Pennsylvania
- St. Luke’s Hospital
- St. Luke’s Hospital
- Albany Medical Center
- Massachusetts General Hospital
- Medical College of Wisconsin
- Stony Brook
- Methodist Health
- Michigan State University
- Please refer to [EMRA Critical Care Division](#) for an updated list of the SCC fellowships that currently accept EM applicants.

**Differences between programs** There are many differences between the structure and roles of each fellowship’s “preliminary resident in surgery” year. For many programs, the curriculum of this first year has been evolving, since this is a very new pathway for them. Applicants should contact each program director for further insight into what this first year entails. It is also helpful and important for applicants to talk to current EM-trained fellows to get their thoughts on that year.

The experience of second year is largely similar to an institution’s surgical critical care fellowship. As such, applicants should inquire about the diversity, volume, and role of that year’s training. It is also helpful to determine the types of job that the EM-SCC fellows secure after complication of the fellowship.

**Length of time required to complete fellowship** SCC fellowships are 2 years in length.
Skills acquired during fellowship
You will become an expert in the critical management of all forms of shock, coagulopathy, renal failure, lung injury, ICU nutrition, infectious disease, sedation, and mechanical ventilation.

You may gain exposure to the surgical airway, percutaneous gastrostomy, Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA), femoral or venous cutdown, and extracorporeal membrane oxygenation (ECMO).

Typical rotations/curriculum
The first year consists of 12 months of intermediate-level surgical experience in the management of patients with complex surgical pathology. Services that are acceptable to the ABS for this experience include but are not limited to:

- Abdominal surgery, particularly of emergent nature
- Trauma surgery
- Solid organ transplantation
- Vascular surgery
- Cardiothoracic surgery
- Surgical oncology
- Surgical infections
- Orthopaedic surgery
- Neurosurgery
- Pediatric surgery
- Surgical ICU - may not comprise more than 3 months of the total 12 months

The second year focuses on exposure to SICUs, and oftentimes includes elective and research months to further pursue an academic interest within the realm of SCC.

Board certification afterwards?
The ABS SCC board certification examination is a 1-day examination consisting of approximately 200 computerized, multiple choice questions. The exam lasts 5 hours and is offered in September of each year. An examination content outline is available at SCC Certifying Examination Content Outline.

To be eligible, ABEM diplomates must complete a “preparatory year as an advanced preliminary resident in surgery” prior to entering a one-year ACGME-accredited fellowship in SCC at the same institution that the preliminary year was completed. Upon successful completion of the SCC certification examination, ABEM diplomates will need to participate in either the ABEM Maintenance of Certification (MOC) Program or the ABS MOC Program to maintain their SCC certificate. The ABS has not offered a provision (grandfathering clause) for ABEM diplomates who had completed a SCC fellowship before July 2013 to become certified in SCC.

Average salary during fellowship
Typically, fellows will receive either PGY-4 or PGY-5 level of salary during the first year of fellowship, depending upon whether they graduated from a 3- or 4-year EM program.

PREPARING TO APPLY

How competitive is the fellowship application process? The SCC fellowship application process is fairly competitive because there are limited programs and spots available.

Requirements to apply
Completion of 3- or 4-year ACGME-accredited emergency medicine residency.

Research requirements
Research is encouraged but not required. Applicants should pursue projects they find interesting, which may include clinical or basic science research projects, clinical protocol design, or qualitative improvement projects that aim to improve the care of critically ill patients in the ED or ICUs. The project should ideally lead to poster or podium presentations and/or publications.

Suggested elective rotations to take during residency
ICU rotations with senior-resident level responsibility and additional trauma surgery outside of your required trauma months.

Suggestions on how to excel during these rotations
To excel during these rotations, it is important that you know your patients, their pathologies, and management. As with all other rotations, be proactive in procedures, stay on top of the literature, and offer to teach junior residents and students. Above all, show interest and motivation to learn.

Should I complete an away elective rotation?
Yes, if your home institution does not offer any of the suggested rotations. If there is a program of particular interest to you, consider completing an away rotation there.

What can I do to stand out from the crowd?
Ways to stand out include national or institutional leadership positions, research that leads to publications, interest and expertise in education, and outstanding letters of recommendation, particularly from surgical intensivists.

Should I join a hospital committee?
Yes, if your interest and time permits. Some helpful hospital committees to join include: resuscitation, critical care, transfusion, pharmacy, quality improvement, and/or palliative care.

Publications other than research
Additional
publications beyond research would potentially help and strengthen your application. They include blog posts, book chapters, reviews, case reports, podcasts, and/or videocasts.

How many recommendations should I get? Who should write these recommendations? 3 recommendation letters are generally required. In addition to soliciting a letter from your EM program director or chair, it is important that you highlight your performance in the ICU. To do so, you should solicit letters from intensivists. If your program does not already have ICU rotations built in the curriculum, doing an elective in an ICU (preferably SICU) as a senior resident will really help to demonstrate your dedication to this pathway as well as a way to secure a recommendation letter.

What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship? Yes, but you should make the attending year(s) worthwhile by enhancing your critical care knowledge and skills.

What if I'm a DO applicant? Same set of rules and recommendations apply to the DO applicants as long as they are completing an allopathic residency program.

What if I am an international applicant? The SCC Program Requirements state that applicants must have completed residency in ACGME-accredited programs. Programs accredited by the Royal College are usually acceptable, while others are often not. Find out which programs accept international applicants and type(s) of visa they can sponsor prior to submitting your application. Once accepted to a fellowship, it is important to submit all requested documentations promptly in order to avoid delays in visa approval.

APPLICATION PROCESS

How many applications should I submit? Applicants should apply to as many places as possible within their geographic preference. Do not apply to a program if you would not be willing to live in that area.

How do I pick the right program for me? If you decide that applying to an SCC fellowship is the right choice for you, then look closely into each fellowship’s curriculum, the EM fellows’ roles during each rotation, geography, and the alumni network.

Common mistakes during the application process The biggest mistake people make is not submitting all the required information in a timely fashion. Starting in 2015, many SCC programs have instructed applicants to go through the Surgical Critical Care and Acute Care Surgery Fellowship Application Service (SAFAS). The Surgical Critical Care Program Directors Society is strongly encouraging programs to use SAFAS for applicants. Applicants may create an account and follow the applicant instructions provided by SAFAS. The SAFAS applications will be accepted through Aug. 15 of each year.

Most SCC programs will require applicants to submit the following items with their application:
- Personal statement
- 3 letters of recommendation
- Curriculum Vitae
- Copy of your medical school transcript
- USMLE scores
- Copy of ECFMG (if applicable)

Some SCC programs accept applications on a rolling basis beginning in the spring or summer in the year prior to matriculation. The process varies among programs, so it is important to check with each program individually about application requirements and deadlines. It is also important that applicants secure recommendation letters from intensivists in addition to their EM program director.

Application deadlines Aug. 15 if you apply through SAFAS; otherwise, aim to submit as early as possible.

Tips for writing your personal statement It is important to formulate a cohesive discussion on your interest in critical care and how that will help to enhance your training in EM. Some topics of discussion may include: What got you interested in EM-CC in the first place? What do you plan to do with your SCC training after you are done? Who inspired you? What have you done to further your interest in SCC?

Is this a match process? This may be different for each program, so it is best to ask the fellowship directors to see if they are putting their EM-SCC positions into the match.

What happens if I don’t obtain a fellowship position? Use the next few years to enhance your application and make you a better future EM-intensivist. Some examples may include, but are not limited to, another fellowship such as ultrasound, resuscitation, research, medical education, or simulation. You may decide to take an attending job either at the institution where you may be interested in furthering your SCC training.

INTERVIEW PROCESS

How can I stand out from the crowd? In general, applicants who stand out are those who have shown
commitment during their training to EM-critical care. Examples include leadership roles such as chief residency or service on national critical care committees, institutional quality improvement projects, research, education, or national awards.

**What types of questions are typically asked?**
- Why critical care?
- Why SCC vs other types of critical care fellowships?
- Tell me about a challenging critically ill patient that you had.
- What are some challenges in critical care medicine?
- Do you have any questions about the program? It is very important to do your homework regarding the program itself, the institution, and many of the faculty before the interview.

**How many interviews should I go on?** Because SCC spots are limited and fairly competitive, applicants go on as many interviews as possible until they have received an offer.

**PREPARING FOR FELLOWSHIP**

**Textbooks to consider reading**

**Important skills to practice while in residency to prepare for fellowship**
- Central line placement, intubations, tube thoracostomy, thoracentesis, paracentesis, emergency airway, thoracotomy
- Ultrasound - FAST, echocardiogram and IVC status for volume assessment, lung, vascular access
- Bronchoscopy, fiberoptic intubation, wound management

**Tips on how to succeed as a fellow** Work hard, but eat and sleep while you can. Learn from your colleagues (particularly those who trained through different specialties). Get to know your patients and their families; participate in as many family meetings as you can. Identify mentors and role models, and respect and learn from the nurses, respiratory therapists, and ancillary staff. Teach someone something new every day. Don’t be afraid to get your hands dirty, and don’t be afraid to ask for help. Try something new (procedure, management style, etc.) every week. Keep in touch with your loved ones.

**CONCLUSION**

**Additional resources**

**Journals:**
- New England Journal of Medicine
- JAMA
- The Lancet
- Chest
- Critical Care Medicine
- Critical Care
- Intensive Care Medicine
- Journal of Trauma and Acute Care Surgery
- JAMA Surgery
- Journal of the American College of Surgeons
- Resuscitation

**Podcasts:**
- EMCrit
- iCritical Care podcast by SCCM
- SMACC Gold
- Intensive Care Network
- Medscape Critical Care podcast
- Critical Care Perspectives in EM
- The RAGE podcast
- ICU Rounds
- ED ECMO
- ALiEM

**Blogs:**
- LearnICU
- Intensive Care Network
- Maryland CC Project
- Penn CC Project
- Critical Care Reviews
- Life in the Fast Lane
- PulmCCM
- The Bottom Line
- Resuscitation Medicine Education
- Critical Care a Day
- Thoracic Anesthesia

**Articles:**
National organizations
- Critical Care Sections of ACEP, SAEM, and EMRA
- Society of Critical Care Medicine
- American Association for the Surgery of Trauma
- Eastern Association for the Surgery of Trauma
- Western Trauma Association
- Shock Society
- American Heart Association
- Conferences
  - ACEP, SAEM, and EMRA critical care section meetings
  - SCCM EM Section meeting
  - AAST
  - EAST
  - WEST
  - AHA Resuscitation Science Symposium
  - Social Media and Critical Care Conference (SMACC)

How to find a mentor
Ways to network and find a mentor include: virtual mentorship (http://www.emccmfellowship.org/mentorship.php), attending critical care section meetings, using social media, utilizing alumni network, and/or EMRA mentorship programs.

To submit updates or to assist with future revisions, please email fellowships@emra.org.
INTRODUCTION

Description of the specialty In the 1980s, the specialty of disaster medicine emerged as a result of a combination between emergency medicine and emergency management, formerly known as disaster management.1 This resulted in a specialty that incorporates principles from different disciplines, including emergency medicine, public health, disaster management, humanitarian works, and emergency medical services (EMS).

Disaster medicine is meant to provide care for most of the injured victims from natural or human-made disasters, with consideration to the extent of the event and the available resources. This mandates extending the scope of practice to collaborate with other partners from other jurisdictions such as: law enforcement, fire departments, EMS, departments of public health, governors and so on. The role of a disaster medicine-specialized physician should go beyond his/her work in the ED during disasters. This role is not limited to responding to the disaster, but should be throughout the disaster cycle, including preparedness, response, recovery, and mitigation.

History of the specialty/fellowship pathway It is difficult to pinpoint a single moment that gave rise to the development of disaster medicine as a specialty, nor to track a linear chronological progress for its development. The first known documentation of a disaster response dates as far back as the eruption of Mt. Vesuvius in 79 A.D. Whether the specialty was formally started in Europe or the United States, disaster medicine was developed to fulfill the need for an organized management structure for health issues arising with disasters happening around the world. By 1990, the first core curriculum for disaster medicine training was proposed.2 Since then, the intentions toward more formal training kept growing.
Events such as 9/11, Hurricane Katrina, and the Haiti earthquake in 2010 have had a major impact in shaping the specialty to what we see today. In 1976, the American College of Emergency Physicians came up with a policy statement describing the role of emergency physicians during disaster. The University Association of Emergency Medicine called for the establishment of fellowship training in disaster medicine. Different disaster medicine fellowships have been started around the U.S. They continue to increase in number and improve in quality with time. In 2005, the American Board of Physician Specialties (ABPS) determined that a new board of certification in disaster medicine should exist as an integral part of national disaster preparedness strategy. As a result, the American Board of Disaster Medicine (ABODM) was created as the first medical board certification in disaster medicine in the U.S. (http://www.abpsus.org/disaster-medicine).

**Why residents choose to follow this career path**

Residents choose to follow this career path when they desire to be disaster medicine specialists engaged in leadership roles in disaster management through the whole spectrum of the disaster cycle.

**How do I know if this path is right for me?**

If you are the kind of person who wants to break the routine and go beyond your personal limitations to save lives during disasters, then this is the perfect specialty for you. You should see yourself playing the role of the leader: sorting causalities, managing injuries, and leading hospital operations or deployed medical teams. That is not the only fun part – you should also imagine yourself sitting around a big table surrounded by distinguished leaders from different disciplines, discussing matters that affect your hospital, society, and nation. You may find yourself in another country, helping people to recover from a recent disaster and reliving their suffering. However, if you don’t like meeting frequently, brainstorming, and discussing non-clinical issues for hours, you should reconsider your application for such a fellowship.

**Career options after fellowship**

Many exciting opportunities await the disaster medicine specialist. It is no secret that emergency physicians are prone to burnout. Because of this, many emergency physicians look for an area of interest in which they can extend their scope of practice outside the doors of emergency departments. Whether you want to spend most of your time in the ED or in hospital disaster administration, all are available options. Many factors can affect your career pathway, including the hospital’s view of and demand for emergency management, as well as your qualifications and intentions. Many hospitals are in need of someone who can help them prepare for and sail through the waves of disasters toward safer shores after a crisis. You may need to gather more information about the hospital’s disaster management system before applying for a job, and see what suits your goals the most. It is not only hospitals that employ disaster specialists. There are many other institutions for whom you can work, including the military, federal government, public health departments including the Centers for Disease Control and Prevention (CDC), academic research centers and universities, and private agencies. Humanitarian disaster relief work is a whole different world for those who are interested in being in the field, and career paths can lead you to work with various non-governmental organizations (NGOs) or even the World Health Organization (WHO). If you prefer to stay domestic, you can also join a DMAT (Disaster Medical Assistance Team) in your region to be part of a federally sponsored deployment team. You can always seek advice from mentors in the field to make sure your career will satisfy your goals.

**Splitting time between departments**

The graduate of a disaster medicine fellowship is expected to participate actively in hospital emergency management. So, splitting time between the ED and your hospital’s emergency management team is not uncommon. Some graduates will pursue a full-time job in emergency management, but splitting the time with ED shifts is more common. Taking the responsibility of hospital disaster management is not an easy job as it requires a lot of time and effort. The best way to figure out what is expected from you is to discuss it with your hiring institution. Ask about the objectives needed from you and working hours for both (ED and disaster management). The same approach applies if you want to work for institutions other than hospitals, whether it is local, federal or international. Fortunately, the flexible nature of ED shift work will help you to save time for other duties. In the end, it is your call to plan how to manage your time and to keep the balance in your career.

**Academic vs. community positions**

The earlier you plan for your future career, the stronger the chance you’ll get what you aim for. It is important to decide early if you want an academic vs. community position. If you are passionate about teaching, research, and academic titles, then you should go for an academic position. Positions are available for disaster medicine fellows in many universities and university-affiliated hospitals. Many faculty members of fellowships hold academic titles in well-known academic institutions, not only in the United States, but all over the world. So, you should look for a university-affiliated fellowship.
with as many possible academic faculty members in order to be more involved in the academic environment. Working in a community hospital will most likely lead to more involvement in emergency management with less teaching and research opportunities (if any). Disaster medicine is a relatively new and rapidly growing specialty. As such, the demand for more research and education is high. This fellowship can help you build bridges to connect with many academic staff from different disciplines, which may help you in your future career.

**IN-DEPTH FELLOWSHIP INFORMATION**

**Number of programs** Currently there are at least 15 programs that address disaster medicine, although some combine it with an EMS fellowship. Programs include:

- Albert Einstein Medical Center
- Brown University/Rhode Island Hospital
- George Washington University
- Harvard Medical School/Beth Israel Deaconess Medical Center
- Indiana University
- Johns Hopkins University
- Robert Wood Johnson University Hospital
- Stanford University
- SUNY Health Sciences Center at Brooklyn
- Summa Akron City Hospital
- University of Massachusetts Medical School
- University of California Irvine School of Medicine
- University of California San Diego Medical Center
- University of New Mexico
- Wake Forest University School of Medicine

**Differences between programs** Most of the fellowship programs have the same core content. Some programs are older than others, and better established. Some are fast-growing, while others are almost in a steady state. Programs may have a particular emphasis on a specific aspect of disaster medicine and management. Many programs still combine EMS with disaster medicine. The location of some programs maybe advantageous. For example, a few programs are concentrated in distinct geographical areas, which allow them to share resources and experiences together in an enriching environment. The intensity of the curriculum and the level of hands-on training provided can vary between programs. The strength of research activities is also variable between programs.

**Length of time required to complete fellowship** Disaster medicine fellowship are 1-2 years in length.

**Skills acquired during fellowship** As a disaster medicine fellow, you are expected to grasp the principles of emergency and disaster management and to gain the skills to be able to manage disaster situations both clinically and administratively. Through didactic sessions and clinical training, the fellow will obtain the skills to triage, manage, and evaluate a multitude of disaster-related injuries, including, but not limited to, blast injuries, hazardous material causalities, and mass casualty incidents (MCI). Through courses and meetings you will be able to develop the requisite administrative skills, including planning, allocating resources, utilizing data, maximizing surge capacity, conducting drills, and improving research. During fellowship, you should gain experience in prehospital disaster related operations, Hospital Incident Command System (HICS), and hospitals’ disaster-related protocols development. You will also learn about field disaster response on the domestic level using Incident Command and on the international level, including coordinating with the UN, WHO, and basic deployment field skills and principles.

**Typical rotations/curriculum** Most fellowships have a common core content of their curriculum, which include mandatory and elective rotations. Usually, the curriculum is a mixture of didactics, meetings, clinical sessions, courses (both online and in person), field experience, and research activities. Core content will include things like Federal Emergency Management Agency Incident Command System (ICS) courses, mass-casualty incident (MCI) triage, and management of CBRNE (Chemical-Biological-Radiological-Nuclear and Hazardous Materials) events.

There is a large variety of available elective rotations, some of which can entail a second year. Examples of elective rotations include EMS (if not already integrated in the program), tactical medicine, visits to federal agencies, CDC, international emergency medicine, disaster relief/humanitarian aid, and disaster simulation. Those who want to do a 2-year fellowship often have the opportunity to obtain advanced degrees related to disaster medicine. For instance, fellows may be able to obtain a Master’s of Public Health (MPH), Health Care Emergency Management (HEM) and the European Master of Disaster Medicine (EMDM).

**Board certification afterwards?** The ABODM provides medical board certification in disaster medicine; however, this is not commonly promoted in disaster fellowships in the U.S.

**Average salary during fellowship** Joining a fellowship by itself can cause a disparity in salary to someone who is already working as an attending
physician. Salary will vary, but it is usually based on that of a PGY-4/5 training level at the specific hospital where you will be training.

**PREPARING TO APPLY**

**How competitive is the fellowship application process?** This fellowship is relatively new and growing. Level of competition on acceptance is variable between centers. As the number of fellowship programs increases, so does the number of candidates.

**Requirements to apply** To apply for this fellowship, it is required to be a board certified (or eligible) emergency physician.

**Research requirements** It is always advantageous to have prior experience in research, but it is not a mandatory requirement for admission. Having a research project in mind or (preferably) written before starting the fellowship will be a good idea, since you will be asked to conduct research during fellowship. The more research experience you have during residency, the stronger your application will be from an academic point of view. Of course, it would be better if the research is related to disaster medicine, and specifically your area of interest. If possible, present your work as an oral or poster presentation at an available conferences if you cannot publish it before applying.

**Suggested elective rotations to take during residency** Disaster medicine is typically presented in limited didactic and training sessions during residency. Many disaster medicine experts with a special interest in education are calling for more coverage of disaster medicine science during residency. However, some of the content of disaster medicine (especially the clinical part) is covered during the usual required residency rotations in the ED, EMS, intensive care units, and trauma care. If your program offers elective training in disaster medicine, it is never a bad idea to go for it. You may want to spend some time with emergency management personnel at your hospital and learn from them. It would be a good idea if you can make a rotation from that experience.

**Suggestions on how to excel during these elective rotations** Reading about the specialty is always a good start. You may want to start by reading the introduction chapters from a disaster medicine textbook. Some courses out there may provide you with some fundamental knowledge, like The National Disaster Life Support (NDLS®) courses. You should show your interest in the field to those who can help you to excel during your early career. Actively participating in your hospital emergency management is a strong indicator of your interest. This includes involvement in meetings, table top exercising, planning processes, and disaster drills.

**Should I complete an away rotation?** If you have the chance to deploy for a disaster, whether a local or an international one, do not miss the opportunity. Participation in disaster relief work will be a strong point in your application. Deploy with a professional organization in order to get the maximum benefit from such an experience. International emergency medicine is a sub-specialty of emergency medicine, with a significant overlap with disaster medicine. Participation in international activities will help you in your fellowship and your career after the fellowship. It may be difficult to fit such activities in your already tight schedule, but you should try your best to make it happen. It is reasonable to look for such experience in your local area (whether your city or state) before traveling far away to get a similar experience. An away rotation is not mandatory, but it can be significantly beneficial.

**What can I do to stand out from the crowd?** You should demonstrate a strong desire toward disaster medicine in your application. Your education, research, and training should display that interest. Try to be involved in activities related to disaster management as much as you can. You should display the required leadership skills. You should also show that you have the administrative skills to be able to handle and manage critical operations during disasters. Your reputation during your work in the ED is very important. You should excel in your primary job as an emergency physician from the beginning. It is never a bad idea to have a mentor with sound experience in disaster medicine to guide you and help you throughout this process. Your academic performance during residency is a good indicator of your work ethic. So, you should focus early on disaster medicine related activities to strengthen your application.

**Should I join a hospital committee?** It is very beneficial for you to join hospital committees dealing with disaster-related issues. It is always advised to participate actively with your hospital emergency management department. Active participation includes attending meetings, participating in drill development, and – most important – showing up on time! Try to leave a positive impact on any committee in which you participate. If possible, participate in committees on larger scales, such as on a city or state level. These committees can potentially expose you to leaders in disaster medicine within your region who you may get support from for your future career.

**Publications other than research** There are plenty
How many recommendations should I get? Who should write these recommendations? Most programs will ask for 3 letters of recommendation, with at least 1 from either your program director or chair of the emergency department. This can be your emergency medicine based letter. You will likely need 2 additional letters, and it is recommended that both of these are from physicians who work in the field of disaster medicine and emergency management. Getting the letters from the hospital emergency management and disaster medicine fellowship directors is ideal. These letter writers should have worked with you on a project, in the field or in the ED, as the letters should be strong, well-written, and specific to you.

What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship? You can still be competitive after working as an attending, but you need to show your attraction to disaster medicine. Most of the things aforementioned apply here, like joining the emergency management committee at your hospital and being actively involved. Being involved completely in another subspecialty of emergency medicine may make others question your interest in disaster medicine as a future career path. However, working as an attending by itself will enhance your clinical, administrative, communication and leadership skills. Make sure you have a disaster medicine mentor who will help ensure that you make this time productive and demonstrate your interest in disaster medicine.

What if I'm a DO applicant? In general, there is an increase in the number of fellowships that accept graduates of DO residency. Yet, there are not as many candidates as MD graduates joining the programs. It may be easier if you are a DO who trained in an allopathic program to apply to allopathic fellowship programs. You may need to contact each different fellowship to see if they accept DO candidates and what additional requirements for ACGME certification they have.

What if I am an international applicant? Disaster medicine fellowship is one of the most popular fellowships for international candidates. In general, the requirements are almost the same, but you need to know if passing USMLE exams is mandated by the program or not. You need to work on your application even earlier, at least 6 months ahead. The visa application may take some time, so you should put that into consideration also. It would be great to know people from your country who joined the same program that can make your application much easier. It would be best to ask programs about this prior to applying.

APPLICATION PROCESS

How many applications should I submit? There are many factors to consider when determining where and to how many programs you should apply. Which programs offer guidance and educational programs in the specific areas of disaster medicine you are interested in? Are there certain geographic areas of the country you want or more importantly don’t want to be? Do you want to be in a program close to your family or friends? Do you have an idea of what you want to do post-fellowship, and will a particular program or a program in a particular area help you achieve those goals? Is university affiliation important to you, or are you going to be happy in any program as long as you obtain a fellowship position? Whether coming straight out of residency or taking a short hiatus from the clinical duties in an already established professional practice, the important factors in choosing the right program is going to be different for everybody. When choosing how many programs to apply to, first identify which of these factors is most important to you and apply to how ever many or few fit your criteria.

How do I pick the right program for me? After identifying your personal criteria, do your research about each of the fellowship programs. The most common mistake people make when applying is assuming every program has the same curriculum. Disaster medicine is not, as of yet, an ACGME accredited specialty. This has its advantages and disadvantages. While you are given great latitude and flexibility in designing an educational experience that fits your specific interests, there is no standardized core curriculum, so researching opportunities at specific programs is critical. The information you are searching for is out there if you look hard enough. Nearly all disaster fellowship programs have websites explaining their mission, the programs they offer, the specialties and interests of their faculty and what their graduates are doing post-fellowship. You’re going to be overwhelmed by all the amazing and cool opportunities out there, and you will probably change your mind about what interests you in disaster medicine multiple times during this process.

Common mistakes during the application process The biggest mistake one could make during the application process is not doing enough research
on the different programs and faculty. This is critical in designing an attractive CV as well as planning for the interview, the two most important pieces of the application process.

Exaggeration or embellishment of any experiences, previous positions, or professional roles in the CV or during the interview is another significant mistake an applicant can make. Have confidence in your experiences and sell yourself truthfully.

**Application deadlines** Fellowship curricula schedules follow the academic year (July - June) so the best time to apply, particularly for senior residents, is the summer at the beginning of your final residency year. Interviews will typically take place October-November, and fellowship acceptance notifications will be received during November. Most programs accept applications on a rolling basis, but each program is different. Contact the programs you are interested in early to get application materials and guidance regarding deadlines.

**Tips for writing your personal statement** Keep it simple and do not overthink it. Depending on the fellowship program, you may be asked to write a full 1- to 2-page statement or just a single paragraph, placed at the top of your CV. In either case, you want to be succinct, brief and hit a few important points:

- Identify your personal goals for your career and what experiences have led you to identify those particular goals.
- Explain why you think a fellowship in disaster medicine will help you reach those goals.
- Explain both why the particular program you are applying to is the right fit for you and why you are the right fit for the program.

**Is this a match process?** No.

**What happens if I don’t obtain a fellowship position?** The first thing is to contact the programs you have not heard from. Find out where they are in their hiring process and if you still have any potential fellowship opportunities for the coming year. Assuming all of your desired positions have been filled, just remember it is not the end of the world. Once you have secured a clinical position for the following year, it is time to re-evaluate how important doing a disaster fellowship is to you and your career goals. The greatest benefits of a disaster medicine fellowship are the networking potential with others in the field and the opportunity to learn about the various aspects of the specialty in an environment where the education is paramount and clinical duties are important, but secondary. While these benefits offer certain advantages when developing your career in the specialty, completing a disaster medicine fellowship is not a requirement. There are a multitude of resources available for self-teaching or you can take an entirely different structured academic approach to the field by seeking a master’s in emergency management or public health. If you still strongly believe that fellowship is your path and you are willing to wait the extra year (or two, depending on your clinical responsibilities), take the time to strengthen your application. Participate in your hospital’s emergency management committee, take online and in-person courses offered by the Federal Emergency Management Agency and other disaster-associated organizations or join your local medical reserve corps. There are many opportunities if you are willing to do the research and find them.

**INTERVIEW PROCESS**

**How do I stand out from the crowd?** There are many tips on good interviewing practices, but the most critical thing to do is be yourself. Play up your strengths, but do not stretch or exaggerate the truth to make yourself look better, and NEVER lie on your CV. You would not have been asked to interview if the program did not see something special in your application, so be confident in yourself and your accomplishments.

Disaster medicine programs may have an extensive network of faculty, but the core faculty that will be interviewing you is a small group. Know each program’s strengths, the opportunities that they provide and the research interests of the faculty, particularly the core faculty. These will give you talking points throughout the interview to bring up and show that you are truly interested.

This interview may be different from others. While it is still very important to sell yourself, your previous accomplishments, and the experience you have garnered over the years leading to this point in your life, remember that you are interviewing the program at the same time they are interviewing you. For the sake of your own future career, you want to do your fellowship in the program that best fits your needs and interests, so come prepared to ask a lot of questions.

**What types of questions are typically asked?**

- Why do you want to go into disaster medicine?
- What aspects of the specialty interest you?
- What are your goals for future?
- Do you see yourself in academic or community medicine?

*These interviews tend to be pretty informal compared to residency interviews. Most programs are just trying to get a sense of what you want to accomplish so they know if you would be a good fit.*
How many interviews should I go on? When determining how many interviews to go on, it’s important to revisit the advice from the application section. If you chose to apply only to positions that met the criteria for programs that would allow you to achieve your goals, go on as many interviews as you are offered. The more interviews you go on, the more you will learn about each of the programs and the better your ability will be to discern key differences between programs. Of course, the more interviews you go on, the more offers you are likely to receive later.

PREPARING FOR FELLOWSHIP

Textbooks to consider reading

Beyond the textbooks, there is a wealth of disaster-related research literature available.

Important skills to practice while in residency to prepare for fellowship
Try to expand your disaster medicine knowledge base as much as possible prior to starting fellowship. Take advantage of the opportunities provided by your residency program in the various areas that disaster medicine encompasses. Get involved with opportunities for global health (whether that be humanitarian aid missions with your hospital group or formal international rotations through your residency). Volunteer at the main medical tent for large city marathons or Ironman events. Go on EMS and air medical ride-a-longs or spend some time with local EMS medical directors and agencies.

Tips on how to succeed as a fellow
When the fellowship year starts, you want to do all in your power to make it as worthwhile as possible. Do your reading. Complete as much of the available online and classroom training as you are able. Participate in your hospital’s emergency management meetings. Take every available opportunity to meet key people in the field by going to conferences and joining the ACEP Disaster Medicine Section group and the SAEM Disaster Medicine Interest Group. Participate in disaster simulation exercises in your area. Wherever you end up, opportunities will be numerous. Be flexible with your schedule and get involved with as many as you can. You will have some of the foremost experts in the field at your disposal so use their guidance, but take an active role in developing your own self-directed educational experience.

CONCLUSION

Additional resources

Online and classroom training:
- [https://delvalle.bphc.org/](https://delvalle.bphc.org/)
- [https://training.fema.gov/](https://training.fema.gov/)
- [https://www.disasterready.org/courses](https://www.disasterready.org/courses)
- [http://ndms.fhpr.osd.mil/](http://ndms.fhpr.osd.mil/)
- [https://www.medicalreservecorps.gov/HomePage](https://www.medicalreservecorps.gov/HomePage)

Journals:
- [http://journals.cambridge.org/action/displayJournal?jid=DMP](http://journals.cambridge.org/action/displayJournal?jid=DMP)
- [http://journals.cambridge.org/action/displayJournal?jid=PDM](http://journals.cambridge.org/action/displayJournal?jid=PDM)
- [http://www.pnpco.com/pn03000.html](http://www.pnpco.com/pn03000.html)
- [http://www.tandfonline.com/loi/idis20#VmSmAOLMRPY](http://www.tandfonline.com/loi/idis20#VmSmAOLMRPY)
- [http://www.annemergmed.com/content/dismedicine](http://www.annemergmed.com/content/dismedicine)
- [http://www.gfmer.ch/Medical_journals/Disaster_medicine_military_medicine.htm](http://www.gfmer.ch/Medical_journals/Disaster_medicine_military_medicine.htm)
- [http://www.deepdyve.com/browse/journals/international-journal-of-disaster-medicine](http://www.deepdyve.com/browse/journals/international-journal-of-disaster-medicine)

Clinical Resources/Websites/Blogs:
- [http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2791718/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2791718/)
- [http://disasterfellowship.org/](http://disasterfellowship.org/)
- [http://www.hopkinsmedicine.org/emergencymedicine/fellowship_programs/disaster.html](http://www.hopkinsmedicine.org/emergencymedicine/fellowship_programs/disaster.html)
- [http://www.downstate.edu/emergency_medicine/disasterfellowship.html](http://www.downstate.edu/emergency_medicine/disasterfellowship.html)
- [http://www.umassmed.edu/emed/fellowship/disasterfellowship/](http://www.umassmed.edu/emed/fellowship/disasterfellowship/)
National organizations
- EMRA Prehospital & Disaster Medicine Division
- ACEP Disaster Medicine Section
- SAEM Disaster Medicine Interest Group
- World Association of Disaster and Emergency Medicine

Conferences
- https://www.eiseverywhere.com//ehome/60933
- http://www.wadem.org/
- http://www.trauma-criticalcare.com/?id=2
- http://www.extrememedicineexpo.com/

How to find a mentor
Reach out to any faculty in your residency who may have an interest in disaster medicine or emergency management. Physicians who sit on the emergency management committee have already identified themselves as someone interested in the field and will be able to network you with other physicians on a hospital, city and state level. Reach out to local EMS agencies as they are also often linked in with people who work in disaster medicine on a larger scale and can help find you mentors in your area of interest. Do not be afraid to use email as a way to find mentors. It never hurts to ask, as most senior members in the field are eager to help interested new-comers find their way.

References

To submit updates or to assist with future revisions, please email fellowships@emra.org.
Medical Education Fellowship

INTRODUCTION

Description of the specialty Medical education fellowships within emergency medicine (EM) are designed to provide further skills with curriculum development, education research, adult learning theory, assessment tool design, simulation and immersive learning, continuing medical education, and faculty development. While content typically focuses on undergraduate and graduate medical education in emergency medicine, skills developed are transferable to other domains in medical education and leadership.

History of the specialty/fellowship pathway Medical education has clearly been around for many years, as there have been physicians in leadership positions within undergraduate and graduate medical education since the advent of medical training. Medical education fellowships were born out of the necessity for advanced training for those who will educate the next generation of physicians. These fellowships were often institution-wide and focused for young to mid-career faculty in order to hone their skills within education.

Medical education fellowships within emergency medicine are specifically designed for physicians to take dedicated time to hone their skills within curriculum development, education research, adult learning theory, assessment tool design, simulation and immersive learning, continuing medical education, and faculty development. These fellowships began to spring up approximately 10 years ago but in recent years have proliferated exponentially. The fellowship programs range from 1-2 years, usually depending if a certificate or master’s degree is offered as part of the fellowship training program. Online courses with partial programs requiring in-person meetings are also options to pursue advanced degrees in medical education.
Why residents choose to follow this career path
Many residents follow this career path to hone their skills as educators as they start a career in academic emergency medicine; others enter to pursue more specialized areas of education such as curricula research or residency program leadership. The skills developed during medical education fellowship training also offer the scaffolding to pursue careers with institution-wide education leadership roles (i.e., assistant/associate deans, vice-chairs, simulation center leadership etc.).

How do I know if this path is right for me? If you enjoy teaching medical students and residents and want to improve your skillset, or if you want to gain experience with education research methodology, curriculum development, assessment tool design, or other areas of medical education, this fellowship could be right for you! Additionally, if you have a desire to serve as associate program director, a clerkship director, or a program director, additional training in the theory and methods of medical education are excellent career development options.

Career options after fellowship The career options after fellowship are endless. Some choose to focus on academics and publish medical education research that pertains to both undergraduate and medical education audiences, while others seek out opportunities in residency program leadership (i.e., residency program director or associate/assistant residency program director). Other future career options often include positions as assistant or associate deans of a medical school (i.e., in faculty development, graduate medical education, student affairs, curriculum); or a designated institutional officer for GME at your institution. There are also positions available in national education organizations, such as the Agency for Healthcare Research and Quality.

Splitting time between departments Your time will likely be split between administration/education duties and clinical shifts. It is up to you and your employer to determine how much time is split being such activities.

Academic vs. community positions Some physicians choose to work part-time in the community or primarily at a community-academic affiliate in order to maintain their own independent practice while others work solely in academic institutions staffing medical students and residents full-time.

IN-DEPTH FELLOWSHIP INFORMATION

Number of programs The number of education fellowships has rapidly increased due to its popularity, with more than 30 programs (and growing). Please reference EMRA Match for the most up-to-date list. If you are interested in medical education fellowships, it would also be useful to discuss this with your program director, who is often the first to know of new programs via the CORD email listerv and can forward these opportunities when they arise.

Additional searches for online or distance-learning programs can be undertaken yearly (as an alternative to completing a fellowship or in conjunction with fellowship) as new programs appear each year.

Some of the most well-known online learning programs include the University of New England Master’s in Medical Education and Hopkins Master’s of Education in the Health Professions.

Differences between programs Generally, all programs are designed to develop leaders in resident and medical student education, curriculum development, and education research. The facilities and methods in achieving those goals may differ among different programs. For example, some programs provide the opportunity to be in already established podcasts while others allow teaching the U.S. Navy procedures on cadavers. While most programs have a wealth of information on their website, the younger programs may not have such detailed information available as to what they have to offer and you are encouraged to contact the fellowship director(s) directly with questions.

Typically, for academic emergency departments, the strengths of that respective department will be leveraged and well-represented in the fellowship’s training opportunities. Thus if there is a department involved in innovative aspects of emergency medicine, it is highly likely that the respective fellowship will afford the fellow to immerse himself/herself in this area during the training period.

Length of time required to complete fellowship Program length varies from 1-2 years. Most 2-year fellowships encourage and often, at least in part fund, an advanced degree in education and/or research methodology.

Skills acquired during fellowship A medical education fellowship generally provides a foundation for a career in academic medicine. Each program should be able to provide you with mentorship in many, if not all, of the following areas: undergraduate and graduate medical education, curriculum development, education research, adult learning theory, assessment tool design, simulation and immersive learning, continuing medical education.
education, and faculty development. Many programs will have projects in progress that you can join. If you have a specific area of interest, however, there are often opportunities to develop new projects. Because the community is small, immersion in a medical education fellowship opens the door a wide-variety of networking opportunities with like-minded educators and academicians across the country.

**Typical rotations/curriculum** There are no formal rotations as part of a medical education fellowship. Most fellowships have a shift-load requirement of 7-10 shifts per month where the fellow functions as an attending physician in either an academic environment or a community affiliate. There is typically an informal curriculum used to teach the above mentioned skills in undergraduate and graduate medical education, curriculum development, education research, adult learning theory, assessment tool design, simulation and immersive learning, continuing medical education, and faculty development. There may be an institutional formal curriculum to teach this as well or the fellow may pursue an advanced degree that will cover this content in more depth. Completion of projects related to new curriculum development, learner assessment, or educational research are usually required components of these fellowships.

**Board certification afterwards?** No. As mentioned previously, some programs will include an advanced degree (certificate or Master’s in Medical Education).

**Average salary during fellowship** The average salary varies by institution, given that this is not an ACGME-accredited fellowship. The lowest salary is that of a PGY-4 or PGY-5 trainee while the highest can range upward of $120,000 per year when hired as a junior clinical faculty. Institutions with lower salaries may incorporate the fellow into the bonus structure of the department, which will significantly increase the fellow’s earning potential. Many programs will also allow some external moonlighting during the fellowship to supplement income so long as it does not interfere with the fellows training.

Most programs set aside funds for the fellow that will supplant training opportunities outside of the department. While these funds could be part of the fellow’s salary, having the option of pre-tax funds available may appeal to fellows who will choose to pursue an advanced degree or certificate, or may choose to attend more conferences throughout the fellowship year.

## PREPARING TO APPLY

### How competitive is the fellowship application process?
The application process for medical education fellowships is fairly competitive. There are generally anywhere from 4-12 applicants per fellowship position. Be aware that some fellowships are created for internal institutional needs and vary on number of external applicants considered (because departments invest time and money in these fellowships, the goal for some is to groom these fellows as academic faculty).

### Requirements to apply
Requirements include board eligibility or board certification in Emergency Medicine, a personal statement or letter of intent, and generally three letters of recommendation including one from your program director. Some fellowship programs require acceptance to their Master’s degree program in order to be accepted for the fellowship program.

### Research requirements
There are no definitive research requirements, although previous research in medical education that results in a national presentation or publication is always a plus.

### Suggested elective rotations to take during residency
If you have elective time, you should seek opportunities to spend this time teaching and building your education portfolio. Multiple templates are available for you to start populating your educational portfolio; chances are your institution already has a template that you can start using. Many programs allow residents to spend time teaching one-on-one with medical students while on a shift. You could also develop conference content, teach ACLS or ATLS certification courses, or assist with writing, running, and debriefing simulation cases. You can also seek mentorship from faculty and develop curricula for medical students and residents. It is advised to take the time to write up your educational activities for publication in education-focused journals or for the AAMC’s MedEdPORTAL.

### Suggestions on how to excel during these elective rotations
Seek mentorship from within the clerkship and residency leadership on how to develop bedside teaching skills. Think about the educators that helped you the most during your training and what teaching styles they used.

### Should I complete an away rotation?
It is not necessary to complete an away rotation in order to secure a fellowship position in medical education; however, if there is a particular institution where you would like to match, you may choose to do so.

If you have time available during the last year of residency, consider taking the ACEP Teaching
Fellowship. Spots may be limited; but this experience will serve as a good primer as to what will await you as a prospective medical education fellow.

What can I do to stand out from the crowd? The best way to stand out from the crowd is by developing a CV that strongly demonstrates your interest in medical education through meaningful activities. This can include research, curriculum development, publications such as blog posts, leadership activities such as chief resident or involvement with EMRA, involvement in medical student education etc.

Should I join a hospital committee? For MedEd, try to get involved in your residency program and with the medical student clerkship in ways that are pertinent to applying for fellowship. For example, you can get involved with teaching shifts where you work one-on-one with medical students, you can work with your clerkship director to learn how to write SLOEs, or you can work on core content delivery for students through simulation, lectures, or podcasts. With regard to resident education, you can get involved with hospital GME committees, monthly resident simulation, conference content, or podcasts.

Publications other than research If you have the opportunity to develop a curriculum or some sort of educational content, you should attempt to publish it! There are several journals both within emergency medicine and within medical education as a whole that accept educational innovations. Another great avenue to get your hard work noticed is MedEd Portal, which is also peer-reviewed.

How many recommendations should I get? Who should write these recommendations? You should have at least 3 recommendations when applying to medical education fellowships. One must be from your program director. The other 2 should be from faculty who know you well, both in regards to your clinical work and your education work.

What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship? Absolutely! You would still be competitive, especially if you decided to take a faculty position at an academic institution prior to completing a fellowship and develop an interest in medical education during that process and wish to pursue further training.

What if I’m a DO applicant? If you are a DO applicant who has completed or will complete a residency in emergency medicine in the United States and become board certified or board eligible by the time of entering a medical education fellowship, you will be considered.

What if I’m an international applicant? If you are an international applicant that has completed or will complete a residency in emergency medicine in the United States and become board certified or board eligible by the time of entering a medical education fellowship, you will be considered. You must have a valid visa at the time of application and at the time of entering the fellowship. It is advised that you check with the program’s policies and procedures for international applicants, as these will vary from institution to institution.

APPLICATION PROCESS

How many applications should I submit? As always, where you are going to spend the next 1-2 years of your life is a very personal decision. Make sure wherever you end up is somewhere you could move with your loved ones. That said, there are not many education fellowships and since they are getting more competitive, apply broadly so long as you think you can be happy there.

How do I pick the right program for me? This one will be hard to tell until after interviews. As most programs are accommodating for interviews, we recommend going on whichever interview you get (as long as you are seriously considering attending that program). Education requires a team-based approach, and as such finding the right ‘fit’ is very important. As of now, there is not a large discrepancy in history or prestige, so pick the place you believe you would thrive in.

Common mistakes during the application process We believe that one of the biggest mistakes would be not being true to yourself or to the program that is interviewing you. Make sure you are serious about applying somewhere before going on an interview. If you do not have a serious interest in attending a specific program, then it is advised that you do not interview at that program. If you are seen as dishonest during this process, that view may stick with you longer than you would like. Remember, this is an increasingly small professional world, so treat everyone as you would like to be treated.

Application deadlines All variable, but as a general rule of thumb you should start applying in the late summer as interview season generally starts in the fall.

Tips for writing your personal statement Honest, honesty, honesty. As a general rule of thumb, a good story about education is better than generic. Be yourself and you shouldn’t have any issues.
Is this a match process? No. And many applicants are frustrated by the lack of consistency with the timing of offers for a particular fellowship. For example, one program may offer a position and need to know the applicant’s decision before the applicant still has not heard back from other programs. Because of this lack of a standardized process, it is important to be honest and open with fellowship directors. Communication is key. If you find yourself in this situation, simply let the fellowship director know.

What happens if I don’t obtain a fellowship position? There are many ways to contribute to the education process, other than through dedicated medical education fellowships. Any academic position will lend you the opportunity to contribute to the education of current and future doctors, though they may focus less on education theory. Fortunately, EM is a specialty that rewards the motivated so keep at it and a productive year makes you more likely for a fellowship the following year!

INTERVIEW PROCESS

How do I stand out from the crowd? You have managed to impress your prospective program director on paper with your academic achievements and clinical experience. Now it is time to show them in person how you are different from other applicants. It is very important you package and present yourself by finding your qualities and strengths and aligning them with the program’s objectives to display compatibility. Researching the program’s website will give the interview dialogue a two-way feel and you will come across as a well-informed candidate. Rehearse and decide what message you want to convey to the interviewer, showing how the connection between your achievements and the fellowship’s opportunities will help you reach your goals.

What types of questions are typically asked? Predicting questions and preparing answers ahead of time can certainly make you come across as a strong candidate. Interviewers want to know about your past and current educational activities to gauge how much of a fit you are to their program. This is your time to shine and demonstrate your strengths. Be prepared to talk about your educational and administrative activities (e.g., publications in magazines/journals, medical student and resident teaching activities, presentations, lectures, resident recruitment, etc.) Express what you are eager to teach and how you would teach it.

You may also be asked on your educational philosophy, or in other words, what your personal worldview on teaching and learning is. Are you a proponent of self-directed learning, and want to increase this skill in your residents? Or do you value experiential learning, and want to immerse your trainees in multiple experiences to enhance their learning? Chances are you have already developed your philosophy. Being mindful of this philosophy, and talking about it during your interview is a sign of educator maturity.

How many interviews should I go on? Go to every interview that you are offered. Medical education fellowships are competitive, and there are still not many programs. As long as you think you’d be happy there, you should go on the interview.

PREPARING FOR FELLOWSHIP

Textbooks to consider reading Your potential fellowship will likely recommend some textbooks on education theory. There are too many good ones to recommend a specific book. We do like some of the podcasts/Ted Talks on leadership and education and would recommend browsing those at your leisure.

Important skills to practice while in residency to prepare for fellowship Take any teaching opportunity you can: medical students, residents, volunteers. However, an equally important aspect for you will be starting to understand education theory. Pay attention when your curriculum changes, and ask questions about the reasoning behind it.

Tips on how to succeed as a fellow Motivation and hard work trump book knowledge. Really try to immerse yourself as a member of the program, especially if you are not staying at your home program.

CONCLUSION

Additional resources

- www.ALiEM.com

National organizations It is recommended you maintain membership in ACEP and EMRA.

You can consider joining the Society for Simulation in Healthcare (SSH) to develop simulation ideas and network with others interested in simulation. They have committees you can consider joining as well.

Strongly consider joining the Council of Emergency Medicine Residency Directors (CORD), an educational organization striving to improve resident education. There are many committees that will accept residents as members.

Conferences Some fellowship programs emphasize simulation and subsequently recommend attending the
annual International Meeting on Simulation in Healthcare (IMSH) provided by the SSH.

The yearly CORD Academic Assembly is where all the big names in Emergency Medical Education get together.

**How to find a mentor** You can attempt to find a mentor within your own program or reach out to a desired program for a faculty advisor from the Med-Ed Fellowship program there.

EMRA has an Academic Career Mentorship Program where you can electronically request a mentor.

**References**


**To submit updates or to assist with future revisions, please email fellowships@emra.org.**
INTRODUCTION

Description of the specialty Emergency medical services (EMS) is the delivery of medical care outside of a hospital or medical facility (also known as “prehospital care” or “out-of-hospital care”).

History of the specialty/fellowship pathway Emergency medicine and EMS share a common ancestry, as both evolved from the core purpose of taking care of patients with time-sensitive conditions at their moment of injury/illness. Although EMS has been practiced for hundreds of years, EMS medicine officially became a subspecialty of emergency medicine in 2013. EMS fellowships are uniquely positioned to give emergency physicians (and physicians from other specialties) the experience and knowledge they require in order to provide, oversee, and improve pre-hospital care.

Historically, EMS fellowships had varied widely in terms of the experiences for individual fellows. However, with the arrival of subspecialty certification and ACGME accreditation, there is now a standard core curriculum for EMS fellowships. Fellowships include field response, where the fellow responds to requests for physician assistance or to help with large incidents. Many fellowships are attached to a flight program as well, which provides the opportunity to serve as a physician on aircraft for inter-facility transfers and emergency requests.

In addition to clinical prehospital care, EMS fellowships train physicians in the medical oversight of EMS systems. Fellows are intimately involved in many aspects of EMS education, as well as quality assurance and improvement. EMS policies are constantly in flux due to changing research and guidelines, and fellows learn how to create, implement, and evaluate policies and protocols. Fellowships also offer opportunities in scientific research, as well as disaster planning and response.
Why residents choose to follow this career path
This field attracts physicians who are interested in becoming involved in the EMS field, such as clinical providers, researchers, educators, and/or medical directors.

How do I know if this path is right for me? A career path in EMS may not be right for all physicians. Being involved in EMS requires significant time dedicated to the furthering of the EMS organization. This will involve collaboration with multiple committees and working groups. EMS work usually involves skill with interpersonal communication, outreach, diplomacy, and politics, as one of the roles of an EMS physician is meeting with members of the community, public safety agencies, and governmental bodies, as well as regulatory agencies. Serving as an EMS medical director often requires some ability in finance, administration/management, and policymaking as well.

Career options after fellowship There are local, state, federal, and private positions that are opportunities for physicians interested in EMS. Many states and larger EMS systems have a dedicated full-time medical director. Some larger organizations require multiple physicians. Tactical teams and local law enforcement, large event organizations, sporting arenas, and international medical groups may employ the services of an EMS medical director or physician. The medical director position in larger EMS organizations is typically filled by a physician with a background in emergency medicine and prior EMS experience or training. However, there are many EMS agencies who still do not have medical directors with EMS experience or training. Completing an EMS fellowship will greatly help your chances of obtaining a job as an EMS physician or medical director.

Splitting time between departments Depending on the specific position and organization in which you are employed, an EMS medical director position may include working clinically within an emergency department, or it may not include any clinical work. Some EMS positions may require a full-time administrative commitment, which would mean the individual has to make his/her own arrangements for clinical work separately. Others may only have limited (or no) funding available, so many EMS physicians work with several EMS agencies (which is more cost-effective both for the EMS agencies and the physician).

Academic vs. community positions There are both academic and community based positions in EMS. An EMS agency may be university-based, hospital-based, fire-department based, municipal, or a private organization. They may be associated with a medical school or academic department, or may have no affiliation. All of these variables can affect the working environment and responsibilities requested of a medical director/physician. The largest challenge for a physician involved in EMS is often balancing the time spent between EMS and non-EMS work, as well as clinical, educational, academic, and administrative work within EMS.

IN-DEPTH FELLOWSHIP INFORMATION

Number of programs There are currently 46 ACGME accredited fellowships, with more in the accreditation queue. There also exist several non-ACGME accredited fellowships. Lists and links to current programs can be found on the ACGME website, the National Association of EMS Physicians website, and EMRA Match.

Differences between programs With the implementation of ACGME accreditation of EMS fellowships in 2013, all fellowships are required to provide their fellows with a foundational level of knowledge regarding the basic tenants of EMS. The joint ABEM and ACGME “EMS Milestone Project” provides a framework for assessment of the development of the fellow in key dimensions of the elements of physician competency in EMS. They reside in the domains of patient care, medical knowledge, system-based practice, practice based learning and improvement, professionalism, and communication skills. The Core Content of Emergency Medical Services Medicine, published by ABEM, lists the skills that should be acquired during an accredited fellowship. This is also the content on which the board exam is based.

Furthermore, the ACGME has established a specific set of program requirements for any EMS fellowship. Many of these requirements are similar to other specialty residency and fellowship programs. These requirements can be found in the ACGME Program Requirements for Graduate Medical Education in Emergency Medical Services.

The execution of the requirements is left to the individual programs, and there can be variability. The EMS adage that says, “If you have seen one EMS system, you have seen one EMS system,” can apply to fellowship programs as well. Generally, they all offer training in ground and air medical services in such areas as patient care, communications systems, system design, quality assurance, education/training, and disaster medicine, among others.

Length of time required to complete fellowship ACGME-accredited fellowships are 1 year; however,
some fellowships offer an additional year for an advanced degree or other endeavors.

**Skills acquired during fellowship** As mentioned, all accredited fellowships are required to provide their fellows with a foundational level of knowledge regarding the basic tenants of EMS. The Core Content of Emergency Medical Services Medicine and “EMS Milestone Project” described the knowledge and skills graduates of accredited programs are expected to have mastered.

**Typical rotations/curriculum during fellowship** EMS fellowships differ on the specific structure/schedule they use to deliver the curriculum. Most intersperse various areas and topics throughout the year. Some fellowships have set rotation schedules where the fellow spends a specified period of time in one area/topic, and then rotates to another.

**Board certification afterwards?** Beginning in 2013, EMS subspecialty board certification is available through a written certification exam administered every 2 years by ABEM. Subspecialty certification is open to any primary specialty, provided they meet the requirements for EMS certification. Fellows who complete an ACGME-accredited fellowship may take the board exam at the next offering after completing their fellowship.

Currently a practice pathway (“grandfathering” pathway) exists for those who either completed a non-accredited fellowship or who have been practicing actively in EMS without any fellowship training. Non-accredited program graduates must have at least 2 years of active EMS experience, while those applying without any fellowship training must have at least 5 years of EMS experience. Both practice pathways are set to close in 2019, after which the only way to be eligible for board certification is to complete an accredited fellowship.

**Average salary during fellowship** Most programs offer a PGY salary equivalent to your level of training, at minimum. For some programs, this is the sole source of salary. However, others offer a varying stipend for clinical shifts worked during fellowship (which may or may not be considered “moonlighting”). This stipend will vary in amount by institution and should be explained in the contract. Some fellowships may come with clinical instructor or other academic appointments as well. In addition to the salary, fellowships may offer CME (Continuing Medical Education) budgets, retirement plans, or other additional compensation.

**PREPARING TO APPLY**

**How competitive is the fellowship application process?** Although there are still more positions available than applicants, the fellowship application process may become more competitive over the next several years. With the advent of EMS board certification has come a surge in interest in fellowship training. EMS is also a field rapidly growing in physician involvement and research. There is no match for the EMS fellowship, which can result in increased competitiveness at certain programs and geographic regions. Earlier applicants may appear more competitive as they can accept a position earlier.

**Requirements to apply** EMS fellowships are theoretically open to any board-eligible or board-certified physicians.

**Research requirements** As with many subspecialties, prior research experience is helpful when applying to an EMS fellowship. There has been an increasing drive towards evidence-based medicine in EMS, and having research experience demonstrates commitment in this area of importance. Certain EMS fellowships are known for their research focus, in which case such experience is extremely important.

**Suggested elective rotations to take during residency** Your EMS rotation during residency will be an important area of focus. Fellowship programs are looking to train people who will be committed to improving EMS care. Different programs have different requirements and opportunities, but any involvement in EMS is a good way to demonstrate dedication and to obtain some experience in the topic. For example, getting involved with EMS provider education and training during residency is a great way to get involved. Completing ride-alongs as a resident, whether it is ground or air based, is also important. It will give you experience in prehospital care, and further solidify your commitment, especially if done outside of your mandatory rotation.

**Suggestions on how to excel during these elective rotations** The best way to excel during these rotations is by displaying strong clinical skills, teamwork capabilities, and enthusiasm for pre-hospital medicine.

**Should I complete an away rotation?** Away rotations for EMS are relatively rare, though may be a consideration if your residency program does not have a strong EMS component, and you wish to bolster your experience and increase your competitiveness.
What can I do to stand out from the crowd? To stand out from the crowd, fill your CV with activities that display a strong interest in EMS and also display your leadership skills.

Should I join a hospital committee? Hospital review committees involving EMS, such as STEMI, stroke care, and trauma care, are all great experiences that will help to solidify your candidacy.

Publications other than research Publications outside of EMS are also helpful for your application. As a resident, there are many opportunities for publication, such as EM Resident, the magazine published by EMRA, or one of the many newsletters, such as ACEP Now.

How many recommendations should I get? Most EMS fellowships will accept physicians who have been practicing as an attending before applying. The key is to ensure that you stay involved with EMS as part of your practice. Again, fellowship programs are looking to train people who will remain committed to EMS. However, it is important to note that many people find it hard to “switch back” to a trainee rank, salary, and lifestyle after being an attending. That is an important consideration that one has to weigh.

What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship? Almost all EMS fellowships will accept physicians who have been practicing as an attending before applying. The key is to ensure that you stay involved with EMS as part of your practice. Again, fellowship programs are looking to train people who will remain committed to EMS. However, it is important to note that many people find it hard to “switch back” to a trainee rank, salary, and lifestyle after being an attending. That is an important consideration that one has to weigh.

How do I pick the right program for me? The right program is also a very subjective question. Most fellowships have a website you can visit for highlights about their program. Additionally, the EMS community remains a relatively tight-knit subspecialty, so EMS faculty in your department are often able to provide insight into other programs. The application and interview process also is very revealing, and the impression you get from meeting the fellowship director and core faculty can have a huge impact on picking the right program. In addition to the program elements, many applicants have their own family, geographical, or other requirements that may shape their decision of picking the right program. In the end, as with choosing any job, trust your gut.

Common mistakes during the application process It cannot be stated enough that the EMS community remains a small and tightly knit one. Always be professional and honest throughout the application process.

Application deadlines Given the lack of a true formal process for fellowship applications, these dates are highly variable. You should contact specific programs to ensure you meet their timelines. Generally, strive to submit your application by September.

Tips for writing your personal statement Your personal statement can serve to both emphasize points on your CV as well as delve into those intangible things that don’t fit on a CV. For instance, it is your opportunity to show the reader why you decided to go into EMS medicine. Be honest and concise. Writing individual letters to each program emphasizing why you would be a good match for them and demonstrating that you have done some research into their program is a good idea as well. Having a faculty member review your draft statement can often be valuable. The American Medical Association, EMRA, and many other organizations offer personal statement advice you can review as well.
Is this a match process? No. But there is an unofficial agreement within the fellowship director community that the majority of programs observe. This process allows program directors to make offers at any time to a number of candidates up to their total number of slots. The candidate is under no obligation to respond to the offer until the agreed upon deadline (usually the second week in November), after which the fellowship may offer their spot to another candidate. The fellowship and candidate are free to agree to terms prior to the deadline (which often happens).

What happens if I don't obtain a fellowship position? If you do not obtain a fellowship position, you have several options. As stated before, there are usually more positions than applicants, so if you have no restrictions you have a good chance to place somewhere. Other options include applying during the next cycle or looking at non-AGCME-accredited fellowship programs.

INTERVIEW PROCESS

How do I stand out from the crowd? During any interview process, it is always of benefit to you and the program to be yourself. There is no advice specific for EMS fellowship interviews. Program directors (like any supervisor) are looking for energetic candidates with a commitment to learn about EMS and take that knowledge to improve the field. They are not looking for someone who just likes to wear shoulder patches and drive around with lights and sirens blaring.

What types of questions are typically asked? Topics asked of the applicant may vary from specific to EMS to generalizations. For example, questions regarding the aspects of EMS that you feel are important, the latest science of EMS, or opinions about specific issues are all valid questions. Be knowledgeable about the latest controversies, scientific breakthroughs, and news in the area of out-of-hospital medicine. One area of questioning that may arise is the topic of why you are applying to accredited vs. non-accredited fellowship programs. Be prepared to answer this question. There are benefits and detriments to both types of fellowship programs, and these need to be clearly understood for the interview.

How many interviews should I go on? There is no “magic number” of interviews. You should interview at an adequate number of programs depending on your competitiveness. If you feel you are not a strong candidate, you should interview at more programs to increase the likelihood of obtaining a position. Remember there are still more positions than there are applicants, so the odds are with you.

PREPARING FOR FELLOWSHIP

Textbooks to consider reading There are no required texts to read prior to fellowship. Some considerations include the seminal texts and papers in EMS that may offer some background on the specialty. One of those foundational papers is the EMS Agenda for the Future. The NHTSA website contains links to many others. The NAEMSP publishes what is considered the core textbook for EMS medicine: Cone’s (2015) Emergency Medical Services: Clinical Practice and Systems Oversight. NAEMSP also advocates for some additional reading materials that may be used as references. Certainly, you should be familiar with all of these materials by the end of fellowship and before taking the board exam. Thus, it doesn’t hurt to start reading them before beginning your fellowship.

Important skills to practice while in residency to prepare for fellowship Getting solid emergency medicine training should be your focus during your residency. You have to know how to practice medicine in the hospital before you can adapt it outside the hospital. Showing EMS interest through research, involvement in medical direction, or other avenues is encouraged during residency.

Tips on how to succeed as a fellow Fellowship should be a fun experience. Everyone entering this field has a desire to work in the prehospital setting. Work hard, enjoy your time there, soak up the mentorship from your peers, network with others, and never forget your roots in emergency medicine.

CONCLUSION

Additional resources There are further resources for EMS for those who are interested. The National Association of EMS Physicians (NAEMSP) has a wealth of resources available on their website at www.naemsp.org, as well as a podcast that interviews authors of major articles. Prehospital Emergency Care (or PEC), published by NAEMSP, is considered one of the most influential journals for EMS medicine.

National organizations NAEMSP is one of the most important organizations for EMS physicians. NAEMSP provides resources for new and established EMS physicians, publishes position papers on important topics, and promotes opportunities for research and networking. NAEMSP also publishes the journal Prehospital Emergency Care quarterly. NAEMSP
EMRA FELLOWSHIP GUIDE

offers a medical director’s course annually, which is an excellent three-day course that helps prepare you for becoming an EMS director. NAEMSP welcomes resident and fellow members.

Conferences NAEMSP hosts an annual conference in January that is highly recommended for those interested in EMS.

How to find a mentor Finding a mentor is an important part of the journey to become an EMS physician. EMRA offers a fellowship mentor program where you can apply to be paired with a mentor or to work as a mentor, if interested. Ideally, a mentor should be located at your site of practice and they can be a valuable resource to assist with your involvement in EMS. SAEM and ACEP both have EMS sections that can provide a forum to seek advice and make connections.

To submit updates or to assist with future revisions, please email fellowships@emra.org
FORENSIC MEDICINE NICHE

INTRODUCTION

Description of the specialty Emergency physicians care for patients with forensically relevant chief complaints nearly every shift. Victims of trauma including gunshots, stab wounds, and motor vehicle crashes pass through the ED. Both adults and children may be brought to emergency departments following sexual assault. EM physicians are in ideal positions to identify victims of domestic violence, elder mistreatment, child abuse, and human trafficking. In all of these cases, they may be required to collect and preserve evidence, provide documentation, provide court testimony, and refer to the appropriate agencies. Thus, it is important for EM physicians to be appropriately trained and have access to the necessary resources to care for this unique population of patients.

History of the specialty/pathway In recent decades, violent crime, abuse, assault, and neglect have risen to arguably epidemic levels. EM physicians are frequently involved in the identification, evaluation, and treatment of these patients. To help physicians gain the appropriate skill set to help this patient population, in 1991 the Department of Emergency Medicine at the University of Louisville established the first forensic medicine fellowship in the U.S. By 2006, the American College of Emergency Physicians (ACEP) established the Forensic Medicine Section. Very few residencies include clinical forensic medicine in their training curricula, but ACEP’s Model of Emergency Medicine does require proficiency in sexual assault training. Fellowships within this field have also been slow to develop.

Why residents choose this career path Residents follow this career path when they have a strong interest in utilizing the forensic education and skill set to assist victims of crime, injury and violence. Physicians in this field may have a leading role in violence prevention and in the care of
victims of trauma and violent crime.

How do I know if this path is right for me? Do you find yourself interested in becoming better at forensic medical evaluation, injury documentation, and photography? Do you want to become a champion for victims and an expert at testifying for these patients? Are you interested in helping with the forensic training and education of health care providers? Do you desire to become an expert and leader in this field within your hospital system? If you answered yes to any of these questions, you should strongly consider a career in clinical forensic medicine.

Career options after residency Some options to consider when designing a career with a focus on forensic emergency medicine include:
- Employment with a Sexual Assault Response Center
- Employment with a Child Advocacy Center (CAC)
- Director of Forensics for departments of emergency medicine
- Researcher in forensic relevant topics
- Forensics educator of residents, nurses, etc.
- Speaker at national meetings on forensics topics

Splitting time between departments Most clinicians interested in emergency forensics will develop this niche within their own EDs and will not split time. Some physicians may be double board certified in another specialty or perhaps have a second career, such as police officer, etc., and then will split time between departments. Others may consider working in an ED and a CAC or Sexual Assault Response Center. The key when you desire to split your time between departments/agencies/careers is to make sure you do not get scheduled at both places simultaneously and you do not get caught in terrible transitions, such as going from an overnight ED shift directly into a day shift working at a CAC. This will need to be carefully negotiated in your initial contract. You will also need to negotiate vacations and holidays between these two organizations. Finally, don’t forget to negotiate your involvement in activities such as departmental meetings, hospital committees, etc. Ideally, you would have fewer hospital commitments to accommodate your forensic involvement.

Academic vs. community positions Those interested in teaching and/or research often gravitate towards academia or community-based academic positions. However, those with an interest in pediatric forensics may find academic positions challenging, as large centers often separate their adult and pediatric patients into separate emergency departments. Another consideration is whether the hospital is a designated center for sexual assault forensic examination (SAFE). It is not uncommon for an entire county to bring all sexual assault cases to one designated hospital. Finally, one should consider the department’s current involvement in forensic emergency medicine and their openness to hiring someone (you) to specialize in this niche.

IN-DEPTH SPECIALTY INFORMATION

Number of programs This track is unique, as it is currently more of a “niche” within emergency medicine and has the opportunity to grow into future fellowships.

Preparing for a Career in Forensics

Research requirements There is no research requirement to become involved in this field. However, if you are interested in research, we absolutely encourage you to pursue this. Because clinical forensic medicine is a young field, research opportunities abound.

Suggested rotations to take during residency Rotations to consider during your elective months to expand your skills in forensics include (but are not limited to): violence prevention programs, coroner’s office, forensic toxicology service, Child Advocacy Centers, child abuse service (offered within pediatrics in some academic institutions), medical examiner’s office, detention center clinic, hospital-based forensic examiner teams.

Suggestions on how to excel during these elective rotations The best way to excel on any rotation is to demonstrate your dedication, interest, and knowledge base. Read every day about relevant topics. It is always a good idea to arrive early and stay late if needed, especially to ensure all patient care has been completed. Be courteous to everyone you encounter.

Should I complete an away rotation? If your department does not provide you with a rotation and/or exposure to a particular patient population that you desire (example: child abuse cases, elder abuse, sexual assault, etc.) then we highly encourage you to seek away elective opportunities. We encourage you to seek out programs that have forensic departments within their department (such as Drexel University College of Medicine) or at least EDs that are the designated center for assault/abuse, etc., cases in their regions.

How can I make my CV stand out from the crowd? Your resume should clearly display your interest in forensics by listing multiple supporting activities. Strive for leadership positions where you have meaningful involvement. It might be helpful to narrow your niche
even more within forensics (such as child abuse, for example) and become an expert in this field. Aggressively seek means to educate yourself and then subsequently educate others about your niche. Learn the administrative skills that are needed to design and manage a forensic examiner team.

**Should I join a hospital committee?** Many hospitals have a committee that reviews child abuse and neglect reports, elder abuse reports, sexual assault cases, domestic violence cases, etc. It would be wise to inquire about such committees and to join if possible. Ideally your involvement in this committee would be meaningful and potentially in some sort of leadership capacity.

**Publications other than research** Publications other than research on forensic topics are highly encouraged. There are many opportunities for submitting articles in medical newsletters, magazines, journals, and blogs. You could also consider working on a podcast. This is an excellent opportunity to expand your own and the audience’s knowledge base on a particular topic and also to bolster your writing skills. Perhaps the best way to accomplish this is to reach out to your targeted publisher. You will be surprised by how many doors open simply by asking!

**Textbooks to consider reading**

**Important skills to practice during residency to prepare for fellowship** If given the opportunity, it would be helpful to become proficient at the sexual assault exam. You should also aggressively strive to broaden your knowledge base in forensics:
- Learn the different burn and fracture patterns associated with child abuse.
- Understand how to appropriately document and photograph child abuse findings.
- Learn the verbal and physical clues that will alert you to elder abuse, domestic violence, and human trafficking victims.
- Develop leadership and administrative skills to run forensic medicine sections of an emergency department.
- Understand the concept of chain of custody and preservation of evidence.
- Develop effective educational skills to teach others about forensic medicine.
- Expand your knowledge about the legal system and learn about court testimony.

**Creating a Career in Forensics: Convincing Your Employer**

**How do I stand out from the crowd in the interview/hiring process?** Your goal during the interview is to be engaging, confident, and personable. Take care not to come off as either arrogant or disinterested. Be courteous to everyone you meet, and treat every event/interaction as part of the interview. Make sure your application is complete and you fulfill all requirements in a timely manner. Voice a clear vision about how you would like your future career to include forensics.

**What types of questions are typically asked?**
- What are your 5- and 10-year career plans?
- What specifically was your forensic training during residency?
- How do you plan to expand our department’s involvement and education in forensic medicine?
- What are your strengths and weaknesses?
- Tell me more about [fill-in-the-blank] leadership opportunity that you list here on your resume.
- Why do you seek employment at our institution?

**How many recommendations should I get? Who should write these recommendations?** Each potential future employer will have its own policies regarding the number of recommendations required. It is advised that your letter writers are from those physicians who know you well and will advocate strongly for you. Letters from program directors and/or department chairs would be favorable. If you have a mentor within the niche of forensics, a letter from him or her would be ideal. Letters that display your knowledge of and competence in forensic emergency medicine will help support your cause for a career that allows you to continue to build and expand upon your forensic training.

**CONCLUSION**

**Additional resources**

**Journals:**
- Journal of Forensic Sciences
- Journal of Forensic and Legal Medicine

**Journal articles:**
- Finn R. Tips for Conducting a Child Sexual Abuse

**Webinars:**
- The Faculty of Forensic and Legal Medicine of the Royal College of Physicians

**Websites:**
- Physicians for Human Rights
- California Clinical Forensic Medicine Training Center
- National Sexual Violence Resource Center

**Blog:**

**National organizations**
- American Academy of Forensic Sciences
- ACEP Forensic Medicine Section

**Conferences**
- American Academy of Forensic Sciences Annual Scientific Assembly
- Annual International Conference on Traffic and Transport Psychology
- International Symposium on Child Abuse
- International Conference on Sexual Assault, Domestic Violence, and Engaging Men & Boys

**Coursework to consider completing**
- Medical Training Academy for Child Physical and Sexual Abuse (This is a self-paced online course.)
- Master of Science in Forensic Science
- Drexel University: [http://www.drexel.edu/medicine/Academics/Graduate-School/Forensic-Science/](http://www.drexel.edu/medicine/Academics/Graduate-School/Forensic-Science/)

To submit updates or to assist with future revisions, please email fellowships@emra.org.
INTRODUCTION

Description of the specialty An overall increase in life expectancy and the demographic bubble of the baby boomers is reflected in increasing numbers of older patients presenting for emergency care. The field of geriatric emergency medicine evolved to fill the needs of this group of people. Older patients are generally more complex than younger patients, with physiologic, pharmacologic, and pathologic differences, as well as social needs that may differ from younger patients. In addition, there are specific geriatric syndromes that often go unrecognized in emergency departments. As a result of this growing patient population, fellowship training is an important component of the emerging subspecialty of geriatric EM.

History of the specialty/fellowship pathway The American Board of Internal Medicine and the American Board of Family Medicine offer ACGME accredited fellowships with a match process and board exam. These programs generally do not offer training to emergency medicine applicants.

Geriatric EM fellowships provide fellowship-level geriatric knowledge and training to EM residency-trained physicians and are a relatively new fellowship pathway within emergency medicine. The first geriatric emergency medicine fellowship started at Beaumont in Michigan, with the second at New York Presbyterian in 2005. Most of the GEM fellowships combine attending-level EM clinical care with the patient care and coursework of an existing geriatric medicine fellowship.

Why residents choose to follow this career path EM residents choose this career path when they are interested in furthering their clinical proficiency in the acute care of the older patient. It may also be a choice for those interested in research topics relevant to the
development of health care for the emergency geriatric population.

**How do I know if this path is right for me?** Are you interested in improving care for the elderly who seek medical attention in the emergency department? Are you interested in participating in research related to the field of geriatric emergency medicine? Would you like to create an emergency department geriatric service? How about participating in and leading hospital committees that address elderly issues? Do you like working in multidisciplinary teams? If so, then this may be the fellowship for you.

**Career options after fellowship** Geriatric emergency medicine program director/assistant program directors, GEM medical director, involvement in multidisciplinary geriatric initiatives, GEM research, GEM education for emergency medicine residents and faculty as well as medical students.

Geriatric emergency departments have developed in community based EDs across the country. Many of the community health systems with geriatric EDs are actively seeking GEM expertise, providing opportunities for GEM-trained physicians to practice lead after graduation.

**Splitting time between departments** Your specific schedule depends on final appointment, local opportunities, hospital culture, and individual circumstances. Geriatric EM-trained physicians have worked in community settings, skilled nursing facilities, and other split positions.

**Academic vs. community positions** Geriatric emergency medicine can be practiced at both community and academic institutions. The choice of academic vs. community is usually dependent on the applicant’s desire for education or research opportunities, as larger academic institutions tend to have better access to funding, research staff, research facilities, and students, residents, and fellows.

Many community geriatric EDs exist across North America, and community geriatric emergency practice offers the opportunity to affect the lives of thousands of patients.

**IN-DEPTH FELLOWSHIP INFORMATION**

**Number of programs** The programs, in order of establishment, are:
- Beaumont
- New York Presbyterian
- UNC
- UC Davis
- Mount Sinai Hospital, University of Toronto

Research fellowship with options for a geriatric focus:
- The University of Arizona

**Differences between programs** With the exception of the University of Arizona, which is purely a research program, these fellowships are similar in their diverse geriatric multidisciplinary clinical training. They vary in the types of research and advanced degree opportunities available. Please refer to individual program websites for additional details.

**Length of time required to complete fellowship** 1-2 years. The 2-year program should have an advanced degree, such as a master's-level program.

**Skills acquired during fellowship** Geriatric emergency medicine fellows receive interdisciplinary training regarding the care of the geriatric patient across multiple in- and out-patient settings. For further details, please refer to the individual GEM Fellowship programs’ websites.

**Typical rotations/curriculum** Clinical, research, administrative, and clinical educator rotations and curriculum are the foundation of these fellowships. Most programs offer opportunities for obtaining an advanced degree and/or mentored research projects.

**Board certification afterwards?** Currently, GEM fellowships are non-ACGME-accredited. However, beginning in 2014, SAEM has approved several of these non-ACGME-accredited GEM Fellowships.

**Average salary during fellowship** Because this is not an ACGME approved fellowship for EM physicians, the fellowship salary is typically much more competitive as compared to the typical PGY-4/5 salary.

**PREPARING TO APPLY**

**How competitive is the fellowship application process?** Because this is not an ACGME fellowship, it is hard to gauge how competitive this fellowship is. There are limited fellowship programs available but the application pool is typically small.

**Requirements to apply** Applicants must be either in their final year of EM residency, EM board eligible or EM board certified physicians. Applicants must also be able to obtain a medical license in the state in which the fellowship is based.
Research requirements Research is not required but may certainly strengthen your application, especially if you perform research in topics relevant to the field.

Suggested elective rotations to take during residency Elective rotations to consider include geriatric outpatient clinics, inpatient consult services that specialize in geriatrics, palliative care services, geriatric psychiatry units, outpatient geriatric clinics, etc.

Suggestions on how to excel during these elective rotations The best way to excel during these rotations is to work hard, come in early and stay late, read every day and expand your knowledge base, be courteous to all, remain enthusiastic throughout the entire rotation, and be a team player.

Should I complete an away rotation? An away rotation at one of the institutions listed who sponsor this fellowship may be a good idea to help you “try out” the program and let the program get to know you. Assuming you do well during this rotation, it could be a nice way to help you stand out from other applicants.

What can I do to stand out from the crowd? The best way to stand out from the crowd is to develop a CV that through various activities clearly demonstrates your interest in GEM and also demonstrates your leadership ability.

Should I join a hospital committee? Yes, assuming you are able to hold a leadership position and be an integral part to the committee.

Publications other than research Publications other than research, such as blog posts, EM Resident articles, podcasts, etc., are strongly encouraged especially in topics related to the GEM field. These are excellent opportunities to educate yourself and fellow EM physicians while also helping to increase your visibility to the small but vibrant GEM community.

How many recommendations should I get? Who should write these recommendations? Traditionally you should obtain 3 letters of recommendations, 1 of which should be from your residency program director.

What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship? Absolutely. The key is to continue your involvement in this field and continue to develop your CV.

What if I'm a DO applicant? There are no known barriers to DO applicants.

What if I am an international applicant? International applicants are strongly encouraged to contact each program individually. International applicants will at minimum need to have the appropriate visa, medical licensure, and have passed all 3 USMLE steps.

APPLICATION PROCESS

How many applications should I submit? Apply to all programs you would seriously consider attending if offered a fellowship position.

How do I pick the right program for me? The fellowship program you choose should provide the resources to help you obtain your career goals and aspirations. It should also be in a location where you and your family will feel comfortable spending the next 1-2 years. Finally, during your interview, you should feel comfortable and see yourself fitting in.

Common mistakes during the application process
- Missing application deadlines.
- Choosing letter of recommendation writers who do not know you well or are not strongly supportive of your aspirations in geriatric emergency medicine.
- Grammatical errors in your application and/or personal statement.
- Having a CV that does not clearly show your interest in GEM.
- Having a CV that does not have any activities that display your leadership capabilities.

Application deadlines Please contact each program individually regarding their application process and application deadlines. It is best to inquire approximately 1 year (July) prior to your intended fellowship start date.

Tips for writing your personal statement Do not fall into the trap of repeating your CV in your personal statement. Instead, use this avenue to explain why you are interested in a geriatric emergency medicine fellowship and how you plan to use this training for your future career. The best personal statements read as a story. Thus, if there is a particular patient who sparked your interest in the field, now is the time to talk about it. Let your personality shine through in your statement, and use this as an opportunity to positively separate yourself from the other applicants.

Is this a match process? No.

What happens if I don't obtain a fellowship position? If you do not obtain a fellowship position, take a hard look at your application to identify areas of weaknesses. It may be helpful to have your residency program director look over your application with you to help identify these areas. You may also consider asking the GEM programs that you applied to for advice on...
how to make your application stronger. Spend the next year addressing these weaknesses and apply again. Worst-case scenario, you can build a niche within this field with research and other publications as well as a clinical educator.

**INTERVIEW PROCESS**

How do I stand out from the crowd?

The best way to stand out from the crowd is by letting your personality shine through. Don’t be overly talkative, but also do not be the shy candidate who is hard to engage in conversation. Come prepared with questions about the program that are not easily answered by looking at the program’s website. Have a clear vision about your reasoning for wanting to complete this fellowship and regarding your future career goals.

What types of questions are typically asked?

- Why are you interested in geriatric emergency medicine?
- Why are you interested in GEM at our specific institution?
- What are your 5- and 10-year career goals?
- Tell me more about [blank] that you list here on your CV.

How many interviews should I go on? It is recommended to attend all interviews that are offered.

**PREPARING FOR FELLOWSHIP**

Textbooks to consider reading


Important skills to practice while in residency to prepare for fellowship

Skills to practice to prepare for fellowship include proficiency in clinical care of elderly patients, administrative and leadership skills, research skills, and clinical educator skills.

Tips on how to succeed as a fellow

Fellowship is a unique time to continue expanding your skills under the guidance of a faculty mentors. Take advantage of all opportunities offered. Work hard and become an expert in this field all while maintaining a balance with your personal life.

**CONCLUSION**

**Additional resources**

- ALIEM has had some great GEM themed articles.
- GEM physicians active on Twitter: @ACEPgeriatricsection, @geri_EM, @gemcast, @clshenvi, @katren_tyler, @kbiese, @SMDresdenMD, @ulahwang.
- Podcast: [https://gempodcast.com](https://gempodcast.com)
- Listing of Geriatric Medicine Journals: [http://www.ccgp.org/content/geriatric-journals](http://www.ccgp.org/content/geriatric-journals)

**National organizations**

- Academy of Geriatric Emergency Medicine (AGEM)
- Academy of Society for Academic Emergency Medicine
- GEMS – Geriatric Emergency Medicine Section (ACEP)
- The American Geriatrics Society

**Conferences**

- ACEP and GEMS sections
- SAEM and AGEM section (especially great networking dinner)
- American Geriatric Society meeting
- Local geriatrics conferences, including Maine Geriatrics Conference and UCLA Intensive Course in Geriatrics

**How to find a mentor**

No central website that we are aware of connects mentors to interested residents. FOAMed resources are a great way to get in touch, and residents should reach out to fellowships. We encourage residents to seek out geriatric EM clinician mentors within their own institutions, during away electives, and/or at conferences, especially at ACEP (Geriatric Emergency Medicine Section) and SAEM (Academy of Geriatric Emergency Medicine).

To submit updates or to assist with future revisions, please email fellowships@emra.org.
INTRODUCTION

Description of the specialty Healthy policy fellowships strive to educate future physician leaders who will be effective change agents within the health care system and ultimately serve to shape the future health care landscape. This is accomplished through the development of academic, clinical, and professional skillsets. EM providers, with their experience at the gateway to health care and broad clinical training, are uniquely qualified to serve in this capacity.

History of the specialty/fellowship pathway This history of health care in the United States is complicated and messy because it is dominated by a complex public-private health care industry. This large and expensive system has resulted in escalating medical bills for both the individual American consumers and the government and both are struggling to pay these extraordinary costs. It thus comes as no surprise that discussion of health care reform has dominated discussions within both local and federal government agencies. Emergency physicians are uniquely suited as advocates in such discussions due to the wide spectrum of patients that they provide care to. As a result, health policy fellowships designed specifically for the emergency physician have developed.

Why residents choose to follow this career path Residents may choose this path for a number of reasons, including a desire to advocate for emergency medicine patients and providers, to promote health policies that improve emergency care in the United States, and to develop leadership and administrative skills.

How do I know if this path is right for me? This path tends to draw those who have a strong desire to be involved in the health care system beyond their clinical roles: those who desire to impact emergency care, public health, and take leadership roles to benefit both their specialty and their patients on a larger scale.
Career options after fellowship The career options following a fellowship in health policy are broad and allow graduates choose diverse careers. Many choose combined career paths that allow them to utilize their clinical skills and public policy expertise. After graduating from the fellowship, one may pursue work as an academic emergency physician focusing on health policy research or perhaps as a community physician representative on hospital or health care organization's executive committees. Other opportunities include serving in an advocacy or government position (such as policy advisors for Congress), becoming a liaison to governmental organizations (such as HHS, CDC or CMS), becoming media or legislative representatives on health policy issues, or a consultant for insurance companies.

Academic vs. community positions While some fellowships or grants for health policy career development allow one to pursue educational and experiential opportunities while working at any desired institution, most fellowships in health policy are located at academic institutions. However, many health policy fellowships offer a range of locations to choose from when doing clinical shifts. Discussing options for clinical shifts is an important topic to approach when speaking with current fellows or fellowship directors, particularly if an applicant is interested in working at a specific type of clinical center.

### IN-DEPTH FELLOWSHIP INFORMATION

**Number of programs** There are currently 9 active programs that offer health policy training specifically as an emergency medicine fellowship. There are further areas of specialization within health policy fellowships, such as social emergency medicine, practice management, advocacy, safety and quality, or general health policy.

Other programs have positions available for emergency

<table>
<thead>
<tr>
<th>Program</th>
<th>Length</th>
<th>Advanced degree</th>
<th>Focus area</th>
<th>Clinical Work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baylor College of Medicine</td>
<td>1* or 2</td>
<td>Yes</td>
<td>Health Policy and advocacy</td>
<td>20 hr/week</td>
</tr>
<tr>
<td>Brigham and Women's Hospital</td>
<td>2</td>
<td>Yes</td>
<td>HP research and translation</td>
<td>Varies</td>
</tr>
<tr>
<td>Georgetown</td>
<td>2</td>
<td>Master's in Policy Management</td>
<td>General Health Policy</td>
<td>6-8 shifts/month at MedStar affiliated sites, moonlighting available</td>
</tr>
<tr>
<td>George Washington</td>
<td>1* or 2</td>
<td>MPH</td>
<td>General Health Policy</td>
<td>650 hr/year as clinical faculty at the VA hospital, moonlighting opportunities available</td>
</tr>
<tr>
<td>NYU School of Medicine</td>
<td>1</td>
<td>Support considered on case by case basis</td>
<td>ED Safety and Quality</td>
<td>Average of 20 hr/week at affiliated sites</td>
</tr>
<tr>
<td>University of Pennsylvania</td>
<td>2</td>
<td>Yes</td>
<td>Emergency care policy and research</td>
<td>Varies</td>
</tr>
<tr>
<td>Stanford</td>
<td>1 or 2</td>
<td>---</td>
<td>Option to pursue in second year</td>
<td>Social Emergency Medicine and Population Health</td>
</tr>
<tr>
<td>UC-Davis</td>
<td>1 or 2</td>
<td>---</td>
<td>Option to pursue in second year</td>
<td>General Health Policy</td>
</tr>
<tr>
<td>University of Maryland</td>
<td>2</td>
<td>Certificate or Masters General Health Policy</td>
<td>600 hr/year as clinical faculty at one of UM affiliated hospitals</td>
<td></td>
</tr>
</tbody>
</table>

* A 1-year fellowship option is available for individuals who already possess an advanced degree in public health or public policy.

* Moonlighting or assigned shifts in ED
physicians, but may also extend invitation to applications to all specialties. These include:

- The National Clinician Scholars Program
- The Commonwealth Fund
- The AAMC-CDC Public Health Policy fellowship

Differences between programs Fellowships offer a spectrum of options from those that focus on advocacy, to translational or experiential training, to predominantly research in health policy. While almost all offer elements of each, fellowships vary in emphasis on these categories. The health policy fellowships that emphasize research, aim to develop the necessary skills to conduct translational research in health policy. Those that have a more experiential emphasis tend to offer a larger variety of practicum placements, allowing fellows to rotate through different public policy experiences: city, state, national government organizations, advocacy groups, nonprofit organizations, or research centers. Most fellowships require the completion of a research, MPH, and/or capstone project.

Length of time required to complete fellowships Fellowships are nearly all 1-2 years in length but some are flexible depending on whether an applicant already has a master’s degree or graduate certificate in public health or a related field.

Skills acquired during fellowship Many include as part of the training the option or sometimes requirement to obtain a graduate certificate or degree. Particular knowledge and skills acquired during fellowship include, but certainly aren’t limited to, basic understanding of American policy and procedures, understanding of how policy impacts public health, leadership development, and policy research. Further, there is exposure to policy systems through involvement with advocacy groups, think tanks, city, state or national governmental organizations and legislative bodies.

Typical rotations/curriculum For fellowships that are specifically for emergency medicine physicians, clinical shifts are offered at one or more emergency departments. Most health policy fellows work part-time, approximately 5-8 clinical shifts per month, which varies from month to month depending on other fellowship demands. Education includes:

- Graduate courses focusing on public health, health policy, research methods, statistics, and ethics
- City, state, or national government practicum to gain experience in how public policy is made
- Advocacy, nonprofit, or think tank practicum
- Research project focusing on health policy topic
- Leadership development and coaching

Board certification afterwards? No.

Average salary during fellowship Salary during fellowship can be variable depending on the structure of a particular program. Compensation may be based on the Graduate Medical Education pay scale, based on employment as a part time attending, or a combination of base salary and supplemental income from moonlighting opportunities. Not all health policy fellowships allow moonlighting, but those that do usually recommend not working more than at total of eight to ten clinical shifts per month so that you can fulfill the other requirements of the fellowship.

PREPARING TO APPLY

How competitive is the fellowship application process? There are only a few programs, each of which accept 1-2 fellows per year, which inherently makes it competitive.

Requirements to apply Completion of an accredited emergency medicine residency program is necessary to matriculate into a health policy fellowship. Other requirements, such as prior research, policy, or public health experience will vary amongst the programs.

Research requirements The amount of research required to apply for health policy fellowships depends on the emphasis placed on research during the fellowship. However, research experience, particularly if it is related to a health policy topic is likely to improve one’s application. Please note there are healthy policy grants available from the Emergency Medicine Foundation, ACEP, and other public and private institutions devoted to health policy research and advocacy that you may be able to utilize during both residency and fellowship.

Suggested elective rotations to take during residency EMRA offers a 4-week health policy elective for medical students and a 4-week mini-fellowship for residents.

Suggestions on how to excel during these elective rotations During your elective rotations, be enthusiastic, reliable, hardworking, and friendly to everyone. Arrive early and offer to stay late. Read every day and expand your knowledge base on topics such as lobbying, policy, legislation, regulation, etc.

Should I complete an away rotation? Away rotations are neither widely available nor required to apply for health policy fellowships. However, if an away rotation is available, it may be useful to preview a particular program of interest and further explore your interest in health policy.

What can I do to stand out from the crowd?
Opportunities individuals can take to set themselves apart include:

- Active involvement in state EM organizations, EMRA, and/or ACEP
- Special rotations or mini-fellowships in health policy
- Conducting health policy research
- Meaningful activities within hospital committees and administration
- Publishing reviews, articles, book chapters, relevant to policy

Should I join a hospital committee? Hospital committees are excellent leadership opportunities as long as your involvement allows for meaningful contribution.

Publications other than research Publications such as blog posts, magazine articles, book chapters, case reports, etc., can certainly strengthen your application.

How many recommendations should I get? Who should write these recommendations? 2-3 letters of recommendation are required.

What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship? Aside from personal logistics, there are no specific limitations to working as an attending prior to fellowship. Be mindful to remain involved in the health policy field and continue to build your CV after residency. Please note that some programs do limit applications to those who have been graduated from residency for less than 2 years.

What if I'm a DO applicant? No barriers currently exist for DO applicants.

What if I am an international applicant? International applicants are encouraged to contact each program individually to inquire about whether or not they accept visa applicants.

APPLICATION PROCESS

How many applications should I submit? The answer to this question is dependent on the individual, as with so few programs, with varied focus, a lot of the determination will be on the basis of desired geographic location, offered graduate degree(s), and specific interest within the health policy realm.

How do I pick the right program for me? Reaching out to current fellows and speaking with them is instrumental in the process. It is important to get an idea about their experiences, how they feel the training has helped them and maybe most importantly, what they would change about the program(s). Speaking with the current fellows of different programs offers invaluable insight into the programs structure, fellows’ quality of life and opportunities that are available.

Common mistakes during the application process

- Missing application deadlines and applying late in the year.
- Choosing letter writers who provide weakly supportive letters of recommendations.
- Poorly written personal statements.

Application deadlines Application deadlines for each program are different. As with any application process, submitting materials earlier is always better. Most programs interview in the fall/winter of the year prior to matriculation and make acceptance offers by January-February of the next year.

Tips for writing your personal statement

Personal statements are meant to demonstrate not only your interest, but also commitment and qualifications for the program to which you are applying. All personal statements should reflect the author’s interest and intent for pursuing a health policy fellowship. It may be useful to include a story about what encouraged you to pursue health policy, your specific areas of interest and/or research, prior experience in health policy and ultimate career goals.

Is this a match process? No.

What happens if I don't obtain a fellowship position? Options for future directions for those who apply and are not granted admission to a health policy program depend upon each applicant. An individual may choose to pursue a clinical emergency medicine career, work towards improving their fellowship application, reapply, or pursue health policy education through alternative experiences (mini-fellowships, graduate school, volunteer work, etc.).

INTERVIEW PROCESS

How do I stand out from the crowd? As with any interview, applicants should dress professionally in a business suit or professional skirt or dress. Be prepared by having additional copies of your CV and writing samples. Let your personality and enthusiasm for the field shine during your interview.

What types of questions are typically asked?

Interview questions, as with most academic and professional interviews, focus on the applicant’s interest in health policy, research, their interest about the specific program at which they are interviewing, long term career goals, and occasionally personal opinions on well-known health policy subjects.
How many interviews should I go on? It is recommended that you attend all interviews offered by programs that you would strongly consider attending if offered a fellowship position.

PREPARING FOR FELLOWSHIP

Textbooks to consider reading


Important skills to practice while in residency to prepare for fellowship Health policy is often focused on addressing important public health issues and events, it is important to follow current events to show your awareness of major issues being discussed. That said, the best advice for moving toward fellowship, is to simply stay informed, active, and maintain the passion for policy issues that drove you toward making this choice. Active involvement in organizations, governmental affairs, or policy research can be important in honing the essential skills such as public speaking, leadership, and gaining the important policy knowledge that will serve the potential fellow well throughout their career.

Tips on how to succeed as a fellow Fellowship is a unique time to expand your skillset under the guidance of a mentor. Take advantage of all opportunities such as research, course work and advanced degrees, international opportunities etc. Strive to develop your professional network of contacts in health policy. Work hard to become an exceptional leader, clinician, educator, and advocate.

CONCLUSION

Additional Resources

Blogs:

- PolicyRx
- ACEP 911 Network
- http://www.govtrack.org/
- Social media apps such as Twitter can be helpful in organizing the healthy policy information flow.

National organizations

- ACEP/EMRA Healthy Policy sections
- SAEM

Conferences ACEP hosts a yearly leadership and advocacy conference, usually in May, that is an excellent opportunity for all EM providers to learn, network, hone leadership skills, and discuss topics directly with legislators. There are tracks for residents to help expand their knowledge and launch their involvement in health policy.

How to find a mentor Reaching out to program directors and other faculty at your home institution can be very helpful. Also, speak with current and past fellows, and attend conferences, as these can be a fantastic opportunity to network with others who have interests in health policy.

To submit updates or to assist with future revisions, please email fellowships@emra.org.
INTRODUCTION

Description of the specialty The Accrediting Council for Graduate Medical Education (ACGME) defines this fellowship as “the subspecialty of all medical specialties that transforms health care by analyzing, designing, implementing, and evaluating information and communication systems to improve patient care, enhance access to care, advance individual and population health outcomes, and strengthen the clinician-patient relationship.”

History of the specialty/fellowship pathway In 2007, the American Medical Informatics Association launched an investigation to define the core content and training process for proposed informatics fellowship. In 2008, they sent proposals to multiple different medical specialty boards, and in 2009 the American Board of Preventive Medicine (ABPM) agreed to sponsor the fellowship. In 2010, the formal application was submitted, and in 2011 the ABPM committee officially accepted it. Starting 2013 and until 2017, the newly created board certification exam will be offered to all physicians already working in the field. By 2018, all physicians must complete a fellowship to take the board certification exam.

Why residents choose to follow this career path This training path is for those physicians who are interested in the application of information technology and protocols to promote efficient patient care, improve access to data, and help prevent disease.

How do I know if this path is right for me? Are you interested in the use of technology to help facilitate care for patients and to help with patient safety? Do you wish to design an interface between health care systems and providers that is more user-friendly? Are you interested in creating a strategy, budget, and team to introduce new technology to a health care system? If the answer is yes, this may be the fellowship for...
Career options after fellowship Career options include (but are not limited to): chief medical informatics officer, physician champion for patient safety, quality improvement project leader, and risk management director.

Splitting time between departments After being certified in informatics, physicians traditionally use their information training as part of their administrative duties while still maintaining clinical duties. For example, an EM physician may devote 70% to clinical duties and 30% to administrative responsibilities involving informatics projects.

Academic vs. community positions Due to the introduction of electronic health records, it is certainly possible to use your informatics training at a community or academic institution. Some informatics physicians may prefer employment at a low volume community hospital, whereas others may prefer employment at a large research focused academic institution.

IN-DEPTH FELLOWSHIP INFORMATION

Number of programs Currently, there are 20:
- Banner Health/University of Arizona-Phoenix
- Beth Israel Deaconness Medical Center
- Boston Children’s Hospital
- The Children’s Hospital of Philadelphia
- Columbia University/New York-Presbyterian
- David Geffen SOM at UCLA/UCLA Health
- Duke University SOM
- Geisinger Health System
- Madigan Healthcare System
- Oregon Health & Science University
- Partners Healthcare
- Regenstrief Institute, Inc.
- Stanford SOM
- UC San Diego
- UC San Francisco
- University of Illinois at Chicago
- University of Washington
- Vanderbilt University
- Washington University SOM
- Yale Center for Medical Informatics/New Haven Medical Center

(As more programs become accredited, they are listed with AMIA.)

Differences between programs Be careful, because all programs are not accredited by the ACGME. Most programs use ERAS for their application process, but some have their own application that can be accessed either on their website or by emailing their program director and/or coordinator.

Length of time required to complete fellowship The ACGME requires a 2-year fellowship.

Skills acquired during fellowship During fellowship, you will receive training in each of the 4 core content categories: fundamentals of informatics, clinical decision-making and care process improvement, health information systems, and leadership/management of change.

Typical rotations/curriculum Example of rotations include the following: clinical informatics experience managing an electronic health record; quality improvement training and project involvement; research; and clinical skills (aka must maintaining primary specialty board skills by working in that respective department).

Board certification afterwards? Yes, there is board certification available for those who complete this fellowship. This exam is conducted by the American Board of Preventive Medicine.

Average salary during fellowship Because this is an ACGME fellowship, salary is based on the appropriate PGY level.

PREPARING TO APPLY

How competitive is the fellowship application process? Currently there are 16 accredited programs, with each typically taking 1-2 fellows per year.

Requirements to apply You must be board eligible or board certified in any ABMS approved specialty to apply.

Research requirements Research is not required but is highly recommended, especially if the research is completed on a topic relevant to informatics. Make sure you have your research projects near completion when you apply. It is better to have 1 completed research project than 3 projects in the data collection phase.

Suggested elective rotations to take during residency Consider using your elective time to take an administrative or research elective. Some programs specifically have an informatics rotation, which would be an ideal rotation.

Suggestions on how to excel during these elective rotations Your elective months can potentially connect you with attending physicians who may be your future letter of recommendation writers. Thus, it is...
imperative to treat every day on elective as an interview day. Treat everyone with respect and go the extra mile. It is always looked at positively when you arrive early and stay late to help. Be innovative. Strive to be both a team player and a leader. Read every night, and increase your knowledge base about informatics.

Should I complete an away rotation? It may be worth considering an away rotation at a program that has an informatics fellowship. This may be a prime way to help “get your foot in the door” and display your interest and clinical skills.

What can I do to stand out from the crowd? The best way to stand out from the crowd is to build a CV that displays clear leadership ability and a clear interest in the field of informatics. One example to consider is to develop a quality improvement project during residency that focuses on improving electronic health records system at your institution.

Should I join a hospital committee? Absolutely. Try to join a committee that is focused on informatics topics and allows you to make a meaningful contribution.

Publications other than research. Publications other than research are also encouraged. Writing case reports, blog posts, magazine articles, etc., is an excellent learning opportunity and a great way to get your name out into the informatics community.

How many recommendations should I get? Who should write these recommendations? It is generally recommended to obtain 3 letters of recommendation. One of these letters must be from your residency program director and/or department director. The remaining recommendations should be from faculty who know you well, strongly support you, and can speak to your interest and skills in informatics. For example, physicians with whom you’ve worked on quality improvement projects, research projects, or on hospital committees may be a good resource for these letters.

What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship? You can absolutely still be competitive if you work as an attending before applying to fellowship. The key is to remain involved in activities, especially those related to this field. You do not want the activities on your CV to stop when residency ends. Also, be prepared to explain during your fellowship interviews why you made the decision to practice prior to applying for fellowship.

What if I am a DO applicant? There are no barriers for DO applicants.

What if I am an international applicant? Please contact individual programs regarding whether they accept international applicants (some programs receive funding that prevents them from taking international applicants). In general, international applicants are usually required to be certified by the Educational Commission for Foreign Medical Graduates (ECFMG). You also must have a visa (traditionally a J-1).

APPLICATION PROCESS

How many applications should I submit? You should apply to all programs you would seriously consider attending if offered a fellowship position.

How do I pick the right program for me? Pick a program that makes you happy in regards to career and personal life. Do not ignore your inner voice; if you feel uncomfortable, that program is not for you. Choose the program that believes in you and is supportive of your career goals. Finally, do not forget location. If you are unhappy when you go home after work, this sentiment will infiltrate your fellowship experience, and you won’t be nearly as happy or as productive as you otherwise would have been.

Common mistakes during the application process. Common mistakes include submitting an application past the deadline, submitting an incomplete application, choosing letter writers who are not 100% supportive of you, or having a CV that does not display an interest in informatics.

Application deadlines. Applications traditionally open in July and positions are filled by January. Contact each program regarding specific application timelines.

Tips for writing your personal statement. Your personal statement should not be a regurgitation of your CV but rather should show your personality and explain why you are interested in informatics. Is there a specific patient-technology interaction that first sparked your interest in the field? Perhaps your involvement in a hospital committee or maybe a mentor was pivotal in introducing you to the field? The best statements read as a story that engages the reader from the very first sentence. Also, consider ending your personal statement with your thoughts about your career goals after completing an informatics fellowship.

Is this a match process? No.

What happens if I don’t obtain a fellowship position? If you do not obtain a fellowship, we recommend that you take a hard look at your application and interview process to identify weaknesses that you need to change. It may be worth
gently asking the programs that did not offer you a position if they have any advice to help you to improve. More important, we recommend that you find a trusted physician (such as your EM residency program director) to look at your application with a critical eye to find the gaps. Spend the next year addressing these gaps and apply again. Worst-case scenario, it is possible to create a niche within the field of informatics as an attending physician without completing a fellowship.

INTERVIEW PROCESS

How do I stand out from the crowd? The best way to stand out from the crowd during an interview is simply by being yourself. Let your personality shine through. Don’t be the applicant that barely talks during the interview (but don’t be the one who talks too much either). Come prepared to ask questions about the fellowship program. Make sure these are thoughtful questions that cannot be easily answered by looking at their website. Finally, know your application well and be prepared to answer anything from it.

What types of questions are typically asked?
- Why are you interested in informatics?
- Why are you interested in informatics at our institution?
- What are your 5- and 10-year career goals?
- Tell me about “blank” activity that you list on your CV.
- What are your strengths and weaknesses?

How many interviews should I go on? You should attend every interview that is offered to you by programs that you would seriously consider attending.

PREPARING FOR FELLOWSHIP

Textbooks to consider reading

Important skills to practice while in residency to prepare for fellowship Practice your leadership, research, and negotiation skills. Above all else strive to be a fantastic physician first and foremost. Work on your understanding of electronic medical administration record (eMAR) systems, and eMAR and technology as it interacts between patients and the healthcare system. Become knowledgeable on how to create and implement quality improvement projects.

Tips on how to succeed as a fellow The best fellows are the ones who are passionate and dedicated to their careers. Fellowship is a unique opportunity to learn about informatics under the guidance of many physician mentors. Take advantage of all that fellowship has to offer. Read every day, come into work early and stay late, and be amicable to everyone. Also, remember to stay balanced and take care of yourself and your family.

CONCLUSION

Additional Resources
Journals:
- International Journal of Medical Informatics
- Journal of American Medical Informatics Association (JAMIA)

Blogs:
- College of Medicine Phoenix
- Top 50 informatics blogs

Podcast:
- http://www.healthcare-informatics.com/category/podcasts/podcast

National organizations
- American Medical Informatics Association (AMIA)

Conferences
- AMIA iHealth clinical informatics annual conference
- International conference on healthcare informatics
- Medical Informatics World Conference

How to find a mentor At this time there is no central website that we are aware of that connects interested physicians/residents to mentors within the field of informatics.

To submit updates or to assist with future revisions, please email fellowships@emra.org.
INTRODUCTION

Description of the specialty This fellowship trains physicians to become injury prevention experts, educators, and researchers.

History of the specialty/fellowship pathway In 1964, Haddon et al published Accident Research: Methods and Approaches, a groundbreaking piece for the development of injury control research. For the first time, basic principles of research for the injury field were established. Soon after, the National Highway Traffic Safety Administration was formed, which established funding for scientific research in automobile safety. By 1985, injury research was recognized as a distinct field and the Centers for Disease Control and Prevention’s National Center for Injury Prevention and Control was established. Injury research and funding has accelerated since this time both locally and globally. It is largely due to this research that disability and mortality caused by injury has declined over the past century.

Why residents choose to follow this career path Residents choose to follow this career path if they are interested in developing and disseminating evidence-based strategies for injury prevention with resultant decreased morbidity and mortality.

How do I know if this path is right for me? This fellowship may be for you if you are interested in any of the following:

• Using research to prevent injuries from motor vehicle crashes (MVCs), sports injuries, household injuries, assault, or abuse.
• Becoming an expert, public educator, and physician educator in injury prevention.
• Coordinating outreach programs or becoming part of the team at an injury prevention center.

Career options after fellowship Career options to consider after
fellowship include becoming an injury prevention research faculty member/investigator or advocate for intentional or unintentional injury.

**Splitting time between departments** Traditionally, physicians hold the rank of staff physician or faculty member in the emergency department, and their injury prevention work falls under administrative and/or research effort.

**Academic vs. community positions** It is common for physicians after this fellowship to work in academic positions to pursue available funding and research opportunities. In addition, a variety of injury control positions are available in the community, government, and private sectors.

## IN-DEPTH FELLOWSHIP INFORMATION

**Number of programs** There are 3 fellowships for physicians:
- Alpert Medical School of Brown University (Rhode Island Hospital/Hasbro Children’s Hospital)
- Emory University
- Harborview Injury Prevention & Research Center (University of Washington)

Other opportunities include internships and grants that are not necessarily geared toward physicians:
- Certificate in Injury and Violence Prevention
- Indian Health Services Injury Prevention Fellowship
- Injury and Violence Prevention Internship
- Occupational Injury Prevention Research Training (PhD), University of Minnesota
- Occupational Injury Prevention Research Training (PhD), University of Utah

**Differences between programs** The fellowship at Emory can be completed within 1 year (but most fellows take 2 years to complete their research), whereas the fellowships at Brown and Harborview require 2 years. These programs are all research-based and are associated with injury prevention centers. Harborview specifically focuses on injury prevention in children and adolescents.

**Length of time required to complete fellowship** This is usually a 2-year fellowship.

**Skills acquired during fellowship** The Brown Alpert Injury Control Fellowship at Brown includes a Master’s of Public Health and is also a well-established research program with a long track record of funding.

The fellowship at Emory is designed to help physicians develop their research interest within injury control and prevention.

The fellowship at Harborview is funded through a T-32 grant and offers a Master’s of Public Health or Master of Science as part of the training program.

**Typical rotations/curriculum** Fellows traditionally continue to work a small percentage of time in the emergency department, while the remainder is protected time for research educational work, some of which may be as part of a public health curriculum. Fellows are involved in mentored research and also in public health course work.

**Board certification afterwards?** There is no board certification available; this is not an ACGME accredited fellowship.

**Average salary during fellowship** Because this is not an accredited fellowship, your salary is similar to that of a part-time EM attending.

## PREPARING TO APPLY

**How competitive is the fellowship application process?** While there is a small applicant pool for this fellowship, there are only 3 fellowship programs. Because of the small number of programs, this is a more competitive fellowship.

**Requirements to apply** You must be at minimum in your last year of emergency medicine residency to apply for this fellowship.

**Research requirements** Research during residency is very strongly encouraged to be completed during residency. Performing research with ties to injury control would be particularly favorable on your application. It would be very difficult to obtain a spot in this fellowship without having some sort of research project on your CV.

**Suggested elective rotations to take during residency** Consider using your elective time as research months. If your institution has an injury prevention center, it may be worth seeking out a rotation or administration month working with this center.

**Suggestions on how to excel during your elective rotations** To excel on your elective rotations, it is important that you display your passion and enthusiasm. Arrive early and stay late, read daily, and take advantage of opportunities to expand your knowledge base. If you are on a research elective, strive to get as much done as possible during the month with
the goal of (at minimum) having an abstract to submit by the beginning of your senior year and submitting your research for publication by the end of your residency.

**Should I complete an away rotation?** It may be worth completing an away rotation at Emory, University of Washington, or at Brown as a way both for you to check out their program and for the program to “audition” you.

**What can I do to stand out?** Ensure that your application displays a strong interest in research and target both your research and other activities toward injury control. Having activities on your CV that display your leadership capabilities is also helpful.

**Should I join a hospital committee?** If the opportunity to participate in a hospital committee arises that interests you and allows you to have meaningful contribution, then this is strongly recommended.

**Publications other than research** Case reports, blog posts, and magazine articles are highly encouraged as well. This is a great way to educate both yourself and others and to start getting your name out in this academic space. Especially consider publishing about topics within the injury control field.

**How many recommendations should I get? Who should write these recommendations?** Applicants traditionally submit 3-4 letters of recommendations. One of these letters must be from either your residency program director or department chair. You may also consider asking your residency research mentor to write a letter. Make sure that you choose faculty who know you well and are willing to write you a strong letter.

**What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship?** Absolutely. The key is to keep working on research and other projects, especially those related to the injury prevention field. Ensure that the list of activities on your CV does not stop after you graduate from residency. Also, be ready to explain your decision to practice as an attending prior to applying for fellowship.

**What if I am a DO applicant?** There are no known barriers to DO applicants.

**What if I am an international applicant?** Contact each program to inquire whether they accept international applicants. Make sure you have completed your USMLE steps, have your ECFMG (education commission for foreign medical school graduates), and have acquired a visa to work clinically in the U.S.

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**APPLICATION PROCESS**

**How many applications should I submit?** Applicants should apply to all programs s/he would consider attending.

**How do I pick the right program for me?** Pick a program that matches your educational and career goals. You should feel comfortable at the program and you should be surrounded by mentors and a leadership team dedicated to helping you succeed. Finally, ensure that a program is in a geographic location where you and your significant other will be comfortable and happy.

**Common mistakes during the application process**
- CV does not demonstrate an interest in injury control.
- No involvement in research.
- Impersonal or unfocused personal statement.
- Having letter writers who are not completely supportive of the applicant.
- Missing application deadlines as set by the program.
- Submitting an incomplete application.

**Application deadlines** Please contact each program regarding their application deadlines. Traditionally, applicants begin to apply in July the year before they plan on starting fellowship.

**Tips for writing your personal statement** The best personal statements read more as a story that explains your interest in the field of injury prevention and discusses your career goals. Do not simply repeat what can be found in your CV. This is your chance to show your personality and also your dedication to the field. Consider describing a patient and/or perhaps a research mentor who sparked your interest in the field. Ask multiple people whom you trust to review and critically edit your personal statement. Make sure there are no grammatical mistakes.

**Is this a match process?** No.

**What happens if I do not obtain a fellowship position?** If you do not obtain a fellowship position, take a step back and critically review your application. Consider asking your residency program director to critically review your application with you to identify ways to improve it. You may also consider gently asking the programs that did not offer you a position if they have any suggestions for improvement. Spend the next year addressing these areas of weakness and apply again. You can also consider getting a master’s degree (such as an MPH) after fellowship or perhaps investigating a traditional research fellowship instead.
is also possible to build your niche in the field without completing a fellowship. Seek mentors and look for a career that allows you to spend time working in an injury prevention center.

**INTERVIEW PROCESS**

How do I stand out from the crowd? The best way to stand out from the crowd during your interview is simply by being yourself. Make sure you are able to articulate your interests and passions but avoid being overbearing. Also, be prepared to ask questions about the fellowship that are insightful and cannot be easily found on their website.

What types of questions are typically asked?
- Why are you interested in an injury control fellowship?
- Why are you interested in attending our fellowship program?
- Please tell me more about [fill in the blank] on your CV.
- What are your 5- and 10-year career goals?

How many interviews should I go on? It is recommended that you attend any interview offered by a program that you would seriously consider attending if offered a fellowship position.

**PREPARING FOR FELLOWSHIP**

Textbooks to consider reading

Important skills to practice while in residency to prepare for fellowship Practice your research, leadership, and educator skills during residency. But above all else, make sure you leave residency as a strong, confident, and capable emergency medicine physician.

Tips on how to succeed as a fellow Take advantage of all opportunities offered to you during fellowship. Use your protected educational time to complete coursework such as a MPH or other Master’s degree.

Your research mentor is a wealth of information for you to learn from and to help you complete a research project during fellowship. Work hard during these two years and develop your skills as a leader and as an educator. Make sure that you stay balanced and spend time with your family, which will help protect you against burnout.

**CONCLUSION**

Additional Resources

**Journals:**
- Injury Prevention
- Journals accepting manuscripts for injury and violence prevention research
- CDC Injury Fact Book

**Blogs:**
- Children’s Hospital of Philadelphia Center for Injury Research and Prevention Research in Action Blog

**Podcasts:**
- Injury and Violence Prevention Podcasts by the CDC
- [https://soundcloud.com/bmjpodcasts/sets/ip-podcast](https://soundcloud.com/bmjpodcasts/sets/ip-podcast)

**National organizations**
- Society for Advancement of Violence and Injury Research (SAVIR)

**Conferences**
- SAVIR annual conference:
- University of Michigan Injury Control Center in September, 2017
- Comprehensive Children’s Injury Center in Spring 2018
- Penn Injury Science Center in Spring 2019
- World Conference on Injury Prevention and Safety
- IOC World Conference on Prevention of Injury and Illness in Sport

How to find a mentor SAVIR offers a mentor program to match you with an appropriate mentor.

To submit updates or to assist with future revisions, please email fellowships@emra.org.
INTERNATIONAL EMERGENCY MEDICINE FELLOWSHIP

INTRODUCTION

Description of the specialty

International emergency medicine (IEM) is a subspecialty of emergency medicine (EM) that focuses on the development of EM capacity across national borders. Some IEM practitioners prefer the term global health, which refers to the systematic quest for health equity around the world, and in an effort to be more inclusive, IEM has gradually become known as global emergency medicine (GEM). In most of the world, emergency medicine is a new specialty or has not yet been established. There is a great need for EM physicians to build and equip emergency departments, establish training and research programs, mentor colleagues and provide patient care in many countries. There are currently more than 40 GEM fellowship programs, with more being added every year. GEM fellowships are widely variable in goals, work balance, training, and target population. Fellowship tracks are as varied as the programs that offer them, thus a fellowship in GEM can generally be tailored to your specialty interests and needs.

History of the specialty/fellowship pathway

Emergency medicine is a relatively young specialty that has become well-established in only a small number of countries. The United States was the first to recognize the specialty. The first EM practice was established in 1961 by Dr. James Mills Jr. and three other colleagues in Alexandria, Virginia, and it wasn’t until 1979 that the American Board of Emergency Medicine (ABEM) was established.

Between 1980 and 1986, Canada, Australia, Hong Kong, Singapore, and the U.K. followed suit and formalized specialties in EM along the lines of the American model. Simultaneously, continental Europe developed a competing model, termed the Franco-German model, in which physicians in the field triaged patients to specialty inpatient units and...
there was little need for an ED with generalist physicians and undifferentiated patients. With time, the American model has been adopted in most countries that have incorporated EM into their health system design.

With the development of EM in these countries, a number of EM trained physicians in the early 1990s turned their attention to developing the specialty in other regions. Arnold et al. described 3 stages of EM development: underdeveloped, developing, and mature. In underdeveloped systems, EM is not recognized as its own field, and specialty systems for patient care do not exist. In developing systems, emergency medicine is recognized as a specialty and residency training is usually underway, and a national EM society often exists. In mature systems, academic EM, subspecialty fellowships, national databases, and peer reviewed journals are well established.

With increasing interest and demand for international assistance and a desire to develop mature EM systems globally, GEM was born. GEM was first composed of medical relief organizations. One of the first organizations, Doctors Without Borders, delivers emergency medical care when war, civil strife, epidemics, or natural disasters occur. It was founded in 1971 by 13 French doctors and was known as Médecins Sans Frontières (MSF). Their first mission was in Managua, the capital of Nicaragua, where an earthquake in 1972 had destroyed most of the city and killed between 10,000 and 30,000 people. MSF now has offices in 28 countries, employs more than 30,000 people, and has treated more than 100 million patients—with 8.25 million outpatient consultations being carried out in 2014 alone.

World Association for Disaster and Emergency Medicine (WADEM) was one of the first EM development organizations, founded in 1976 to “promote the worldwide development and improvement of emergency and disaster medicine.” WADEM focuses on the development of disaster management systems and sponsors the biennial World Congress for Disaster and Emergency Medicine. This organization also publishes the journal Prehospital and Disaster Medicine.

In 1989, ACEP was among 4 international organizations to found the International Federation for EM, which is now the most broad-based international organization dealing with GEM development issues. In 1998 the ACEP Section on GEM was founded, which quickly became one of the largest sections in ACEP, and currently has more than 1,000 members.

The Society for Academic Emergency Medicine (SAEM) had an international committee from 1991-1996, which then changed to a GEM Interest Group. SAEM’s international arm is now known as the Global EM Academy (GEMA), which provides an academic framework for GEM activities and provides guidance for individuals and organizations seeking to guide the development of EM in other countries.

The first GEM fellowship program was established in 1994 at Loma Linda University, and now there are more than 40 GEM fellowships in the United States alone. In more recent years, academic institutions have become more involved in GEM by sponsoring medical missions, physician-exchange programs, and long-term development projects. Currently GEMA is working to establish curriculum standards for these fellowships. Funding continues to be a challenge in resource-limited settings, and fellowships rely on a combination of US-based clinical work, teaching, research grants, government programs and non-governmental organization (NGO) sponsorship to cover GEM fellow salaries.

In the past 50 years, the medical care in underdeveloped countries has continued to grow, making GEM a rapidly growing field in medicine. The future for GEM is a bright one as an increasing number of countries seek to improve their health care systems and young physicians continue to push the boundaries of medicine, especially in the developing world.

Why residents choose to follow this career path
Embarking on a 1- to 2-year post-residency fellowship is a big decision. Though GEM fellowships have varied goals, there are a few things that a fellowship can offer you: mentorship, skills development, networking opportunities, research opportunities, and general global health experience. International EM is a small community. The personal relationships and networking opportunities you develop while in fellowship can set the stage for your GEM career for the rest of your life. First-hand education from those who have experience is priceless. During fellowship you will be focused on developing international medicine skills, which usually translates into scheduling flexibility with reduced shift load to accommodate possible graduate work and international travel.

How do I know if this path is right for me? Some residents may choose a fellowship if they have a special interest in academics and may want to continue their global EM career in an academic setting. Many physicians in GEM pursue academic careers because of more available time for travel, international projects, and teaching. Participating in a GEM fellowship may be a great way to get your feet wet.

Career options after fellowship International EM is broad, so the career options afterwards are nearly
unlimited. Before choosing to do a fellowship, it is important to undertake a personal inventory of your goals, career aspirations, and lifestyle. Some career paradigms include:

- **Overseas work:** Some graduates pursue full-time international positions. NGOs and other international organizations (i.e., Doctors without Borders, MSF) employs physicians and offers volunteer opportunities. Another strategy is to apply to a specific hospital or clinic and work as an international physician in a standard local clinical setting.

- **Research:** Some graduates devote themselves solely to international research. Though most people balance this with a clinical career, governmental or non-governmental organizations (i.e., World Health Organization (WHO), the United Nations (UN)) offer positions for clinical researchers interested in global health.

**Splitting time between departments** International emergency medicine work typically falls as part of your EM appointment within your home institution. However, the negotiation will be regarding how much international time you spend practicing medicine and this time will be compensated.

**Academic vs. community positions** Academics: Working in an academic medical center with a specialty interest in global health is one strategy for those who are passionate about teaching or research. One advantage of pursuing an academic career is that some institutions may reduce clinical service and provide scheduling flexibility to allow you to divide time between international and domestic work.

Community work: Another strategy is to work in a community setting and negotiate time off to pursue international work. As many community jobs base pay on clinical productivity, it may be easier to reduce clinical service requirements, but your paycheck may reflect the time you spend doing other non-clinical activities.

**IN-DEPTH FELLOWSHIP INFORMATION**

**Number of programs** The International Emergency Medicine Fellowships Consortium (IEMFC) is the primary administrative body for GEM Fellowships and lists all fellowships at iemfellowships.com/programs (32 programs in 2016). If you are applying to a fellowship that is not a member of IEMFC, you may want to ask why a fellowship is not included.

**Differences between programs** Most GEM fellowships encompass 3 components: clinical work, educational experiences, and operational functions.

- **Clinical work:** Most fellows work clinically in the ED with a reduced shift load. This varies by program. It is important to strike a balance between working in the emergency department to keep your clinical skills fresh while also allowing yourself enough time outside of the ED to accomplish your academic and global health goals.

- **Education:** Some time will be allocated for your personal global health educational goals (i.e., Master’s in Public Health, advanced courses, didactics, and conferences)

- **Operational:** Much of GEM fellowships is spent participating in field work. This component may vary based on goals of the fellowship, but it could include global health research, field work, clinical time abroad, etc.

Most fellowships offer an advanced degree such as a Master’s in Public Health (MPH), Diploma in Tropical Medicine and Hygiene (DTM&H), Master’s in Science in Global Health (MSc-GH), or Master’s in Business Administration (MBA). Every fellowship program is different not only in the area they focus, but also on the way they approach improving global health. Broadly, some of the different areas of interest include:

- Emergency medicine specialty development (Residency building, EM skills training)
- Public health/capacity building (EMS/Emergency services)
- Disaster Relief/Humanitarian Aid
- Academic research

**Length of time required to complete fellowship** Most GEM fellowships last 2 years. Some programs will allow you to only finish in 1 year if you already have an advanced degree, and there are a few programs that are 1 year but offer no advanced degree.

**Skills acquired during fellowship** The types of skills required for GEM are extensive and can be different from what you learned during residency. Only you can determine what skills you want to have and what skills you think will benefit your career. Here are a few to think about:

- **Public Health Skills/Epidemiology:** An MPH degree teaches you about health on a large scale. This skill can be valuable in international medicine where it is often public health interventions rather than brilliant diagnostic skills that make the greatest impact.

- **Research Skills:** How do you set up a formal focused needs assessment? How do you ensure a quality homogenous chart review? How do you talk to the IRB in India? These are skills that will benefit you.
• **Education Skills**: How do you teach an internal medicine physician in Kenya about ATLS? How do you educate residents in Cambodia?

• **Program development skills/Health systems**: What does it take to set up an EMS system in Panama? Can you design a program for combating maternal mortality in Slovakia? What do you do to help out with the earthquake in Nepal?

• **Clinical Skills**: How do you treat typhoid? What do you do about sepsis when you have only limited antibiotics and no IV fluids?

**Typical rotations/curriculum** One of the most important aspects of a fellowship is the type of curriculum it offers. Programs have either a structured or flexible program. Structured programs have a set curriculum that all fellows follow, because it is believed that there are core concepts that all fellows need to learn regardless of specific interests. More flexible programs allow the fellow to determine what they want to learn. Some applicants prefer the structure because it can help them develop their skills with more guidance from experts in their area of interest, but some prefer more flexibility to allow them to determine how much time they travel, what they learn, or how they’ll develop their skills further. Most programs have a mixture of both styles of learning, so be sure to match your program with your career goals and your style of learning.

During fellowship you typically spend 2-7 months per year working on projects abroad. The rest of the time is spent working clinical shifts in the ED, preparing didactics, working on research, and fulfilling administrative responsibilities.

**Board certification afterwards?** ACGME does not accredit GEM fellowships. There are multiple programs that offer the opportunity to get certifications from other schools or their own (such as a certification in tropical medicine from the London School of Tropical Medicine and Hygiene). At this time we are not aware of any academic departments that offer a specific certification beyond fellowship completion and experiences in fellowship are widely accepted.

**Average salary during fellowship** Many fellowships offer salaries between $60,000 and $100,000, although the most accurate information is available by contacting potential fellowship programs. Additional things to consider in your fellowship search could include fees that are paid for by the program (ie, do they pay for certifications or for a public health degree), travel stipends, and benefits. For example, you may have a smaller salary, but a program that covers international and educational expenses may be more cost-effective.

One should consider the cost of living since this will vary widely as well.

**PREPARING TO APPLY**

**How competitive is the fellowship application process?** Spots go unfilled most years. The IEMFC posts a list of unfilled positions after the application process each year (mid-November). As with many other fellowships, there are specific programs that are much more competitive. In general, competition for GEM spots at well-known institutions has grown in recent years and will likely continue to grow.

**Requirements to apply** Global emergency medicine fellowships are available to graduates of all accredited EM residency programs.

**Research requirements** There are no specific research requirements. Grant writing and research skills will likely be an advantage, but there are some programs that are more research-oriented and will favor candidates with research experience.

**Suggested elective rotations to take during residency** Consider completing an international away elective.

**Suggestions on how to excel during these elective rotations** As with anything else in residency, and in life for that matter, you will excel at things you are passionate about. If you choose an experience that you are excited about and have clear goals for your time, you will likely excel and learn a great deal.

**Should I complete an international rotation?** Though an international rotation is not required, it would be helpful to increase your breadth of experience. Participating in an international rotation during residency is not always possible due to time and financial constraints, but most applicants have had some experience abroad in the past. If you get the chance for an elective, try to use it to engage in something that you are passionate about. You will not have much time in residency, so use your time to do something that will reinvigorate you and serve as a reminder for why you went into emergency medicine. While many people will try to get clinical experience abroad, you may want to serve in an educational activity and teach to abroad or take a course at the CDC to learn more about epidemiology. Whatever you choose, as long as you get something out of the experience it will add depth to your application and your ability to talk about why you want to be a GEM fellow.

**What can I do to stand out from the crowd?**
Joining a hospital committee, teaching courses for medical students, going to international conferences, volunteering abroad, and any other experience can be helpful to your application if you are passionate about it and can explain how it contributed to your skillset.

**Should I join a hospital committee?** Hospital committees may help you build a targeted skillset but are not required for GEM fellowship application.

**Publications other than research** As mentioned earlier, it is more important to be involved with experiences that you are passionate about and that have in some way contributed to your education or career. Everyone understands that you have little free time in residency. As a general rule, program directors understand that you are busy and have a lot of clinical and educational time constraints. You have too little free time to be participating in activities that you do not enjoy, so choose your experiences wisely. Writing for EM related journals or magazines is a way to get more publications and experience writing without detracting from residency. These are not required but can be a helpful experience and accomplishment to have on your resume.

The most important approach to residency activities for the GEM fellowship applicant is to limit the breadth of your work to 1 or 2 high-quality projects. Choose a project and do it very well and you will stand out from the crowd. Even if your interests change, your reputation for high-quality work will be valuable.

**How many recommendations should I get? Who should write these recommendations?** Most fellowships require 3 letters of recommendation, with one being from your residency director or chair. We recommend that the other 2 letters be from someone who can speak to your versatility, attitude, and skillset. As with all letters of recommendations, it is important that they are heartfelt and are from someone who really knows you. Most programs are looking for fellows who can operate in very diverse and challenging situations, and for fellows who can maintain a positive attitude and work with a team. Additionally, the most successful applicants are people who are competent and passionate about their work so make sure you choose mentors who can speak to this. Ideally, choose someone who has worked with you on specific projects or shared experiences with you that showcase how remarkable you are and why you would be a great GEM fellow.

**What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship?** Absolutely. Taking some time to work can help you solidify your clinical skills, allow you to really clarify your career goals, and give you time to gain more experience in educational and clinical roles. It may be more professionally and financially difficult to return to an academic environment if you have been working in the community, but prior fellows have made this transition previously.

Several residents interested in GEM are able to customize their GEM fellowship-like experience by taking a part-time attending job and connecting directly with a mentor and project in the field, bypassing the fellowship route altogether. Salaries are typically higher and the commitment is much more flexible. However, this strategy does make it harder to enter some academic roles. Additionally, a lot of flexibility requires an equal amount of self-discipline and ability to network and find mentoring independently, which can be difficult.

**What if I’m a DO applicant?** There are no preferences for DO or MD candidates.

**What if I am an international applicant?** Applicants to most fellowships must be ABEM board-certified or eligible by the July 1 fellowship start date, and be eligible to live and work in the US.

**APPLICATION PROCESS**

**How many applications should I submit?** Apply to all programs that you may want to attend. Choosing a fellowship is an intimate process since you are not only choosing a curriculum, but you are also choosing your colleagues and mentors. Most applicants apply to 5-10 programs.

**How does an applicant pick the right program for them?** The most important part in choosing a fellowship is first figuring out your own goals and priorities. You have 1-2 years in fellowship and want to make the most of your experience, in programs that are incredibly heterogeneous. Consider your particular interests, type of curriculum, degree of autonomy you are seeking, mentorship and personality of your program and colleagues, any advanced degrees or certificates you are looking for, proportion of time spent abroad, length of program, program affiliations, and benefits/salary. We have already touched on many of these previously but here is a brief rundown on each topic:

- **Location of Interest:** Most fellowships are based at a single sponsoring North American institution and have one or two international partner institutions. Your first consideration should be the site where you want to work, as your fellowship may have limited capacity to add additional sites.
• **Particular Areas of Interest**: Most programs focus on one of several areas of interest including EM development, public health/capacity building, research, or humanitarian disaster relief.

• **Degree of Autonomy**: Fellowships offer a variety of structured and flexible curricula. It is important to conduct an assessment of your personal learning style and goals during fellowship to find a program that will best serve your needs.

• **Mentorship**: Your program mentors are one of the strongest reasons to do a fellowship. Find a mentor with the same goals and objectives as you who can offer the degree of mentorship that you desire. This is particularly relevant in international EM, because mentors may spend a significant portion of each year out of the country. Choosing a mentor with similar interests may be helpful. It is most important though to find someone who will be supportive of you and has a vested interest in your education.

• **Advanced degrees**: Pay close attention to the degree(s) offered by your fellowship program. In general, academic degrees are no substitute for field experience if you primarily seek clinical expertise. Commonly an MPH program is included, and many fellowship directors recommend fellows complete a diploma or certificate. Online degrees offer more flexibility and may allow you the time to become a stronger GEM practitioner. As this is not a board certified specialty, a degree gives you something tangible to show for your time in fellowship.

• **Length of program**: Most programs are 1-2 years with an extended year to allow for you to complete an advanced degree.

• **Program Affiliations**: These can be incredibly helpful to provide networking and career opportunities after fellowship. Fellowships generally fall into 3 categories: those that serve in a global research or advisory role at several sites, those that affiliate with one or two partner academic institutions, and those that affiliate with an NGO such as MSF, IMC or Partners in Health. The first category is most useful for fellows seeking a specific academic area of expertise. Fellowships that partner with other institutions are useful ways to establish connections with a particular part of the world. NGO affiliations provide a stable long-term link to populations in greatest need. Consider your goals and be sure to ask about program relationships when you interview.

• **Benefits/Salary**: Assess the salary as well as the cost of living, amount of clinical time you are expected to work, and other expenses covered by the program to get a real sense of your true benefits package.

Common mistakes during the application process

Applying to only “the best” fellowships: Just because a fellowship is associated with a prestigious institution does not mean that it is the best for you. Most fellowships only focus on one or two regions of the world or topics within GEM.

• **Over-emphasizing research or practice**: When applying, don’t try to fit yourself into the mold that you think the fellowship wants out of you or you may be disappointed during your fellowship years. Be yourself and you will find the fellowship with the right blend of work experience.

• **Not showing enough interest**: When you find the right program, reach out to the faculty in that division. Start planning your fellowship projects as an applicant and you will stand out as the best match.

• **Applying too late**: Programs start accepting applications at various times. For most programs, this is from early April to early June. Submit your application early.

• **Not applying to degree programs in time**: Ask if you need to start your application to MPH or DTM&H programs simultaneously, or immediately after you matriculate at a fellowship program.

• **Not having minimum credentialing requirements**: This is more often an issue after you have accepted a position, so don’t sweat it too much up front. Make sure your ACLS, BLS, and PALS are up to date. Ask if the institution requires a Difficult Airway certification. Ask about the institution’s ultrasound credentialing requirements - most institutions require documentation of at least 25 scans of each type (FAST, echo, bladder, etc.). Make sure you have copies of your immunization documents and citizenship documents, just like during residency credentialing.

Application deadlines

Applications are submitted via the International Emergency Medicine Fellowships website. Applicants are accepted April through October. Programs offer acceptances on the second Monday of November, and applicants are given 24 hours to make a decision regarding the fellowship.

Tips for writing your personal statement

Fellowship personal statements may be more prosaic than residency personal statements. Show why GEM is important to you. Reflect on your experiences thus far. Most importantly, show a vision for your career plans 5-10 years down the road.

Is this a match process? No.

What happens if I don’t obtain a fellowship position? If you are not offered a fellowship, you can
call other programs you were interested in to see if they have an unfilled spot, or you can consider spending your time working with an international organization. There is not a back-up application process for GEM, but with many programs unfilled each year, there should be positions available for you if you are well prepared.

**INTERVIEW PROCESS**

**How do I stand out from the crowd?** Show that you have an understanding of the breadth of GEM and your place within it. Show that you have thought out your long-term career plans personally, academically, and financially (are you really going to go volunteer with that NGO forever?). Show that you are passionate and you will stand out.

**What types of questions are typically asked?** Fellowship interviews are focused and typically not intimidating. You will typically interview with the fellowship director, the emergency medicine department chair, a teaching faculty member, and additional global health faculty. Example questions include:

- What skills have you focused on developed during residency inside and outside the ED?
- What motivates you to be involved in global health? Do you find special personal, philosophical, spiritual, cultural, or academic experience in the field?
- Do you mind living in austere conditions? Are you comfortable using an outhouse, taking cold showers, eating rice and beans every day? How do you take care of your personal safety?
- What are your long-term career plans?
- What research have you performed? What research interests you? Why did you choose it? What challenges did you encounter?
- How well do you understand the state of GEM globally? International organizations? EM capacity in various countries?
- What is your clinical style as an academic EM attending?
- What is your approach to teaching residents?
- Why did you choose your particular residency program?
- What experience do you have working or visiting a region we focus on?
- If you feel intimidated at a fellowship interview, then that institution is probably not the right place for you.

**How many interviews should I go on?** In general, most applicants interview at fewer than 10 programs. GEM fellowships are vastly different from each other and fellowship applications are less competitive than residency applications. Applying to too many programs suggests you have not established your specific fellowship goals.

**PREPARING FOR FELLOWSHIP**

**Textbooks to consider reading** Focus on clinical excellence during the residency years. Work hard to do well on the national board exams. Your greatest asset in GEM is your clinical credentials. Do not worry about reading a GEM textbook during residency. If you need a guide while on rotation, consider the EMRA GEM guide.

**Important skills to practice while in residency to prepare for fellowship** Practice placing IVs without ultrasound guidance. Practice as much bedside ultrasound-based diagnosis as possible. Make sure to work on language skills if relevant to your region of interest.

**Tips on how to succeed as a fellow** Establish a good balance of clinical care and project involvement.

**CONCLUSION**

**Additional Resources**

**Literature:**
- The Global EM Literature Review summarizes the best GEM literature each year.

**Podcasts:**
- The MSF Podcast summarizes the greatest under-reported humanitarian challenges weekly.
- EM:RAP offers editions tailored to several parts of the world in several languages.

**National organizations**
- EMRA International Division
- ACEP International Section
- SAEM Global Emergency Medicine Academy
- AMA
- Global Academy of Emergency Medicine

**Conferences**
- ACEP Scientific Assembly
- SAEM Annual Meeting
- ICEM
- There are many other International Medicine conferences abroad.

**How to find a mentor** Check out [www.globalem.net](http://www.globalem.net), a website run by GEMA that allows you to connect with a mentor in a social network-style format.

**References**


To submit updates or to assist with future revisions, please email fellowships@emra.org.
INTRODUCTION

Description of the specialty Neurovascular fellowships have long been a pathway that board certified physicians in neurology pursue in hopes of continuing their careers in acute stroke care. More recently, emergency medicine physicians have undertaken this fellowship in mostly non-ACGME accredited programs in hopes of becoming experts in this niche area.

History of the specialty/fellowship pathway While this is a new area of fellowship and there are only a few programs accepting EM trained physicians, it is an expanding field since EM physicians are the first to evaluate these patients and activate neurovascular emergency protocols. In fact, as EM trained physicians have historically not pursued this type of fellowship, they are often coveted for these programs. Several new career paths and opportunities for the EM physician have arisen secondary to this fellowship in both the academic and community setting. While most programs do not offer ACGME accreditation at this point, in the future we may see board certifiable positions being offered.

Why residents choose to follow this career path Residents choose to follow this career path for several reasons including wanting to increase their familiarity and expertise with acute neurovascular emergencies. In addition, those interested in directing stroke care and developing set protocols for neurovascular emergencies at either an academic or community institution find this fellowship interesting. Those looking to advance the pre-hospital evaluation of neurovascular emergencies are also drawn to this path. Finally, residents looking to function as both clinicians and researchers undertake this fellowship with specific predilection for clinical or basic science research in acute stroke care.
How do I know if this path is right for me? If you have a specific interest in neurovascular care but are not sure if you want to pursue any fellowship, it may be best to plan rotations with your respective neurology colleagues on a stroke service. Alternatively, pursuing basic or clinical research may help you gain a greater perspective. Generally, those residents strongly interested in academic stroke medicine or becoming directors of stroke/neurovascular care in primary or comprehensive stroke centers are good candidates for this career path.

Career options after fellowship Career options vary depending on the particular program, as there is some variety between what each fellowship offers. Regardless, the idea is that after completion of this fellowship, you will be an expert in neurovascular emergencies forming a unique niche within whichever practice environment you choose to pursue. If any doubt exists on where to take your career after completion of the fellowship, the best idea is to find someone who has taken a similar path and take his or her guidance. There are not many EM trained clinicians who have gone down this route, so seeking out faculty mentors is crucial.

After completion of this fellowship, while you may not be board certified like some other programs, you will possess a unique skill set- whether that be immense research background on acute neurovascular emergencies or being the leading expert at your hospital on acute stroke care. At primary or comprehensive stroke centers, you may be the most qualified to head committees or serve as directors of acute stroke care. Some examples are:

Primarily Research/Clinician
- Clinical research focusing on acute stroke care, biomarkers of ischemia/TIA, novel antithrombotic agents
- Basic science research focusing on intra-cerebral hemorrhage in rodents or other neurovascular emergencies

Primarily Clinician/Administrative
- Teaching positions/clinical educators in medical school or residency programs regarding neurovascular emergencies
- Directors of stroke at academic or community settings, either at primary or comprehensive stroke centers
- Serve as members of stroke/neurovascular emergency committees, implementing new protocols in pre-hospital and early hospital care/administrative work

Splitting time between departments Splitting time between the ED and stroke/neurology/neuro-ICU service is very possible if not encouraged. In fact, several programs fund the fellowship through shift work in the ED. As an EM-trained fellow, this is a great way to not only fund your fellowship, but also to stay involved in the acute initial management of neurovascular emergencies from the moment the patient hits the door. In addition, for those applicants interested in staying in the clinical spectrum after fellowship, it allows you to keep your emergency medicine knowledge fresh.

Academic vs. community positions Most positions after fellowship are at academic institutions, though some graduates go on to become stroke/neurovascular directors at local community hospitals that are either comprehensive or primary stroke centers. The path you choose is entirely dependent on what you desire after graduation. It is important to keep this in mind when choosing the right program for you as well as throughout training. You want to maximize exposure and tailor your CV to what best suits your interests. Some programs will have more of a predilection for academics or research and this is important to keep in mind when determining which is right for you.

IN-DEPTH FELLOWSHIP INFORMATION

Number of programs There are fewer than 10 well-cited fellowship programs, but as these are non-ACGME accredited, some institutions may be open to having a research fellow in neurovascular emergencies if funding can be attained.
- Massachusetts General Hospital
- University of Cincinnati
- Henry Ford Hospital
- UCLA
- University of Michigan

Differences between programs While there are slight differences between any fellowship program, most offer similar curriculums, combining both research and clinical duties. Some programs are more research based than others, devoting more time to basic or clinical research. Rotations are similar amongst the programs. As mentioned before, these programs are not used to having EM trained candidates, so do not be surprised if you are the first- you offer a unique perspective on these disease processes and their immediate treatment and management protocols.

Length of time required to complete fellowship Most programs vary between 1-2 years in length. This distinction is often made based on either the interests of the candidate or the specific program itself. Candidates strongly interested in research generally take an additional year to complete this. Fellows looking to be
Skills acquired during fellowship Depending on the program, you will gain experience with either clinical or basic neurovascular research, largely depending on your interest. Additionally, you will spend time on the stroke service, Neuro-ICU and neuroradiology honing your clinical skills as a diagnostician and your ability to interpret various forms of imaging in neurovascular emergencies. Some programs additionally offer the ability to serve on stroke committees and implement or augment existing policies.

Typical rotations/curriculum Dependent on fellowship. Fellowships usually offer the following: stroke service (inpatient and outpatient), neuroradiology, PMNR, Neuro-ICU, Research.

Board certification afterwards? Most are not-ACGME accredited fellowships for EM residents and thus do not grant board certification afterwards. However, this does not mean they do not afford a wide variety of career opportunities after completion.

Average salary during fellowship Salary will be that of a PGY-4,5,6, comparable to other residents/fellows in your same area.

PREPARING TO APPLY

How competitive is the fellowship application process? Most programs take 1-2 fellows max/year and these spots are shared with neurology residents/vascular residents so spots are limited. However, historically there are few EM candidates interested in these positions and programs are typically looking for more EM trained candidates. The best way to be competitive is to have strong academics and supportive letters of recommendation. As most are non-ACGME accredited for EM residents, the rate-limiting step may in fact be funding in which case moonlighting or other shift work/grants could fund the curriculum and an additional fellow spot.

Requirements to apply The only strict requirement is that applicants complete an accredited residency in EM.

Research requirements There is no strict research requirement, though encouraged if you have an interest in specific ongoing trials. The exception is that University of Michigan does require participation in research.

Suggested elective rotations to take during residency If possible the following rotations may be beneficial to the interested applicant, but are not required: Stroke call, neurology elective month both inpatient or outpatient, and/or neuroradiology.

Should I complete an away rotation? There are no specific requirements for applicants to complete away rotations. However, if you are interested or want to get a better feel of a program and how neurovascular emergencies are run at that particular hospital, an away rotation may help.

What can I do to stand out from the crowd? There are few EM trained candidates applying for these fellowship positions, so you already stand out from the crowd! Other things to consider are of course completing research specifically in neurovascular emergencies or serving on stroke committees. In the end, you already are an exception to the rule, and the best thing you can do is get strong recommendation letters and build your CV to showcase a distinct interest in this area.

How many recommendations should I get? Who should write these recommendations? Get 2-3 recommendation letters from core EM or neuro faculty and/or faculty from your away rotations/elective months. Core faculty includes core EM faculty or those responsible for neurology away rotations. The most important thing is that these faculty know you well.

What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship? Yes, definitely! Most applicants are encouraged/required to continue clinical work in the ED at least several shifts/month at the institution. And they are encouraged to work at outside hospitals during fellowship as well. Any additional experience is generally a good thing.

What if I'm a DO applicant? DO applicants are accepted to some, but not all, neurovascular fellowships. In some institutions they are not eligible to do shift work in the ED and may be limited to the research aspect of the fellowship. Requirements are generally the same; these applicants need to complete an EM residency to qualify for fellowship. Research and away rotations may be more beneficial to this type of applicant.

What if I am an international applicant? Some international candidates may be accepted but may not be allowed to perform clinical shift work in the ED of that institution.

APPLICATION PROCESS

How many applications should I submit? In terms of number of programs applied to, interviews to go on
or typical questions asked, there is no great consensus. As stated before, neurovascular fellowships are largely non-accredited and historically EM candidates have not pursued these positions. There are only a few programs throughout the country, so applicants would probably do best by applying to all of them.

Generally speaking, applicants contact the appropriate program director expressing interest in the fellowship along with a CV and 2 letters of recommendation. If the applicant is deemed eligible, an interview would follow and then positions are offered. There is no strict application process for most of these programs as they operate outside of the match process.

**How do I pick the right program for me?** It seems that positions are largely filled based on how well the applicant and program fit together and the similarity in academic interests. The best way to pick the “right” program is to pick one that will serve as a foundation for the type of career you want (research, academics, clinical education or as stroke directors at community hospitals). It is important to take into account the collaboration between neurology, neurosurgery, and radiology, but in the end a program should be chosen based on what best suits your desires.

**Application deadlines** This fellowship operates outside of the match. Contact program directors with your CV and letters of recommendation by January before the start of the fellowship.

**Tips for writing your personal statement** Personal statements are not officially required: only a CV and letters of recommendation are required. An “interest letter” or email to the respective program director should go along with the above but is not necessarily a personal statement. As this fellowship is based on fit between you and the program it is less formal than fellowships that operate within ERAS or the match.

**Is this a match process?** No.

**What happens if I don’t obtain a fellowship position?** Unfunded positions may be available at specific institutions that can be funded through outside clinical work/moonlighting. Research opportunities may still be available in neurovascular/stroke at the desired program for 1 year, with re-application the following cycle.

**INTERVIEW PROCESS**

**How do I stand out from the crowd?** Be yourself! This is your time to let your personality shine and show that you would be a great fit in their program. Make sure you know your application well and also research the program prior to your interview. Try and practice a mock interview prior to the real interview so that you can make sure you present your best self. Finally, make sure you are able to clearly vocalize why you are interested in this fellowship and your tentative career goals post-fellowship.

**What types of questions are typically asked?** There is no real consensus on the types of questions typically asked on these interviews. Program directors will have genuine conversations with you regarding your interests in neurovascular emergencies and inquire as to why you have chosen this particular type of fellowship. What are you looking to gain from this program and what particular skills do you hope to leave with? They most likely will want to know what direction you want to take your career whether that be strictly research, clinical education, stroke director, etc.

**How many interviews should I go on?** It is recommended that you attend as many as are offered, as there are not that many eligible programs in the country.

**PREPARING FOR FELLOWSHIP**

**Textbooks to consider reading** There are no real tips on textbooks to read prior to fellowship. It is useful strategy to keep up on the latest in neurovascular care, however, via journal articles, etc.

**Important skills to practice while in residency to prepare for fellowship** The competitive applicant should try and broaden his or her knowledge of neurovascular emergencies, making sure to include both acute and chronic management of these disease processes. Unlike general emergency medicine residency, during fellowship you will likely be focused on the inpatient or clinic care of these patients and it is important to keep that in mind during residency if you desire this type of fellowship. Patient care will not end with diagnosis and acute stabilization. Most EM trained residents are fairly skilled in neuro-radiology, but any additional training, exposure or expertise would be a great skill to acquire, especially since some of your colleagues will be neurology trained with expertise in advanced imaging.

**Tips on how to succeed as a fellow** Fellowship is a unique time to expand your skill set under the guidance of mentors. Take advantage of any opportunity to further your education during fellowship, not just as an EM physician, but also an expert in acute neurovascular care. Make sure to also stay balanced and to spend time with your family to help prevent burnout.
CONCLUSION

Additional Resources Because EM trained applicants generally have not followed this path, there are few additional resources. National organizations affiliated with neurovascular study are geared toward neurology and vascular surgery residents and would probably not prove very useful. The best resource you have is other clinicians who have taken a similar path and word of mouth. This is a very small network where connections go a long way so all the better to start forming them now.

Journals:
- Journal of Stroke and Cerebrovascular Diseases
- Stroke

Podcasts:
- International Journal of Stroke: Podcast Series

National organizations
- No consensus opinion exists on recommended national organizations.

Conferences No consensus opinion exists on conferences to consider attending. Consider attending the lectures at ACEP that are on neurovascular and stroke topics as these are not only educational but can be potential networking opportunities as well.

How to find a mentor The best way to find a mentor is to try to find someone within your institution that has gone down the path you intend on pursuing. This may prove difficult in the sense that there are few EM-trained physicians who have completed neurovascular fellowships. However, if there are faculty that are clinical educators in neurovascular emergencies, serve on stroke committees or have strong connections with the stroke protocol teams, it may be useful to have their opinions or guidance. EM physicians around the country have pursued this path, otherwise the opportunity wouldn’t exist. So find them! Reach out to others even outside your institution that have followed this course and find some direction. Most emergency medicine physicians are passionate about their fields and more than willing to help future generations; this is no exception to that tenet.

To submit updates or to assist with future revisions, please email fellowships@emra.org.
INTRODUCTION

Description of the specialty The specialty focuses on training emergency physicians to be leaders in education, research, administration, and clinical care in the realm of observation medicine. Physicians trained in this specialty have a broad knowledge base regarding clinical operations, quality improvement, patient safety, observation patient selection, and patient flow such that they are capable of developing and running an observation unit. Physicians in this specialty often engage in quality improvement and/or research projects.

History of the specialty/fellowship pathway With the rapidly aging population, increased ED and hospital crowding, and increased ED boarding, the focus on patient flow has intensified. One of the solutions to both hospital and ED overcrowding has been the development of short stay/observation units. These units offer an alternative to inpatient admission by providing efficient and effective time-limited health care. Patients who are treated in these units are those whose expected care will be completed within 24 hours and who have limited severity of illness or intensity of service needs. These units started with protocols for cardiovascular emergency patients, but now serve a variety of patients with medical and trauma-related emergencies. While in some hospital systems the care of these patients falls to the internal medicine service, in many hospital systems care remains the responsibility of the emergency physician. As a result, fellowships have arisen to help train and prepare emergency physicians both clinically and administratively to run an observation unit.

Why residents choose to follow this career path This is a growing specialty designed for physicians who aspire to be leaders in developing, managing and working clinically in observation units. As a training environment, the observation unit is excellent entry-level training for
the ED administration, and many former observation unit directors have gone on to become ED medical directors.

**How do I know if this path is right for me?** Are you interested in addressing patient flow? Are you interested in developing protocols to help observation units run more efficiently? Would you like to develop an observation unit at your institution? If the answer to any of these questions is yes, this may be the fellowship for you.

**Career options after fellowship** Completing this fellowship provides you with the skills to be a leader in observation medicine. Not only will you specialize in the care of these patients, but you will also have the administrative skills to develop and run an observation unit. Many move into careers in ED operations and administration. Some also become involved in resident education and expanding their acute care knowledge base. Some graduates become involved in resident education, and other graduates find their niche in research and/or quality improvement projects.

**Splitting time between departments** Those who complete fellowships do not typically split time between departments, because observation units are often staffed and managed by emergency medicine. However, most observation medicine specialists will work more shifts in the observation unit compared to your colleagues. Also, you will likely need to factor in time for research and/or administrative work in addition to your clinical shifts. Finally, some hospitals have two observation units: one within the ED and one staffed by hospitalists. A strong ED observation unit director would be well-trained to oversee both, which would involve interface with the Department of Medicine hospitalists.

**Academic vs. community positions** The choice of practicing in an academic vs. community position is a personal decision. Both academic and community programs across the country have developed observation units and offer administrative/leadership positions. Those with strong interest in research tend to gravitate toward careers in academia. Those with education interests also gravitate toward academia or community-academics. There are health systems that employ observation medicine directors to oversee all observation services within multiple hospitals.

**IN-DEPTH FELLOWSHIP INFORMATION**

**Number of programs** There are 2 programs at this time:
- Emory University School of Medicine
- Johns Hopkins Medicine

**Differences between programs** Both available fellowship programs are very similar.

**Length of time required to complete fellowship** This is a 1-year fellowship unless you earn an advanced degree (such as MBA, MPH, or MHA) during fellowship, which would take 2 years.

**Skills acquired during fellowship** You will acquire administrative and leadership skills, research skills, and continue to expand upon your knowledge base and clinical skills within the observation medicine field.

**Typical rotations/curriculum**
- Johns Hopkins: 800 clinical hours during the academic year
- Emory: 64 clinical hours per month as an emergency medicine attending physician. Clinical coverage of observation unit is part of clinical shifts. Much of this time will be spent in an observation unit, but there will also be time within the regular emergency department.

**Board certification afterwards?** There is no board certification in this field. However, both fellowships offer the opportunity for advanced coursework/certificate/degree work if so desired.

**Average salary during fellowship** Because this is not an ACGME accredited fellowship, you will likely be offered a competitive salary.

**PREPARING TO APPLY**

**How competitive is the fellowship application process?** This is a small field with limited fellowship opportunities. However, there are also a small number of applicants per year.

**Requirements to apply** You must be graduating from an emergency medicine residency or be a graduate who is board-eligible or board-certified EM physician.

**Research requirements** Completing research prior to fellowship is strongly encouraged, particularly in research that pertains to observational medicine.

**Suggested elective rotations to take during residency** It would be wise to spend a dedicated rotation to work in your department’s observational unit. Other elective rotations to consider include research, cardiology/stress testing, neurology, neuroradiology, and ED administrative months.

**Suggestions on how to excel during these elective rotations** Be enthusiastic, engaging, and easy to work with. Arrive early and stay late. Read every
day and continue to expand your knowledge base. Treat every day as an interview day, and be courteous to all. Aggressively seek out mentors and future letter-writers.

**Should I complete an away rotation?** If your home institution does not have a separate observation unit within your department, then it would be worth considering an away rotation.

**What can I do to stand out from the crowd?** The best way to stand out from the crowd is to demonstrate a strong interest in observational medicine with your CV, personal statement, and interview. Have a clear vision for your career after fellowship. Be clear, concise, and friendly during your interview. Have ideas to share with your interviewer about how the fellowship training might be used in your future career aspirations. It would be ideal to have a research project near completion by the time of your interview. Being chief resident will help your application but is not required. Assume meaningful leadership roles. Finally, ensure that you meet all deadlines, have strong letters of recommendations, and practice your interview skills, ideally with faculty familiar with observation medicine.

**Should I join a hospital committee?** If your hospital has a committee that interests you and on which you can have meaningful contribution, then this experience may strengthen your application. Anything that shows a resident’s ability to engage and play a leadership role, even on small committees or projects, would be helpful. The ability to build relationships with others, and other departments, is important.

**Publications other than research** Publications other than research - such as blog posts, newsletter articles, clinical case publications, etc. - are encouraged.

**How many recommendations should I get? Who should write these recommendations?** Try to get 3 letters of recommendation (minimum of 2), one of which should be from your program director and/or department chair. If possible, a strong letter from a physician who is known within the observation medicine community or spends time working within an observation unit would be useful as well.

**What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship?** Yes, you can still be competitive. The key is to continue to be involved in leadership and/or research opportunities and to continue to gear your resume toward observational medicine. If you can, seek out shifts in observation units. Attend conferences about observational medicine, and consider publishing educational articles. Consider joining a relevant hospital committee.

**What if I’m a DO applicant?** There are no barriers for DO applicants.

**What if I am an international applicant?** International applicants are encouraged to contact the programs early to see if your visa is accepted.

### APPLICATION PROCESS

**How many applications should I submit?** Apply only to the programs s/he would consider attending.

**How do I pick the right program for me?** Look for the one that best aligns with your future career interests. You should be excited about the program. You should feel like you enjoy the staff and clinical environment and would be happy there for the duration of your fellowship. Do not ignore your inner voice if it is telling you a particular program is not the right fit. The program should also be in a location where you can see yourself happily living for 1-2 years.

**Common mistakes during the application process**
- Grammatical errors in your personal statement.
- Missing application submission deadlines.
- Submitting an incomplete application.
- Having a CV that does not display an interest in observation medicine.
- Choosing letter writers that are not strongly supportive of you.
- Being rude to ancillary staff/program coordinators.
- Asking questions about the program during an interview that could easily be found on the program’s website.
- Not knowing your CV well and thus being unable to answer questions about it during your interview.
- Falsifying parts of your CV.

**Application deadlines** Both fellowships accept rolling applications, and fellows start their program on July 1. Johns Hopkins will consider mid-year candidates as well.

**Tips for writing your personal statement** Try to use your personal statement to show your personality and character traits that suit you well for a career in observation medicine. Avoid repeating your CV on your personal statement. This is your time to show your personality. Readers are interested in understanding why you want to pursue observation medicine and how it fits in your future career goals. The best personal statement reads as a story and captures the reader’s attention. Is there a particular patient, mentor, or clinical scenario that led to your interest in observation
medicine? If so, let this story be the focus of your statement, and end the statement with your career goals and aspirations after completing a fellowship.

Is this a match process? No.

What happens if I don’t obtain a fellowship position? If you are not selected for a fellowship position, discussing your application with the fellowship program director can provide insight into how you can strengthen your application for the future. Asking a trusted mentor to critically review your application (preferably a physician in a leadership role) can also identify areas of weakness. Practice your interview skills, and apply again for fellowship. Consider also applying to related fellowships (such as an administrative fellowship). Attend national conferences, and continue to seek opportunities to show your interest and become involved in the field. Another option is to work with your employer to develop your niche within observation medicine within your institution.

INTERVIEW PROCESS

How do I stand out from the crowd? Practice your interview skills prior to your actual interview to place your best foot forward. You want to come off as confident, engaging, and interested in their program. You want to show them you would be a great fit. Don’t be the applicant who talks too much, and don’t be the one who doesn’t talk at all. Do not be vague or uncertain about your decision to pursue this fellowship opportunity. You also don’t want to come off as arrogant or shy. Search the program’s website and make sure the questions you ask during your interview are not easily answered on their website. Know your application well, and be prepared to answer any questions about it (such as about your personal statement, activities on your CV, etc.)

What types of questions are typically asked?

- Why are you interested in completing an observational medicine fellowship?
- Why are you interested in completing this fellowship at our institution in particular?
- What are your 5- and 10-year career goals?
- Tell me more about your research interests.
- What has been your clinical experience working in observation units? How much exposure have you had?
- Tell me more about your CV.
- What are your strengths and weaknesses?

How many interviews should I go on? Because there are limited fellowship positions, it is recommended that you attend all offered interviews.

PREPARING FOR FELLOWSHIP

Textbooks to consider reading


Important skills to practice while in residency to prepare for fellowship

Work on your clinical skills and knowledge base, especially for observation medicine; research skills; administrative and leadership skills.

Tips on how to succeed as a fellow

Fellows who are most successful are those who are passionate about their fellowship and develop their niche within it. Show up early and stay late for your shifts. Read every day to expand your knowledge base. Find a project that interests you and do it well. Become involved in hospital committees and in research projects. Stay balanced to protect yourself from burnout. Take every opportunity your training program offers, and make the most of your time as a fellow.

CONCLUSION

Additional Resources

Journal articles:


Blogs:

- http://blog.ema.net/tag/observation-status/
- http://www.physicianspractice.com/blog/understanding-observation-codes
National organizations
- ACEP Observation Medicine Section
- Society of Cardiovascular Patient Care

Conferences
- Society of Cardiovascular Patient Care Congress, held annually in May
- Michigan College of Emergency Physicians, Observation Medicine – Science and Solutions in September
- The World Congress’s annual Observation Management Summit
- Observation Patient Management Congress by Global Media Dynamics

How to find a mentor There is no current centralized service that pairs interested physicians with mentors in the field. We recommend finding physicians currently holding leadership roles in observation units to help introduce you to this field. Your program director is another good source of mentorship. Finally, you can consider emailing either of the observation medicine fellowship programs and asking their leaders for advice & mentorship.

To submit updates or to assist with future revisions, please email fellowships@emra.org.
Occupational and Environmental Health Fellowship

INTRODUCTION

**Description of the specialty** Occupational and Environmental Medicine (OEM) is a specialty in which physicians focus on the evaluation, treatment, and prevention of diseases related to workplace and environmental exposures.

**History of the specialty/fellowship pathway** Occupational medicine first began in the 1700s, when Bernardino Ramazzini published about the diseases resulting from noxious gas and dust in the workplace and also from improper posture of the body. The industrial revolution gave rise to medical inspectors in factories and physicians dedicated to taking care of patients harmed by industry. In 1914, focus on the importance of environmental and occupational exposure lead to the creation of the Office of Industrial Hygiene and Sanitation. In the 1920s, Dr. Alice Hamilton pioneered the specialty as a division within public health and preventive medicine. By 1970, the National Institute for Occupational Safety and Health (NIOSH) and Occupational Safety and Health Administration (OSHA) were created. As a result, there are funds allocated for both the training and employment of physicians within OEM, resulting in numerous residencies and fellowships for this specialty across the country.

**Why residents choose to follow this career path** Residents choose to follow this career path when they have an interest in caring for those affected by occupational and environmental hazards. This fellowship provides the resident with the tools to prevent these hazards from affecting the health of the population, the ability to treat those who suffered from subsequent afflictions, the investigative knowledge needed to identify the source of disease resulting from occupation and environment, the leadership skills to promote policy changes within the government, the educational skills to teach other physicians about the
field, and the research skills to help improve the health of individuals and communities.

**How do I know if this path is right for me?** Are you interested in treating patients with job-related diseases? Are you interested in recognizing and finding solutions for both workplace and environmental hazards? Would you like to be involved in creating workplace and environmental health policy? Does research within OEM interest you? If so, this fellowship may be a good fit for you.

**Career options after fellowship** After completing this fellowship, physicians may work in private practice, industry, government, military, community, or academia. They are typically engaged in clinical, leadership/administrative, research, and/or education roles.

**Splitting time between departments** It would be unusual for a physician in OEM to split time between departments. However, if you have completed both an emergency medicine residency and this fellowship, you may be able to find a job that allows you to practice in both fields. This can be difficult (although not impossible); you will have to convince two different departments to hire you and decide on the split that you work in each, such as 50% in each, or 75% in one or the other. Be careful that you protect yourself from a circumstance such as back-to-back shifts overnight into the next day. You will also need to negotiate things such as vacation time, conference time, days off, benefits, etc. Having two certifications in two unique specialties makes you a valuable commodity for an institution. Remember this and make sure to confidently sell your skills/training during your contract negotiation.

**Academic vs. community positions** The decision of a community vs. academic vs. government position depends on your individual career aspirations. Those who enjoy research and education tend to gravitate towards academia. Some people enjoy health policy and tend towards government careers. Others seek out jobs working for industry or private sectors.

**IN-DEPTH FELLOWSHIP INFORMATION**

**Number of programs** The American College of Occupational and Environmental Medicine posts new opportunities as they become available. Presently there are 14 programs:
- Duke University Division of Occupational & Environmental Medicine
- Harvard T.H. Chan School of Public Health Occupational & Environmental Medicine
- Icahn School of Medicine at Mount Sinai
- Johns Hopkins Occupational and Environmental Medicine
- University of California Irvine Occupational Medicine
- University of California, San Francisco, Occupational & Environmental Medicine
- University of Cincinnati Occupational Medicine
- University of Iowa Occupational Medicine
- University of Kentucky Occupational Medicine
- UT Health Northeast Occupational Medicine
- The University of Texas Health Science Center at Houston: Occupational and Environmental Medicine
- University of Utah Occupational Medicine
- University of Washington Occupational and Environmental Medicine
- Yale School of Medicine Occupational and Environmental Medicine

**Differences between programs** You will notice that some of these programs are listed as residencies. This is because you do not need to complete a residency within emergency medicine to apply. You only need 1 year of residency to complete an OEM training program. Some of these programs specifically list on their website that they offer positions to those trained in emergency medicine, whereas others do not. Some programs also preferentially or only consider physicians who have completed a residency training program, whereas the majority of programs only require the completion of a PGY-1 year. Also, the focus and expectation to be involved in research during fellowship will vary per program.

**Length of time required to complete fellowship** 2 years

**Skills acquired during fellowship** After fellowship, you will be prepared to participate in a multi-disciplinary approach to planning, implementing, managing, and evaluating programs and services for environmental health and worker health and safety. You will develop a broad clinical knowledge of the spectrum of disease that affects these patients. Finally, you will gain leadership, educator, and research training.

**Typical rotations/curriculum** During this fellowship you will be required to complete a Master’s in Public Health (MPH), which typically takes 1 year to finish. The second year is usually 12 months of clinical time focused on public health-oriented administrative rotations. Example clinical rotations include large industries, occupational and subspecialty clinics, poison control centers, and public health agencies. You will likely participate in site visits to locations with occupational and/or environmentally suspected diseases. Research opportunities are offered by most
institutions.

**Board certification afterwards?** Those who complete this training are eligible to obtain certification in occupational medicine as provided by the American Board of Preventive Medicine.

**Average salary during fellowship** The average salary provided varies between institutions but will typically be based on the appropriate PGY level salary.

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**PREPARING TO APPLY**

**How competitive is the fellowship application process?** This is a moderately competitive residency/fellowship.

**Requirements to apply** Minimum 1 year of residency in an ACGME accredited program with a minimum of 11 months of direct patient care.

**Research requirements** Research is not required but is highly suggested. If you do engage in research, it is much better to focus on one project and follow it to completion than to start but not finish many projects.

**Suggested elective rotations to take during residency** Elective rotations to consider include poison control, toxicology service with focus on environmental toxins, “Work First” and other occupational health clinics, research months with focus on OEM topics, and public health agencies.

**Suggestions on how to excel during these elective rotations** It goes without saying that you should arrive early and stay late during your rotations. Show your enthusiasm in the subject matter and motivation to learn by being as involved as possible. Continue to read and expand your knowledge base. Be a team player and look for physician mentors in OEM (and potentially future letter of recommendation writers) during these rotations. Treat every day as if it was an interview day and remain as professional as you can be.

**Should I complete an away rotation?** If your program does not offer an away rotation within the realm of OEM then it would be worth considering an away elective. Arranging a rotation at an institution where you are considering a fellowship may be helpful as well.

**What can I do to stand out from the crowd?** The ideal applicant is one whose application clearly displays commitment to the field of occupational and environmental health. Becoming chief resident can certainly help your application. Ideally, you should have some sort of activity in which you have a meaningful leadership role.

**Should I join a hospital committee?** If your hospital offers a committee that is within the field of occupational and environmental medicine, then we highly recommend joining it. Actively pursue leadership positions within these committees.

**Publications other than research** Publications other than research are also encouraged. Examples of such publications include blog posts, newsletter articles, magazine articles, and patient case publications. Creating a podcast episode is another consideration. Such publications are a great way to educate both yourself and the physician community about topics relevant to OEM.

**How many recommendations should I get?** **Who should write these recommendations?** Most programs require a minimum of 3 letters of recommendations (and some programs may require 4). One of these must be either from your program director or your ED director. The others should be from physicians who know you well and can speak to your strengths as a fellowship candidate. Be sure to ask for a strong LOR from all your letter-writers; if they cannot provide a strong LOR, consider choosing a different letter-writer. LORs from physicians involved in the occupational and environmental health field are most ideal.

**What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship?** You can absolutely still be competitive when applying after being an attending. They key is to use your time as an attending to continue to show your involvement and interest in occupational and environmental health and build your resume. Actively pursue leadership opportunities within your hospital system, and if possible, local OEM organizations. If you have no involvement in the field and then decide to apply after years of practice, it will be hard to convince a program that you are serious about this fellowship.

**What if I'm a DO applicant?** Please note that most programs request USMLE scores in their application process.

**What if I am an international applicant?** International applicants must have completed an ACGME accredited PGY-1 year and also must have a visa that is accepted by the institution. Please contact individual institutions for more details.
APPLICATION PROCESS

How many applications should I submit? Apply to all programs you would seriously consider attending if offered a fellowship position.

How do I pick the right program for me? Choose a program that will help you achieve your career goals. You want a program that believes strongly in you as an individual. Do you feel like you fit in at their program? Do the residents/fellows/faculty seem happy? Also, make sure the program is in a location where you wouldn’t mind living for 2 years. Finally, do not discount the opinion of your spouse, especially in terms of program location.

Common mistakes during the application process
Common mistakes include the following: not submitting your application on the first day of application acceptance, not submitting a complete application, having LORs from physicians who do not know you well or do not 100% support you, or having an application that does not display a strong interest in OEM.

Application deadlines Please note that some programs use ERAS and others have their own separate application process. Please refer to each program’s website for more information. Of note, for many programs you have to apply to both their fellowship and MPH program.

Oct. 15 appears to be the most common application submission deadline, but again, please refer to each individual program for additional information.

Tips for writing your personal statement The best personal statements read almost like a story that focuses on your interest in the field. The worst personal statements are ones that simply repeat your CV without providing the reader with any insight about your personality or your career goals. Is there a particular mentor or patient who sparked your interest in occupational and environmental medicine? If so, write about this. The reader should understand why you are passionate about this field, how your experiences have expanded that passion, and why they would benefit from giving you the position. What goals do you want to accomplish during fellowship, and in the years soon thereafter? It may be worth including your 5- and/or 10-year career goals.

Is this a match process? No.

What happens if I don’t obtain a fellowship position? If you do not match into a fellowship position, take a critical look at your application and find the deficits that need to be corrected before you apply again. Consider asking one of the programs for specific feedback about why they did not choose you. You can also ask your program director or assistant program director to look over your application for deficiencies as well. Practice your interview skills and continue to seek out opportunities for involvement in this field to help strengthen your application. Consider applying only for an MPH and applying for the fellowship later. If all else fails, you may be able to build your niche within this field despite not completing a fellowship by attending conferences, additional course work, and research.

INTERVIEW PROCESS

How do I stand out from the crowd? During the interview, your goal is to be confident, pleasant, and engaging, with a clear vision about your future career in OEM. Be confident without sounding arrogant. Be courteous to everyone, and send thank-you notes to those who interviewed you.

What types of questions are typically asked?
- Why are you interested in completing an OEM fellowship?
- Why are you interested in completing this fellowship here?
- What are your 5- and 10-year career goals?
- Please elaborate on [an activity or accomplishment] listed your CV.
- What are your strengths and weaknesses?

How many interviews should I go on? You should attend as many interviews as are offered (assuming that you only applied to places that you would seriously consider attending if offered a position).

PREPARING FOR FELLOWSHIP

Textbooks to consider reading

Important skills to practice while in residency to prepare for fellowship Research skills, knowledge of core areas of preventive medicine, administrative and leadership skills, patient care of those suffering from occupational and environmental exposures, clinical educator tasks, and knowledge of epidemiology and
biostatics.

**Tips on how to succeed as a fellow** Success during fellowship starts with choosing a program that best suits you and is in a location that suits both you and your spouse. The happier you are with your program and your life outside the hospital, the more productive you will be during fellowship. Read daily and continually expand your knowledge base. Be reliable, take great care of patients, and be a team player. Take advantage of every opportunity fellowship offers, and consider the legacy that you would like to leave behind.

**CONCLUSION**

**Additional resources**

**Journals:**
- Journal of Public Health
- The Annals of Occupational Hygiene
- Occupational Medicine

**Electronic resources:**
- Occupational Medicine Podcast
- Western Occupational & Environmental medical association Webinars
- New England College of Occupational & Environmental Medicine Online Lectures

**National organizations**
- American Academy of Environmental Medicine
- American College of Occupational and Environmental Medicine
- The Society of Occupational Medicine

**Conferences**
- American Occupational Health Conference
- Western Occupational and Environmental Medical Association Annual conference
- American College of Occupational and Environmental Medicine Annual Conference

**How to find a mentor** Currently we are unaware of a website or organization that helps pair interested residents with faculty in the field. However, we encourage you to use elective time to rotate through relevant operations and environment medicine rotations and strive to make connections with future mentors. The OSHA website may also be a valuable resource to help connect with local clinicians and leaders in this field.

**To submit updates or to assist with future revisions, please email fellowships@emra.org.**
Palliative Care Fellowship

INTRODUCTION

Description of the specialty Palliative care (PC) is patient-centered specialized care for those with a serious or chronic life-limiting illness. PC aims to improve patients’ quality of life by providing pain and symptom relief as well as spiritual and psychosocial support. Palliative care research has shown PC to improve quality of life, reduce hospital length of stay, reduce number of repeat emergency department (ED) visits, improve patient and family satisfaction, lessen utilization of intensive care units, and provide overall cost savings to hospitals.1,2

Hospice is a type of health care for patients in the last months of their lives when curative treatments are either not available or no longer desired by patients. Hospice enrollment enables patients to receive comprehensive medical care outside the hospital, including nursing visits, medications, medical equipment, social work, and spiritual support in the comfort of their home or at a hospice facility. Although palliative care can overlap with hospice and the terms are often used interchangeably, palliative care and hospice are not the same. Palliative care is support that may be provided along with curative treatment over a long period of time. Hospice care, on the other hand, is considered at the end of life when a patient is not expected to live longer than 6 months, if their disease were to run its usual course. The support to family extends beyond the death of patient under hospice care.

History of the specialty/fellowship pathway Emergency departments are increasingly treating patients with advanced chronic illnesses and those who are seriously ill and dying. Ideally, integration of palliative care should be done by patients’ primary care providers or by dedicated palliative care providers who work alongside patients’ regular providers. However, with the health care system serving an increasing aging population, and considering primary care provider shortages as
well as fragmented specialty care, the introduction and implementation of palliative care does not always happen before the patient visits the ED. ED providers are therefore increasingly engaging, developing and incorporating palliative care in the ED for their seriously ill patients.

In 2006 Hospice and Palliative Medicine (HPM) became an officially recognized subspecialty where ten specialties including emergency medicine can obtain HPM certification. The American Board of Emergency Medicine (ABEM) offers a pathway for emergency medicine (EM) trained physicians who complete a Hospice & Palliative Medicine fellowship to sit for the HPM board certification. Thus, the EM physician who completes fellowship and passes the boards will become dual board certified in both, emergency as well as hospice and palliative medicine. Currently, there are about 114 dual board certified physicians (EM and HPM) and emergency medicine is 6th out of 10 specialties in such dual certified physicians.

The integrated emergency and palliative medicine discipline in general has shown tremendous growth and garnered increased interest in the last decade. American College of Emergency Physicians (ACEP) has a very active Palliative Medicine section with growing membership each year, in addition to the Society for Academic Emergency Medicine (SAEM) Palliative Medicine interest group. Also, due to increased physician demand, the American Academy of Hospice & Palliative Medicine (AAHPM) has recently established an emergency medicine forum/interest group. Due to the increasing number of palliative care-emergency medicine research papers, the ACEP Annual Research Forum has now created a separate submission section for palliative and hospice medicine to be alongside ultrasound, critical care, and other long-standing core content in Emergency Medicine research in 2015. ACEP Now magazine has dedicated tri-annual articles to palliative care in the ED. There is an increasing call to incorporate palliative care into emergency medicine education and practice. It’s a new and exciting place to be!

**Why residents choose to follow this career path**
Residents choose to follow this career path when they desire to practice emergency medicine as well as hospice and palliative medicine jointly or they may transition to practice as a full-time palliative medicine physician.

**How do I know if this path is right for me?**
If you are the type of resident who can step back during a clinical shift and put a patient’s ED visit into the context of “the big picture,” this specialty may be for you. If you have a strong interest in improving the care of those who are very seriously ill and/or dying, then this specialty provides the key skills to improve end-of-life care. If you’re an excellent advocate for your patients and actively inquire about their wishes, then you’re already on the path to becoming an amazing HPM physician. Additional avenues of interest include the symptom management of complicated chronically ill, pain management, and bio-ethics of medicine. This fellowship will teach you to become a skilled communicator and you will become the “go-to” person in your department for treating and educating others about caring for the sickest of the chronically sick.

If this interests you, then a palliative medicine fellowship will give you a niche for your future academic career. Having a niche by training in palliative medicine may allow for a varied perspective and an opportunity to balance clinical work with education and research in a less chaotic, less procedure intense, or time constrained setting. Some physicians want to have these options in their careers so later they can adjust their work-life balance and transition to clinical care in a care setting other than working in the ED shifts.

**Career options after fellowship**
HPM fellowship is meant to train you as an independent HPM physician who can run an inpatient unit, palliative care consult service, or become an outpatient palliative care or hospice provider after fellowship.

**Splitting time between departments**
After fellowship, some physicians prefer dividing their time between the two departments often with rotating time blocks of ED shifts and inpatient palliative care consult service. Other physicians may want to practice HPM medicine only in the ED. Most EM-HPM physicians are contracted for majority of their time in the emergency department due to the salary difference, in that emergency medicine physicians make more annually. HPM physician’s salaries are more similar to subspecialists in internal medicine such as nephrology or endocrinology.

Most EM-HPM dual trained physicians work in major academic institutions where they teach palliative care and/or do research. These physicians are generally consulted in the care of seriously, chronically ill patients and specialize in alternative treatment pathways other than aggressive resuscitation. Some physicians sit on ethics committees in conjunction to their clinical practice. Others take on the role as hospice medical director.

Being an EM-HPM pioneer, you may need to pave your own way, setting up your schedule/time split and negotiating between the two departments. The best
way to do this is to figure out your own personal career goals and compare them with what the institution’s expectations are in terms of clinical hours, salary, teaching, and research requirements for full time physicians within each department. Past hospitals have hired EM-HPM physicians and allowed them to split their time between two departments; however, other hospitals might not be familiar with EM-HPM providers and will need guidance to how this works. Similar to other subspecialties, you may need to look at the two departments to find the right fit, or have the flexibility for two different institutions.

**Academic vs. community positions** Most EM-HPM trained physicians work in major academic institutions that are more comfortable or familiar with providers certified in multiple specialties. As an EM-HPM physician, you most likely will be the point person in your emergency department for faculty teaching or medical education and the collaborating physician for ED based palliative care-oriented projects. If EM-HPM medical education and/or research is concurrent with your future career goals, then choosing an academic environment may be more conducive.

Remember, after fellowship you are an asset, bringing a unique perspective and skill set that is vital to the hospital, so don’t forget this when negotiating! You will lead your emergency department to gain specialized skills and knowledge in hospice and palliative medicine. If there is a program you’re interested in working at after fellowship, send out your CV and take the time to call the director, as some places will not always advertise their job openings. Before accepting, make your goals—such as medical education or research—are clear to both you and your employer in order to thrive as a supported faculty member that achieves their professional goals.

**IN-DEPTH FELLOWSHIP INFORMATION**

**Number of programs** Currently the ACGME lists 118 hospice & palliative medicine programs.

**Differences between programs** Because hospice and palliative medicine involve nearly every specialty, HPM fellowships can be sponsored via different disciplines and departments. Most fellowships span both inpatient and outpatient settings and are sponsored by general internal medicine or family medicine; although, others can be housed within the geriatric, oncology, or anesthesiology departments. Emergency medicine and surgery departments however currently do not sponsor a fellowship program.

Fellowship directors may hold primary certifications from a variety of disciplines. An example: Emory Palliative Care Center, which is headed by an emergency medicine physician, versus the director of UCSF-Frenso, who is trained in both internal medicine and psychiatry. Be sure to check whether a fellowship’s faculty composition is primarily from the same background or if there is a variety of specialties represented. This can tell you if the faculty have similar interests and goals in research, administration, or education to which you seek.

Older, more established programs tend to have larger faculty, more fellows, and fixed schedule blocks that provide more structure. Smaller, newer programs may offer less structure, but can provide greater flexibility if you want to focus on a particular area, design your own electives, or wish to moonlight in an ED throughout fellowship. Despite some variations, all fellowships regardless of size or departments, require the same basic rotation requirements.

**Length of time required to complete fellowship** HPM fellowships are 1 year. Some programs offer additional tracks in research, geriatrics, bioethics, or public health which may require a longer time commitment.

**Skills acquired during fellowship**

- **Symptom control** This includes pain control and alleviation of other bothersome and/or difficult to control symptoms experienced by patients with serious illnesses, such as chronic malignancy related pain, dyspnea, nausea/vomiting, fatigue, neuropathic symptoms, etc.
- **Guidance and management of symptoms of the actively dying patient** in both inpatient and outpatient settings, such as: delirium, anxiety, dyspnea, etc.
- **Communication skills** These are critical for conflict resolution and goals of care discussions. You will learn how to do this while simultaneously giving caregiver (surrogates) support. Palliative medicine is an interdisciplinary team sport, including social work, medical chaplaincy, nursing, and advanced practice providers. Communication and leveraging team care is fundamental to palliative medicine.
- **Goals of care** In addition to being a master of symptom management, it is necessary to be adept at building a realistic view of a patient’s disease trajectory and using this to provide advice regarding the non-initiation or stopping of interventions that are not consistent with a patient’s goals.
Clinical recognition skills: Fellows recognize chronic illness or dying trajectories of terminal illness, organ failure, frailty, & sudden illness to help prognostication. They can identify the imminently dying patient, complications of cancer, and cultural and ethical issues surrounding end-of-life and death.

Ethical/legal understanding: Gain knowledge of advanced directives and multidisciplinary team/support systems for chronically ill and dying patients.

Typical rotations/curriculum: Your fellowship will likely be divided into blocks (usually 1 month in length) of inpatient consults or working with patients in a palliative care unit, hospice outpatient visits—typically within a patient’s home, inpatient hospice both acute and long-term care, and electives in pediatrics, geriatrics or interventional pain.

Inpatient experience will span at least 4 months in duration or roughly 100 hours monthly, although most fellowships do more. Most fellows achieve this experience by working in a palliative care inpatient unit or by participating on a palliative care consultation team or both. ACGME requires fellows to see 100 new patients by the end of fellowship.

Patient homes and long-term facilities: Fellows conduct home hospice or home palliative care visits with members of the interdisciplinary team which often include nurses, chaplains, social workers, etc. and attend any interdisciplinary case conferences for their patients. This can be completed as a separate clinical block or spread out over several months, i.e. every Thursday you do home visits with the team. Fellows must have 25 minimum outpatient visits and total 100 hours.

Ambulatory practice setting: This is usually outpatient palliative medicine clinic that runs weekly although it varies from institution to institution. You must attend clinic for at least 6 months during fellowship.

Elective: Fellows must spend at least 1 month or equivalent of elective time in a clinically relevant field. Electives may include ethics consultations, geriatric medicine, interventional pain management, medical psychiatry, pediatrics, HIV clinic, medical oncology, radiation oncology, pulmonary, cardiology, neurology clinics, or other experiences determined to be appropriate by the program director.

Fellowship scholarly activity: This must be completed during fellowship and can be a research project or quality improvement project involving hospice & palliative medicine.

As an HPM physician, during rotations you will specialize in acute symptom management, running family meetings, and helping to optimize the care of a patient with their loved ones by attending to their medical, spiritual, and psychosocial needs. Patient and family interactions can be intense and time-consuming, but are also very rewarding as you work to honor patients’ wishes while improving their quality of life. This specialty requires patience and good communication skills in order to balance all aspects of care across multiple services (oncology, neurology, surgery, etc.) and settings (such as hospital, home, long-term care etc.) HPM providers are often looked upon as the masters of communication and conflict resolution; adept at resolving difficult clinical decision-making conflicts and solving ethical dilemmas, as well as providing good end-of-life care.

Board certification afterwards? Yes. Emergency medicine (EM) trained physicians who complete a Hospice & Palliative Medicine (HPM) fellowship are eligible to sit for the written HPM board certification. The written boards are offered every other year and there are no HPM oral exam component. Recertification is every 10 years as it is for Emergency Medicine. In 2014, the pass rate for the first-time takers was 85%. In September 2015, there are currently 114 EM-HPM dual certified providers.

Average salary during fellowship: Most fellows receive a PGY-4 or 5 level salary.

PREPARING TO APPLY

How competitive is the fellowship application process? The application process is currently evolving as both the awareness and popularity of the specialty are growing. The fellowship was available through the NRMP Match in 2015 for the first time. Unfortunately, data is not available from the NRMP at this time. Geographic location appears to influence how competitive the application process is for a given program to some degree i.e. desirable city locations on east and west coast are more popular for applicants.

Requirements to apply: Candidates should be allopathic or osteopathic physicians in good standing and anticipated to graduate from one of the approved disciplines previously described—this includes emergency medicine.

Research requirements: There are no strict criteria regarding research. However, it is encouraged and there are an abundance of research opportunities within the field.
Suggested rotations to take during residency

It is generally recommended that applicants rotate with the palliative medicine service within their institution or participate in an elective in HPM if available. This shows prior exposure to the clinical scenarios relevant to the practice of HPM and demonstrates interest.

Suggestions on how to excel during these rotations

- Access the literature and introductory texts before and during the rotation to foster a greater depth of understanding for the evidence guiding palliative care in clinical settings.
- Demonstrate dedication to becoming an adept communicator. Fundamental communication skills lead to success when discussing goals of care and during family meetings; however, they take time to develop. It is clear when a resident is making an effort to practice these skills. Consider reviewing VitalTalk at www.vitaltalk.org for useful tips.
- Be a team player. This skill set is important in all areas of medicine and just like it is part of being a successful Emergency Medicine physician, this will help you learn how to garner the best care for the patient while including all members of the team such as: social work, chaplaincy, case management, pharmacists, and other learners.

Should I complete an away rotation?

Away rotations are particularly useful if you are hoping to match at a specific program. A stellar job will certainly help you stand out when rank lists are made later in the year. This will also allow you to experience a program first-hand that you may be interested in to try them out, too!

What can I do to stand out from the crowd?

As mentioned above, a positive rotation will go a long way towards standing out. Since there is so much opportunity for exploration of research and education in HPM, participating in projects that align with your interests can be worthwhile. It will also show a longitudinal interest in the topics surrounding HPM (whether this is through publications, volunteerism, committee work, or involvement in education) and a long-standing commitment to the field.

Should I join a hospital committee?

There are many opportunities for overlap between the goals of a hospital committee and HPM. The important element is finding one that you’re passionate about and would like to continue to explore. This is not necessarily a requirement as much as a suggestion since it will show a dedication to the field. Some suggestions include the ethics or pain management committee.

Publications other than research

Since there is so much opportunity for integrative medicine and possibility for the use of medical humanities within HPM, most clinicians have an appreciation for other forms of publication. For example: creative writing, poems, play-writing, and medical narratives. However, this is again what feels true to your own personal interest. The important aspect is building a link between these and your interest in HPM.

How many recommendations should I get? Who should write these recommendations?

In general, at least three letters of recommendation are preferred with at least 1-2 letters from within the field (although this is not a requirement, per se). As always, a letter from the residency Program Director is encouraged, as well as from faculty whom you have worked with extensively. Additional letters may be from mentors/supervisors of research or special interest projects. If an elective or away rotation was done in HPM, a letter from HPM faculty is highly recommended. Overall, the key is to choose people who can translate your unique skill set to HPM.

What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship?

Yes, the key is to demonstrate interest and a ‘trail of breadcrumbs’ that led you to this new path. In these cases, it is beneficial if clinical experience can be directly tied to HPM exposure. If this is challenging it may be wise to look for alternative avenues, such as gaining permission to shadow the in-house HPM consult team, that may provide clinical exposure.

What if I’m a DO applicant?

The AAHPM and NRMP websites both state that DO physicians are considered candidates for the match in HPM.

What if I am an international applicant?

Refer to the NRMP website as far as application procedures apply.

There may also be some institutional variation, and therefore one may want to contact programs of interest prior to applying in order to find out their procedures and practices.

APPLICATION PROCESS

How many applications should I submit?

This is largely dependent on the applicant’s geographic area of interest, confidence in their candidacy, and number of programs that feel like a good fit. Because the HPM fellowship has only gone to the Match process one year ago, there is not a lot of real data to work with. It
may be most beneficial to discuss the exact number with an advisor based on your performance-to-date and geographic area of interest. In general, more is better than less to provide you with an adequate pool to choose from and make-up for possible programs that may not offer you an interview.

**How do I pick the right program for me?** It is important to consider future next steps when choosing a program as geographic location may determine your next career move. In addition, if a specific institution would be your dream job, it may be useful to train there. Geographic location and accessibility to your support system may be a consideration given the financial constraints many trainees have graduating from residency and still earning a salary commensurate with a PGY-4 as well as the stressors involved with starting a new training program.

Get to know the people in the program! Are fellows happy? Do the faculty seem supportive? Are there opportunities for exploring your interests? Many of the same rules apply as when you interviewed for residency.

Explore if there are opportunities available specifically for EM trained graduates. Inquire about moon-lighting if you want to keep your skills fresh while in training. Many programs are looking to expand their presence in the ED and inquiring about consult numbers from the ED will give insight into the type of exposure HPM staff have to ED patients.

**Common mistakes during the application process**

- Assuming all programs are alike. Every program will have a slightly different range of experiences that they have to offer. It is important to identify what your career goals are and to check to see if the places you have interviewed align well with them. It also will insure your ultimate happiness at the place you match with.
- **Not asking enough questions!** Make the programs work for a spot on your rank list! Write a list of your top priorities in a program and check to see if the program meets your standards. You are interviewing them as much as they are interviewing you. Remember: this is the launching pad for the next stage of your career.

**Application deadlines** HPM participates in the NRMP Medical Specialties Matching Program, so the timeline includes:

- ERAS registration: Spring
- ERAS opens: July
- NRMP Registration opens: Late August
- Rank List opens: Early October
- Rank List deadline: Mid-November
- Match: December

**Tips for writing your personal statement** A strong personal statement will describe the journey you took in deciding to pursue an HPM fellowship, highlight your personal qualities that make you an ideal candidate, and does not serve as a carbon-copy of your CV. As with all personal statements, it is important to have a good hook as your personal statement will be one of many that a person may read and you want to stand-out. If possible describe personal experiences, research, and key cases that contributed to your decision.

The conclusion is also important. Put it all together for the reader and connect how all of these pieces fit to make you an ideal candidate.

**Is this a match process?** Yes. HPM uses the NRMP MSMP. Designing a rank order list is a similar process to the one used for residency.

**What happens if I don’t obtain a fellowship position?** Open slots are posted on the AAHPM JobMart for candidates to review. It is also beneficial to review the procedures on NRMP regarding applying for unfilled slots. Most importantly, you should review your application with the HPM program director or elective director available at your institution and assess what needs to be improved upon for future application cycles. You also may want to consider further exposure to HPM through electives or mentoring that is available within your institution.

**INTERVIEW PROCESS**

**How do I stand out from the crowd?** Be yourself.

Practice: Try to rehearse with a faculty member in HPM to help yourself prepare for typical interview questions (see below for examples) and polish your answers. This will help your responses sound natural and come easily to you, so you won’t freeze on interview day. The program generally wants to get to know you and already knows your credentials. They are looking for a good fit.

Don’t be afraid to highlight your achievements. Your goal is to show that you will be an asset to the program and to insure the program will be supportive of your interests. It is helpful to demonstrate this connection for the interviewer and help them see what you will bring to the program and why you’re unique.

Show you are truly interested in their program. If you’re making the investment of interviewing at the program, then it should be a place you’re seriously considering. Take the time to read about what makes their fellowship unique.
unique and use these facts to highlight your interest.

What types of questions are typically asked?
- Why are you interested in a hospice and palliative medicine fellowship after completing a residency in EM? Provide an example of a case you participated in that influenced your career path.
- Describe how your personal skills will help you navigate challenges in palliative care (i.e. difficult family meetings, challenging interactions with the primary team for the patient, etc).
- What do you hope to be doing in 5 years?
- Why are you interested in our program; what brought you here today?

How many interviews should I go on? As previously mentioned, this is difficult to approximate given the Match process has only been used for the last year. Since some programs are more ‘Emergency Medicine friendly’ it would be beneficial to investigate in advance how many prior graduates are from EM and if they are seeking EM candidates (this also obviously is beneficial when you select programs to apply to). It would be wise to add an EM-friendly program in for every program you’re not sure of. In general, assess the strength of your application, your goal geographic area, and consider your comfort level both financially and for insuring a spot. It is never considered wise to apply to a single program.

PREPARING FOR FELLOWSHIP

Textbooks to consider reading

Important skills to practice while in residency to prepare for fellowship
- Run a family meeting with a fellow or attending present for back-up.
- Consider practicing goals of care discussions when appropriate. Remember, palliative care is part of the Choosing Wisely campaign for EM.
- Try opioid conversion practice problems using some of the texts listed above and while supervised by an attending if you’re able to do an HPM elective.

Tips on how to succeed as a fellow Be a self-directed learner. This absolutely will serve you well regardless of what specialty becomes your ultimate career. Recognize gaps in knowledge or questions represent opportunities for learning. Don’t accept the answer, “We do this because this is the way it has always been done,” and look for supportive literature to show the evidence that supports our practice patterns. Learn from your attendings and ask them to explain their thought process. This may be your last chance to work in an environment where your education is a top priority! Take advantage of it and try and pick-up pearls from a variety of sources along the way. Consider including local EM leadership in adding support for HPM within the hospital and take the lead on consults coming from the ICU and ED. Show off the amazing skill set that you have developed through an EM residency. Be a team-player. HPM is a team sport like EM with many moving parts. It is important to always recognize and value the skill sets offered by case managers, social workers, chaplains, nursing, and other specialties that are an essential part of the palliative team.

CONCLUSION

Additional resources

Podcasts:
- EMCrit Podcast (Episode 25 – End of Life and Palliative Care in the ED)
- Emergency Medicine Cases (Episode 70 End-of-Life Care in EM)
- EM:RAP (especially Episode 149)

Journals:
- Journal of Pain and Symptom Management
- Annals of Emergency Medicine
- Academic Emergency Medicine
- JAMA Oncology, especially January 2015
- Journal of Palliative Medicine
- Journal of Emergency Medicine
- Western Journal of Emergency Medicine

Clinical Resources/Websites/Blogs:
- Palliative Care Network of Wisconsin (Fast Facts and Concepts are a great resource under this website with easy to understand clinical summaries. They have an ED section.)
- Academic Life in Emergency Medicine
- Palliative Care PV Card
- ACEP Now

National organizations
- ACEP Palliative care section
- American Academy of Hospice & Palliative Medicine
- Society of Academic Emergency Medicine
- Center to Advance Palliative Center
- Palliative Care Network of Wisconsin

Conferences
- ACEP Scientific Assembly
- AAHPM annual meeting
- Education in Palliative & End-of-Life Care (EPEC)
• EMTalk, powered by VitalTalk
• Center to Advance Palliative Care national meetings and webinars

**How to find a mentor** Establish a mentor early and connect with him/her often to ask questions and receive feedback. Mentors to consider include your program director, palliative care director, or other palliative care physicians at your institution. The ACEP Palliative Care Section has several committees that facilitate networking and mentoring.

Remember, at this time there’s a limited number of dual certified EM-PC physicians in this young sub-specialty who are able to advise and mentor effectively. It is important that you seek out mentors from both outside and within your institution in order to start the search process and begin networking early.

**References**

**To submit updates or to assist with future revisions, please email fellowships@emra.org.**
Pediatric Emergency Medicine Fellowship

INTRODUCTION

Description of the specialty

Pediatric emergency medicine (PEM) is a clinical subspecialty that focuses on caring for the complicated and acutely ill pediatric patient in the emergency department. The subspecialty is available to both pediatricians and emergency medicine (EM) physicians, and completion of PEM training and examination results in board certification in pediatric emergency medicine.

History of the specialty/fellowship pathway

In 1990, the American Board of Emergency Medicine (ABEM) and the American Board of Pediatrics (ABP) applied for approval to offer subspecialty certification in pediatric emergency medicine. Once approved, the first board examination for PEM was in 1992, and it has been offered biennially since that time. The longest running PEM fellowship was established in 1980 at Children's Hospital of Philadelphia, and since that time more than 50 fellowships have been developed in the United States.

Why residents choose to follow this career path

PEM combines principles of emergency medicine with general pediatrics and pediatric critical care. This subspecialty allows the emergency physician to expand his/her knowledge of pediatrics in the acute care setting. It is an ideal addition to residency training for those interested in pediatric emergency care protocol and guideline development, pediatric emergency care infrastructure, pediatric emergency medicine education, practice in a pediatric emergency setting, and advancing emergency medicine research in the pediatric population.

How do I know if this path is right for me?

This fellowship is ideal for those who love the emergency department setting and also have an interest in pediatric care. By taking the pathway of emergency medicine to PEM fellowship, you have developed strong resuscitation and acute
care skills in residency, and then will expand your skills with diagnostics and management of pediatric patients in fellowship.

**Career options after fellowship** PEM fellowship will expand your employment options and practice settings. Those boarded in emergency medicine and pediatric emergency medicine are qualified to work in any emergency department (pediatric or adult) in the country. Some physicians choose to practice exclusively in the pediatric emergency department; however, many either practice in a combined emergency department (pediatric and adult patients seen in the same care setting) or dual pediatric/adult emergency department (pediatric and adult patients seen in parallel departments in the same hospital) or in multiple care settings (adult and pediatric hospitals). Additionally, those who practice in general emergency departments often make a niche for themselves by being the pediatric care coordinator for the department to establish protocols and quality improvement for pediatric patients.

**Splitting time between departments** Given variability in practice settings, some EM/PEM physicians split time between the general adult emergency department and pediatric emergency department or practice in a combined pediatric and adult emergency department. Many places will help with setting up your contract and division of labor between these two departments but this is situational dependent. Some institutions will have one department chair for both departments, which will make contract negotiation easier, where as others have two separate department chairs whom must both agree to hire you.

**Academic vs. community positions** There are both academic and community positions for the EM/PEM physician, depending on the type of practice environment you seek. As many pediatric hospitals are academic centers, practicing exclusively in the pediatric emergency department setting will often have a teaching-supervisory component. Further, pediatric academic hospitals often utilize residents, nurse practitioners and physician assistants, leading to a different practice environment than many emergency physicians have experienced in residency.

**IN-DEPTH FELLOWSHIP INFORMATION**

**Number of programs** To date, there are more than 50 PEM fellowship opportunities. Programs are added to the EMRA Match database and the AMA Residency & Fellowship Database as they become available.

**Differences between programs** PEM fellowships vary widely in departmental structure. The majority are situated within tertiary care pediatric hospitals, while some function within combined adult and pediatric centers. As with emergency medicine, there is a spectrum from highly academic to more community-oriented fellowships. The fellow role varies between programs, with many having the fellow as an intermediary role between the resident and attending, while others have the fellows see patients in an attending capacity primarily with supervision. There is also variability in curriculum with regards to the incorporation of graduate classes, research, and elective opportunities.

**Length of time required to complete fellowship** To be eligible to sit for the PEM subspecialty boards, emergency medicine physicians must complete an accredited 2-year fellowship. However, given that pediatricians must complete a 3-year fellowship, there are both 2- and 3-year programs.

**Skills acquired during fellowship** All programs will train you in trauma and medical resuscitation of the critically ill pediatric patient. You will also gain skills and knowledge in dealing with pediatric specific complaints and pediatric subspecialty areas such as genetic syndromes and metabolic disorders, congenital heart disease, endocrinopathies, transplant medicine, and neurologic disorders.

**Typical rotations/curriculum** Because this is a clinical fellowship, the majority of your time will be spent in the pediatric emergency department with direct patient care. Curriculum varies between programs; however, exposure to the pediatric intensive care unit and specific pediatric subspecialties are typically included. Many programs include rotations in child abuse, sports medicine/orthopedics, pediatric anesthesia, transport medicine, PICU, NICU, burn/trauma, and clinic rotations. Further, some programs include opportunities for obtaining advanced degrees in research or public health.

**Board certification afterwards?** Yes, you will be board eligible after the completion of an ACGME accredited pediatric emergency medicine fellowship.

**Average salary during fellowship** The majority of programs have a salary consistent with that of a PGY-4,5,6, which will vary by location. Some programs will offer or allow moonlighting opportunities.
PREPARING TO APPLY

How competitive is the fellowship application process? The application process is strongly competitive for pediatric trained applicants and moderately competitive for emergency medicine trained applicants. Given the multiple paths to this fellowship and the variable training years, some programs are more open to emergency medicine applicants than others; however, as the specialty matures this gap is closing.

Requirements to apply The only requirement for application is completion or projected completion of an emergency medicine or pediatric residency.

Research requirements Research, while not a requirement for applications, is strongly encouraged, as is experience in quality improvement.

Suggested elective rotations to take during residency Given the unique educational environment of the PEM fellowship, it is important to obtain letters of recommendation from PEM faculty, as well as some experience in a pediatric emergency department prior to your application. Depending on the program in which you are training, you may not have access to a pediatric emergency department beyond the minimum rotation requirement. In this case, we recommend completing an away rotation at a site where you are interested in applying. Additional rotations you may find helpful in preparation for applying to fellowship include the pediatric intensive care unit, the neonatal intensive care unit, transport medicine, sports medicine, and pediatric anesthesia.

Suggestions on how to excel during these elective rotations Read the pediatric chapters of whichever emergency medicine textbook you use in residency prior to a pediatric rotation. Many pediatric emergency departments have developed treatment protocols, also known as pathways, for common complaints such as asthma, bronchiolitis, neonatal fever, button battery ingestions, and appendicitis diagnosis. Contact the department in advance to find out if you can access them online so you will be familiar with their treatment algorithms prior to your arrival. Remember that pediatric emergency departments have a structure and flow model that is often different from a general emergency department, so go into these rotations with an open mind. Finally, skim through some of the pediatric blogs, podcasts, and online review articles such as Evidence-Based Medicine and Pediatric Emergency Medicine to get a sense of current topics in pediatric care.

Should I complete an away rotation? If your home institution does not have a dedicated pediatric emergency department on-site or closely affiliated, then you will need to complete an away rotation for letters of recommendation and exposure to the practice of pediatric emergency medicine.

What can I do to stand out from the crowd? Show that you are interested in pediatrics! Join a pediatrics based quality improvement committee at your institution, write a pediatrics article for EM Resident or another emergency medicine magazine, join the EMRA Pediatric Division or the ACEP Pediatric Section, and get involved. With regard to research, PEM fellowship includes a research requirement, as does emergency medicine residency. Thus, being involved in research will put you a step ahead of other applicants. Consider submitting a case report or interesting clinical image during residency in addition to your research.

Should I join a hospital committee? If your hospital includes pediatric care, then consider joining a committee or quality improvement project relating to pediatrics. Many emergency departments have a committee dedicated to pediatric care protocols, which would be an excellent learning opportunity and way to be involved.

Publications other than research Any publication that you can include in your CV relating to pediatric care will bolster your application. You may consider working on a book chapter or writing an article for an emergency medicine magazine. You may also consider writing an article for EM Resident or the ACEP Pediatric Section Blog.

How many recommendations should I get? Who should write these recommendations? You should provide 3 letters of recommendation, 1 from your program director and 1-2 from PEM attendings who have worked with you. If you need a third letter, consider a research or QI mentor who can speak to your non-clinical leadership qualities.

What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship? Yes! Just as in any fellowship application, you will need to explain your decision to work as an attending prior to applying for fellowship, but this is not uncommon among PEM fellowship applicants.

What if I’m a DO applicant? If you have completed a residency in emergency medicine and are eligible to sit for the AOBEM/ABEM boards, then you may apply for PEM fellowship.
What if I am an international applicant? The same requirements are necessary for PEM fellowship as prior for an ACGME residency. If you are a U.S. citizen applying as an international medical school graduate, and you have completed a residency in pediatrics or emergency medicine making you eligible for ABP or ABEM, then you may apply for PEM fellowship. Many programs are able to support a visa, but international applicants are less common, thus we recommend that you contact a program prior to applying.

APPLICATION PROCESS

How many applications should I submit? There is no firm guideline for the number of places to apply for fellowship. A general recommendation is to send applications to 10 programs; however, this should be tailored to your desired location and program qualities.

How do I pick the right program for me? When selecting a program, look at the number of EM trained fellows they have taken in the past, as EM applicants start fellowship with a different skill set than their pediatric peers. It is helpful to have a program that understands that the educational goals of an EM trained fellow are different from those of a pediatric trained fellow. Also, look at opportunities for fellows including research, electives, supervisory roles, graduate school, and international rotations. Finally, look at where the program's fellows go after they complete fellowship, academic vs. community, local vs. national, and combined vs. pediatric specific sites.

Common mistakes during the application process
ERAS opens for PEM in the late spring, so send in your application as early as possible. Approach your letter writers early so they have enough time to write your letters of recommendation and upload them for your application. When writing your personal statement, explain your interest in PEM and then use your application and CV to support this. Be honest in your application, remember to spell-check, and have a colleague review and proofread it.

Application deadlines
The application season opens in June, and programs are able to start viewing applications in July. Interviews are from September to November, and the match occurs in December. The application timeline can be found on the ERAS site.

Tips for writing your personal statement
Your personal statement should discuss the reasons you are interested in PEM, and any specific examples you might have to support this. The EMRA Pediatric EM Division website contains an applicant toolkit and sample personal statements for EM residents applying into PEM fellowship.

Is this a match process? Yes. There is an NRMP match for PEM fellowships.

What happens if I don't obtain a fellowship position? If you do not match, remember you are still a trained emergency medicine physician who can see both adults and children in practice. Consider if you would like to re-apply, which is not uncommon for pediatric trained applicants in PEM. Go over your application with a mentor, your program director, and possibly your letter writers. Look for deficiencies in your applications and work towards improving those areas in your application the next year.

INTERVIEW PROCESS

How do I stand out from the crowd? As with all interviews, your goal is to present yourself as competent, professional, respectful, and enthusiastic about the pediatric emergency medicine fellowship. Review the program and faculty on their website prior to your interview so you may ask insightful and appropriate questions. Know your reasons for applying to fellowship and your goals for what you would like to learn and achieve in fellowship.

What types of questions are typically asked? Programs will typically ask about your reasons for applying to PEM fellowship, especially given that not many emergency medicine residents apply for PEM fellowship. You may also be asked about your research and prior publications, thus consider anything on your CV a potential topic of conversation. Finally, remember that the PEM fellowship interviews are an opportunity for the program to get to know you as a person, so you may be asked about your interests, etc.

How many interviews should I accept? There is no standard number of interviews, but a general rule would be to go to any interview you are offered.

PREPARING FOR FELLOWSHIP

Textbooks to consider reading

Important skills to practice while in residency to prepare for fellowship
- Resuscitation leadership
- Ultrasounds – you may be the expert in fellowship
- Procedural skills including ultrasound guided IV placement, intraosseous placement, intubation, procedural sedation, laceration repair techniques, splinting and casting
- Child life – practice communicating with pediatric patients on their developmental levels and providing coping mechanisms during exams and procedures
- Emergency departmental flow

**Tips on how to succeed as a fellow**
- Keep an open mind. Institutions have differing protocols based on local resources.
- Work hard on shift and seek feedback from faculty.
- Get involved in projects within your department.

**CONCLUSION**

**Additional resources**
- ACEP Pediatric Emergency Medicine Section
- AAP Section on Emergency Medicine
- EMRA Pediatric EM Division

**Blogs/Podcasts:**
- PEM Network
- Pediatric EM Morsels
- PEM Academy
- PEM Database
- PEM ED Podcast
- HIPPO Education – Pediatrics

**National organizations**
- EMRA Pediatric EM Division
- ACEP Pediatric Emergency Medicine Section
- PEM Database – email listserv
- AAP Section on Emergency Medicine

**Conferences**
- ACEP Scientific Assembly
- ACEP Advanced Pediatric Emergency Medicine Assembly
- Pediatric Scientific Assembly (PAS)
- AAP National Conference
- SAEM Annual Meeting

**How to find a mentor** Look within your home institution for PEM faculty to guide you in your consideration of fellowship. Outside of your program, consider applying for a mentor through the EMRA Mentor Match program on the EMRA PEM Division website or through the EMRA Medical Student Council, which will match you with a PEM faculty member nationally.

**To submit updates or to assist with future revisions, please email fellowships@emra.org.**
INTRODUCTION

Description of the specialty Population health has been defined by the American Journal of Public Health and Milbank Quarterly as “the health outcomes of a group of individuals, including the distribution of such outcomes within the group.” The goal of this specialty is to reduce and potentially eliminate health disparities stemming from social determinants of health (such as cultural, economic, environmental, etc.) Social emergency medicine narrows the field of population health by focusing on the emergency department acting as the local population’s health and social “safety net.” By analyzing the interplay between the social forces of the local community and its interaction with the emergency system, this specialty strives to impact these social forces with the goal of improving the individual and thus community health and well-being.

History of the specialty/fellowship pathway Population health as a specialty did not become prominent in the United States until the late 1990s and early 2000s. It is still a young specialty, with only 2 fellowships available.

Why residents choose to follow this career path Residents choose this career path when they are interested in impacting population health and policy through community outreach, research, health policy, clinical services, and education.

How do I know if this path is right for me? Are you interested in the social origins of health and disease? Do you find yourself dedicated to examining the interactions between emergency medicine and the social forces that affect population health and well-being of our communities? Are you interested in working on collaborative interventions where you design, implement and evaluate these new strategies? If so, this
fellowship may be for you.

Career options after fellowship Career options after fellowship beyond the traditional appointment as an emergency medicine faculty include (but are not limited) to the following: government positions for the Department of Health Services, assisting in the formation of health policies, developing quality improvement initiatives, developing local programs such as HIV testing or infant mortality prevention, and employment with nonprofit agencies.

Splitting time between departments Traditionally, EM physicians who complete this fellowship do not necessarily split time between departments. Rather, their primary appointment falls under emergency medicine, and their population health commitments fall under protected administrative time.

Academic vs. community positions The decision between academic and community positions depends on the physician's desire for research; academic programs traditionally have increased access to funding as compared to community programs. Other factors to help make this decision include desired location for employment and the hospital's current and/or willingness for future involvement in programs that focus on improving population health.

IN-DEPTH FELLOWSHIP INFORMATION

Number of programs Currently there are 2 programs:
- Stanford Social EM and Population Health
- University of Wisconsin Population Health Institute

Differences between programs Stanford is unique in that it is the only fellowship that specifically targets emergency physicians. The University of Wisconsin requires a master’s or doctoral degree in public health or an allied discipline at the time of appointment. Thus, Stanford is the only program that includes physician clinical activities in its fellowship.

Length of time required to complete fellowship Stanford is 1-2 years, depending on whether the fellow chooses to complete a master’s degree and/or research project. University of Wisconsin is a 2-year service and training fellowship.

Skills acquired during fellowship During fellowship, you will obtain skills in scientific research, health policy formation, community health advocacy, team communication, and program administration.

Typical rotations/curriculum Curriculum usually includes research, involvement in curriculum development and health policy formation, involvement in community outreach programs/community health, and course work in public health.

Board certification afterwards? There is no board certification after fellowship. However, most fellows will have completed a master’s degree in public health during fellowship in the Stanford fellowship. The other program typically requires an applicant to have an MPH prior to fellowship.

Average salary during fellowship Because this is not an ACGME accredited fellowship, salary during fellowship is typically comparable to that of a part-time ED attending.

PREPARING TO APPLY

How competitive is the fellowship application process? Although there are typically a low number of applicants to these fellowships, because there are limited fellowships with limited spots, this is considered a reasonably competitive fellowship.

Requirements to apply Stanford requires candidates to be either in their last year of residency or have completed an ACGME-approved residency program in emergency medicine to apply. University of Wisconsin requires a master’s or doctoral degree in public health or an allied discipline.

Research requirements Completing research during residency is highly recommended for applicants considering this fellowship, especially research with ties to population health. It is better to have 1 completed research project than to have 3 incomplete projects at the end of your residency.

Suggested elective rotations to take during residency Suggested elective rotations to consider (but not limited to) include research, administrative, community health clinics, state or local public health office, and substance abuse clinics.

Suggestions on how to excel during your elective rotations On your elective rotations, strive to be the hardworking resident who is known to come in early and stay late. Be enthusiastic, helpful, and friendly. Be a team player. Continue to read every night and expand your knowledge base about population health topics.

Should I complete an away rotation? If you are interested in Stanford, it may be worth considering an away rotation at their institution since this is such a unique program. Be aware that this rotation will be a way not only for you to get to know the program, but also for the program to get to know you. Be on your
best behavior during this rotation and treat every day as an interview day.

**What can I do to stand out from the crowd?** The best way to stand out from the crowd is by building a solid CV that displays leadership, educational, and research activities that clearly display your interest in population health.

**Should I join a hospital committee?** If there is a hospital committee in which you are interested and could have a meaningful role, then you should definitely participate. Hospital programs with community outreach involvement would be ideal to help prepare for fellowship.

**Publications other than research** Publications other than research, such as blog posts, magazine articles, podcasts, etc., are recommended and highly encouraged. These are great ways to educate yourself and the community especially about topics regarding population health. Do not forget to list such opportunities on your CV.

**How many recommendations should I get?** How should I write these recommendations? Both programs require 3 letters of recommendation. Stanford specifically requests that 1 of these letters be from either your program director or department chair. The other 2 letters should be from physicians and/or researchers who know you well and are willing to write you a strong letter. Having a letter writer within the field of public health would be very beneficial.

**What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship?** Yes, you can still be competitive. Be prepared to answer questions during your interview about this gap in your application. Also, make sure you continue to build your CV during your time as an attending. For example, continue your involvement in research projects, community or hospital-based leadership roles, etc.

**What if I’m a DO applicant?** There are no known barriers to DO applicants.

**What if I am an international applicant?** We recommend for international applicants to contact each program individually. University of Wisconsin requires foreign nationals to have U.S. permanent citizen status.

**APPLICATION PROCESS**

**How many applications should I submit?** Apply to all programs where you would strongly consider accepting a fellowship position if offered.

**How do I pick the right program for me?** Pick the program that strongly aligns with your career goals. Choose a program in an area where you will be comfortable living for 2 years.

**Common mistakes during the application process**
- Missing application submission deadlines.
- Choosing authors for your letters of recommendation who do not know you well.
- Grammatical mistakes in your application.
- Failure to have activities on your CV that display leadership.
- Failure to have activities on your CV that display your interest in population health.
- Unfocused or inconsistent personal statement.

**Application deadlines** Stanford has an application due date of mid-November (with a July 1 start date in the following year), whereas the University of Wisconsin lists a deadline of mid-December.

**Tips for writing your personal statement** Your personal statement is a place to let your personality shine through and to set yourself apart from the other applicants. Be careful not to simply repeat your CV, but rather explain why you are interested in population health and how this fellowship will help you achieve your career aspirations. The best personal statements are cohesive and immediately grab the reader from the beginning.

**Is this a match process?** No.

**What happens if I do not obtain a fellowship position?** If you do not achieve a fellowship position, the best thing is to take a step back and analyze your application looking for areas of weakness. It may be worth gently asking the programs where you applied if they have suggestions for improvement. It is also worth considering asking someone in a leadership position, such as your EM program director, to look over your application for weaknesses as well. Spend the next year addressing the deficiencies on your application and apply again. It is also possible to find a career in population medicine without completing a fellowship.

**INTERVIEW PROCESS**

**How do I stand out from the crowd?** The best way to stand out from the crowd is by displaying a strong, clear interest in population health and articulating your plans for a career after fellowship. Be friendly and pleasant with everyone you meet. Practice your interview skills with someone in a leadership position at your current residency program prior to your fellowship interview.
What types of questions are typically asked?
- Why are you interested in a population health fellowship?
- Why are you interested in a population health fellowship at our program specifically?
- Tell me more about “blank” that you list here on your CV.
- What are your 5- and 10-year career goals?

How many interviews should I go on? You should attend all interviews offered (assuming you applied only to programs you are serious about attending if offered a fellowship position).

PREPARING FOR FELLOWSHIP

Textbooks to consider reading

Important skills to practice while in residency to prepare for fellowship It is important that you first and foremost strive to become a strong emergency physician during your residency. Other skills to focus on include developing your skills as a researcher, educator, and advocate for vulnerable patient populations.

Tips on how to succeed as a fellow Take advantage of everything your fellowship has to offer. Fellowship is a unique time to develop your skills with the close guidance of mentors who have been in the field for years. Come in early for your required rotations and responsibilities, stay late, and make sure you continue to build your knowledge base by reading daily. Seek out feedback and strive to improve your skills daily. The existing fellowships offer opportunities to earn an advanced degree; strongly consider pursuing this opportunity. Finally, use this training to develop a community program or health policy initiative that improves local and/or global population health.

CONCLUSION

Additional resources

Journals and journal articles:
- Population Health
- Anderson ES, Hsieh D, Alter HJ. Social


Blogs/Podcasts:
- Improving Population Health
- Robert Wood Johnson Foundation’s Culture of Health blog
- Population Health for Clinicians

National organizations
- World Health Organization

Conferences
- PopHealth Summit
- Population Health Colloquium

How to find a mentor We know of no existing central website that links interested physicians with mentors within the field of population health. Consider reaching out to individual programs to find networking opportunities or mentors within that program or hospital system.

To submit updates or to assist with future revisions, please email fellowships@emra.org.
INTRODUCTION

Description of the specialty Emergency medicine research fellowships are a non-ACGME-accredited post-graduate training opportunity for emergency medicine (EM) residency graduates interested in pursuing a career in basic and clinical research. The Society for Academic Emergency Medicine (SAEM) has approved a subset of eligible research fellowships that have met a number of milestones based on predetermined guidelines. Fellows who complete a research fellowship at a SAEM-approved site receive a certificate of approval upon completion. Emergency medicine is a dynamic specialty that relies heavily on evidence-based medicine to guide everyday practice. EM is an ideal specialty for studying acute emergencies with a broad mix of patients and conditions. The proportion of academic faculty involved in research and the proportion of studies published in emergency medicine journals that have research funding has been climbing (Karras, 2006 and Birkhahn 2006). Emergency medicine research is growing quickly, and fellowship training has been one successful pathway to increase EM research success.

History of the specialty/fellowship pathway The Josiah Macy Jr. Foundation sponsored a conference in 1994 titled “The Role of Emergency Medicine in the Future of American Medical Care,” which recommended that medical schools develop and enhance academic departments of emergency medicine. The conference also recommended that the American College of Emergency Physicians (ACEP) and SAEM should convene a conference to develop an agenda for research in EM and to define strategic options for implementing that agenda. The Research Directions Conference in 1995 presented 5 recommendations of their own in response to the Macy conference in order to develop and enhance research support both outside and within departments of EM. These recommendations included (1) to support
basic, clinical, and health services research pertinent to EM practice, (2) to promote collaborative and interdisciplinary research within and across traditional institutional boundaries, (3) to develop new systems to manage clinical information, (4) to develop new methods to assess the outcomes of emergency care, and (5) to seek and develop increased funding sources for EM research. The Future of Emergency Medicine Research Conference in 1997 issued a call for more EM physicians (1) to pursue fellowship training within and outside the traditional EM settings, (2) to seek advanced degrees, and (3) to develop focused research mentorships. The conference also recommended that academic institutions (1) draft a strategic plan to develop or improve research capabilities for EM, (2) protect time for productive researchers, (3) support promising interdisciplinary collaborations, and (4) provide statistical and study design support within their departments. The Emergency Medicine Foundation, SAEM, and ACEP have been tasked with advancing these various goals and to act as a clearing house of advanced research training opportunities pertinent to EM and to facilitate the advancement of promising individuals into research fellowship training.

Why residents choose to follow this career path
Residents who desire to incorporate the conduct of research into their career while working at an academic institution choose to follow this career path. Several studies have demonstrated that residency and fellowship training with a focus on research is associated with increased career satisfaction, as well as success in obtaining increased grant funding, academic promotion and an increased number of publications.

How do I know if this path is right for me? If your goal is to become a leader in the field of emergency medicine research, then this is the right path for you. Individuals who pursue a research fellowship have a passion for discovery in health services and clinical research, research methodology, and/or biostatistics. A career in research also includes a fair amount of writing in the form of manuscripts and grant proposals, so an aptitude for writing, while not a necessity, is definitely an advantage. Individuals who go into academic emergency medicine in general are enthusiastic about teaching and enjoy collaborating with an interdisciplinary team.

Career options after fellowship Most research fellows remain in academic medicine after fellowship. Some fellows accept an attending position at the institution where they completed their fellowship, giving them the opportunity to continue their research. Others accept faculty positions at other academic institutions as members of a research division. There are also positions available in health policy if you opt to do a health services research fellowship. Where you end up really depends on what the research focus was during your fellowship. It is important to find a program that will allow you to develop your clinical skills as a faculty member at an institution that has the resources available to fund your research.

Academic vs. community positions Nearly all EM researchers practice at an academic institution. There are very few opportunities or institutional funding available to perform research in a community setting.

IN-DEPTH FELLOWSHIP INFORMATION

Number of programs There are currently 32 non-SAEM approved sites and 15 SAEM approved sites in the United States and Canada.

Differences between programs All of the programs will aim to train you to be an excellent researcher in emergency medicine or a multitude of other disciplines. SAEM created a list of fellowships in order to promote standardization of training for fellows though many excellent programs do not participate in the SAEM review process. There are a number of milestones that institutions must address in curricular elements, faculty support recommendations, and career development opportunities in order to be considered an SAEM-approved site. Fellows will receive a certificate of approval upon completion of a SAEM-approved site. Many programs offer opportunities to obtain an advanced degree including a Master’s of Public Health (MPH) or a Master’s of Science in Clinical Research (MSCR). Research fellowship programs are often dedicated to a specific area of research while others provide research opportunities in a number of different areas specific to emergency medicine. It is important to visit each institution’s web site to determine if there is a specific research focus.

Length of time required to complete fellowship Research fellowships are 2-3 years in length.

Skills acquired during fellowship All programs will train fellows to conduct high quality research. In general, research fellowships will include the following components: (1) course work in methodology, biostatistics and content area expertise, (2) direct mentoring from senior research faculty, and (3) practical experience in the form of a fellowship research project. SAEM-approved fellowship programs are required to specifically address instruction in the following areas including hypothesis generation, research design, data collection methods, data monitoring and interim data.
analysis, data analysis, presentation of research, project management, ethical aspects of medical research, regulatory requirements, informatics, teaching skills, manuscript submission and grant submission. Fellows are expected to submit at least one study to the IRB during training. Fellows are also expected to author at least 2 full-length manuscripts and submit a competitive grant application to the NIH or another major national organization for at least $100,000. It is recommended that clinical hours be restricted to 8 hours per week, and it is required that clinical hours be restricted to a maximum of 12 hours per week. All fellows are required to pursue their research training for 40 hours per week, and programs must guarantee that trainees will have at least 75 percent nonclinical time for at least 2 years.

**Typical rotations/curriculum during fellowship**

The curriculum is institution-dependent especially with non-SAEM-approved sites. Generally, the first year concentrates on didactic coursework working towards a MPH or MSCR, and conducting preliminary work on a research project. The second year focuses on continuing master’s coursework and preparing grant for submission to a federal agency. Fellows also have clinical duties and teaching during their two years. A minimum amount of protected time is set aside for research related academic activities, which is dependent upon each program. Other activities can include fellow seminars, which involve grant proposal discussions and work in progress presentations.

**Board certification afterwards?** There is currently no board certification for research fellowships, although there is an SAEM-approved fellowship certificate of approval.

**Average salary during fellowship** Salary is variable, ranging from a low range approximately equivalent to that of a PGY-4 to a higher range similar to other clinical instructors. Practically this range is between $55,000 to $95,000 per year. Most of this variation is driven by the clinical work differences between fellowships. Benefits, tuition and travel funds vary based on institution.

**PREPARING TO APPLY**

**How competitive is the fellowship application process?** Research fellowships are not generally thought of as highly competitive. Most applicants who apply end up finding a position but applicants for research fellowships tend to be very accomplished. Fellowships vary in terms of mentorship and structure. It is important to find a research fellowship with good mentors and one that has a structured plan to gain skills in data analysis, manuscript preparation, and grant writing.

**Requirements to apply** The only requirement is that applicants are board-prepared or board certified in emergency medicine. Since this is a research fellowship, a demonstrated interest in health services or clinical research, and a commitment to a career in academic emergency medicine is a must. There are no set guidelines in terms of how many publications an applicant needs to be considered competitive, however, it is recommended that the applicant complete at least one research project during residency. Ideally the applicant should have at least one publication in a peer-reviewed journal and at least one poster presentation of their research at a national conference.

**Suggested elective rotations to take during residency** The research fellowship is unique because there are no specific rotations to take during residency. It is important to start looking for a research project early in your residency especially if you are coming from a three-year residency. Starting a project on your own and finding a mentor that will work with you may not be time effective given the time it takes to plan, execute, and publish a research project. The best way to mitigate the time constraint of residency is by joining an active project that is already underway within your department. One way to get involved early is by attending research meetings within your department’s research division and finding out what projects are currently active or in the planning process. Another way to get involved is by contacting a mentor within your department that is involved in a research project that may interest you. Joining an ongoing project may have a number of advantages. It enables you to contribute to a project early on in your residency with the potential for your name on a publication and provides an opportunity for you to present your research at a national conference. Working on an existing project can also lead to your involvement in other group projects or allow you to develop a project of your own with a member of your team. Most residencies allow time for research electives in 2-4-week blocks as long you demonstrate that your time off will be spent on a meaningful research project with a mentor.

**Suggestions on how to excel during these elective rotations** The research elective is unique compared to other rotations because most of your time is spent alone working on your research project with a mentor. It is important not to fall into the trap of using this time as a second vacation. You should have a clear plan of what you would like to accomplish during your elective and an agenda for each day. Make sure that the faculty member that you will be working with has
the time to work with you during your elective and that they understand the goals of your elective as well. This is the time during residency when you can dedicate all of your energy to your research project. However, don’t expect to finish your project during this limited time period. Rather, you should use this time on aspects of your project that might require more of your attention. You could also use this time on reporting your research, including writing an article, preparing a poster for an upcoming conference, or completing a manuscript.

**Should I complete an away rotation?** Rather than an away rotation, consider a remote collaboration with an experienced researcher involved in an area of emergency medicine research that does not exist at your institution. This is a viable option, particularly if the research does not involve direct patient interaction. Working with a faculty member from another institution can also provide opportunities for future collaborations.

**What can I do to stand out from the crowd?** Your application should reflect meaningful involvement in a research project. Performing meaningful research on one or two related projects during your residency rather than on multiple unrelated projects at a cursory level will have more of an impact on your fellowship application and your professional development as a researcher. Meaningful research includes working on the design and implementation of the project, assisting with the Institutional Review Board (IRB) and grant application, presenting a poster at a national conference, and primary or secondary authorship on a peer-reviewed manuscript. Involvement in educational and administrative activities at your institution in addition to your research activities would demonstrate your commitment to a career in academics. Taking on a leadership role within your institution’s research track or on the national level with a research committee can reflect positively on your application and show reviewers your potential as a leader in the emergency medicine community. Being a chief resident is not a requirement.

The other thing you may consider is applying for an Emergency Medicine Foundation (EMF) resident research grant to fund your project during residency. Although the funding is modest, this level of commitment and organization demonstrates a skill set that is valuable for future trainees in a research fellowship.

**Should I join a hospital committee?** Consider joining a hospital committee if it relates to your research in some capacity. Being on a committee may expose you to faculty members from other specialties that may have similar research interests and provide for future collaborations.

**Publications other than research** There are a number of opportunities in emergency medicine to publish including blog posts, book chapters, magazine articles, and podcasts. Contact faculty members in your department who are active in Free Open Access Medical Education (FOAM) to see if there are any opportunities for you to publish articles pertaining to your area of interest. Publishing a case report in a journal or blogpost that relates to your research is also a quick and easy way to add to your resume.

**How many recommendations should I get?**

**Who should write these recommendations?** All programs require a letter from either your program director or chair of the emergency department. You should also submit a letter of recommendation from the faculty member with whom you worked the most closely on your research project.

**What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship?** Yes, it is possible to return to academics after working as an attending for a couple of years, but it is not easy. Most research fellowships are offered informally, which is easier to obtain when you are in residency when you have daily contact with academicians in the field. Also, it may be hard to go back to a trainee salary once you start making a faculty or community physician salary. If you do opt to work as an attending for a couple of years prior to fellowship, make sure that you stay up to date on the latest literature in your field of interest, maintain contact with academicians, and continue to be involved in research to be prepared for returning to academic research and practice.

**What if I’m a DO applicant?** There are no restrictions for applicants from a DO residency to apply to a research fellowship in an allopathic program. Ensure that you take all 3 USMLE Step exams before applying.

**What if I am an international applicant?** International residents are welcome to apply to research fellowships as long as all program requirements are met and you have passed all 3 USMLE exams. Make sure the programs that you are applying to support your visa prior to applying.

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### APPLICATION PROCESS

**How many applications should I submit?** Only apply to institutions that you are serious about attending. You should start contacting research faculty toward the end of your residency to find out if they are accepting fellows for the coming year. Some programs have a specific research focus that may or may not
interest you while others allow for a broad range of potential research topics. It is important to find out what the research focus is at your institution of interest prior to applying, and to see if it falls in line with your research interests. There is no specific number of programs to apply to, but having multiple offers to choose from is better than none at all.

**How do I pick the right program for me?** You need to find a research fellowship that has a robust research program that matches your interests and goals. Some programs have a specific research focus while others allow for a diverse range of research topics. It is up to you to find out which program represents your research interest and to make sure that they have the funding available to fund your research for the next 2 years. Find out who has graduated from that program in the past, and find out if they are still actively involved in research to get an idea of what you can expect after graduating from the program. This is probably the single most important variable to consider – are past graduates of this program in academic positions? Are they continuing to conduct scientific research? Have they been promoted? Are they funded? Try and get a feel for the faculty, nursing staff, and other fellows in the program during your interview to see if your personality and goals are in-line with theirs. Geography also plays a role in your education, especially if you are planning on relocating your family for the next two years. Make sure you visit the area with your family, if applicable, before committing to any program.

**Common mistakes during the application process**
Reach out to faculty members who you are interested in working with early in the application process. Make sure you are continuously updating your CV during the course of your residency, and make sure that your CV is complete and accurate. Be honest about your level of involvement on each project that you list on your CV. Make sure to send your CV, letter of interest, and letters of recommendation well before the November 1 deadline. Give faculty writing letters of recommendation on your behalf plenty of time to complete your letters of recommendation.

**Application deadlines** The deadline for most programs is November 1 of each year.

**Tips for writing your personal statement** Your letter of intent should address why you are interested in a career in research and academic emergency medicine. Use the letter of intent as an opportunity to describe your research in more detail and how you hope to contribute to the practice of emergency medicine on a larger scale. Don’t make the mistake of just reciting what is on your CV. Describe how your research has impacted patient care in the emergency department by providing an anecdote that ties your research and patient care together. Your letter should be a mature reflection of what it means to you to work in academic emergency medicine. Do not forget that research is just one aspect of your fellowship training in addition to resident mentoring, which you should acknowledge in your letter as well. Make sure you send your letter to multiple people in addition to your research mentor prior to submission. Consider sending your letter to people outside of medicine as well (Let’s face it: Doctors don’t always make the best editors.).

**Is this a match process?** No.

**What happens if I don't obtain a fellowship position?** Contact your mentor to review your application to find any deficiencies that might have compromised your admission to a research fellowship the first time around. Talk to your program about staying on for another year in a less competitive fellowship. One year is not enough time to start a new research project, but you might be able to join an existing project with the potential to publish. Use this time to enhance your application and to strengthen your contacts in the research field. This would also be a good time to pursue other interests in EM that you were hesitant to pursue before.

**INTERVIEW PROCESS**

**How do I stand out from the crowd?** The most important thing to remember in an interview is to be yourself. Most interviewers have years of experience interviewing candidates and are quite adept at recognizing insincerity. Try to highlight your strengths as a researcher without appearing too arrogant or self-absorbed. It is important to articulate how the program can help you achieve your goal of becoming a successful researcher while also describing what you can bring to the program. Be realistic in your goals for the next 2 years and discuss what you would like to achieve as a fellow in the research division. Find out as much as you can about the program you are applying to by asking other faculty members in emergency medicine, and visiting their website prior to your interview. Find out which faculty are active in the research division and read up on a couple of recent publications in addition to any landmark publications the department might have produced over the years. Be clear about your research goals and talk about which faculty you would be interested in working with to achieve those goals. Go on a couple of mock interviews (with faculty members at your institution) prior to your actual interview with faculty members who have had experience with the fellowship interview process.
What types of questions are typically asked?
Be prepared to explain your research in detail from planning to execution depending on your level of involvement. This shouldn’t be a problem as long as you were honest in your application about your involvement on a specific research project. You should appear enthusiastic about your projects and the program where you are interviewing. Make sure you read up on recent developments and publications within your specific research field of interest. You should have a good understanding of what will be expected of you as a faculty member in addition to research. Prepare a list of thoughtful questions that you have about the program that cannot be easily found on their website.

How many interviews should I go on? There is no specific number of interviews that you should attend when applying for a research fellowship. Only attend interviews at programs that you are really serious about. It is a waste of your time and disrespectful to the program interviewing you if you are not earnestly considering them to begin with. You should really only be interviewing at programs where you could realistically see yourself staying after fellowship as a faculty member.

PREPARING FOR FELLOWSHIP

Literature to consider reading
- Benos DJ, Kirk KL, Hall JE. (June 2007). How to review a paper. Retrieved from http://advan.physiology.org/content/27/2/47.full

Important skills to practice while in residency to prepare for fellowship Planning for designing a research presentation, presenting research, and writing.

Tips on how to succeed as a fellow The overall key to a successful research fellow is being able to develop a program that addresses their professional goals in emergency care research, mastering research methodology through didactic study and individual mentorship, becoming proficient in project management, grant writing and grant submission, and developing an understanding and appreciation for the career track of an academic emergency medicine physician. Start applying for funding as early as possible before your fellowship starts. Applying early will give you time to reapply if you are rejected on your first attempt. Make sure that your research interests align with your mentor. Formulate a clear plan for postdoctoral funding as you transition from research and fellowship (T & F series) grants to career development grants (R & K series). Join a grant committee through one of the national organizations in order to develop contacts with researchers from other institutions. Finally, participate in a faculty development course which is available through a number of organizations.

CONCLUSION

Additional resources

Journals: This really depends on your specific area of research. We would recommend starting with some of the more common journals in emergency medicine to find out what is “hot” right now in the field of emergency medicine research. General recommendations are:
- NEJM Journal Watch for Emergency Medicine
- JAMA
- Annals of Emergency Medicine
- Academic Emergency Medicine

Clinical Resources/Websites/Blogs:
- EMRA Research Committee
- ACEP Emergency Medicine Research Section
- SAEM Research Committee:
  - Emergency Medicine Foundation

National organizations Consider joining EMRA’s resident and fellow-run research committee. There are many ways to get involved with the committee, and it’s a great way to connect with other residents interested in EM research. SAEM also offers great mentorship and collaboration for emergency medicine researchers, including trainees.

Conferences Consider attending the national conferences including ACEP and SAEM. SAEM also has a number of regional conferences that you might consider attending to find out what is going on in your region, present your research, and to make new contacts.

How to find a mentor The best way to find a mentor is at your home institution early in your residency. Find out
which faculty members are active in research either by word of mouth or on your residency program’s website. Contact them to see if they would be willing to have you join an existing project they are working on or assist you in starting a project of your own. If they don’t have anything going on at the moment they might be able to direct you to a faculty member that does. You can also reach out to mentors at other institutions if they are involved in research that you are really passionate about. Make sure to come prepared with questions for your mentor and schedule regular meetings.

To submit updates or to assist with future revisions, please email fellowships@emra.org.
INTRODUCTION

Description of the specialty Interested in critical care and emergency department resuscitation but not in the day-to-day rounding and inpatient medicine of the intensive care unit (ICU)? The resuscitation fellowship allows for focused clinical and scholarly training to care for the critically ill patient in the emergency department (ED). Some of the fellowships are research-oriented and help develop the clinician-scholar, often offering advanced degrees in addition to working and training clinically. Other fellowships have a stronger focus on developing clinical resuscitation skills, especially the skills needed to work in an ED-based ICU. These fellowships are best suited for emergency physicians who want to maintain a clinical practice solely in emergency medicine with an academic or research emphasis in resuscitation and/or ED-based critical care. The commitment varies from 1 to 2+ years depending on interest in pursuing advanced degrees. This fellowship is non-ACGME board eligible at this time.

History of the specialty/fellowship pathway The fellowship has evolved from a need for emergency-based resuscitative care. Many EDs have long ICU boarding times, and additional training to care for these critically ill patients is desirable to ensure the high-quality “upstairs” ICU care is available “downstairs” in the ED. The ED is also a prime location to enroll patients for resuscitation and critical care research, especially for early treatment of sepsis, cardiac arrest, and the golden hour of trauma, among many other research areas. More recently, some emergency departments are developing short-term ICUs to care for critically ill patients with anticipated rapid improvement in clinical status (for example, the University of Michigan’s Emergency Critical Care Center). These patients have a length of stay anticipated to be too long for a traditional ED visit but could likely be “turned around” fast enough to avoid an inpatient ICU admission. Specialty training of EPs is needed
to ensure quality ICU-level care of these patients and this fellowship addresses that need.

**Why residents choose to follow this career path**
Residents choose to follow this career path when they desire to become a resuscitation and critical care specialist within the emergency department without working in the inpatient setting. This pathway is geared toward training to treat high-acuity patients in their initial phase of presentation, before the patient is transferred to the ICU. This is also an opportunity for mentored research focusing on critical care and resuscitation in the ED.

**How do I know if this path is right for me?**
If your goal is to become better at resuscitation as an emergency physician without the option of working in an ICU, or become a leader in resuscitation research, this is the fellowship for you!

**Career options after fellowship**
Primarily academic and research oriented. Clinically, fellowship graduates work in emergency departments and ED ICUs. Some graduates take on research positions within the emergency department and some have administrative roles.

**Academic vs. community positions**
There is always the option of a community position, but historically this fellowship appeals more to residents seeking academic positions. This fellowship also has the potential for hybrid careers such as consulting and administration.

**IN-DEPTH FELLOWSHIP INFORMATION**

**Number of programs**
There are a limited number of fellowships currently, but the field is continuing to grow:

**Research focus:**
- University of Pennsylvania
- Virginia Commonwealth University
- Beth Israel Deaconess Medical Center
- University of Illinois at Chicago

**Clinical focus:**
- Stony Brook University Hospital
- Hershey Medical Center

**Differences between programs**
Programs generally have either a research or clinical focus. Each program has some crossover, and some have more than others. All programs will train you to be an excellent resuscitation scholar. There is variation among the programs with a clinical curriculum in terms of number and type of elective and ICU experiences offered and clinical shifts in the ED. Location of your fellowship inevitably results in some variation of patient disease processes encountered during fellowship. Emphasis placed on research and other administrative activities will vary as well.

**Length of time required to complete fellowship**
Resuscitation fellowships are 1-2 years in length. The duration often depends on if the fellow pursues an advanced degree in research.

**Skills acquired during fellowship**
Programs with clinical training will train you to provide high-quality care to critically ill patients in the emergency department. You will become a master of resuscitation and of providing advanced life support from the initial presentation until the patient is in the ICU. Through didactic sessions and clinical training, you will obtain in-depth knowledge about the physiology, clinical presentation, and treatment of disease states that lead to life-threatening illnesses. Your current technical skills will be refined, and you will learn new procedures and undergo advanced ventilator training. For those programs with research training, you will have specialized mentoring, protected time for scholarly work and the opportunity to pursue advanced degrees in research. Each program's emphasis on research vs. clinical training is different, and it is important to contact each program to know where the emphasis lies.

**Typical rotations/curriculum during fellowship**
Rotations and curriculum varies by program. Programs focused on research have less clinical training but may offer advanced physiology/basic science or biostatistics/research methods courses. Programs focused on clinical resuscitation training have rotations in the ED and ICUs.

**Board certification afterwards?**
No.

**Average salary during fellowship**
Salary varies across programs. Some programs pay PGY-4, 5, 6 salaries and some pay adjusted attending level salaries.

**PREPARING TO APPLY**

**How competitive is the fellowship application process?**
There is not a lot of information available, because applications are made directly to the programs themselves, and no formal match process applies to these programs. Given the limited number of programs, the process appears fairly competitive.

**Requirements to apply**
The only requirement to apply is that applicants must complete a residency in emergency medicine. Most programs request a letter of interest and curriculum vitae via email to initiate the conversation with the fellowship program director.
**Research requirements** Research seems to be highly recommended, especially with a focus on ED critical care as this indicates a strong interest in this facet of medicine.

**Suggested elective rotations to take during residency** There are not any specific requirements but trauma and critical care rotations in the medical, cardiac, surgical, or neurological intensive care unit would be very beneficial prior to starting this fellowship.

**Suggestions on how to excel during these elective rotations** Make sure you are well-read about the fundamentals of critical care and are also up to date on the latest research in the field. You should plan to arrive early and stay late daily and be a dependable team member. Make it a point to know all the patients on the service well. During rounds, your presentations should be polished, thorough, and medically sound. You should update families without being asked and should adeptly coordinate care for the patients with other specialties as indicated. Make it a point to lead the team during resuscitations in the ED and ICU, and be proficient with your procedure skills.

**Should I complete an away rotation?** It may help to rotate at a program that has this fellowship to be able to see what the resuscitation fellow does, but this is not necessary.

**What can I do to stand out from the crowd?** Your application should demonstrate multiple meaningful activities in resuscitation and critical care. It is better to have a couple projects that you have significant involvement in than multiple projects that are disjointed. A common theme among your activities such as administrative, educational, or research is recommended instead of having a smattering of projects. Show evidence of leadership and self-starter mentality. Create strong relationships with mentors who will be able to write you strong letters of recommendation. You should have a strong performance in residency, should clearly be a hard worker and enthusiastic resident.

**Should I join a hospital committee?** If your hospital has committees that are based in critical care, it is worth considering joining. The goal would be to have meaningful involvement in the committee with resulting positive impact on patient care. These committees can potentially expose you to leaders in critical care within your hospital, and may lead you to your future letter writers.

**Publications other than research** Other opportunities include, but are not limited to book chapters, blog posts, magazine articles, and podcasts.

How many recommendations should I get? Who should write these recommendations? Like most fellowship programs, you will need the support of your program director, but most of the application process is self-directed. Contact programs early to learn more about their specific application requirements and to allow for sufficient time for letter writers.

**What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship?** Yes, but you need to make this time after residency valuable. Get involved in writing and research in critical care and resuscitation. Join a critical care committee at your hospital. Become involved in national critical care organizations. Make sure you have a critical care mentor that will help ensure that you make this time productive and demonstrate your interest in critical care.

**What if I’m a DO applicant?** There are no special requirements for DO applicants.

**What if I am an international applicant?** You will need to demonstrate the same requirements and interest as other applicants, including taking USMLE. The biggest challenge will be in getting programs to support your visa. It would be best to ask programs about this prior to applying.

## APPLICATION PROCESS

**How many applications should I submit?** There are limited programs available, but you should only consider applying to those places where you would honestly consider working as a fellow.

**How do I pick the right program for me?** Your goal is to find a program that has access to a critically ill patient population, exposes you to different critical care environments in which you can apply your resuscitation skills, and has both the curriculum as well as the mentors that match your needs/interests/goals. For the research-focused programs, access to mentors in your area of research, access to sustained funding and opportunities for advanced degrees are important.

**Common mistakes during the application process** Start early! This application process is self-directed, and you will need to contact program directors and fellowship leadership to facilitate further interest.

**Application deadlines** No specific deadline, but starting in the latter half of your second-to-last year of residency will give you ample time to contact programs, develop relationships, and gather all application materials on time.
Tips for writing your personal statement
Your personal statement should address why you are interested in resuscitation and research. The best personal statements tell a story and have something unique/interesting that sets you apart from the pack. Keep a list of interesting critical care cases during your residency; this can be a branch point for your personal statement. Do not regurgitate what is already listed on your CV; rather, your personal statement should be a mature reflection on what it means to be a resuscitologist. Let your personality show through, and display yourself as thoughtful, intelligent, and insightful. Remember to send your personal statement to multiple people to help edit and fine-tune your masterpiece.

Is this a match process? No.

What happens if I don’t obtain a fellowship position? You will need to evaluate your application, preferably with someone who is either involved in the fellowship or has recently graduated the fellowship to look for deficiencies within your application. Spend the next year addressing these deficiencies and also practice your interview skills. Do not be afraid to re-apply. Consider pursuing other fellowship opportunities such as teaching or research, which would strengthen your overall application.

INTERVIEW PROCESS

How do I stand out from the crowd? Your goal in the interview process is to come off as a strong candidate. You want to highlight your strengths and things you can add to the program without being too pompous, aggressive, or self-absorbed. Supply good reasons about why you want to attend that specific program. The more you know about the program, the better the impression you will make. Find out as much about the program as you can, and treat it as if it is your No. 1 choice. Articulate not only how that program can help you achieve your career goals, but also what you can bring to the program. Hold a mock interview prior to the actual interviews to ensure that you present your best self. The goal is to be yourself and let your personality shine, show your passion for critical care medicine, and demonstrate what you can bring to the program of interest. Remember, these are small programs; you will need to impress upon leadership that you are a good team player.

What types of questions are typically asked? Be prepared to discuss your interest in critical care and resuscitation within the prehospital setting and emergency department as well as your career goals. You will likely be asked to recount specific experiences during your residency training. You will be expected to demonstrate that you have good clinical knowledge and understanding about the field. Know some of the “hot topics” within the field, such as therapeutic hypothermia or sepsis. Know your application inside and out, because questions about your leadership experience, publications, and research projects are all fair game. Be prepared to discuss your research projects as if you were presenting an oral poster presentation; not knowing your research makes it seem as if you played a superficial role. You should be enthusiastic about your projects, about critical care, and about the program where you are interviewing. Have an idea about what type of position you are aiming for after fellowship (ie, funded independent researcher or clinical resuscitation expert in an academic emergency department, for example). Be prepared with a list of questions to ask about the program. These questions should be thoughtful and not something easily answered by the institution’s website.

How many interviews should I go on? There is no recommended number of interviews that you should attend. Because of the competitive nature of this fellowship, the general advice is the more interviews you attend, the more likely you are to obtain a position. Ideally, you should attend any interview offered at programs where you would seriously consider an acceptance offer.

PREPARING FOR FELLOWSHIP

Textbooks to consider reading


Important skills to practice while in residency to prepare for fellowship

Procedural skills including (but not limited to) central lines, arterial lines, intubation, thoracentesis and paracentesis

- US skills, especially echocardiograms and lung exams
Leading a team and managing multiple sick patients
Leading medical resuscitations (codes)
Ventilator management
Knowledge of targeted temperature management and sepsis protocols

Tips on how to succeed as a fellow Read every night to expand your knowledge base. Work hard during your clinical shifts, and strive to be the best physician you can possibly be. Make sure you stay balanced and spend time with your friends and family.

CONCLUSION

Additional resources

Journals:
- Circulation
- Resuscitation
- NEJM
- Chest
- Journal of Trauma
- Anesthesiology
- Critical Care
- Critical Care Medicine
- Intensive Care Medicine
- JAMA
- Lancet
- American Journal of Respiratory and Critical Care Medicine

Podcasts:
- EMCrit
- iCritical Care podcast by SCCM
- SMACC Gold
- Intensive Care Network
- Medscape Critical Care podcast
- Critical Care Perspectives in EM
- Ragepodcast
- ICU Rounds

Clinical Resources/Websites/Blogs:
- http://www.learnicu.org/Pages/default.aspx
- http://intensivecarenetwork.com
- http://marylandccproject.org
- http://lifeinthefastlane.com/research-reviews-fastlane-064/
- http://pulmccm.org/main/
- http://www.wessexics.com/The_Bottom_Line/
- http://resus.me
- www.thoracic.org
- http://icuroom.net/index.html

National organizations EMRA has a Critical Care Division that is a great resource, is resident- and fellow-based, and offers multiple opportunities for involvement. ACEP also has a Critical Care Section that connects all EM physicians that are interested and/or trained in critical care medicine.

Other organizations to consider:
- American Heart Association (3CPR Council)
- ACCP
- ATS
- EAST
- SCCM
- European Resuscitation Council (ERC)

Conferences EMRA Critical Care Division has biannual meetings at SAEM and ACEP. The Critical Care Section of ACEP has annual meetings during the scientific assembly. SCCM has annual meetings in January. There are multiple other meetings, including but not limited to the following:
- Resuscitation Science Symposium (ReSS) at the American Heart Association Scientific Sessions
- SMACC Gold conference
- UPENN HART (Hypothermia and Resuscitation Training Institute)
- University of Maryland Medical Center Critical Care Conference
- Weil/UC San Diego Symposium on Critical Care and Emergency Medicine
- Northern New England Critical Care Conference
- Rocky Mountain Regional Critical Care Conference

How to find a mentor Within your home institution, your program director would most likely be able to guide you towards both local and national mentors; establishing good relationships with the intensivists on your critical care and trauma rotations may also help facilitate introductions. Attending organized medicine conferences such as SAEM and ACEP and meeting people presenting resuscitation research will assist in finding appropriate mentors. There are also young investigator events for networking at the American Heart Association Resuscitation Science Symposium. You should establish a mentor early during residency and do your part to foster this relationship by bringing questions and scheduling regular meetings. Search out feedback from your mentor and apply it. Given there are few programs, that accept 1-2 fellows annually, this is a small community. Try to reach out to program leadership or graduates of these programs to inquire about mentorship in resuscitation care and research.

To submit updates or to assist with future revisions, please email fellowships@emra.org.
INTRODUCTION

Description of the specialty Medical simulation is an educational technique that can bridge gaps in traditional education and training approaches through the safe, structured fostering of medical knowledge, decision-making, procedural skills, teamwork, and communication. Health care simulation as a specialty is guided by 4 main purposes: education, assessment, research, and patient safety. Simulation can be as extensive as virtual reality surgical simulators for fine technical skills, computer-based avatars and virtual patients for decision-making skills, or as straightforward as using actors with standardized patients for communication skills. A key component of this method of teaching is to promote a safe learning environment where technical and non-technical clinical skills can be taught, assessed, and reviewed with participants in order for them to apply the lessons learned and skills acquired to real patient care.

Currently, simulation is formally used in most core health care fields, eg, emergency medicine, internal medicine, OB/GYN, surgery, anesthesiology training programs, and by the full spectrum of medical professionals, including medical and paramedical providers, nurses and nursing assistants, physicians and advanced practice providers among others. The broad applications of simulation have led to an increase in the number of simulation centers in the United States, with more than 1,000 as of 2016.

History of the specialty/fellowship pathway Simulation as a method of training has been documented since the 6th century, but the most direct antecedent of simulation for modern medical education lies in aviation. U.S. military aviation accidents in the 1930s led to the armed forces’ acquisition and deployment of flight simulation trainers to decrease the frequency of these disasters. In the clinical realm,
CPR training mannequin development followed in the 1960s, and the importance of these devices to train people in potentially lifesaving CPR skills was the catalyst for modern medical simulation. Simulations in medical education advanced rapidly after the Institute of Medicine’s 1999 report, To Err is Human, outlined the value and need for interdisciplinary training to improve patient care and safety. The 1990s saw the rise of simulation-focused conferences, and the 2000s were the starting point for simulation fellowship training programs across the United States and internationally. The Society for Simulation in Healthcare, an international organization supporting the community of inter-professional simulation educators, was formed in 2004.

**Why residents choose to follow this career path**
Health care simulation is a field for those interested in the intersection of patient care, medical education, systems improvement, and technology.

**How do I know if this is right for me?**
Someone interested in a career in simulation education should anticipate working with learners at different training/practice levels (eg, undergraduates, professional students, active clinicians, experts) from a variety of disciplines across numerous settings (eg, community practice, hospital-based, medical, and nursing schools).

Someone interested in simulation education should be ready to serve as an educator as well as an administrator. This can mean involvement with institution-wide committees and strategic planning as well as small-scale operational management (eg, business plans, cost analysis and budgeting) to insure proper functioning and stability of the center.

**Career options after fellowship**
Simulation is a rapidly expanding, new field with many career opportunities. Many new or expanding simulation centers seek faculty for administrative, education, or research positions at junior and senior levels. For this reason, many former fellows from simulation fellowship programs are now simulation center directors across the country. Graduates may be offered academic/educator positions at an established institutional simulation facility or newly established training positions in traditional and/or emerging fields and specialties.

In general, a career in medical simulation will primarily involve direct education and hands-on training of learners, along with curriculum creation and implementation for different disciplines, experience levels and needs. Moreover, there are individuals working in private industry (eg, educational companies, technology companies, and insurance companies) as simulation center directors and health educators.

**Splitting time between departments** EM-based simulation fellows usually split their time between their simulation work and emergency medicine clinical duties. While some programs require their simulation fellow to work as an emergency physician in an affiliate site, other programs require participation only in simulation education related activities, with optional clinical duties; some facilities offer observational fellowship arrangements without clinical duties.

**Academic vs. community positions**
Depending on the setting, your responsibilities, learner cohort, and curricula will vary. Some simulation centers will be more focused on credentialing, task training, and team training, and others will devote a considerable amount of time to graduate medical education, medical student training and/or research. These distinctions, however, are not based solely on community versus academic training affiliations, as evidenced by the creation of a validated national simulation curriculum by the Veteran’s Affairs Health System.

### IN-DEPTH FELLOWSHIP INFORMATION

**Number of programs**
As of early 2016, there were at least 30 U.S. programs offering fellowships in EM-based medical simulation. For details including contact information, visit the EMRA Simulation Division website. Programs include:

- Alpert Medical School/Brown University
- Austen BioInnovation Institute in Akron/Summa Health System
- Children’s Hospital of The King’s Daughters/Eastern Virginia Medical School
- Dayton Veterans Affairs Medical Center
- Drexel University
- Durham Veterans Affairs Medical Center
- Hartford Hospital
- Hennepin County Medical Center/Mayo Clinics
- Institute of Medical Simulation and Learning/HHC hospitals
- John H. Stronger of Cook County Hospital
- Johns Hopkins
- Massachusetts General/Harvard Medical School
- New York University Langone Medical Center/Bellevue Hospital
- NYSIM
- North Florida/South Georgia Veterans Affairs Medical Center
- North Shore University Health System/University of Chicago
- Palmetto Health/University of South Carolina
- Pittsburgh Veterans Affairs Healthcare System
- Providence Veterans Affairs Healthcare System
Differences between programs Simulation fellowships vary in their curricula, background and needs of learners, extent of research and administrative opportunities, and options to obtain certification or an advanced degree. Some programs will strongly emphasize research, employ a strict fellowship curriculum, have a specific cohort of learners, offer advanced degree(s) or certification opportunities, etc.

Length of time required to complete fellowship Fellowships range from 1-2 years, with a typical start date of July 1. Most 2-year programs encourage or require the pursuit of advanced degrees, such as a Master’s in Education. Moreover, programs may provide funding for a Certificate of Teaching and Learning with a concentration in health care simulation, eg, through the MGH Institute for Health Professions or participation in the ACEP teaching fellowship.

Skills acquired during fellowship The skills developed during fellowship will vary depending on the focus, requirements, and the exposure provided by the program. The knowledge and skills acquired during fellowship will likely be a combination of curriculum development expertise, technical skills, debriefing techniques, academic research methods, the fundamentals of simulation program administration/operations, etc. Graduating simulation fellows should be able to coordinate and conduct simulation courses, capably operate high-fidelity simulators, perform reliable and meaningful learner assessments, debrief proficiently, and have been reported to do so the majority of the time halfway through fellowship.

Typical rotations/curriculum Most simulation fellowship training programs focus on teaching skills, educational theory, curriculum development, simulation center logistics, and research. The majority of education occurs experientially through planning, coordinating, organizing, participating in, leading, and debriefing simulation activities; receiving feedback from faculty members and simulation technicians; and participating in operations meetings.

Programs may incorporate in situ simulation within their fellowship curricula, which involves coordinating and implementing a simulation inside the hospital or affiliated clinical setting.

Board certification afterwards? There is no American Board of Medical Specialties (ABMS) board certification process for simulation; however, the Simulation Society in Healthcare (SSH) offers accrediting standards for simulation centers and examinations for simulation educator certification at basic and advanced levels. These certifications are the Certified Healthcare Simulation Educator programs. Additionally, there are multiple fellowships that provide certificates or master’s degrees in medical education through a variety of academic affiliated institutions.

Average salary during fellowship Salaries during fellowship vary by post-graduate year for the institution and range from $70,000-$75,000 in a recent survey.

PREPARING TO APPLY
How competitive is the fellowship application process? As there is no universal match process for simulation fellowships, there are limited data regarding their fill rate. A survey of 9 programs revealed that 78% of them had a 100% fill rate for the past 3 years.

Requirements to apply Although there are no specific or standardized academic requirements per se, many simulation fellowships may require a description of your teaching and research background and future goals within your cover letter. Additionally, some programs will require acceptance into an advanced degree program prior to application or expect the applicant to enroll in a master’s degree program upon acceptance into fellowship.

Research requirements Research relevant to the application may include ongoing studies, projects undergoing data analysis, or manuscripts in preparation. If you have not performed simulation research, you may be able to reference medical education projects, simulation cases or curricula, or medical teaching experiences.

Suggested elective rotations to take during residency There are no simulation rotations formally required prior to fellowship application. Fellowship programs commonly offer a 2- or 4-week elective in their simulation center. Many simulation fellowships do not advertise their electives, but one may be arranged by directly contacting the simulation center or fellowship director. Participating in this type of elective...
increases your exposure to simulation, broadcasts your investment and interest in the educational modality, and introduces you to potential programs of interest.

**Suggestions on how to excel during these elective rotations** If you choose to participate in a simulation rotation, you can excel by being enthusiastic and engaged in the rotation, meeting and exceeding elective expectations, proactively engaging in simulation sessions, and participating in the development and implementation of simulation curricula and research programs. Prior to beginning the rotation, discuss with the director his or her expectations: which activities he or she thinks you would benefit from participating in; if they want you to write and/or program a case; with whom they would like you to work. During your elective, you may help run a program from behind the scenes.

**Should I complete an away rotation?** Away rotations may familiarize you with potential programs, show your commitment to a geographic area, or provide you with simulation-related methods and experiences that you may not have been previously exposed to.

**What can I do to stand out from the crowd?** In a survey among simulation fellowships, directors reported research methodology and scholarly writing as the most desired competencies (57% and 48%, respectively).20

**Should I join a hospital committee?** Your home institution may have simulation committees, simulation interest groups or other educational / training entities that host simulation events- being active in these venues will provide opportunities to enhance your application. Participating in committees that address CPR, cardiac arrest, credentialing, quality management, and patient safety may be especially helpful in exposing you to the interdisciplinary nature and collaborative efforts associated with institutional simulation efforts.

**Publications other than research** In addition to research publications, there are several other ways to generate academic deliverables. You can actively develop and implement a simulation case at your institution; if you develop an interesting case, try submitting it to the AAMC’s MedEdPORTAL. You can work with faculty or fellows to develop a simulation-enhanced curriculum, e.g., for toxicology or procedural training. After implementation, consider submitting the project as an abstract to a national conference. If your institution hosts regional or national simulation workshops, volunteer to assist.

**How many letters of recommendations should I get? Who should write these recommendations?** Simulation fellowship programs typically request 2-3 letters of recommendations during the application process; many programs request one from the applicant’s program director.18,40 Others specify letters of recommendation from the applicant’s clinical department, medical education faculty, and/or simulation professionals.18,41

**What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship?** Fellowship programs typically accept board-eligible or board-certified emergency medicine residency graduates. If you have worked as an attending, you likely are eligible for the fellowship. How competitive you are as a candidate will depend on your teaching and assessment background, academic and research work, personal qualities, and letters of recommendation, similar to a pending residency graduate.

**What if I’m a DO applicant?** Some programs accept DO candidates only if they have completed an ACGME-accredited emergency medicine residency18,29,56; other programs accept DO candidates without ACGME accredited training. Contact the fellowship program’s coordinator or director for clarification.

**What if I’m an international applicant?** There are several programs that accept international applicants if no qualified U.S. citizens apply.17,18 At a minimum, international applicants are required to demonstrate appropriate English language abilities and be able to obtain a work visa (H-1B or J-1) or have U.S. resident status / citizenship. Non-clinical (observational) simulation fellowships may have alternative arrangements.

**APPLICATION PROCESS**

**How many applications should I submit?** The number of places you should apply to depends on the geographic area you are interested in (and the number of programs within those geographic areas). There has been no standard recommendation published and there is a dearth of data to specify the precise number of fellowship programs to be applied to.

**How do I pick the right program for me?** Assess each program with respect to how well it matches your simulation interests, academic and career objectives, and personal goals. Consider the history of the fellowship, length of the program, simulation and clinical environments, simulation faculty, fellowship curriculum, research support, work schedule and other lifestyle factors.

**Common mistakes during the application process** It is important to follow each program’s...
specific application requirements. Make sure to read each program’s application directions and inquire when specific requirements are not listed or readily accessible. Proofread your CV and cover letter multiple times prior to submitting your application to each program. Address any gaps during residency or time spent after residency prior to fellowship application. Ensure your cover letter is directed to the program to which you are applying and the header lists the correct recipient’s name and information. Submit your application before the listed deadline; if the deadline is rolling, consider submitting in September through October to have adequate time for the program to review and potentially extend an offer to interview. The simulation community is small; always speak positively about any other programs or centers that may be mentioned during the interview process. Follow up your interviews with an appreciative email or letter and include any follow-up questions.

Application deadlines The application timeframe for simulation fellowships varies widely. Some programs begin accepting applications as early as July 1st, with deadlines as early as September 1 and as late as May 1. Some programs have fixed application deadlines, with interviews offered only after all applications are received, whereas others accept and offer interviews and positions on a rolling basis.

Tips for writing your personal statement Many programs would like to know about your professional interests, career goals, what attributes you bring to the program, and why you are interested in their particular program. Be specific; you want to emphasize your unique qualifications that make you a good candidate for their fellowship position. Illustrate your experiences in simulation and how they demonstrate your dedication to the field. Moreover, you want to describe your ultimate goals upon graduating from their simulation fellowship.

Most important, you want to keep your cover letter professional and well-written. Use spell-check. You may even want a non-medical person to review the letter for simple grammatical errors. Have a mentor or residency program director review the letter prior to submission.

Is this a match process? No.

What happens if I don’t obtain a fellowship position? Most fellowship programs offer positions from October through January. If you do not receive a fellowship offer, you should continue to apply for other fellowships or other positions as an emergency physician.

INTERVIEW PROCESS

How do I stand out from the crowd? Prior to your interview day ensure that you are well-rested. If provided your interview schedule, review the faculty included in your interview day. Prepare questions to ask each interviewer. Be knowledgeable and ready to speak of/elaborate on any information listed within your curriculum vitae and cover letter. Avoid asking questions that you can find on their website or previously provided information.

What types of questions are typically asked? Many interviews will start with “Tell me about yourself.” Be ready with a quick spiel introducing yourself to the interviewer. This can include your hometown, medical school, and residency. You can briefly describe your interest in simulation and how you pursued it during residency; the synopsis could be rounded out with a discussion of your specific interests and how they fit into the simulation fellowship program.

How many interviews should I go on? There is limited information regarding the number of interviews that a medical simulation fellowship applicant should schedule. You should consider the number of positions offered by each fellowship, if there were unmatched fellows in previous years, and the competitiveness of your application. We suggest you attend three to five interviews to increase your likelihood of a fellowship offer.

PREPARING FOR FELLOWSHIP

Textbooks to consider reading


Important skills to practice while in residency to prepare for fellowship The most important and relevant skill to develop for a simulation fellowship during residency is excellence in the clinical setting and during educational activities. Do not underestimate the value the rest of your training will have on your simulation career. For example, the more you know and understand with regard to the performance of clinical procedures, the better you will be able to break down the skills in a meaningful way to effectively help novices learn them and experts master them.
**Tips on how to succeed as a fellow** Part of your time in fellowship will most likely be dedicated to a project, with a goal of publication. However, not everyone is able to publish following fellowship, and a potential lack of mentoring combined with limited time in the program can affect this outcome. Who your mentor is may be more important than the topic of the project. Keep these in mind as you select a program to ensure that you choose one with a lot of mentorship, as well as one that has experience in completing and publishing fellowship projects.

While there is not yet strong evidence regarding factors associated with a successful simulation fellowship, there are many general advice articles from other medical and surgical fellowships. These articles recommend choosing programs with areas of focus aligned with your career goals, obtaining formal training in research methods, and ensuring you are the lead researcher and first author on your fellowship research project. It has also been suggested that fellows develop and pursue research questions that may become more feasible over time, and to be vigilant of and apply for funding opportunities within and outside of your department.

Success in fellowship will also be based upon experiences you have had in simulation training. The larger the variety of simulation modalities you experience, and the higher the quality of those experiences, the easier it will be to adapt them into your own simulation scenarios in the future.

**CONCLUSION**

**Additional resources**
- ALiEM
- BMJ Careers
- MedEdPORTAL

**National organizations**
- Society for Simulation in Healthcare
- SAEM Simulation Academy

**Conferences**
- Annual Association for Simulated Practice in Healthcare Conference
- Annual Association of Standardized Patient Educators Conference
- Australian Simulation Congress
- Dutch Society for Simulation in Healthcare
- International Meeting on Simulation in Healthcare
- International Pediatric Simulation Symposia and Workshops
- Meeting of the Society of Europe for Simulation Applied to Medicine
- Ontario Simulation Exposition
- Simulation Technology and Training Conference
- SAEM Annual Meeting

**How to find a mentor** The best place to start is at your own institution. Talk to the people who run simulation education sessions for your residency program. If you are at a medical school, you can also talk to the people who run the standardized patient encounters. Look into who runs the Advanced Cardiac Life Support classes or nursing education, as they may know of someone who has done simulation leadership training. Anyone who has gone through a simulation fellowship or who is now in a leadership position in simulation will be a great resource to guide you through the process and to give you opportunities to explore the field and determine if this is right for you.

You can also reach out to the SAEM Simulation Academy, the EM Section of the Society for Simulation in Healthcare (SSH), or the EMRA Simulation Division. Many of these groups have members who are willing to help mentor residents as they explore this new and exciting field.

**Sources**

36. Medical Simulation Fellowship. Hartford Hospital. Online.


To submit updates or to assist with future revisions, please email fellowships@emra.org.
Primary Care Sports Medicine (PCSM) Fellowship

INTRODUCTION

Description of the specialty  Sports medicine physicians provide care for injuries sustained both on and off the athletic field. Prior to the creation of this specialty, the majority of musculoskeletal injuries were cared for by orthopedic surgeons; however, most athletic injuries are non-operative and frequently include general medical complaints as well as traumatic brain injuries. Therefore, the approach to an athletic injury often exceeds the knowledge scope of any one specialist and requires a generalist approach for appropriate care. The Primary Care Sports Medicine (PCSM) subspecialty was designed to meet this need.

History of the specialty/fellowship pathway  The PCSM fellowship is available to family medicine, internal medicine, pediatrics, emergency medicine (EM), and physical medicine and rehabilitation physicians. It was certified by the American Board of Medical Specialties (ABMS) in 1992, and since 1993 a written examination for board certification has been administered by the American Board of Family Medicine. It is one of 9 ABMS accredited fellowships available to EM physicians.

Why residents choose to follow this career path  Residents who choose this path often have an interest in athletics and caring for active people of all ages. Similar to other EM fellowships, this increases your aptitude in a niche of emergency medicine: diagnosing and managing musculoskeletal complaints. Completion of this fellowships offers an opportunity to have a diverse career in both the emergency department and the outpatient setting, which prevents burnout and promotes career longevity.

How do I know if this path is right for me?  If you have an interest in sports and athletic events, then try an elective with a sports medicine physician (ideally EM sports medicine physician if available) and/or
volunteer to cover sporting or mass participation events in your area. If you participate in such electives/events and cannot imagine your career without this patient population, then this may be the fellowship for you.

**Career options after fellowship** EM sports physicians have a variety of career paths available to them, and there are multiple ways to combine an EM and SM practice whether working in an academic or private practice. Sports medicine is a rewarding niche in emergency medicine with many opportunities for education, research, writing, publications, and participation in regional, national, and international organizations and committees. EM sports physicians have become team doctors for a variety of sports teams of all levels, including high school, collegiate, professional, and Olympic sports, as well as leaders in national sports organizations. EM sports physicians may also participate, organize and lead medical teams at mass participation and endurance events.

**Splitting time between departments** Emergency sports physicians often combine their clinical practice and are able to spend part of their time working in an emergency department and part of their time in a sports medicine clinic, managing non-operative musculoskeletal complaints as well as general medical conditions and minor head injuries in athletes. However, while not as common, it is possible to practice either specialty exclusively.

**Academic vs. community positions** Both academic and community positions are available to EM sports physicians. This decision usually depends on a physician’s desire for research, educating fellows/residents, and location preferences.

### IN-DEPTH FELLOWSHIP INFORMATION

**Number of programs** There are more than 130 ACGME accredited PCSM programs through the American Board of Family Medicine, around 10 through the American Board of Pediatrics, and 7 through the American Board of Emergency Medicine. While the majority of programs do accept EM applicants, it is recommended to check with each program individually, and it is prudent to ask if they have ever interviewed, offered a position to, or matched any EM applicants in the past. Figuring out which programs are truly EM friendly and have experience with EM fellows can be challenging at times.

**Differences between programs** The primary difference for EM residents applying to PCSM fellowships is to differentiate if they have an EM track and/or if they have taken EM applicants in the past. It also important to find out there are any EM sports faculty available at the program. ACGME requires that fellows work a minimum of 4 hours per week in your primary specialty. However, this requirement was determined based upon the primary care, not emergency medicine environment. Four hours per week is difficult to achieve in an EM setting and may not be ideal for the new EM graduate. Not all family medicine programs understand the needs of EM fellows and/or have systems in place to allow you to work in an emergency department. Many primary care based programs will only allow EM fellows to work in an urgent care, office-based setting. Thus, more research may be needed if interested in these programs. It also important to note that some programs have you work in the ED/urgent care as a resident, while others allow you to work as an independent provider.

**Length of time required to complete fellowship** These are primarily 1-year fellowships, with a very few number of programs supporting a 2-year fellowship. Typically, a second year fellowship would be primarily devoted to research endeavors.

**Skills acquired during fellowship**
- Advancement in the ability to diagnose, evaluate, and manage musculoskeletal injuries, as well as other sports-related injuries (ie, concussions, exertional heat illness, etc.).
- Increased experience in musculoskeletal ultrasound, both diagnostic and procedural.
- Procedural ultrasound skills focused on joint injections, calcium deposit aspiration, arthrocentesis, and soft tissue injection.
- Procedures including joint aspirations and injections, splinting/casting, endurance testing, compartment testing, some possible fluoro-guided procedures.
- Training in the ability to follow up acute injuries and manage chronic disease of athletes with continued studying of exercise physiology and athletic injuries.

**Typical rotations/curriculum** Example of rotations include rehab clinic, sports medicine clinic, covering of sports events, orthopedic rotations, etc. All fellowships include a certain percentage of time working shifts in the emergency department. You will additionally have scheduled didactic time.

**Board certification afterwards?** Yes, a written exam is administered through the American Board of Family Medicine.

**Average salary during fellowship** Most programs have a salary range between $50-60K based on location, and fellows are typically paid at the PGY-4 level.
PREPARING TO APPLY

How competitive is the fellowship application process? Recent data suggests that of the 206 total positions, 197 (96%) fill during the match while 9 (4%) are unfilled.

Requirements to apply While there are no formal requirements for application, aside from being board certified or board eligible in your respective specialty, there is a fellowship preparation track that recommended by the AMSSM:

- Elective in sports medicine
- 1 year of longitudinal team physician experience with local high school team
- Medical coverage in 1 mass participation event
- Presentation during at least 2 sports medicine conferences
- Presentations of 1 journal club article related to sports medicine
- Scholarly project in sports medicine
- Attendance for at least 1 sports medicine conference

Research requirements Most programs require participation in a research project during fellowship, typically under the direction of faculty, but the requirements and structure varies from program to program. Thus, completing research during residency would be highly beneficial on your application.

- Suggested elective rotations to take during residency (and how to excel during these elective rotations)
- Orthopedics: Show interest in the non-operative management of MSK injuries. Practice your procedural, splinting and casting skills.
- Sports Medicine Rotation: Reach out to mentor/ sports medicine physician and let them know you plan to pursue a career in SM.

Should I complete an away rotation? If your home institution does not offer a sports medicine elective, and/or you are interested in a particular program/region then an away rotation should be completed. If there is the opportunity to complete a sports medicine elective at your home institution, it is highly recommended that you participate in this.

What can I do to stand out from the crowd? Applicants should complete at least 1 sports medicine rotation. While SM fellowship directors realize you are busy as a resident, it is important to get some exposure to SM, both to show your interest and dedication and to ensure it is the right career path for you. Similar to EM programs, it is possible to rotate at programs of interest in order to become familiar with the program and their leadership. Consider a resident research project/QI in sports medicine. Experience in sporting event coverage is common in applicants.

Presentations/publications in SM are important to show academic interest in SM. Additionally, membership in national organizations (ie AMSSM or AOSSM) is recommended.

Should I join a hospital committee? Not necessary.

Publications other than research Publications such as blog posts, magazine articles, case reports, etc., in sports medicine-relevant topics can help to strengthen your CV.

How many recommendations should I get? Who should write these recommendations? Traditionally 3 letters of recommendation are preferred. One recommendation should be from your program director. Another letter of recommendation should be written by a sports medicine physician with whom you have worked. Additionally, letters can be written by EM faculty and/or other sports physicians who know you well.

What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship? Yes, applicants can still be competitive after working as an attending. It is important that you continue to show evidence of interest/experience/dedication to sports medicine.

What if I am a DO applicant? The process is the same for DO or MD applicants who have completed an ACGME accredited residency program and are board certified or board eligible in emergency medicine. For programs that do not participate in ERAS/NRMP, please contact each specifically regarding this question.

What if I am an international applicant? Not all programs accept international applicants; please refer to individual program websites.

APPLICATION PROCESS

How many applications should I submit? There is a wide range of recommendations, with about 10-15 the average number recommended.

How do I pick the right program for me? A program should have the right fit and feel for you. The program should offer broad exposure to many levels and types of sports. Other considerations include geographic location, family, and how future career goals align with individual program strengths/emphasis. It is strongly recommended to attend a program with a EM-SM physician on faculty.
Common mistakes during the application process
Applying too late is the most common mistake. Most programs have a deadline of Oct. 1 to submit completed applications and a December deadline for rank list submission. However, many programs begin offering interviews on a rolling basis as soon as they receive applications, and may have all of their interview slots filled before Oct. 1.

Another common mistake is not getting a letter of recommendation from a sports medicine physician.

Application deadlines On July 15 programs can begin reviewing applications. It is wise to have your application submitted by this date to allow you the best chance at obtaining an interview. Application deadline varies based up individual program. Certification of the rank list is usually due mid-December and the match is in early January. Please refer to ERAS/AAMC website as well as individual program websites for deadlines.

Tips for writing your personal statement. Highlight important goals/achievements and how this has shaped you and how it relates to becoming a SM physician. Most important, be authentic. Tell your story in a way that is uniquely you, and let your personality shine through.

Is this a match process? Most programs participate in ERAS-NRMP.

What happens if I don't obtain a fellowship position?
Scramble. There may be at-large positions available after the match. An applicant can re-apply the following year but it is recommended they meet with their SM faculty mentor to analyze what may have gone wrong and improve their application as necessary.

INTERVIEW PROCESS
How do I stand out from the crowd? Be on time. Be familiar with the program you are interviewing with. Ask thoughtful questions. Do not be afraid to be enthusiastic.

What types of questions are typically asked? Questions may include: Why do you think sports medicine is right for you? What are your experiences in sports medicine? How do you envision incorporating your fellowship training into your future career?

How many interviews should I go on? This varies depending on strength of application, but approximately 10 interviews are recommended.

PREPARING FOR FELLOWSHIP
Textbooks to consider reading

Important skills to practice while in residency to prepare for fellowship It is important to spend the time in residency learning your primary specialty well, as many people choose to practice both after fellowship. It is also recommended to spend time in sports medicine clinics and on the sideline of sporting events. No one expects you to be an expert in sports medicine prior to starting your fellowship, but rather have just some familiarity with practice and principles.

Tips on how to succeed as a fellow Start early: Contact current fellows and program director to get advanced advice. Review anatomy and physiology prior to start of fellowship.

Show up early to events, introduce yourself to event staff and athletic trainers as appropriate, and review emergency action plans for events. While it is important to show interest and enthusiasm, it is also important to pay attention to team dynamics: medical care of athletes is a team sport where everyone plays an important role.

Be prepared for journal clubs, lectures, etc.

CONCLUSION
Additional resources
Journals:
- American Journal of Sports Medicine
- Clinical Journal of Sports Medicine

Podcasts:
- http://ajs.sagepub.com/site/misc/Index/Podcasts.xhtml
- http://www.clinicalsportsmedicine.com/podcasts/podcasts

National organizations
- AMSSM
- ACSM
- AOASM
- Sports Medicine section of ACEP
- Sports Medicine interest group of SAEM

Conferences AMSSM and ACSM both hold annual
conferences that are worth attending. If you are attending ACEP or SAEM, make sure to attend the sports medicine section/interest group meetings. EMRA in particular now has a sports medicine division and is actively recruiting members.

**How to find a mentor** Ideally, find an EM SM physician, but many areas do not have one. In that case, connect with other SM physicians; many are very open and helpful to residents from any specialty. They may also be able to get you connected with other EM SM physicians either locally, regionally, or nationally. There are several mentor matching services that can be found through EMRA, ACEP Sports Medicine Section, and the AMSSM. The EM-SM world is small, and physicians are very welcoming and encouraging of interest, as this is a very rewarding EM subspecialty.

**To submit updates or to assist with future revisions, please email fellowships@emra.org.**
INTRODUCTION

Description of the specialty  Tactical medicine is the practice of prehospital emergency care specifically designated for the support of high-risk law enforcement operations. Police tactical teams are responsible for an ever-widening scope of responses to critical law enforcement, national security, anti-terrorism, mass gathering, and disaster response missions. Tactical emergency medical support (TEMS) has gained wide recognition as an essential element of the modern law enforcement mission.

Tactical medicine augments law enforcement operations by performing medical threat assessments, delivering on-scene emergency medical care, and promoting the safety and health of law enforcement personnel. Tactically trained medical personnel achieve their objectives through mission pre-planning, implementation of clinical practices developed specifically for tactical applications, and provision of a critical interface between law enforcement personnel, conventional EMS, and the existing health care system infrastructure.

The broad goals of tactical medicine are to facilitate the overall success and the safety of law enforcement missions during all phases of a tactical operation through the delivery of preventative, urgent, and emergency medical care. The basic approaches utilized by tactical medicine providers were initially developed by the military and have been adapted to the civilian law enforcement environment. The primary function of tactical medicine during a mission is to provide broad medical support to operations including injury prevention, resource identification and allocation and rapid access to emergency medical care within the operation.

History of the specialty/fellowship pathway  In the late 1980s,
leadership within law enforcement, emergency medicine, and emergency medical services (EMS) began to develop consensus on the provision of dedicated medical support for tactical teams. In 1993, the National Tactical Officers Association (NTOA) issued a position statement in support of tactical emergency medical support, emphasizing that, “the provision of TEMS has emerged as an important element of tactical law enforcement operations.” The National Association of EMS Physicians (NAEMSP) further described medical support of law enforcement special operations in a 2001 position paper. In 2004, the American College of Emergency Physicians issued a position paper endorsing TEMS as an essential component of law enforcement teams that “helps maintain a healthy and safer environment for both law enforcement and the public.”

Qualified physician involvement and medical oversight is an essential element of tactical medicine. Professional practice in tactical medicine continues to attain formal recognition and, as an example, basic competency is a newly established sub-requirement of ACGME subspecialty certification in EMS. Dedicated fellowship training in tactical medicine is an emerging concept.

**Why residents choose to follow this career path**

Physicians working in tactical medicine have a strong interest in prehospital and out-of-hospital emergency care and a special interest in working with law enforcement agencies. Tactical physicians actively deploy in the field with their teams, and formal training greatly enhances mission readiness. Tactical medicine often provides additional niche training opportunities such as executive protection, mass gatherings, and care in austere environments. Physicians seeking to train in tactical medicine often have backgrounds in law enforcement and/or military service, and this practice environment is seen as an opportunity to merge those prior experiences with clinical medicine.

**How do I know if this path is right for me?**

Tactical physicians have a strong sense of community service and expect to be on-call for emergency responses on a near continuous basis. Working with law enforcement carries some inherent risks and physicians practicing tactical medicine expect regular exposure to high threat incidents. Tactical physicians must have excellent understanding, at minimum, of their local and regional emergency health care infrastructure and possess the interpersonal and communications skills to work effectively within their systems. Occupational health is an essential component of tactical medicine and physicians must be prepared to spend considerable effort on officer health and safety issues. Finally, law enforcement requires a strict adherence to chain-of-command protocols, so tactical physicians must be adept at such procedures and enjoy working within this framework.

While not required, previous experience in EMS, law enforcement, or military medicine is helpful in gaining an appreciation for the unique challenges of emergency care in the prehospital and out-of-hospital setting. Elective rotations in these areas can provide residents with exposure, though few will specifically involve working with tactical teams.

**Career options after fellowship**

After fellowship most physicians seek to continue their careers as tactical physicians with law enforcement agencies, typically working in these capacities at least part-time. Depending upon geography, such opportunities may already exist, or physicians may work to develop positions within a local department. Military physicians who have completed tactical medicine fellowship training add this qualification when they return to active duty service. Less commonly, fellowship trained physicians may elect to work with search and rescue teams, in disaster and international medicine, or conventional EMS systems.

**Academic vs. community positions**

Well-established positions in law enforcement tactical medicine are typically based at academic institutions. These centers will often have longstanding programs in place with larger agencies, especially at the state or federal levels. Tactical physicians at academic centers will maintain these positions as part of their academic profiles and administrative roles. Well-qualified physicians employed by a community hospital or in private practice may actively work in the field as tactical physicians with a local department. These responsibilities are more commonly individually negotiated, either with or without compensation, separate from their primary employment.

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**IN-DEPTH FELLOWSHIP INFORMATION**

**Number of programs**

With the advent of ACGME accreditation for EMS fellowships, some exposure to special operations or tactical medicine is required within all accredited EMS programs. The degree can be quite variable, though, and is highly dependent upon availability of local resources and institutional expertise. EMS fellowship programs that offer significant tactical medicine exposure or experiences include Washington University, University of New Mexico, Boston University, Carolinas Medical Center, UT Southwestern, and Medical College of Georgia.

The only dedicated tactical medicine fellowship at this time exists at Johns Hopkins University through its
Center for Law Enforcement Medicine. Johns Hopkins maintains this fellowship program separate from, and in addition to, its EMS fellowship program.

Length of time required to complete fellowship
The tactical medicine fellowship program at Johns Hopkins is 2 years in length.

EMS fellowship programs accredited by the ACGME offer some degree of exposure to tactical medicine under the core curriculum heading of special operations. ACGME EMS fellowships are 1 year in duration.

Skills acquired during fellowship
The goal of tactical medicine fellowship training is to prepare academic emergency physicians for leadership, field support, and medical direction of law enforcement special operations and tactical medicine programs. Fellowship in tactical medicine at Johns Hopkins has a significant operational component, providing trainees with key skills needed to safely operate and provide care during high-risk tactical operations, large-scale mass gathering events, and dignitary protection missions.

Typical rotations/curriculum
The main components of the Johns Hopkins tactical medicine fellowship include mentorship in the medical direction of special operations medical programs while applying fundamental tenets of prehospital emergency care; direct experience with local, state, and federal law enforcement tactical, protective, special event, international, and remote consultation programs; and escalating medical control responsibilities for operational medicine programs.

Additional areas of focus include education and training of law enforcement medical providers, continuous quality improvement of care rendered in the tactical environment, administrative and developmental aspects of tactical and operational medicine programs, and academic research in the field of law enforcement medicine.

The fellowship program at Johns Hopkins specifically includes both training and field deployment with multiple federal law enforcement and homeland security teams.

Board certification afterwards?
No.

Average salary during fellowship
Salaries during fellowship, whether EMS or tactical medicine, vary widely by institution. Applicants should contact potential fellowship programs directly for specific information. Fellows generally have some limited opportunities for moonlighting during fellowship.

PREPARING TO APPLY

How competitive is the fellowship application process? Because the field is small and the training opportunities specific to tactical medicine are extremely limited, it is difficult to quantify competitiveness. There is currently 1 fellowship position available per year (up to 2 concurrent fellows per year) at a single program.

Requirements to apply
- Board certified or prepared in emergency medicine.
- Ability to pass a criminal background investigation and be eligible to obtain security clearance(s).
- Psychomotor skills necessary to function in austere environments.
- Demonstrated interest in prehospital emergency care and/or tactical medicine strongly preferred.
- Previous employment in EMS or law enforcement is not required.

Research requirements
Not absolutely required; however, fellows are expected to publish during their fellowship, and previous meaningful research experience is preferred.

Suggested elective rotations to take during residency
Robust in-program EMS rotation/elective or an immersive away elective, preferably at a program with substantive experience and faculty participation in tactical medicine.

Suggestions on how to excel during these elective rotations
Evaluators in prehospital, including tactical, medicine typically want to see a balance between active interest, capabilities, and receptiveness to learning. Because operating in the law enforcement environment has risks, supervisors must ensure that trainees listen well and follow directions precisely. Remember to adhere to chain-of-command protocols and understand the importance of teamwork. Comply with all uniform attire (if provided) requirements and communicate any changes in personal schedule or availability. Ensure your equipment is mission-ready at all times. Always arrive early to any assignment, whether training or operations. Staying late to finish group assignments or tasks will be noteworthy.

Should I complete an away rotation?
If an emergency medicine residency does not provide intrinsic exposure to tactical medicine, away rotation(s) would be helpful to potential applicants, both in demonstrating interest and gaining exposure to determine if tactical medicine is a good fit. Taking commercial, off-the-shelf tactical medicine courses is generally less preferable than rotations at academic centers.
What can I do to stand out from the crowd? A quality longitudinal experience in tactical medicine is a welcome attribute in any potential applicant. Despite this, meaningful opportunities may be variable amongst residency programs. Field experience in any area of prehospital medicine, including EMS and disaster medicine, can be helpful in gauging a candidate’s aptitude for practicing medicine outside of a hospital and his/her understanding of the challenges such work may entail.

Should I join a hospital committee? Hospital committees related to tactical medicine are rare.

Publications other than research Any publication that you can include in your CV relating to tactical medicine will likely bolster your application.

How many recommendations should I get? Who should write these recommendations? Obtain 3 letters of recommendation at minimum. At least 1 should be from the residency director, and 1 ideally from a supervisory faculty member with expertise in prehospital or tactical medicine. Supplemental letter(s) from non-physician supervisors with detailed knowledge of the applicant’s capabilities in the field are welcome.

What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship? Work experience as an attending emergency physician is potentially quite helpful to the tactical medicine fellow, because clinical excellence is a hallmark of successful tactical physicians. Law enforcement agencies look for maturity, leadership, and experience in the physicians they choose to support operational teams.

What if I'm a DO applicant? DO applicants are welcome.

What if I am an international applicant? Unfortunately, due to medical licensure requirements and the need to obtain security clearance(s), international applicants are generally ineligible.

APPLICATION PROCESS

How many applications should I submit? Currently there is only a single dedicated tactical medicine fellowship program.

Applicants with a strong desire to pursue tactical medicine training at the fellowship level should also consider EMS fellowship programs that offer significant tactical medicine content.

Common mistakes during the application process

- Application/CV does not display a clear interest in tactical medicine.
- Choosing letter writers who do not know you well.
- Grammatical errors in your application.
- Weak personal statement.

Application deadlines The common fellowship program start date is July 1 at Johns Hopkins. Applicants are encouraged to apply early, because there is only 1 position offered each year.

Tips for writing your personal statement Personal statements for fellowships will be similar to those written for the residency application process or other graduate medical education programs. Applicants should focus on factors that motivated them to pursue a career in tactical medicine and highlight relevant past experiences, including any special qualifications. Statements should clearly identify any potential barriers to working with law enforcement agencies or that might preclude obtaining security clearances.

Is this a match process? No.

What happens if I don't obtain a fellowship position? Applicants with a strong desire to pursue tactical medicine training at the fellowship level should also consider EMS fellowship training at a program with significant tactical medicine exposure.

INTERVIEW PROCESS

How do I stand out from the crowd? The culture of law enforcement emphasizes uniformity, rank, and adherence to chain-of-command. Along these lines, interviewees should dress neatly, professionally, and be well-groomed. Interviewees should address all individuals by title and/or rank. Punctuality and preparedness are essential.

What types of questions are typically asked? Personal motivation, meaningful experiences, and well-documented involvement in tactical medicine are highly desirable and should be anticipated discussion points. Functional experiences in other prehospital settings such as disaster and EMS are also noteworthy.

Tactical physicians must be able to demonstrate strong leadership, clear decision-making, and clinical excellence under challenging and stressful conditions. Some interview questions may seek to determine an applicant’s aptitude and suitability for medical operations in complex and austere field environments.

How many interviews should I go on? If you are invited to interview at the single program in existence, you should go.
**PREPARING FOR FELLOWSHIP**

Textbooks to consider reading


Important skills to practice while in residency to prepare for fellowship Proficiency with core content emergency medicine and procedural skills acquired during residency are crucial and form the competency base for the practicing tactical physician. Rotations in EMS, trauma, urgent care, occupational health, and critical care are particularly germane.

Experience with operational skills in the field environment – including PPE, radio communications, emergency vehicle operations, and understanding of prehospital provider scopes of practice – can be particularly helpful to potential fellows.

Tips on how to succeed as a fellow Consistent demonstration of enthusiasm, professionalism, strong interpersonal skills, willingness to work hard (both physically and mentally), and adherence to command infrastructure is essential for success as a fellow in tactical medicine.

**CONCLUSION**

Additional resources

Journals:

- *Journal of Special Operations Medicine*
- Prehospital Emergency Care

National organizations

- Tactical Emergency Medicine Section, American College of Emergency Physicians
- Special Operations Medical Association
- National Association of EMS Physicians

Conferences

- Special Operations Medical Association Scientific Assembly
- NAEMSP Annual Meeting
- ACEP Tactical Medicine Section Meeting (held during ACEP’s Scientific Assembly)

How to find a mentor Seek opportunities with residency faculty actively involved in tactical medicine or other practicing tactical physician(s) in your area.

Contact the EMS or disaster faculty at your institution to get involved with prehospital medicine.

Contact fellowship programs with content of interest to seek potential rotations or electives in EMS or tactical medicine.

To submit updates or to assist with future revisions, please email fellowships@emra.org.
Telemedicine Fellowship

INTRODUCTION

Description of the specialty Telemedicine (also known as telehealth) refers to the clinical application of providing medical care at a distance both locally and internationally. The American Telemedicine Association specifically defines telemedicine as the use of medical information exchanged from one site to another via electronic communications to improve a patient’s clinical health status. It is a tool for providers to improve access and provide more convenient and patient centered care.

History about the specialty/fellowship pathway Telemedicine first started in the United States in the 1960s when television was utilized for medical education and consultation. One famous example is from 1965 when one of Michael DeBakey’s open-heart surgeries was live streamed to Geneva. Interest waned from the 1970s-1990s due to concerns about cost and practicality. However, as technology advanced, interest in the field revitalized out of a need for health care delivery to those living in remote places. Corporate industries such as the military, NASA, offshore oil rigs, Antarctica survey stations etc. also began exploring this branch of medicine. By the 1990s, real-time video medical consultation developed, first used in Norway and later spread worldwide. Many believe that telemedicine can provide greater access to health care and improve the quality of health care services at a lower cost. As this field continues to expand and reimbursement model shift from fee for service to value based, it is no surprise that emergency medicine physicians are taking note of this field. Recently two fellowship opportunities have developed for emergency physicians seeking to become experts in this field.

Why residents choose to follow this career path Residents choose to follow this career path when they are interested in becoming leaders in developing telemedicine education, research, and services. They are
experts in bringing together technology and clinical medicine to enhance overall delivery of medical care.

**How do I know if this path is right for me?** Are you interested in developing new innovative technologies to provide patient care to patients when and where they demand it? Would you like to become the director of a telemedicine program? Are you interested in performing research regarding remote biometric monitoring? Are you interested in concierge or direct to consumer medicine? Ever considered joining a startup? If your answers to any of the above questions are yes, this may be the fellowship for you.

**Career options after fellowship** Options after fellowship include: Chief Medical Information Officer (CMIO), Director of Telemedicine; leader in improving patient access, or population health, telemedicine provider; telemedicine researcher; leader of quality improvement teams relevant to telemedicine; program director of telemedicine fellowship, etc.

**Splitting time between departments** Physicians typically practice telemedicine under the department of emergency medicine, but other parts of the health system may also be involved, such as internal medicine, specialist, population health, quality, access, compliance, and accountable care. Thus, they do not need to split time between departments but rather fulfill their telemedicine responsibilities during their administrative time. Organizational leadership opportunities may also exist. The decision about how much administrative time versus clinical time is a personal decision and typically also a negotiation with your employer (example is 25% administrative time and 75% clinical).

**Academic vs. community positions** Telemedicine can be practiced in any hospital setting. This branch of medicine is typically hospital or system specific in their interest in developing and in their current infrastructure for telemedicine. Also of note, academic centers and integrated delivery networks (IDN, ie, VA system or Kaiser) may have more funding and support staff for those interested in research as compared to community positions.

**IN-DEPTH FELLOWSHIP INFORMATION**

**Number of programs** This is an emerging subspecialty. Currently there are 2 programs, along with a specialized course at another program:
- George Washington University (GWU)
- Thomas Jefferson University
- UC Davis offers a 2-day course about telemedicine

**Differences between programs** GWU offers an opportunity to obtain a master’s degree (ie, MBA, MPH, or master’s degree in systems engineering). Fellows are also required to complete 2 research projects during fellowship. Thomas Jefferson offers fellows the opportunity for a certificate or degree from the Colleges of Population, Public Health, or a certificate in Operational Excellence. Both fellowships have their fellows work clinically as telemedicine providers.

**Length of time required to complete fellowship** GWU is a 2-year fellowship, whereas Thomas Jefferson is a 1-2 year fellowship.

**Skills acquired during fellowship** Skills acquired during fellowship include research, academia, leadership, administrative, entrepreneurship, and clinical skills.

**Typical rotations/curriculum** Typical rotations/curriculum during fellowship include participation in the department’s telemedicine services, opportunity to study advanced coursework, research, clinical emergency medicine shifts, and administrative responsibilities.

**Board certification afterwards?** No. However, this fellowship is closely associated with medical informatics. Paths may open in the future that qualify fellows to sit for the Informatics Board by ABPM.

**Average salary during fellowship** Because this is not an ACGME accredited fellowship, salaries are much more competitive than the traditional PGY-4/5 salaries.

**PREPARING TO APPLY**

**How competitive is the fellowship application process?** Because there are only 2 fellowships currently available, this is considered a reasonably competitive fellowship.

**Requirements to apply** You must have completed an ACGME residency to apply for this fellowship.

**Research requirements** Research is not required to apply for this fellowship but may certainly help to strengthen your application especially if the research is relevant to telemedicine.

**Suggested rotations to take during residency** Suggested rotations to take during your elective time include an administrative month, research month, wilderness medicine, EMS and/or telemedicine rotation, etc.

During elective time, it is worth considering attending
conferences such as the American Telemedicine Association Annual meeting and the MHealth Summit Meeting held each year in Washington, D.C. This is a great way to help network and increase your knowledge about the specialty.

Suggestions on how to excel during these elective rotations During your elective rotation, be careful not to fall into the trap of treating this as a “lighter month” and cruise through the month. Instead, make it a point to work hard, come in early, and stay late. Be courteous to all and seek out opportunities to be part of the care team. Read every day and expand your knowledge base. Find mentors in the field of telemedicine during your elective months if possible.

Should I complete an away rotation? Because there are only 2 fellowships available, it may be helpful to arrange an away rotation at either GWU or Thomas Jefferson. This would be a good way for both you and the program to get to know each other better. Assuming you perform well, it may give you an advantage when you apply for fellowship.

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What can I do to stand out from the crowd? The best way to stand out from the crowd is by creating an application that through your CV, personal statement, and letters of recommendation clearly demonstrates an interest in telemedicine. Leadership and/or research activities will also help you build a strong application. Becoming chief resident, while not required, can certainly strengthen your application as well.

Should I join a hospital committee? Joining a hospital committee and/or quality improvement team would be an excellent opportunity to expand your management and leadership skills. Seek out opportunities where you would have meaningful involvement in the committee.

What about publications other than research? Publications other than research — such as blog posts, podcasts, case reports, magazine articles, etc. — can be a great opportunity for you to educate yourself and the emergency medicine community about telemedicine. Such publications would certainly be supportive on your application about your interest in this field.

How many recommendations should I get? Who should write these recommendations? Contact each program regarding their requested number of letters of recommendation. Typically the traditional number is 3 letters, one of which is from your program director or department chair and one of which is ideally from someone within the field of telemedicine.

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What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship? Yes, you can still be competitive if you decide to work as an attending before applying for this fellowship. They key is to continue to be involved in leadership and other academic activities while working as an attending and to list them on your CV. Be prepared to explain your decision to work as an attending when interviewing for fellowship.

What if I'm a DO applicant? There are no barriers to DO applicants that we are currently aware of.

What if I am an international applicant? International applicants are encouraged to contact the fellowship directly. Applicants will at minimum need to have completed their USLME steps as well have obtain the appropriate visas.

APPLICATION PROCESS

How many applications should I submit? Apply only to those places you would seriously consider attending if offered a fellowship position.

How do I pick the right program for me? Choose a great fit academically while also in a location that fits your personal and family needs. Do not forget to include your spouse in the location discussion, as an unhappy spouse will make for a miserable fellowship.

Common mistakes during the application process Common mistakes that applicants make during the process include:

- Missing application deadlines.
- Grammatical errors on personal statement.
- Having a CV that does not demonstrate a clear interest in telemedicine.
- Weakly supportive letters of recommendation.

Application deadlines Interested applicants are advised to contact each program regarding deadlines.

Tips for writing your personal statement The best personal statements do not simply repeat what is on your CV but rather explain your interest in this fellowship and your career goals afterward. This is the time to let your personality shine through and try and set yourself away from the other applicants. If you have a certain life experience that led to your interest in this field, now is the time to write about it. Have multiple people read your statement to make sure it reads well and is without grammatical errors.

Is this a match process? No.

What happens if I don't obtain a fellowship position? If you do not obtain a fellowship position,
take a look at your application to identify areas of weakness. It may be worth gently asking the programs that rejected you for tips on how to approve your application. Also, consider having your residency program director look at it as well. Once you identify these weaknesses, spend the next year addressing them and apply again. Practice your interview skills. Worst-case scenario, it is possible to develop your niche in this field without completing a fellowship.

INTERVIEW PROCESS

How do I stand out from the crowd? The best way to stand out from the crowd during your interview is by having a clear vision about why you are interested in this fellowship and how this fellowship will help you achieve your career goals. Be personable and friendly with everyone that you met. Be careful not to be overly shy nor overly chatty. Make sure you are prepared to ask the program thoughtful questions during your interview that cannot be easily found on their website.

What types of questions are typically asked?

- Why are you interested in telemedicine?
- Why are you interested in telemedicine at our program specifically?
- Tell me about “blank” that you list here on your CV.
- What are your 5- and 10-year career goals?

How many interviews should I go on? Since there are limited fellowship opportunities available, it is recommended that you attend all interviews offered.

PREPARING FOR FELLOWSHIP

Textbooks to consider reading


Important skills to practice while in residency to prepare for fellowship First and foremost, residents should focus their energy towards becoming the best emergency physician they can possibly be. Other skills to consider developing include administrative, leadership, organizational, educator, and technological skills.

Tips on how to succeed as a fellow Take advantage of all opportunities that are offered to you during fellowship. The next 1-2 years is a chance for you to develop your niche under the guidance of mentors. Arrive early, stay late, and read every day. Strongly consider completing advanced degree programs if offered. Seek out opportunities to become involved in quality improvement projects, research projects etc.

CONCLUSION

Additional resources

Journals/Journal articles:

- Journal of Telemedicine and Telecare
- Journal of Ethics article

Blogs/Podcasts/Websites:

- http://telemedicine.arizona.edu/blog
- https://www.globalmed.com/telehealthanswers
- http://learntelehealth.org

National organizations

- American Telemedicine Association

Conferences

- Telemedicine & ehealth
- American Telemedicine Association Conference
- Digital Health World Conference

How to find a mentor Unfortunately, there is no central website that connects interested physicians with mentors within this field. We suggest turning to faculty within your current department, national telemedicine organizations, and/or telemedicine conferences when searching for a mentor.

To submit updates or to assist with future revisions, please email fellowships@emra.org.
INTRODUCTION

Description of the specialty Medical toxicologists are physicians who specialize in the prevention, evaluation, treatment, and monitoring of injury and illness from exposures to drugs and chemicals, as well as biological and radiological agents. These specialists care for people in clinical, academic, governmental and public health settings, and provide poison control center leadership. Important areas of Medical Toxicology include acute drug poisoning; adverse drug events; drug abuse, addiction and withdrawal; chemicals and hazardous materials; terrorism preparedness; venomous bites and stings; and environmental and workplace exposures. Reference: American Board of Medical Specialties.

History of the specialty/fellowship pathway The American Board of Medical Toxicology (ABMT) was established in 1974 by the American Academy of Clinical Toxicology in recognition of the growing responsibilities placed on physicians who provide a dedicated portion of their professional activities to medical toxicology. In September 1992, the American Board of Medical Specialties (ABMS) approved medical toxicology as a subspecialty, recognizing American Board of Emergency Medicine (ABEM), American Board of Pediatrics (ABP), and American Board of Preventative Medicine (ABPM) as the sponsoring boards. ABEM is the administering board. The first examination was offered in 1994 and is currently administered every other year. The American College of Medical Toxicology offers additional details.

Why residents choose to follow this career path The majority of current toxicology fellows didn’t know they wanted to pursue a toxicology fellowship before starting their EM residency. Most applicants describe a specific toxicology case they encountered (in the ED or the ICU) that triggered their passion for the field, while others develop
their interest gradually. Toxicology has a large clinical component it also requires an interest in pharmacology, pathophysiology, organic chemistry, and research.

Completing a fellowship allows one to develop a niche within their career and become an expert in a specialized field. It can also open doors in new career possibilities such as academia, occupational or industrial medicine, pharmaceuticals, forensics, research, and medico-legal work.

**How do I know if this path is right for me?**

Participating in a toxicology rotation is the most valuable way a resident can decide if a fellowship is right for them. Pursuing a fellowship is both a time and financial commitment, so be absolutely sure you want to go through with it. A toxicology rotation will allow the resident to catch a glimpse into the schedules, lifestyle, and career of a toxicologist.

Find mentors in the field to help answer questions and provide guidance. EMRA Toxicology Division can help you get in touch with attending toxicologists and current fellows to help you.

**Career options after fellowship**

- Emergency departments, intensive care units, and other in-patient units where they provide direct treatment and bedside consultation of acutely poisoned adults and children.
- Outpatient clinics, offices, and job sites where they evaluate the health impact from acute and chronic exposure to toxic substances in the workplace, home and general environment.
- National and regional poison control centers where they provide 24-hour phone consultation to health professionals, first responders, public health officials, corporate safety personnel, and the general public regarding hazard identification, decontamination, emergency management, and detailed clinical care of the poisoned patient.
- Medical schools, universities, residencies, and clinical training sites where they teach, research, and provide advanced evidence based patient care.
- Industry and commerce where they increasingly contribute to pharmaceutical research and development, product safety, occupational health services, and regulatory compliance.
- Governmental agencies where they provide toxicology expertise to the U.S. Food and Drug Administration, the U.S. Environmental Protection Agency, and state and local health departments as well as non-governmental advocacy organizations, consumer groups, and industrial associations.
- Clinical and forensic laboratories where they aid in the design, conduction, and interpretation of diagnostic tests and forensic studies.

**Splitting time between departments**

The overwhelming majority of medical toxicologists will divide their time between toxicology and emergency medicine. The exact division of time is completely dependent upon the institution. In general, academic positions will allow more time dedicated to toxicology.

**Academic vs. community positions**

In general, academic positions will allow a toxicologist more protected time (reduction in clinical ED shifts) with an increased focus on lecturing, teaching, research, and toxicology clinical duties. Community positions tend to have more focus on clinical ED duties however it all depends on the hospital system.

**IN-DEPTH FELLOWSHIP INFORMATION**

**Number of programs**

There are 26 ACGME accredited medical toxicology fellowship programs for the 2015-2016 academic year. EMRA Match offers an interactive map of toxicology fellowship programs.

**Differences between programs**

While the core curriculum among fellowship programs is the same, they do differ from one another in a variety of ways, including:

- **EM shifts:** Certain programs have fellows work a designated number of shifts in the ED. Typically fellows do not earn additional compensation for these required shifts. The advantage to this is fellows are able to keep up with their EM skills they learned in residency. Other programs will allow you to work in the ED during your free time (moonlight) and allow you to make additional compensation
- **Number of fellows:** This will factor into how your call schedule is arranged
- **Didactics:** All programs have didactics but the structure and schedule will differ among them
- **Bedside Teaching/Rounds:** Programs will differ among how much they focus on bedside rounds/teaching-at-the-bedside versus phone consultations
- **Sub-focus:** Programs may emphasize different aspects of toxicology including medical, occupational, environmental, and forensics

**Length of time required to complete fellowship**

Medical toxicology fellowships are 2 years in length. This does not differ among programs.

**Skills acquired during fellowship**

The goal of all fellowship programs is to make you an exceptional medical toxicologist. Fellows will acquire the necessary clinical and research skills to allow them to function
as an independent medical toxicologist at the end of fellowship.

Typical rotations/curriculum All programs follow the ABEM Core Content of Medical Toxicology, which serves as the foundation of the toxicology board exam. The majority of toxicology programs do not have blocks or rotations compared to EM residency. Typically programs will have the fellow work during day hours. The fellows’ time will be spent performing clinical duties, research, reading, conferences, and didactics. Call-schedules will vary among programs.

Board certification afterwards? Regardless of program, fellows will be eligible to take the ABEM Medical Toxicology Board Certification Examination. The pass-rates will vary among programs, so be sure to ask during your interview.

Average salary during fellowship Fellows are typically paid as PGY-4/5 depending on their years of residency training. Most programs will allow for moonlighting to supplement your income.

PREPARING TO APPLY

How competitive is the fellowship application process? Medical toxicology is not very competitive. The 2015 NRMP Match Data shows a total of 35 applicants for 40 positions. However, certain programs can be extremely competitive. As with other fellowships, the more you limit yourself to a geographical region, the more competitive the match will become.

Requirements that must be fulfilled to apply Check with each individual program regarding specific requirements. In general, there are no specific requirements needed to apply aside from having a CV and letters of recommendation.

Research requirements Having some activities/pursuits/research that show an interest in toxicology are strongly encouraged.

Suggested elective rotations to take during residency A toxicology rotation is crucial, whether at your home institution or another facility.

Suggestions on how to excel during these elective rotations Be an asset to the toxicology service. Show initiative and interest in the field.

Should I complete an away rotation? If your residency does not have as a strong of a toxicology rotation as you would like, then use your elective time to pursue a toxicology rotation at a different institution. Using an elective for an away-rotation at a program you are particularly interested in would be extremely valuable. Most programs would be thrilled to have a visiting resident on their service.

What can I do to stand out from the crowd? There are several ways to become involved in the field of toxicology as a resident. You can join and become involved in a national organization such as EMRA Toxicology Division, ACEP Toxicology Section, or American College of Medical Toxicology (ACMT). Additionally, you can participate in research involving toxicology (even a case report is a step in the right direction.) Toxicology is a small world, so any connections/contacts you make either through conferences/emails/rotations will serve to help you when you are applying.

Should I join a hospital committee? Activities/pursuits/research that show an interest in toxicology are strongly encouraged.

Publications other than research Activities/pursuits/research that show an interest in toxicology are strongly encouraged.

How many recommendations should I get? Who should write these recommendations? Most programs will require a minimum of 3. One of these has to be from your program director. The other 2 can come from your emergency medicine faculty. More weight will be given to those written by a toxicologist.

What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship? Yes. Most attending physicians do not want to go back to fellowship (and give up their current salary). Therefore, if you decide later in your career you want to pursue toxicology, it does show dedication.

What if I’m a DO applicant? MD and DO applicants are considered equal.

What if I am an international applicant? The current trend in the toxicology match is there are more positions than applicants; therefore, being an international applicant does not place you at a disadvantage.

APPLICATION PROCESS

How many applications should I submit? There are 26 medical toxicology fellowship programs in the country, so apply to any of serious interest; you can always politely decline an interview invitation. Most applicants typically apply to 4-10 programs.

How do I pick the right program for me? Geographical location usually is an important factor.
Each program has its own strengths and nuances, and the best way to evaluate those is to visit the program during an interview.

Common mistakes during the application process
- Not applying to enough programs. There are usually more positions than applicants during a given match cycle, so every applicant has the potential to match.
- Not meeting the necessary deadlines. Most programs will respond to applications as they receive them, so if you wait until the last minute to apply you may find the program has already given out its interviews.

Application deadlines
There is no universal deadline. If you are interested in a program, contact either the program director or program coordinator to find out more about the exact application process. This information is also usually located on the program’s website. Be aware you need to check the NRMP website as to when the deadline to submit your rank list is. It usually occurs the first week of November.

Tips for writing your personal statement
Personal statements should include information about you including some of your motivation for wanting to pursue a career in toxicology and some of your career goals.

Programs are not typically overwhelmed with a large number of applicants so less weight is placed on the personal statement for receiving interviews.

Is this a match process?
Yes, toxicology fellowships participate in the NRMP match. Important dates regarding the match can vary every year so make sure to check the website. Typically important dates are:
- August – Match opens
- September – Ranking enabled
- November – Rank list deadline
- November – Match day

What happens if I don’t obtain a fellowship position?
If you don’t match you can always check to see if there are any programs that didn’t fill their positions. If you don’t obtain a fellowship position you can accept a job as an attending emergency physician and consider re-applying the following cycle.

INTERVIEW PROCESS

How do I stand out from the crowd?
Be prepared. Research the program ahead of time before the interview. Dress and act professionally. The good news is the “crowd” is not as large as some other fellowships.

What types of questions are typically asked?

Having gone through medical school and residency interviews, most fellowship applicants are seasoned interviewees. Be prepared to answer basic and simple questions such as:
- What are your career aspirations?
- Why toxicology?

The interview process is equally important for the applicant. This is your chance to figure out which program is the right fit for you. Do not be shy with asking any questions to help you make this important decision.

How many interviews should I go on?
There is no magic number. As many as it takes you to feel comfortable about securing a position. Most applicants are still in residency so time and finances so the amount of interviews can be restricted by time and money.

PREPARING FOR FELLOWSHIP

Textbooks to consider reading:

Important skills to practice while in residency to prepare for fellowship
Your number one priority in emergency medicine residency is to become an excellent emergency medicine physician. Most of the skills that you acquire during residency will be applicable to your fellowship. However, focusing on clinical toxicology throughout residency will make you more prepared when starting fellowship.

Tips on how to succeed as a fellow
One of the most important factors in succeeding as a fellow is to pick the program that is right for you. No two programs are exactly the same and it is important to decide what you need in a program to make you happy there. Ask yourself, “Is this somewhere where I could work for two years?”, “Do I get along with this group?”, and “Are the program’s goals in line with mine?”

Be enthusiastic about your choice and new career. You are on your way to becoming a specialist. Focus on your studies and passion that brought you to this choice in the first place. Try to learn something new every day.

Know your limitations. While many will be looking to you as an expert, do not be afraid to ask your attending probing questions.

Mange your time efficiently. Make sure you allot time for studies as well as outside interests. Burnout is real; you want to allow yourself time to decompress.
Maintain a positive attitude. Fellowship is the light at the end of a very long tunnel. Make sure to preserve a good outlook that will help you develop as a clinician and sharpen your medical expertise.

**CONCLUSION**

Additional resources

**Websites:**
- EMRA Toxicology Division
- ACEP Toxicology Section
- American College of Medical Toxicology
- American Academy of Clinical Toxicology
- American Associations of Poison Control Centers

**Podcasts:**
- ACMT Podcast
- EM:RAP
- Tox Now
- OHSU Toxicology Journal Club

**Blogs:**
- AAPCC
- Twin Cities Toxicology Conundrums
- The Poison Review
- Life in the Fast Lane toxicology collection

**Journals:**
- Journal of Medical Toxicology
- Clinical Toxicology

**National organizations**
- American College of Medical Toxicology
- Emergency Medicine Residents’ Association
- EMRA Toxicology Division
- ACEP Toxicology Section

**Conferences**
- NAACT Annual Scientific Meeting
- ACMT Annual Scientific Meeting
- ACEP
- SAEM
- ACOEP

**How to find a mentor** Choosing a mentor is a beneficial way to help guide your career. Although reputation within the field is important, it is more valuable to choose someone that you respect, is willing to help, and has similar interests. A mentor should be a role model who has certain aspects of their practice or life that you want to emulate. It would be helpful to have a mentor who is a toxicologist in terms of fellowship applications, networking, and career guidance. The best way to find a mentor is networking, whether that is through a toxicology rotation, conference, or research project. A less personal and more challenging approach would be to contact toxicologists nearby, if none exist in your residency. The EMRA Toxicology Division is also a great resource to use.

To submit updates or to assist with future revisions, please email fellowships@emra.org.
INTRODUCTION

Description of the specialty Ultrasound is a rapidly progressing and becoming a widely-accepted medical imaging modality that has revolutionized the field of medicine. It has become a popular diagnostic modality and the essence of emergency medicine. This fellowship specifically targets those who are interested in becoming experts in utilizing this modality.

History of the specialty/fellowship pathway Emergency medicine (EM) has witnessed the addition of ultrasonography (US) into the practice of emergency care. The history of ultrasound in EM can be traced back to the publication of the first emergency ultrasound curriculum by Mateer et al. in 1994. The initial curriculum was composed of core applications such as trauma/Focused Assessment with Sonography in Trauma (FAST), renal, cardiac, biliary/RUQ, aorta, and early pregnancy. There was an increasing popularity of ultrasound utilization due to the portability, ease of training, and expanding advanced applications in the practice of EM to improve patient care. The first formal policy statement for the use of ultrasound in EM was published by the American College of Emergency Physicians (ACEP) in 2001. The concept of emergency ultrasound gained momentum throughout most of the residency training programs in the United States and became essential to the core curriculum required of residency programs by the ACGME Review Committee for Emergency Medicine (RC-EM). The rapid growth of ultrasound in EM has led to the development and validation of new point-of-care ultrasound (POCUS) applications and dissemination of basic training in developing standard systems of care, nationwide as well as internationally. As the use of POCUS has grown, so have its applications. Many applications are considered diagnostic, including vascular ultrasound for deep venous thrombosis, soft tissue and musculoskeletal, ocular, testicular, lung/thoracic, bladder volume, IVC diameter, fluid
resuscitation, and gastrointestinal ultrasound for bowel obstruction. Additionally, many procedural modalities are available to the emergency physician, including vascular access, thoracentesis, paracentesis, arthrocentesis, nerve blockade, foreign body removal, and lumbar puncture.

**Why residents choose to follow this career path?**

There are varied reasons for graduating residents to choose an ultrasound fellowship. Some may feel they did not receive adequate training during residency, or simply want to improve their US skills. Others may desire to obtain an advanced ultrasound skill set. Many will also hope to become a US director, whether in a community or academic setting, and can see a fellowship to learn the requisite administrative skills required of the position. Along with becoming proficient in POCUS, which is a highly valuable clinical skill, ultrasound fellowships afford graduating residents an opportunity to work at an academic center in a specific geography (in hopes of obtaining a faculty position). Many also want to pursue specific research interests involving ultrasound. There is also a growing interest in international ultrasound training, mainly in developing countries.

**How do I know if this path is right for me?**

Residents who have a strong interest in bolstering their US skills, expanding their skillset, or have an interest in pursuing a career as a US director should consider an ultrasound fellowship. The path is right for you if you enjoy being involved in ultrasound and you can see yourself doing your job for 10 years or more. The ideal applicant should be passionate about ultrasound in clinical, educational, and research settings.

**Career options after fellowship**

A US fellowship affords many different pathways, including education, research, and administration. Opportunities are available to become an emergency ultrasound (EUS) division director, or program director, whether in an academic or community setting. Those who are more educationally inclined can pursue a career as an EUS fellowship director or assistant/associate director. Some may find their passion is ultrasound research, while others may simply want to be an academic faculty member within US as their clinical and educational niche. As US is also being taught and used in the setting of global health, many physicians are using their skills to be an educator and leader in that field. Getting a strong background in educational administration also lends to the possibility of becoming a member of a residency leadership team.

**Academic vs. community positions**

Ultrasound training prepares physicians for both clinical and academic positions. Those interested in teaching and/or research tend to gravitate towards academic or community academic positions. Location is also an important determinant in future careers. Finally, when considering a position, consider the department’s support of ultrasound, current ultrasound equipment and willingness to purchase future equipment.

**IN-DEPTH FELLOWSHIP INFORMATION**

**Number of programs**

There are approximately 80 fellowships currently available, according to the Emergency Ultrasound Fellowships leaders.

**Differences between programs**

Ultrasound fellowships are varied, just like residency programs. Emphasis can be placed on clinical ultrasound, research, international work, or education. Speaking directly with the ultrasound fellowship director, as well as current and former fellows, will allow prospective applicants to better understand the education offered.

**Length of time required to complete fellowship.**

EUS fellowships are typically 1 year in length. A few have an optional second year that incorporates either a master’s degree in clinical epidemiology or combined training in another specialty, such as global health.

**Skills acquired during fellowship.**

Fellows can expect to learn how to perform and interpret both basic and advanced ultrasound applications and apply them to their clinical practice. You will also learn how an EUS program functions within the larger hospital or health care system. Many administrative aspects of running and maintaining a POCUS program are emphasized, such as machine purchase and maintenance integration with your EMR; billing, coding and documentation; working with other medical specialties who utilize ultrasound, including radiology and cardiology; and physician credentialing and education. Specific skills in ultrasound research will likely be a part of your education, and you will most certainly learn how to become a successful ultrasound educator.

**Typical rotations/curriculum**

ACEP has provided an EUS fellowship curriculum that most programs follow. Overall, you are required to obtain about 1,000 scans during the year, participate in image review and Q-and-A sessions, submit a scholarly project, directly with the ultrasound fellowship director, as well as current and former fellows, will allow prospective applicants to better understand the education offered.
Board certification afterwards? While the possibility of accreditation for emergency ultrasound is being explored, EUS is not currently recognized by the ACGME as a certified subspecialty in EM.

Average salary during fellowship The average salary during fellowship varies. Some programs pay you commensurate to your PGY level and allow you to moonlight. Others fund the fellowship by paying you as a part time faculty member. You should discuss salary with each specific site you are considering.

PREPARING TO APPLY

How competitive is the fellowship application process? Some geographical locations can be competitive. Numbers of positions and applicants vary from year to year. In the past few years, there have been more spots than applicants, but this may not predict future years.

Requirements to apply Many programs may require that you are EM-trained and either board eligible or board certified. Additionally, applicants should have some basic exposure to US and meet the RC requirements for POCUS in residency.

Suggested elective rotations to take during residency If available, residents should take a dedicated US rotation, or participate in a US elective.

Suggestions on how to excel during elective these rotations Be engaged and learn novel approaches and utilization of US in appropriate settings. You should be familiar with ACEP Emergency Ultrasound Compendium. Overall, being enthusiastic, asking questions, and getting your hands on as many scans as possible will be of great benefit.

Should I complete an away rotation? There is no need for an outside rotation, unless your residency program does not offer strong ultrasound training, or you are looking at a specific program and want to do an audition rotation.

What can I do to stand out from the crowd? Getting involved in ultrasound education or research during your residency will allow you to stand out from other applicants. Clinical excellence, the desire to work hard, and your accomplishments during residency are all important.

Different fellowship directors use different criteria for selecting a fellow. One common theme is personality: they want fellows who are likable and who fit in with the rest of the crew. Energetic and pro-active applicants with a history of getting things accomplished will be the most sought-after candidates.

Should I join a hospital committee? This is not required. However, hospital committees can be a valuable learning experience and can help to develop your leadership skills.

Publications other than research Being engaged academically certainly helps, and having non-research publications, such as in EMRA’s EM Resident magazine, will certainly make you stand out.

How many recommendations should I get? Who should write these recommendations? Three recommendations are fine. At least one should be from a faculty member active in ultrasound. The others should be from leaders at your residency or department.

What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship? You can still be competitive in many programs if you are applying after working clinically. Be prepared to explain why you did not do a fellowship right out of residency.

What if I’m a DO applicant? You can apply for a fellowship position if you completed a DO residency in emergency medicine.

What if I am an international applicant? International applicants with a license to practice medicine in the United States can be competitive applicants for fellowships. International applicants without a license to practice medicine in the United States may have difficulty without the ability to work clinically, especially considering ultrasound fellows generally work part-time as EM attendings. Applicants with unknown visa status should apply to sites with experience in accepting such applicants. This can be complicated for both the hospital and the applicant.

APPLICATION PROCESS

How many applications should I submit? There is no right answer to this question. It is good to see multiple fellowships so you can more accurately compare them. The average applicant applies to 7-8 programs.

How do I pick the right program for me? There is no “right” program for most applicants, as many programs will provide good training. If you have a strong interest in an area of ultrasound, you may want to find a program that focuses on that area. Applicants should be specific in identifying which clinical ultrasound applications they will master during their fellowship
training. Look at the structure of the fellowship to see if they can fulfill your needs. Ask where their prior fellows have gone and see if they get good jobs. Geographical location is important to some fellows.

Common mistakes during the application process
The most common mistake made during the application process is to have letters submitted to a site that refers the application to another site. Another common mistake is not having a good answer about why you want to attend that particular program. Prospective applicants may assume that an ultrasound fellowship is akin to a simple extension of residency, and some applicants come into the process without having a good explanation as to why they are interested in the fellowship. Using the years as a resident to solidify basic ultrasound skills, engage in research, and attend national meetings is now the norm for competitive fellowship programs.

Application deadlines
The general timeline for an EUS fellowship is as follows:
- July-September – Research and contact US programs to find out information. Applying early may be advantageous.
- October-November – Applications and interviews for EUS fellowships.
- Mid-November – Offers for EUS fellowships go out.
- November-January – Later applicants and scramble applicants contact sites, interview and accept position.

Tips for writing your personal statement
Don’t overthink the personal statement. Try to make a compelling narrative about why you want to do ultrasound. Please be simple, brief, and concise. A long letter describing various skills is unlikely to be helpful, because fellowship directors already have your CV.

Is this a match process? No. Each fellowship director contacts his/her favorite applicant(s) on the day offers are sent. They then go down the list to the rest of the applicants until all of their spots are filled.

What happens if I don’t obtain a fellowship position? If you do not obtain a position the first day that offers go out, you can scramble and contact other fellowship programs that have open slots. This is coordinated through EUSFellowships.com. You can also wait a year and re-apply. If you plan to reapply, try to do something during that year that is US related and improves your application. Do not hesitate to contact the fellowships to which you applied and ask for advice as to how to make your application stronger. If you simply desire to improve your skill set in POCUS, there are a multitude of great courses available.

INTERVIEW PROCESS
How do I stand out from the crowd? Be yourself! Be energetic and enthusiastic about the subspecialty. Research the program where you are interviewing so you can ask individualized questions. Be professional – remember, this is a job interview. Be prepared to discuss your reason for pursuing the subspecialty, as well as all aspects of your application.

What types of questions are typically asked?
- “Why do you want to come to this fellowship?”
- “Why do you want to do an ultrasound fellowship?”
- “What do you want to do with your career in ultrasound?”

How many interviews should I go on? You should go on as many interviews as you want and can afford. There is no right number. Most applicants go to around 7 interviews.

PREPARING FOR FELLOWSHIP
Textbooks to consider reading

Important skills to practice while in residency to prepare for fellowships
In addition to working on your ultrasound skills, practice interviewing, team-building, demonstrating reliability in accomplishing tasks, and taking initiative.

Tips on how to succeed as a fellow
During fellowship, take advantage of all opportunities offered. Fellowship is a unique time to develop your skills in image acquisition, image interpretation, education of other health care providers about ultrasound, leadership and administrative skills in developing ultrasound infrastructure and curriculum, and research skills. Also strive to maintain a balance with your life outside of fellowship to help prevent burnout.

CONCLUSION
Additional resources
- EMRA US Division

National organizations
- ACEP Emergency Ultrasound Section
- EMRA Ultrasound Division
- SAEM Academy of Emergency Ultrasound

Conferences
Some of the conferences with EUS activities include ACEP, SAEM, AAEM, and AIUM, P2SK. They are very
different, but each is attended by ultrasound enthusiasts and each offers opportunities to learn about and get involved in ultrasound on a national level.

**How to find a mentor** Local mentors are best, so ask around your residency first. You can also network at national meetings to identify individuals who will help you with your interest in ultrasound. Email individuals directly. The community is friendly, open, and willing to help.

To submit updates or to assist with future revisions, please email fellowships@emra.org.
INTRODUCTION

Description of the specialty Undersea and hyperbaric medicine (UHM) is a unique subspecialty of emergency medicine that involves the therapeutic use of oxygen under pressure to treat disease. Hyperbaric oxygen is used to treat dive emergencies, arterial gas embolisms, radiation injuries, complex wounds, carbon monoxide (CO) poisoning, deadly infections, ocular emergencies, and much more. The specialty of UHM includes treatment with hyperbaric oxygen but also the study of extreme pressure environments, immersion effects, and marine life injuries.

The patient population is diverse, including recreational and commercial divers, patients requiring daily wound care, and critically ill patients. Fellowship training prepares physicians to care for patients with emergent and elective indications, participate in research, and become leaders in the field.

History of the specialty/fellowship pathway The history of hyperbaric medicine is long and storied. The first use of pressurized gas to treat medical disorders was recorded in 1662 by Henshaw. Decompression sickness, also known as caisson disease or the bends, was first described during the building of the Brooklyn Bridge in 1873. Also of note was the pioneering work of Behnke and Cousteau in scuba diving and creating the first dive tables in the 1930s and 1940s. This all helped lay a foundation for the field of hyperbaric medicine. Since then, many others have helped transform the field from one of observation and anecdote to the evidence-based use of hyperbaric medicine today. The American Board of Emergency Medicine began board certification for UHM in 2000.

Why residents choose to follow this career path Hyperbaric
medicine is an exciting field that gives the emergency physician a new and powerful tool. Further, for those with interests in diving, wound care, or extreme environments, this is an incredibly useful skill that can help patients in and out of the emergency department. The field of UHM is growing, treatment indications are expanding, and there are many research opportunities available. Fellowship training will help you become a leader in undersea and hyperbaric medicine.

How do I know if this path is right for me? If you love the pace of emergency medicine and resuscitation, have an interest in diving and physiologic effects of high pressure environments on human tissue, and love teaching and expanding the body of medical knowledge in which you have found your niche, then hyperbarics may be the right path for you.

Career options after fellowship The career options are broad and diverse, including practicing at dive clinics, hyperbaric tertiary referral centers, hyperbaric wound care facilities, commercial dive-related careers, and classic emergency medicine. Employment facilities can also be varied, with large multiplace chambers (multiple patients being treated in one chamber at the same time) that may be more focused on hyperbaric treatments, monoplace chambers (single person chambers) with an emphasis on wound care, or academic centers that have hyperbaric/hypobaric chambers and may be more focused on research.

Splitting time between departments Many UHM careers are a mix of emergency medicine, hyperbaric medicine, and wound care, and it’s important to find the right balance.

Academic vs. community positions Many UHM careers are a mix of emergency medicine, hyperbaric medicine, and wound care. Finding the right balance between the 3 will be an important decision after fellowship. Fellowship training would be highly advantageous if you desired to stay in academia, although many fellowship trained hyperbaric physicians do continue to practice in the community.

IN-DEPTH FELLOWSHIP INFORMATION

Number of programs There are presently 8 institutions offering fellowship positions to graduates of ACGME accredited residencies:

- Duke University School of Medicine, Durham, NC
- Hennepin County Medical Center, Minneapolis, MN
- Kent Hospital, Warwick, RI
- Louisiana State University, New Orleans, LA
- SUNY Upstate Medical University, Syracuse, NY
- USAF School of Aerospace Medicine, Wright-Patterson Air Force Base, OH
- UC San Diego, San Diego, CA
- University of Pennsylvania Medical Center, Philadelphia, PA

Differences between programs Programs vary in the time fellows spend on call, their access to professional organization membership, time rotating through ICUs, and didactic requirements. Some programs place emphasis on chamber maintenance, while others are committed to local diving organizations. All programs guarantee ample exposure to all classic and innovating applications of hyperbaric technology.

Length of time required to complete fellowship The fellowship is 1 year, and most institutions have 1-4 fellows.

Skills acquired during fellowship Fellowship programs include a diverse range of clinical responsibilities along with research requirements. All fellowships prepare candidates to treat emergent and elective patient indications for hyperbaric chamber use.

Typical rotations/curriculum Fellows are responsible for managing elective and emergent patients receiving HBO2 treatments in the chamber, completing consults, attending didactic sessions, and gaining basic understanding of hyperbaric chamber operations and management. It is not uncommon for an emphasis on wound care to be part of the hyperbaric fellowship curriculum. On-call time is built into schedules where fellows will respond to emergent hyperbaric treatment indications. Fellows typically attend one or more conferences related to the field throughout the year.

Board certification afterwards? UHM is an ACGME approved fellowship. Board certification is available after completing fellowship.

Average salary during fellowship Salary is typically based on a PGY-4 (or 5) contract.

PREPARING TO APPLY

How competitive is the fellowship application process? Programs report the selectivity for applying residents as moderate to highly competitive.

Requirements to apply Candidates must have completed an ACGME-accredited training program and be board eligible/board certified in their specialty. EM training is common among most applicants, though other specialties are allowed to apply.
**Research requirements** Research is not a requirement for applying to fellowship but will improve your chances of matching.

**Suggested elective rotations to take during residency** Scuba diving certification is not a prerequisite for the fellowship, but it is encouraged at some point before or during training. If your residency institution does have a hyperbaric center, it is recommended to rotate through to gain experience.

**Suggestions on how to excel during these elective rotations** To excel, read current literature on hyperbaric medicine, get involved with your seniors and faculty members during cases, and take initiative when it comes to exploring research and case report opportunities.

**Should I complete an away rotation?** Away rotations are not required but will certainly help make you more competitive.

**What can I do to stand out from the crowd?** Research in hyperbaric medicine, case report publications, talks given at local and national conferences, as well as service to the field of undersea and hyperbaric medicine are great ways to demonstrate interest and set yourself apart from other applicants.

**Should I join a hospital committee?** This is not required, but it is encouraged to demonstrate interest and open new opportunities for yourself.

**Publications other than research** Case reports, articles in magazines and websites dedicated to UHM, and review articles are other great ways to publish in the specialty.

**How many recommendations should I get? Who should write these recommendations?** Most programs require at least 2 letters of recommendation. Recommendations should come for senior hyperbaric faculty and from your program director.

**What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship?** Attendings who have been practicing and are looking to further develop their careers are welcome to apply and are competitive for fellowship.

**What if I'm a DO applicant?** Graduates of MD and DO granting medical schools will be considered as long as residency has been completed.

**What if I am an international candidate?** International applicants are also welcome to apply, as are attendings who have been practicing and are looking to further develop their careers.

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**APPLICATION PROCESS**

**How many applications should I submit?** Apply broadly, as there are limited slots for fellows and few programs nationally.

**How do I pick the right program for me?** As with residency application, the “right” program will be based on personal and professional preferences.

**Common mistakes during the application process** A common mistake is to apply later in the year (September or October), when most of the positions have already been filled.

**Application deadlines** Since there is no match for UHM, most programs use a rolling admissions process; start this process early (usually July or August of the year prior to starting fellowship). Interviews typically run from August through December, but candidates can contact programs earlier. Occasionally programs do not fill all their spots or spots will open up, so it is never too late to contact programs to ask if applications are still being accepted.

**Tips for writing your personal statement** The personal statement is a key part of the application. Your statement should address why you want to enter the field of hyperbaric medicine and what you plan to do in the next 5-10 years.

**Is this a match process?** No.

**What happens if I don't obtain a fellowship position?** If you do not obtain a fellowship you can reapply, though it is more difficult to match the second time around. If you do not match it is recommended that you continue to work clinically while exposing yourself to hyperbaric medicine and stand out by doing research, joining committees, and getting involved creative ways.

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**INTERVIEW PROCESS**

**How do I stand out from the crowd?** It is essential that you come prepared. Read up on the program and latest topics in hyperbaric medicine. Be sure to have questions prepared and have a strategy in place that allows you to emphasize your most appealing attributes. Arrive on time, be polite, and be interested.

**What types of questions are typically asked?** Interviewers will ask you why you want to go into hyperbaric medicine and ask you pointed questions about current topics in hyperbaric medicine as well as questions that arise off of your CV and application.

**How many interviews should I go on?** Given the
limited number of programs, you should accept all interview offers in order to guarantee matching in the specialty.

**PREPARING FOR FELLOWSHIP**

**Textbooks to consider reading**


**Important skills to practice while in residency to prepare for fellowship** Become well-versed in the indications for hyperbaric therapy and gain general knowledge regarding chamber function and diving.

**Tips on how to succeed as a fellow** Fellows must be committed to the specialty. This means being professional, invested in your work, and willing to contribute to the community of your specialty.

**CONCLUSION**

**Additional resources**

**Blogs:**

- [http://hyperbaricmedicalsolutions.com/blog/](http://hyperbaricmedicalsolutions.com/blog/)
- [http://www.hbot.com/blog](http://www.hbot.com/blog)
- [https://www.acep.org/hyperbaricsection/](https://www.acep.org/hyperbaricsection/)

**Journals:**

- UHM Journal
- DHM Journal

**National organizations** The Undersea and Hyperbaric Medical Society (UHMS) is a good place to start learning more about the specialty. This international body is a leading authority on undersea and hyperbaric medicine.

Joining the ACEP UHM Section is free for residents and fellows and is also highly encouraged.

**Conferences** Attending the UHMS Annual Scientific Meeting in June or joining the ACEP UHM section during their annual meeting at the ACEP conference may also be valuable.

**How to find a mentor** Prior to fellowship, contacting your local hyperbaric chamber to talk about careers in hyperbaric medicine would be valuable. A week to monthlong rotation at a hyperbaric chamber would also be helpful. In the end, the easiest way to find a mentor is to do a hyperbaric fellowship.

To submit updates or to assist with future revisions, please email fellowships@emra.org.
INTRODUCTION

Description of the specialty Wilderness medicine (WM) is the practice of medicine with limited resources in austere environments, or health care provided anywhere in which environmental conditions have inflicted a patient’s physiologic insult. This simple definition belies the complexity of this specialty, as well as the extensive and varied opportunities it provides. Training in wilderness medicine can prepare physicians to treat mountaineers and sherpas on Everest, serve as directors of national parks, oversee search and rescue missions, work in hyperbarics or dive medicine, and provide medical care on expeditions or at remote scientific base camps. A wilderness medicine physician must not only have a knowledge of medical problems that arise in the elements (i.e. acute mountain sickness, hypothermia, lightning strikes, dysbarism, and envenomations, to name a few), but also how to acutely manage these problems outside of the hospital and often with minimal support.

Wilderness medicine includes, but is not limited to:
- Trauma and Emergency Medicine
- Sports Medicine
- Rescue and Evacuation
- Diving and Hyperbaric Medicine
- Disaster Medicine
- Tropical and Travel Medicine
- Expedition Medicine
- High-Altitude/Mountaineering Medicine
- Envenomations
- Survival Medicine
- Tactical Medicine
History of the specialty/fellowship pathway
If defining wilderness medicine as health care performed beyond the boundaries of existing civilized medical infrastructure, one may argue that surgeons from early Greece and Rome were the true founders of the field. The evolution of wilderness medicine has been closely tied to military operations, a statement that remains true today. The current field of wilderness medicine gained momentum starting in the early 1970s, when experienced Himalayan mountaineers gathered in London to share stories and discuss tips on high altitude survival. A few years later in Wales, scientists joined the discussion and gave lectures on high altitude physiology. In 1975, the Yosemite Mountain Medicine Symposium expanded discussions beyond altitude medicine, to include topics such as search and rescue, trauma, and backcountry first aid. The first textbook on wilderness medicine, Management of Wilderness and Environmental Emergencies, was written by Dr. Paul Auerbach and Dr. Edward Geehr in 1983. The Wilderness Medical Society (WMS) was established in 1982, and this was the first national society for wilderness medicine. The first fellowship in wilderness medicine was established in 2003, and today 14 fellowships are offered throughout the country.

Why residents choose to follow this career path
While residents may choose to pursue wilderness medicine with different specific goals in mind, the overarching commonality is a desire to combine one’s passions for both medicine and the outdoors. Now more than ever the emergency medicine community is recognizing wilderness medicine as an important academic subspecialty. Residents are drawn by the plethora of opportunities to contribute meaningful research to a rapidly growing field, and the opportunity to further expand the role of wilderness medicine physicians.

How do I know if this path is right for me?
Residents and medical students who come down with serious cases of wanderlust the week before an exam or after a weekend of working 12-hour shifts will be well-suited for wilderness medicine. Those who daydream about a life outside of the hospital, revel in their sense of wonder in the world, have a propensity for adventure, and gravitate towards adrenaline-spiking experiences should consider this subspecialty.

Furthermore, wilderness medicine can fulfill one’s desire for involvement at the academic, community, national, and even international level. While all physicians serve their community by providing medical care, those trained in wilderness medicine are able to extend their skills to ski clinics, marathons and ultramarathons, and search and rescue efforts. At the national and international levels, wilderness medicine physicians are well prepared to provide care after natural disasters. Still others support scientific discovery by providing care to researchers collecting data in austere environments, like the Amazon or Antarctica. If you are looking for “something bigger” in your life, consider wilderness medicine.

Career options after fellowship
There are many paths to take after fellowship. Some physicians become involved with EMS, serving as medical directors for search and rescue teams, or training medics in the National Park Service program. Others volunteer as medical officers for disaster relief efforts on the local, national, and international scale. Wilderness medicine trained physicians provide medical care at races and ultramarathons, and on expeditions. There are many opportunities to become involved in education, including serving as a fellowship director, establishing and/or directing wilderness medicine student electives, and teaching training courses. Others contribute to the field through research on a variety of topics, including high altitude medicine, hypothermia, ultramarathon physiology, and effects of climate change on human health. Some physicians are able to devote the entirety of their careers to wilderness medicine, while others work full time in the emergency room and participate in wilderness medicine activities in their free time.

Splitting time between departments
Negotiations are not traditionally between separate departments but rather within the department regarding how you will utilize your wilderness medicine training. For example, you may have aspirations to create a medical student rotation in wilderness medicine, or to become a fellowship director within this specialty. Some physicians find part time employment with national parks, ski lodges etc. in addition to their emergency department responsibilities.

Academic vs. community positions
Academia affords many opportunities for education in comparison to community positions, and provides significant support in terms of both finances and protected time for research. In a community setting, it will likely be up to the individual to network and find opportunities for involvement. In many cases, geographic location is a key determinant in how easy or difficult it will be to find such opportunities. In some rural community emergency departments (EDs), you will likely be incorporating wilderness medicine into all of your shifts!

IN-DEPTH FELLOWSHIP INFORMATION
Number of programs
There are currently 14 available
fellowships, 1 of which is only open to active military personnel:

- Augusta University
- Eastern Virginia Medical School
- George Washington University
- Madigan Army Medical Center (Active Duty Only)
- Massachusetts General Hospital
- Stanford
- State University of New York Upstate Medical University
- Tufts University Baystate Medical Center
- UC San Diego
- UCSF Fresno
- University of Colorado and Denver Health
- University of New Mexico
- University of Utah
- Yale University School of Medicine

For ongoing updates, please refer to the ACEP Wilderness Medicine Section and EMRA Match.

The Wilderness Medical Society also offers a unique certification pathway: Fellowship in the Academy of Wilderness Medicine, or FAWM. This is a great option for anyone who does not want to complete a formal year of fellowship, or for those who want flexibility in completing fellowship training. Fellows must complete lessons from a pre-established WM curriculum of twelve categories, similar to those covered in formal fellowships. In addition, they must gain experiential knowledge in 6 categories: publishing and research, volunteer teaching, public service, practice, service to WMS, and board certification and conference attendance. On average it takes Fellows 3-5 years to complete all requirements for their FAWM. You can start working towards your FAWM in residency and as early as medical school. In addition, the FAWM is open to any WMS member.

**Differences between programs** All fellowship programs follow a standardized curriculum and core content. Clinical opportunities will differ between programs, depending on geographic location and with which organizations (outdoor, rescue, international relief) faculty are involved. Likewise, research focuses and specific teaching opportunities will vary by program. Some fellowships have a heavier emphasis on incorporating EMS, international, disaster, or expedition medicine.

**Length of time required to complete fellowship** Most fellowships are one year. Several fellowships have the option to extend a second year to pursue a Master of Public Health (MPH) degree.

**Skills acquired during fellowship** Most fellowships follow a standardized core content, which assures that fellows receive didactic and skills training in a broad range of wilderness topics. In general, a fellow can expect to develop a high level of proficiency in treatment of high altitude illnesses, wilderness trauma, envenomation, dysbarism, and tropical diseases. They will receive search and rescue and/or EMS training and become proficient in medical evacuation. Fellows also will have opportunities to develop leadership and education skills.

**Typical rotations/curriculum** ACEP’s WM Section created a Fellowship Subcommittee and Task Force in 2009 to research and develop a standardized core content and skill sets for wilderness medicine fellowships.

This provides an outline of topics that an expert in wilderness medicine is expected to master. Fellowship programs vary in presenting this material through educational and clinical experiences, as well as some self-learning. Most curriculums also include a scholarly project that can range from a simple case report to extensive vigorous research projects. Often fellows have the opportunity to presentations at local, national, and international conferences.

Most fellowships provide 1-3 months of protected time for the fellow to dedicate to specific wilderness activities, off-site clinical experience, or site-specific research. Fellows have used this time staffing the Himalayan Rescue Association clinics in Nepal, working as expedition doctors, or other similar activities.

Because wilderness medicine fellowships are not ACGME accredited at this time, most fellows are hired as junior faculty and are expected to do a certain amount of shift work in the ED (specific amount of time required in ED varies by program).

**Board certification afterwards?** No.

**Average salary during fellowship** Anticipate a salary consistent with that of a PGY-4 or 5. However, because most fellows are hired as junior faculty, some programs provide salaries from $75,000-110,000. Moonlighting is allowed in most cases.

**PREPARING TO APPLY**

**How competitive is the fellowship application process?** Competitiveness will vary year to year. As the number of fellowship options continues to expand, the chance of finding a fellowship that suits your specific needs gets better and better. However, if you are focused on only 1-2 programs and they have 1 spot each, it can be quite competitive.
Requirements to apply Currently, almost all fellowships require American Board of Emergency Medicine (ABEM) eligible or ABEM certified physicians. The exceptions are Madigan, which is only open to military personnel; UCSF–Fresno, which takes family medicine physicians; and Utah, who has taken residents from non-EM programs.

Most fellowships will require a letter of intent or personal statement, updated CV, and 2-3 letters of recommendation.

Research requirements There are no standard research requirements for the application process. However, any research will show you are proficient in the research process. Specific wilderness medicine research will definitely help you stand out as an applicant.

Suggested elective rotations to take during residency If your program offers international experience, EMS rotations, or flight medicine opportunities, they can provide a good base for branching into wilderness medicine. See below for more elective ideas.

Suggestions on how to excel during these elective rotations Show your enthusiasm for the projects at hand whether they be specific to medicine or simply a new outdoor skill. Get to know the directors/staff of any wilderness related rotations as they can be valuable resources for future opportunities as well as solid letters of recommendation.

Should I complete an away rotation? In wilderness medicine nothing is as valuable as hands-on experience. Using your elective time to pursue medical experience in a wilderness setting is a great option. This can be as part of an official wilderness medical course, an international medical mission, or something you come up with on your own. The EMRA Wilderness Medicine Division, ACEP Wilderness Medicine Section, and Wilderness Medical Society list elective opportunities for residents and students. Other groups, such as the Wilderness Medicine Institute (WMI) of the National Outdoor Leadership School (NOLS), offer courses and medical expeditions. Set up your elective time early as some of them are popular and spots fill fast.

What can I do to stand out from the crowd? Complete wilderness medicine-specific research or projects. Even if you are not in a region known for WM, you can come up with creative ways to incorporate aspects of WM into your scholarly project. For example, you could research the incidence of hypothermia in the homeless urban patient population during winter months. Write up the patient you took care of in Chicago who had just landed from her vacation in Mexico with a jellyfish sting. Organize a Medical Wilderness Adventure Race (MedWAR) for your residency program, or design a WM track for your residency program if one does not already exist.

Apply to serve on wilderness medicine committees through EMRA, ACEP, SAEM, or the WMS. If selected to serve on a committee, take an active role in the organization and have a tangible end result to show for your invested time.

Seek opportunities for valuable hands-on wilderness experience. Volunteer as medical support for ultramarathons, ask local hiking groups if you can host a workshop on packing survival kits, or sign up for a MedWAR. Consider using your residency elective to take a course through NOLS.

Should I join a hospital committee? There are few hospital committees that directly relate to wilderness medicine. Focusing your energy elsewhere will likely prove more advantageous.

Publications other than research There are ample opportunities to publish editorial, educational, and experience reports through various publications. EM Resident (EMRA publication), Wilderness and Environmental Journal, Wilderness Medicine Magazine (WMS publication), and ACEP’s wilderness medicine committee newsletter all accept manuscripts other than strict research. Any publication in the field of wilderness medicine shows your interest and level of commitment to the field and can help you get into a fellowship program.

How many recommendations should I get? Who should write these recommendations? Most programs require 2-3 letters of recommendation. One should come from your residency program director. If you have done a wilderness medicine related elective, the director of that rotation could provide valuable insight into your skills and commitment to the field of wilderness medicine.

What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship? Yes. Working prior to fellowship should not make you less competitive.

What if I’m a DO applicant? DO vs MD is unlikely to be an issue if you have a strong CV.

What if I am an international applicant? Again, the strength of your CV is the strongest predictor of being accepted into a fellowship program. However, visa
issues may in some cases affect the consideration of an application.

APPLICATION PROCESS

How many applications should I submit? Clearly, applying to more programs will increase your chance of being accepted. However, every program is different, so do your research on what each program offers. Often finding 3-5 programs that will best fit your goals is sufficient.

How do I pick the right program for me? Every program offers a unique experience beyond the standardized core content. Some fellowships are more academic and research driven, while others focus more on experiential training. Some fellowships have a strong EMS component while others have little or no EMS focus. There are several programs that allow the fellow to extend a year and add a MPH into their program curriculum. Each program will offer unique travel and expedition opportunities. An applicant that is interested in pursuing dive medicine will likely be drawn to certain fellowships while an applicant interested in pursuing altitude medicine will be drawn to other programs. Geography also plays a role, not only because of personal preference, but also because certain locations will provide more access to certain wilderness experiences.

Common mistakes during the application process
Get involved as early as you can. Massachusetts General Hospital's fellowship website offers this sage advice: “It is never too early to be in contact with us about your future plans. We tend to take a long view of relationships. Over the years, we have discussed wilderness medicine fellowship training with EMT's, college and medical students, residents and practicing physicians. While we have hired applicants who first approached us less than a year before starting their fellowship, we maintain an active roster of prospective fellows --some over more than 5 years -- many of whom we have then hired as fellows. We are friendly people who like to talk about wilderness medicine. We ask you to begin a conversation with us early.”

In addition to starting too late, not having a clear goal is a common mistake. Most fellowships allow you to tailor your experience and research according to your specific area of interest. During the interview process be able to clearly define what you want to accomplish during your fellowship.

Application deadlines In the past each fellowship program accepted applications, interviewed, and extended offers throughout the fall. More recently fellowships have agreed to follow more specific deadlines to help prospective fellows who are considering multiple fellowship options. Most now follow a verbal agreement to have an application submission deadline of October 1 and final decisions and offers extended on November 1.

Tips for writing your personal statement Clearly highlight your past experiences and exposure to wilderness medicine. Describe your reasons for wanting to pursue a fellowship and what you hope to accomplish. In most cases you will be acting as both fellow and junior faculty, working several shifts in the emergency department. In addition to specific wilderness accomplishments, also describe why you would be a good fit in their emergency medicine department.

Is this a match process? No.

What happens if I don't obtain a fellowship position? There are many opportunities to pursue wilderness medicine with or without a fellowship. You can still get involved in many different areas of wilderness medicine. One option is to work toward becoming a Fellow in the Academy of Wilderness Medicine.

INTERVIEW PROCESS

How do I stand out from the crowd? Use your question responses to highlight your interests, research, projects, and accomplishments that demonstrate your commitment to the academic field of wilderness medicine. This is not the time to be timid about why you are the perfect candidate for that fellowship spot! Take pride in your CV and let your excitement about your future career plans shine through. In addition to knowing your own research projects inside out, have a few ideas about where your past and current projects may lead you in the future. Anticipate questions about lessons learned from your field experiences. Importantly, articulate clear and attainable goals for your year of fellowship. If you want to start your own WM fellowship after training, have an answer prepared for how you developed that goal. It is ok not to know exactly where you want to end up within WM, but have a plan for how you want to explore one or two specific interests. Since each fellowship program offers unique field experiences, do your research ahead of time and tell fellowship directors why you have chosen to apply to his or her program as opposed to somewhere else. Additionally, the value of being amiable and friendly can never be overstated. In many cases you will be traveling and working under stressful environments with your fellowship staff, so they will want someone who is
flexible and enjoyable to work with.

What types of questions are typically asked?
As with most interviews, fellowship directors will likely review pertinent aspects of your CV with you. You will be asked what you learned from your specific wilderness experiences. You will be asked what you hope to accomplish during your fellowship and what your long-term goals are with wilderness medicine.

How many interviews should I go on? Most applicants end up going on 3-5 interviews. It is uncommon for applicants to do more than 5 interviews.

PREPARING FOR FELLOWSHIP

Textbooks to consider reading

- Auerbach, Paul S. *Field guide to wilderness medicine*. Elsevier Health Sciences, 2013.

Important skills to practice while in residency to prepare for fellowship
Consider doing a skills course and getting a wilderness related certification. One of the most common is the Advanced Wilderness Life Support (AWLS). This is a multiday course with lectures and hands on experience and is taught in locations across the country throughout the year. Organizations such as the Wilderness Medicine Institute (WMI), National Ski Patrol (NSP), and Aerie also offer a variety of courses including Wilderness First Responder (WFR), Wilderness First Aid (WFA), Wilderness Medicine Essentials (WME), Wilderness Advanced First Aid (WAFA), Wilderness EMT (W-EMT), and Outdoor Emergency Care Course (OEC). These courses vary in length and amount of information covered. A more extensive course is the Diploma in Mountain Medicine (DiMM). It is quite expensive and time-consuming and more frequently completed either during a fellowship or after. Also consider sport-specific certifications such as Avalanche AIARE courses, Ski Patrol, Swiftwater Rescue, or SCUBA.

Tips on how to succeed as a fellow
Get started early. A year goes faster than you would expect. As soon as you are accepted to a fellowship, start to identify what you hoped to accomplish. You often can start research projects early so you can hit the ground running. Most fellowships will have several optional experience opportunities. To a certain extent your fellowship will be what you make of it. Take as many opportunities as possible and be self-motivated. The more experiences you have the more successful your fellowship will be.

CONCLUSION

Additional resources

Journals:

- Wilderness and Environmental Medicine
- High Altitude Medicine and Biology Journal
- Wilderness Medicine Magazine

Blog:

- www.ebmgonewild.com

National organizations

- Wilderness Medical Society
- ACEP Wilderness Medicine Section
- EMRA Wilderness Medicine Division
- SAEM Wilderness Medicine Interest Group

Conferences

- Offered through WMS
- National Wilderness Medicine conferences

Local conferences are available and often sponsored by individual residency programs, such as UCSF Fresno, University of Michigan, WellSpan York Hospital, and Virginia Tech - Carilion School of Medicine.

How to find a mentor
Sign up for a mentor through the EMRA Wilderness Medicine Division. Reach out to program directors or past fellows with similar interests. Go to conferences and network, and join a national organization or committee.

References


To submit updates or to assist with future revisions, please email fellowships@emra.org.
INTRODUCTION

Description of the specialty This fellowship is known as Women's Health Fellowship, Global Women's Health Fellowship, and/or Sex and Gender Fellowship. Some of these fellowships focus more on research and domestic and global women's health issues. These programs create physician leaders in education and research in gender-specific medicine, who also translate these concepts to real-life emergency medicine practice. Fellows additionally learn how to promote high-quality and culturally competent care for women both locally and globally. Other women's health fellowships focus primarily on clinical training in the clinic, urgent care, and emergency department settings. These programs allow for additional female and reproductive health training beyond the usual training in emergency medicine residencies.

History of the specialty/fellowship pathway Originally, women's health was essentially synonymous with reproductive and gynecologic care. As such, initial fellowships were geared toward OB-GYN physicians. Because internal medicine physicians and family physicians are also involved in gynecologic care, it was a natural fit for these fellowships to offer training to these physicians as well. Over time, interest arose into developing a better understanding of how certain disease states affect women throughout their life cycle. Women's health has subsequently expanded beyond reproductive and gynecologic care to include the interactions of biological, societal, behavioral, political, and environmental issues on the overall health of women. With this expanded vision of women's health fellowship, it comes as no surprise that psychiatry and subsequently emergency medicine physicians are now completing women's health fellowships.

Why residents choose to follow this career path This career path is for residents interested in the development of academic research,
educational initiatives, and leadership skills specific to women's health, or for residents interested in additional clinical training in gynecology and obstetrics. Fellows obtain a foundation of knowledge of women's health issues in the setting of social, cultural, and political environments. It is this foundation that helps physicians achieve successful careers post-fellowship that are dedicated to the health and well-being of women.

**How do I know if this path is right for me?** Are you interested in cardiovascular disease and how it affects women? Are you interested in learning more about female genital mutilation: why it exists, how it impacts a woman (both in the gynecological capacity and psychological perspective), and how to stop it? Would you like to help women with family planning in a war-torn country or in a country devastated by Zika virus? Do you want to be a leader and expert among emergency physicians in regard to the health of women? Do you have a specific research interest in the health issues of women displaced due to disaster? Do you want more advanced procedural training in the fields of gynecology and obstetrics? Are you interested in rural or critical access emergency medicine and want focused clinical OB-GYN training? If so, this may be the career path for you.

**Career options after fellowship**
- Physicians who have completed this fellowship have gone on to achieve:
  - Board member for the Sex and Gender Women’s Health Collaborative.
  - Leadership position in the American Medical Women’s Association.
  - Funded researcher specializing in gender differences in medicine.
  - International employment with focus on (but not limited to) gender based violence, human trafficking, mental health, sexually transmitted diseases, health services to rural communities, etc.
  - Leader in humanitarian response in war-torn countries.
  - Appointment with Ministry of Women’s Rights.
  - Appointment with Partners in Health.
  - Appointment with Department of Health and Human Services.
  - Rural or critical access emergency medicine attending positions with higher likelihood of managing complications of second- and third-trimester pregnancy and labor and delivery.

**Academic vs. community positions** When choosing between academic, community, or global positions after fellowship, this is typically determined by the applicant’s personal career aspirations. For example, those with strong research interests gravitate toward academia, whereas others may seek appointments working in underserved areas.

### IN-DEPTH FELLOWSHIP INFORMATION

**Number of programs** Programs mostly focused on research:
- Brigham and Women’s Global Women’s Health Fellowship
- Warren Alpert Medical School of Brown University (Rhode Island Hospital): Sex and Gender in Emergency Medicine
- UCSF, GloCal Health Fellowship (must be affiliated with University of California to apply)
- Cedars Sinai Women’s Heart Disease and Health Fellowship

**Programs with clinical education and varying levels of research emphasis:**
- Cleveland Clinic Women’s Health Fellowship
- University of Michigan Women’s Health Fellowship
- VHA Advanced Fellowship in Women’s Health (8 sites: Boston, Los Angeles, Madison, Milwaukee, Pittsburgh, San Diego, San Francisco, and West Haven). Please contact each site individually for eligibility requirements.
- MacNeal Hospital Women’s Health Fellowship

**Fellowships that do not currently accept EM resident applications:**
- Mayo School of Graduate Medical Education Women’s Health Training Track

**Additional fellowships (unclear if they accept EM resident applications):**
- University of Illinois College of Medicine at Peoria Women’s Health Fellowship
- Florida Hospital Women’s Health Faculty Development Year
- East Carolina University, Maternity and Women’s Health Fellowship
- Case Western Women’s Health Fellowship
- Columbia Faculty and Fellowship Development in Women’s Health
- OHSU Women’s Health Fellowship
- UMDNJ Reproductive Health Fellowship in Family Medicine

**Differences between programs** Some programs are focused more on research, with opportunities to obtain advanced degrees such as master’s programs in public health, science, and/or clinical research. These programs often have access to research funding and can propel a young researcher into a future niche in women’s health. Some programs are focused on clinical
training. These programs provide the opportunity to gain specialized skills in areas including labor and delivery, cesarean sections, management of low-risk prenatal care, preventative health, mental health, office-based gynecologic procedures, and breast health. Most clinical fellowship programs also offer opportunities for research with varying levels of emphasis on publication.

**Length of time required to complete fellowship**
Varies by program: 1-2 years.

**Skills acquired during fellowship**
- Research experience
- Formal public health education
- Global health experience/exposure for those who are interested
- Leadership and administrative skills
- Education and curriculum development
- Education and training on the following topics (including but not limited to)
  - Obstetrics: low-risk prenatal care, labor and delivery, cesarean section, breastfeeding, ultrasound
  - Gynecology: pelvic pain, office-based gynecologic procedures, family planning, hysterectomy alternatives
  - Preventative care: breast health, pap smears
  - Eating disorders
  - Women and heart disease
  - Endocrinology and bone health
  - Typical rotations/curriculum
- Fellows typically divide their time between research, education, and clinical services. The percentage spent in each varies based on the program.

**Board certification afterwards?** No. However, many fellowships offer the opportunity to obtain an MPH or advanced degree/certificate in research.

**Average salary during fellowship**
Varies based on program. Some programs pay PGY-4, 5, or 6 level salary and others offer a more competitive salary.

**PREPARING TO APPLY**

**How competitive is the fellowship application process?**
Most women’s health fellowships were originally designed for residents from family practice, psychiatry, OB-GYN, surgery, and internal medicine. Many of these programs are open to receiving applications from EM applicants even if they have not had an EM-trained fellow yet. The list of eligible programs is always changing for the EM resident, thus we recommend contacting all programs to ask if they will accept an EM resident. Because there are limited fellowship opportunities available for the emergency physician, this becomes a competitive fellowship. But there are also a small number of applicants per year.

**Requirements to apply**
You must be graduating or have graduated from an accredited emergency medicine residency. You must contact each of these programs individually to formally apply.

**Research requirements**
Research is encouraged but not required.

**Suggested rotations to take during residency**
Here are some rotations to consider when planning your elective time: international rotations, women’s health clinic, community health clinics, public health administration, addiction clinics, preventive counseling, family planning clinics, domestic violence clinics, etc.

**Suggestions on how to excel during these elective rotations**
Residents who do well on these rotations are those who are interested, hard-working, and engaged. Your passion for medicine and helping others should be evident. Strive to make connections with your patients, family, and each member of the health care team. Continue to read and learn throughout the duration of your rotation. It also never hurts to arrive early and stay late; being late to your rotation is a sure way to obtain a bad evaluation.

**Should I complete an away rotation?**
There is no need to attend another institution for an away rotation unless it is for a desired elective that is not offered by your home institution.

**What can I do to stand out from the crowd?**
To stand out from the crowd, it would be helpful to become involved in projects that are geared toward women’s health. Participating in meaningful leadership and research opportunities is key. By the time you apply for fellowship during your third (or fourth) year of residency, your research project should be near completion. It’s better to have 1 completed research project than 3 projects still in the data collection phase. Additionally, women’s health is a broad field, so it may be wise to narrow your focus to a particular “niche” that interests you.

**Should I join a hospital committee?**
If your hospital has a committee related to women’s health that interests you, absolutely pursue this opportunity. This would be an excellent way to gain leadership skills and make a difference within your institution.

**Publications other than research**
Publishing book chapters, blog posts, newsletter articles, etc., that discuss a topic within the field of women’s health would certainly help to strengthen your application and show
your dedication to the field. More important, however, such publications help to expand your knowledge base about the topics and also about this field of medicine and are encouraged regardless of desire for fellowship.

How many recommendations should I get? Who should write these recommendations? In general, 3 letters of recommendation are required, one of which must be from your program director or chair of the emergency department.

What if I decide to work as an attending before applying? Can I still be competitive when I apply for fellowship? Absolutely. The key when applying after residency is to continue to be involved in leadership and/or research activities and to continue to gear your resume toward the desired fellowship.

What if I'm a DO applicant? Please note some programs do require applicants to submit USMLE scores.

What if I am an international applicant? International applicants are highly encouraged to contact each individual program and inquire whether or not they are willing to accept your visa.

APPLICATION PROCESS

How many applications should I submit? Apply to all programs you would seriously consider if you were offered a position.

How do I pick the right program for me? The goal is to pick a program that best fits your career goals and also is a place where you would feel happy and would thus be productive. You want to make sure the program, fellows, and faculty fit your personality. Trust your gut instinct during and after an interview with a program. Decide if you are interested in this fellowship for furthering your academic research career or more for advancing your clinical skills in women’s health, as each program emphasizes these differently. Also, look for a mentor/faculty who has similar educational or research interests and will help you navigate fellowship and beyond. Location is always important, as are the needs of your spouse/family.

Common mistakes during the application process
  • Some mistakes will quickly sink your chances at gaining a fellowship position. Beware of:
  • Turning in your application late and/or incomplete.
  • Letters of recommendation from physicians who do not know you well or who do not endorse you 110%.
  • Sloppy, overly short or long, grammatically incorrect, and/or overall strange personal statements.
  • Incomplete research projects.
  • Too many projects (research, leadership, or otherwise) without any meaningful contribution in any of the projects.
  • Having a CV that does not demonstrate any interest in the women’s health field.
  • Being late for your interview.
  • Treating ancillary staff (such as program coordinators) poorly.
  • Poor interview skills (not making eye contact, rambling or not saying anything at all, etc.).

Application deadlines Residents should plan to submit applications at the beginning their last year of residency. Many programs have an August/September application deadline and November-February admission decisions for a July 1 start date.

Tips for writing your personal statement The best personal statements are easy and enjoyable to read and usually tell a story in such a way that the reader understands why you are passionate about the field and what you hope to achieve in your career. Be careful not to simply repeat what is in your CV; instead, strive to make your statement show your personality. Programs are interested to know what sparked your interest in the field; if you have a particular patient or event in your life that’s driving you, use that as the foundation for your personal statement. Have multiple people you trust provide you with honest feedback on your statement. Take the extra time to make sure there are no grammatical errors.

Is this a match process? No.

What happens if I don't obtain a fellowship position? If you do not obtain a fellowship, we suggest contacting the programs where you applied and respectfully asking the reasons why you were not accepted. The goal is to gain insight to the weaknesses in your application so you can correct them and apply again next year. It may also be helpful to ask another physician in a leadership role (not necessarily from the women’s health field) to look at your application and identify weaknesses. Practice your interview skills. If all else fails, it is possible to create a niche within this field as an attending. Consider attending conferences, becoming engaged in research, earning an advanced degree, and/or becoming involved in international opportunities.

INTERVIEW PROCESS

How do I stand out from the crowd? The best way to stand out is simply to be a well-rounded overall
candidate. Build a strong CV that ideally includes research but also displays your leadership skills and your skills as a clinician and educator. Becoming chief resident would certainly boost your application. Display a clear interest in the field. Write a strong personal statement, and pick strong writers for your letters of recommendation. Try to find a writer who is well-known within the field and is a strong advocate for you. When you interview, aim to appear strong and confident - but not arrogant. Research the program itself and ask pertinent questions that display your interest but are not easily answered on their website. Have a vision about where you would like your career to go and how the fellowship can help you achieve that. Meet all the deadlines, respond quickly to interview invites, and send thank-you notes after your interviews.

What types of questions are typically asked?
- Why do you want to complete a women’s health fellowship?
- Why do you want to complete a fellowship at our institution specifically?
- What are your 5- and 10-year plans after fellowship?
- Tell me more about [fill in the blank] that you listed here on your CV?
- What are your goals to accomplish during fellowship?

How many interviews should I go on? You should attend every offered interview, since this is a small fellowship field with limited spots.

PREPARING FOR FELLOWSHIP

Textbooks to consider reading

Important skills to practice while in residency to prepare for fellowship Focus on developing research, leadership, and educator skills. Work on expanding your foundation of knowledge about local and international women's health topics. Find ways to become engaged in this small community of physicians.

Tips on how to succeed as a fellow Maintain your work-life balance: make sure you sleep, exercise, eat healthy, and make time for your family and hobbies. Remain dedicated, compassionate, and reliable while on your clinical rotations. Read every day to increase your knowledge base. Decide what your legacy will be: what will you leave behind at your fellowship? Will you create a new curriculum for medical students? Or perhaps develop a program for sex trafficking victims? Find a meaningful project to become engaged in and develop your niche in the field.

CONCLUSION

Additional resources

Websites:
- www.sgwhc.org/
- www.womenmdresources.com/
- http://swhr.org/

Journals:
- Journal of Women’s Health
- International Journal of Women’s Health
- NEJM Journal Watch Women’s Health

National organizations
- American Medical Women’s Association
- Academy of Women’s Health
- ACEP American Association of Women Emergency Physicians

Conferences
- Academy of Women’s Health
- University of New Mexico Annual Women’s Health Conference
- UC Davis Health System Women’s Health Conference

How to find a mentor Unfortunately, there is no central website that we are aware connecting you to mentors in the field. Our best advice is to reach out and network with physicians in this field via attending conferences, sending emails to these two programs, and by finding leaders in women’s health within your health system.

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