Recommended Curriculum Guidelines for Family Medicine Residents

Disaster Medicine

This document was endorsed by the American Academy of Family Physicians (AAFP).

Introduction

This Curriculum Guideline defines a recommended training strategy for family medicine residents. Attitudes, behaviors, knowledge, and skills that are critical to family medicine should be attained through longitudinal experience that promotes educational competencies defined by the Accreditation Council for Graduate Medical Education (ACGME), www.acgme.org. The family medicine curriculum must include structured experience in several specified areas. Much of the resident's knowledge will be gained by caring for ambulatory patients who visit the family medicine center, although additional experience gained in various other settings (e.g., an inpatient setting, a patient's home, a long-term care facility, the emergency department, the community) is critical for well-rounded residency training. The residents should be able to develop a skillset and apply their skills appropriately to all patient care settings.

Structured didactic lectures, conferences, journal clubs, and workshops must be included in the curriculum to supplement experiential learning with an emphasis on outcomes-oriented, evidence-based studies that delineate common diseases affecting patients of all ages. Patient-centered care, and targeted techniques of health promotion and disease prevention are hallmarks of family medicine and should be integrated in all settings. Appropriate referral patterns, transitions of care, and the provision of cost-effective care should also be part of the curriculum.

Program requirements specific to family medicine residencies may be found on the ACGME website. Current AAFP Curriculum Guidelines may be found online at www.aafp.org/cg. These guidelines are periodically updated and endorsed by the AAFP, and in many instances, other specialty societies as indicated on each guideline.

Each residency program is responsible for its own curriculum. **This guideline provides a useful strategy to help residency programs form their curricula for educating family physicians.**

Preamble

Disasters come in many forms, and the specialty of family medicine is uniquely positioned in the health care system to stand at the front line to help detect possible threats, support other responding agencies, help allocate resources, and provide patient care during all disasters that might affect a community. It is critical that any disaster medicine curriculum encompass a full spectrum of disaster types and responses. This curriculum was developed to help prepare residents for the critical role they will play in future disasters.

Members of the local health care system are among the first to respond when a disaster occurs. Since assistance from elsewhere may not be immediately available, every family physician should know how to respond to assist their community.

Some disasters can result in the destruction of a considerable portion of the community's medical resources and take a considerable toll on life. Principles of disaster medicine that residents should learn about include preparatory drills, triage, evacuation, coordinated local and federal responses, public health, vector management, and personal safety. During the recovery phase, when situations are improving but not yet back to normal, continuity of operations must be addressed to sustain the business of health care. Recovery presents its own set of challenges for physicians who are recovering, along with their communities.

The number and severity of natural disasters and the domestic and foreign terrorism events in recent decades have brought increased focus on the need for standardized disaster response to speed the implementation of relief and decrease the potential harms caused by the chaos inherent to such situations. In the United States, the National Incident Management System (NIMS) has been developed in an attempt to facilitate a timely, coordinated, and effective response to disasters ranging from small, local incidents to events of national magnitude.

Effective planning, coordination, and execution are keys to successful disaster response. Identification of hazards, developing mitigation plans, and exercise debriefings capture lessons learned and facilitate strategic plan revisions. When tailored to the needs of the individual, psychological debriefings performed by trained health care professionals allow healing for both victims and responders.

While the focus of the specific objectives in this curriculum is domestic disasters, the majority of the principles covered may also be applied to international disaster responses. Disasters might occur on or near national land and sea borders. Other disasters by their nature or magnitude invite international or multinational response efforts and future family physicians should learn about working with international agencies as well.

Competencies

In 2008, the American Medical Association Center for Public Health Preparedness and Disaster Response convened an expert working group (EWG) consisting of many medical professional stakeholder groups, including the American Academy of Family Physicians (AAFP), to review extant competencies in disaster response. The EWG developed an educational framework and six competency domains under which specific competencies could be specified. The following competencies, knowledge, skills, and attitudes utilize the domains created by the 2008 EWG.

At the completion of residency training, a family medicine resident should be able to:

Preparation and Planning:

- Demonstrate knowledge of the principles of personal, family, and community preparedness and the responsibility of the family medicine resident to lead in the education of the public; anticipate the most likely hazards to your facility and your role when these events occur (Professionalism, Systems-based Practice)

Detection and Communication:

- Demonstrate awareness of local, state, and national systems of detection and communication utilized in public health disasters (Communication)

Incident Management and Support Systems:

- Demonstrate a basic knowledge of NIMS and its Incident Command System (ICS), including applications pertaining to the planning, coordination, and execution of disaster responses at local, state, and national levels; this should include ICS training modules 100, 200, and 700 from FEMA.gov (Systems-based Practice)

Safety and Security:

- Demonstrate knowledge of the principles of safety in disaster responses, including personal protective equipment, decontamination, universal precautions, blood-borne pathogens, basic force protection (care of the responder), and disaster scene security (Medical Knowledge)

Clinical/Public Health Assessment and Intervention:

- Demonstrate knowledge of the principles of triage and have the ability to effectively perform triage in a disaster setting in order to maximize utility of scarce medical resources (Patient Care)

- Demonstrate the knowledge and skills to provide effective care in a setting of extremely limited resources and otherwise austere environments (includes improvised medical techniques) (Patient Care)

- Demonstrate understanding of Psychological First Aid (PFA) and caring for responders and when to apply this set of techniques (Systems-based Practice)

Contingency, Continuity, and Recovery:

- Demonstrate basic skills in planning for contingencies in populations of all ages, as well as planning the slower phases of individual and community recovery (Professionalism)

Public Health Law and Ethics:

- Demonstrate awareness of principals and policies for assuring ongoing access to health care for people of all ages, populations, and communities facing disaster (Professionalism)

- Demonstrate awareness of laws and regulations to protect the health and safety of people and communities affected by disaster (Professionalism)

Attitudes and Behaviors

The resident should demonstrate attitudes that encompass:

- Understanding of the need to be prepared for disasters that may strike a community

- Understanding of the importance of teamwork in planning, preparing for, and participating in a disaster response event, including the importance of good leadership and "followership" during a time of crisis

- Understanding of the value of excellent communication skills in a time of crisis

- Understanding of the necessity of staying calm and remaining focused at a time when there is maximal chaos and confusion

- Understanding of the principles of triage to maximize benefit when limited resources preclude comprehensive care for all of those affected

- Understanding of the need for resourcefulness when the usual supplies, personnel, communication, and transportation are not available

Knowledge

In the appropriate setting, the resident should demonstrate the ability to apply knowledge or refer the following:

1. Key definitions
   a. Disasters
   b. Mass casualties
   c. Triage
   d. Terrorism
   e. Continuity of operations

2. Types of disasters
   a. Natural
      i. Meteorological (e.g., hurricane, tornado, blizzard, heat, cold wave)

      ii.   Geological (e.g., earthquake, volcanic eruption, flood)

      iii. Other (e.g., wildfires, explosion, disease outbreak)

  b. Accidental

      i.   Transportation accidents resulting in mass casualties (e.g., airplane, bus, train, multiple vehicle incidents)

      ii.   Transportation accidents resulting in hazardous materials release

      iii. Structural accidents (e.g., building or bridge collapse)

      iv. Agricultural or industrial accidents (e.g., hazardous chemical or biological exposure)

      v.   Radiological accidents

          1) Consider health care sources of radiation, including cobalt, cesium, and technetium; also consider radiation safety in diagnostic radiology and radiologic oncology settings

  c. Intentional or violent

      i.   Criminal acts (in which the focus of the act is the victims)

          1) Bombings

          2) Shootings

              a) Consider hospital and clinic scenarios in which physical security may be compromised, such as active shooter events

      ii.   Acts of terrorism (in which the focus of the act is society)

          1) Bombings

          2) Shootings (e.g., mass shootings, active shooter)

          3) Nuclear and radiological attacks ("dirty bombs")

          4) Biological attacks

              a) Bacteria (e.g., anthrax, cholera, plague, tularemia, Q fever)

              b) Virus (e.g., smallpox, Venezuelan equine encephalitis, hantavirus, severe acute respiratory syndrome [SARS], pandemic influenza, viral hemorrhagic fevers)

              c) Toxin (e.g., botulinum, staphylococcal enterotoxin B)

          5) Chemical agent attacks

              a) Nerve agents (e.g., GA [tabun], GB [sarin], GD [soman], GE [ethylsarin], VX [venomous agent X], V sub X, other organophosphates to include insecticides and pesticides)

              b) Blister agents (e.g., lewisite, mustard)

              c) Precursors (e.g., chlorosoman, chlorosarin)

              d) Choking agents (e.g., phosgene, chlorine)

              e) Blood agents (e.g., hydrogen cyanide, cyanogen chloride)

              f) Riot control agents (e.g., tearing agents, vomiting agents)

              g) Other chemical agents used in industry (e.g., polonium, phosgene)

3. Response to disasters

  a. Preparation and planning

      i.   Personnel

          1) Identify who will be in charge (see Incident Command System [ICS] below)

2) Identify who will be available and their roles
3) Conduct drills
4) Enroll with Disaster Health Volunteers and/ or Medical Reserve Corps
5) Go Bags for institution with printout of contact information and addresses of all residents, faculty, and staff, including emergency and alternative contact information in anticipation of potential communication system failures
6) Individual Go Bags
    ii. Maintain adequate supplies; specific equipment and supplies required will depend on the nature and the scope of the disaster
        1) Suggested medications and related supplies
            a) For care of acute injuries (e.g., tetanus shots; antibiotics; analgesics; intravenous [IV] fluids; supplies for splinting, casting, wound care, and suturing)
            b) For care of acute illnesses (e.g., analgesics, antibiotics, antihistamines, antiemetics, inhalers, psychotropics)
            c) For care of chronic diseases (e.g., insulin, inhalers, diuretics, antihypertensives, oxygen, psychotropics, oral diabetes medications)
                i) Tables of substitution in order to allow for ready conversion of day-to-day medications to stockpiled medications (e.g., fosinopril to lisinopril)
            d) For response to terrorist attacks (e.g., antibiotics, antidote kits)
                i) Center for Disease Control and Prevention's (CDC's) Strategic National Stockpile (SNS) CHEMPACK (antidotes) Program
                ii) CDC's SNS Push packs and managed inventory (Biologics and antibiotics) Program
            e) Public health medications (e.g., antibiotics for tuberculosis)
        2) Logistical supplies
            a) Food and water
            b) Sanitation equipment, toilets, supply maintenance, and waste disposal
            c) Soaps, disinfectants, and sanitizers
            d) Personal protective equipment
            e) Basic office supplies
            f) Infrastructure-independent communication equipment (point-to-point interoperable radios)
    iii. Detection and communication
    Guidelines, regulations, policies and procedures, reimbursement requirements (e.g., National Response Framework, Stafford Act, Public Health Service Act, Title 42 U.S. Code Part B)
        1) Local facility evacuation procedures
        2) Hospital and/or clinic regulations
        3) State, county, and local regulations
        4) The Joint Commission and other accreditation organizations (e.g., Det Norske Veritas [DNV])
        5) National Disaster Medical System
            a) Disaster Medical Assistance Teams

      b) Hospital evacuation

      c) Disaster Mortuary Operational Response Teams

      d) Logistics Response Assistance Teams

      e) Veterinary Medical Assistance Teams and others

    6) Federal Emergency Management Agency (FEMA)

    7) Medical Reserve Corps (U.S. Department of Health and Human Services)

b. Incident management and support systems

   i. ICS as basis, with Hospital Incident Command Systems (HICS) specialized for the institutional health care environment

    1) Unity of command (everyone answers to a single leader)

    2) Span of control (every leader supervises four to seven others)

    3) Incident commander (in charge; the minimum need for calling an incident is an incident commander)

    4) Command staff

      a. Safety officer

      b. Public information officer/media relations

      c. Medical/technical expert

      d. Liaison officer

    5) General staff

      a. Operations (the "doers")

      b. Planning (the "thinkers")

      c. Finance (the "payers")

      d. Logistics (the "getters")

    6) Unified command (multiple organizations working together)

    7) Emergency operations center versus incident command post versus hospital command center

   ii. Internal coordination with key clinic and hospital personnel

   iii. External coordination with local community emergency resources and regional or national response teams

    1) Local office of emergency management

    2) State office of emergency management

    3) Federally deployed Incident Response Coordination Team (IRCT)

c. Execution of disaster response

   i. Safety and security (disaster responders are of no value if they become victims)

    1) Decontamination

      a) Site setup and security

      b) Trained personnel

      c) Clean and dirty areas demarcated

      d) Cleaning agents available

      e) Plenty of water available

      f) Environmental Protection Agency (EPA) regulations understood

      g) Self-directed decontamination

      h) Resource protection [Occupational Safety and Health Administration (OSHA), et al]

        i) Care of the responder

   ii) Rehabilitation of responder resources

   iii) Prevention of heat and dehydration injuries, especially in the hazmat or hot weather environment

 2) Personal protective equipment

  a) Face masks and respirators (e.g., simple mask and N95 respirator), including training, fit testing, and medical clearance, as appropriate

  b) Use of powered air-purifying respirators (PAPR)

  c) Personal protective clothing (e.g., level A, B, C, D protection and indications, including donning and doffing of equipment, Mission-Oriented Protective Posture [MOPP] gear)

 3) Security (include law enforcement in the planning and execution process when possible)

  a) Crowd and traffic control

  b) Protection of relief workers and those seeking aid

  c) Protection of medications, food, and water

 4) Environmental hazards

  a) Damaged infrastructure (e.g., downed electrical power lines, damaged roads and buildings, hazardous chemicals)

  b) Building debris as a hazard to pedestrian and passenger travel

  c) Infectious hazards (e.g., human and animal victim corpses, exhumed bodies from disturbed cemeteries, contaminated water)

 5) Mental health hazards

  a) Psychological first aid (PFA) for victims and responders

  b) Referral resources available for victims who need additional care

ii. Clinical/public health assessment and intervention

 1) Principles and practice of various triage systems

  a) Triage tags (i.e., black, green, yellow, red)

  b) General understanding of various triage systems and how they should be interoperable (e.g., Simple Triage and Rapid Treatment [START]; JumpSTART; Seniors Without Families Triage [SWiFT]; Sort, Assess, Lifesaving Interventions, Treatment/Transport [SALT])

 2) Clinical skills

 3) Care in an austere environment

  a) Broad scope of practice

  b) Ability to supervise clinical nurses and technicians in expanded roles

  c) Clinical diagnostic skills in the absence of partial or full radiology, laboratory, and other ancillary support

  d) Effective therapeutic interventions with limited availability of medication varieties and quantities

   i) Acute illnesses and injuries

   ii) Chronic medical conditions

   iii) Ingenuity in devising treatments

  e) Recognition of when chronic diseases may be left untreated for a short duration to facilitate wise utilization of resources

 4) Psychosocial considerations

  a) Individual survivors presenting to the facility

   b) Patients with special needs (e.g., pregnant women, children, elderly, those who have an underlying mental health problem, homebound patients)
   c) Patients enrolled in methadone maintenance programs or on other chronic narcotic pain medications
   d) Witnesses to the disaster (post-traumatic stress disorder [PTSD])
   e) Family and friends of the missing, injured, or dead
   f) The "worried well" and those with minor injuries and high anxiety
   g) PFA for victims and responders
  iii. Contingency, continuity, and recovery
   1) Location for decontamination, triage, clinical care, and responders' sleeping/eating areas
   2) Communication
    a) Radios
    b) Telephones (wired, wireless, and satellite)
    c) Messaging (texting, messaging apps)
    d) Computers (internet)
    e) Runners or couriers
    f) Visual signage
   3) Human resources (including relief for first responders)
   4) Supplies (medical, food, water, shelter)
   5) Evacuation of patients needing higher levels of care or personnel requiring evacuation from increasingly unsafe environments
   6) Toileting and sanitation services
   7) Pet care and control
  iv. Debriefing
   1) Timing, location, participants
   2) Evaluation and critique of response (avoid blame and capture lessons learned to improve responses in the future)
    a) Communications are often cited as being inadequate and should be addressed in the planning prior to the event
  v. Public health law and ethics
   1) Recognition of need to care for people who speak different languages or have physical or mental limitation

Skills

In the appropriate setting, the resident should demonstrate the ability to independently perform or appropriately refer the following competency domains developed by the American Medical Association Center for Public Health Preparedness and Disaster Response:

1. Preparation and Planning
 a) Develop a Hazards and Vulnerability Analysis (HVA) based on available internal and external data, judging the likelihood of various events and their potential impact on lifeline and medical services

b) Develop plans based on HVA, to include:
  i) Supplies and equipment
  ii) Jobs and responsibilities
  iii) Interagency coordination
  iv) Development and utilization of checklists
c) Practice the plan by conducting drills and/or tabletop discussions

2. Detection and Communication
   a. Set up and test emergency alert system
      i. Include updated personal information
   b. Demonstrate effective communication with a variety of stakeholders, including:
      i. Victims, communities, journalists, and government officials
      ii. Other responders
      iii. Local health department
      iv. Police and fire officials
      v. Emergency medical services (EMS)
      vi. Other community organizations (e.g., religious organizations)
   c. Demonstrate effective team participation
      i. Stay calm and focused under pressure
      ii. Use members of the team effectively
      iii. Closed-loop communication
      iv. Situation, Background, Assessment, Recommendation (SBAR)
      v. Unity of command
   d. Employing various technologies effectively, including social media

3. Incident Management and Support Systems
   a. Understand how incident command centers for emergency operations operate to provide disaster support services and health care

4. Safety and Security
   a. Assess risk to self and others
      i. Wear appropriate personal protective equipment
         a. Gas masks, face masks, and respirators
         b. Protective clothing (e.g., boots, gloves, long pants, long-sleeved shirts, insect repellent)
      ii. Set up and use decontamination systems
   b. Categorization of patients (e.g., triage tags, military triage, other models)

5. Clinical/Public Health Assessment and Intervention
   a. Use life-saving procedures and first aid steps
   b. Have understanding of Psychological First Aid (e.g., American Red Cross DSCLS206A or equivalent)
   c. Additional useful training courses include but aren't limited to:
      i. Basic Life Support (BLS) procedures and first aid
      ii. Basic trauma training (Prehospital Trauma Life Support [PHTLS], International Trauma Life Support [ITLS])
      iii. Advanced Trauma Life Support (ATLS) procedures

      iv. Advanced Cardiac Life Support (ACLS) procedures
      v. Pediatric Advanced Life Support (PALS) procedures
      vi. Comprehensive Advanced Life Support (CALS) procedures (incorporates other advanced life support courses into a single course with emphasis on the needs in rural and limited-resource settings)
      vii. National Disaster Life Support Foundation (NDLSF) procedures

6. Contingency, Continuity, and Recovery
   a. Describe contingency plans for how/where medical services could be provided to minimize interruption of patient care
   b. Understand physical and emotional recovery needs for communities affected by disaster

7. Public Health Law and Ethics
   a. Understand local laws and public health infrastructure
   b. Register for local provider registries, such as Medical Reserve Corps (MRC)

Proposed Implementation Model

- Implement disaster medicine training in family medicine residency programs during the three years of residency training
- Community response to local disasters and participation in a local medical unit can enhance the longitudinal disaster medical curriculum by providing direct experience and training to residents and community members
- Incorporate training in the community medicine rotation; residents should engage in practice scenarios and visit local response agencies to discuss disaster response plans
- Meet with key leaders in the community to discuss strategies for how community will mobilize in case of a disaster
- Training primarily consists of lectures, workshops, scenario discussions, and participation in drills at the hospital and clinic
- Participate in the planning, execution, and evaluation of emergency management drills
- Familiarize with the responsibilities to the resident's credentialing hospital in the event of an internal or external disaster

Resources

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Website Resources

American Academy of Family Physicians. www.aafp.org

American Academy of Pediatrics. Ensuring the health of children in disasters. https://pediatrics.aappublications.org/content/136/5/e1407

American Academy of Pediatrics. Disaster preparedness in neonatal intensive care unit. https://pediatrics.aappublications.org/content/139/5/e20170507

American College of Surgeons. Stop the Bleed. www.stopthebleed.org/resources-poster-booklet

American College of Surgeons. Advanced Trauma Life Support. www.facs.org/trauma/atls/index.html

American Heart Association. Advanced Cardiovascular Life Support (ACLS) Course Options. www.heart.org/HEARTORG/CPRAndECC/HealthcareTraining/AdvancedCardiovascularLifeSupportACLS/Advanced-Cardiovascular-Life-Support-ACLS_UCM_001280_SubHomePage.jsp

American Heart Association. Pediatric Advanced Life Support (PALS) Course Options. www.heart.org/HEARTORG/CPRAndECC/HealthcareTraining/Pediatrics/Pediatric-Advanced-Life-Support-PALS_UCM_303705_Article.jsp

American Red Cross. Our Class Programs. www.redcross.org/take-a-class

Centers for Disease Control and Prevention. Emergency Preparedness and Response. https://emergency.cdc.gov/

California Hospital Association. Hospital Incident Command System (HICS). www.calhospitalprepare.org/hics

Cornell University Law School. Legal Information Institute. 42 U.S. Code Part B–All-Hazards Emergency Preparedness and Response. www.law.cornell.edu/uscode/text/42/chapter-6A/subchapter-XXVI/part-B

Federal Emergency Management Agency (FEMA). Training and Education. www.fema.gov/training

International Trauma Life Support. Education. www.itrauma.org/education/

Johns Hopkins Office of Critical Event Preparedness and Response. www.hopkins-cepar.org/

The Joint Commission. Emergency Management. www.jointcommission.org/resources/patient-safety-topics/emergency-management/

National Disaster Life Support Foundation. www.ndlsf.org/

United States Department of Labor. Occupational Safety and Health Administration. www.osha.gov/training

Office of the Surgeon General. Office of the Assistant Secretary for Health. Division of the Civilian Volunteer Medical Reserve Corps. About the Medical Reserve Corps. https://mrc.hhs.gov/pageViewFldr/About

National Association of Emergency Medical Technicians. Prehospital Trauma Life Support. www.naemt.org/education/PHTLS/

Sphere. The Sphere Handbook: Humanitarian Charter and Minimum Standards in Humanitarian Response. https://spherestandards.org/wp-content/uploads/Sphere-Handbook-2018-EN.pdf

Team Life Support, Inc. The JumpSTART Pediatric MCI Triage Tool. https://webwiser.nlm.nih.gov/tools/FlowChart;jsessionid=083FEC2D23A0CA24760B4161970DE7C9?toolArg=JumpSTART

U.S. Army Medical Department. U.S. Army Medical Research Institute of Infectious Diseases. www.usamriid.army.mil/

U.S. Department of Health and Human Services. Public Health Emergency. National Disaster Medical System. www.phe.gov/Preparedness/responders/ndms/Pages/default.aspx

Website Resources for Disaster Relief Abroad

American Red Cross. International Disaster and Crises. www.redcross.org/about-us/our-work/international-services/international-disasters-and-crises.html

Council on Foreign Relations. Humanitarian Intervention. www.cfr.org/defense-and-security/humanitarian-intervention

International Committee of the Red Cross. www.icrc.org/eng/

United Nations. Deliver Humanitarian Aid. www.un.org/en/sections/what-we-do/deliver-humanitarian-aid/

U.S. Department of State. Bureau of Consular Affairs. What the Department of State Can and Can't Do in a Crisis. https://travel.state.gov/content/travel/en/international-travel/emergencies/what-state-dept-can-cant-do-crisis.html