الهيئة السعودية للتخصصات الصحية
Saudi Commission for Health Specialties

Emergency Medical Services and Disaster Medicine Fellowship Program


بسم الله الرحمن الرحيم

PREFACE

- The primary goal of this document is to enrich postgraduate trainees' training experience by outlining the learning objectives that will help them become independent and competent future practitioners.
- This curriculum may contain sections outlining some training regulations; however, the up-to-date information on such regulations needs to be sought from the "General Bylaws" and "Executive Policies" published by the Saudi Commission for Health Specialties (SCFHS), accessible online under the "Training" section of the official SCFHS website. In the event that discrepancies arise in the regulation statements, the ones contained in the most recently updated bylaws and executive policies will be applicable.
- As this curriculum is subjected to periodic refinements, please refer to the electronic version for the most updated edition, posted online at www.scfhs.org.sa.

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II. COPYRIGHT STATEMENTS

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III. FOREWORD

Emergency medical services (EMS) and disaster medicine (DM) are two distinct subspecialties of emergency medicine. EMS specialists are tasked with clinical oversight for healthcare provision in prehospital settings. They are trained in direct and indirect medical control, scene response, medical direction of EMS systems, and medical oversight of the EMS sector. Both subspecialties require the trainees to be skilled emergency physicians who can use their clinical expertise in a setting which is unusual for a physician. DM specialists are experts in answering questions pertaining to providing medical care during times of crisis. They are skilled in solving problems related to emergency management in healthcare and responding to major incidents such as hazardous material release, use of weapons of mass destruction, active shooting in urban settings, refugee medicine, and counterterrorism medicine. Although the two specialties are distinct, they share multiple competencies that justify combining them into one subspecialty.

Healthcare in Saudi Arabia is moving toward an accountable care organization model. Healthcare institutions are expected to develop their own emergency management programs and run their own EMS. Urban development and population growth mean further healthcare demand and higher rates of major incidents in factories, highways, and living communities. This growth must be associated with a robust EMS framework and a resilient healthcare system that can withstand crises and emergencies. Disaster medicine specialists and EMS play an important role in this growth.

Finally, this document was created to define the goals, objectives, curriculum, and regulations of the program, consistent with the subspecialty criteria set by the Saudi Council for Health Specialties (SCFHS).

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V. INTRODUCTION

1. Context of Practice

The Kingdom of Saudi Arabia is becoming a regional and international leader in healthcare provision and practice. Due to its large geographical size and economic power, Saudi Arabia is uniquely equipped to lead in the field of emergency management, disaster medicine (DM), and emergency medical services (EMS).

Most recent advances in healthcare in Saudi Arabia have focused on healthcare institutions and in-hospital patient care. Prehospital care has remained unchanged for the past decade. One of the major hurdles in developing EMS in Saudi Arabia is the availability of experts. The field of EMS is new and still in its developmental stage in most parts of the world. They serve as the link between healthcare, public safety, and public health. As such, development in this field is difficult since EMS must substantially adapt according to the conditions of the site at which it is being implemented. A fellowship program in Saudi Arabia that teaches the science behind EMS is expected to move the prehospital care forward.

Saudi Arabia is located at the crossroads of the world's economies, cultures, and politics. Surrounded by the most unstable territories and countries in the world, this country is in a constant state of alert for its safety. Since Saudi Arabia has had its share of devastating terrorist attacks and militia issues, it needs a robust emergency management program that considers the developing infrastructure and the variety of risks that exist naturally and unnaturally. Saudi experts are required in the field of weapons of mass destruction response, emergency management, hospital emergency management, humanitarian response, counterterrorism medicine, and conflict zone medicine to counterbalance the breakneck speed of threat and risk materialization in the country.

2. Goal and Responsibility of curriculum implementation

This curriculum's goal is to guide trainees to become *competent* in their specialty. This requires significant effort and coordination from all those involved in postgraduate training. As *"adult-learners,"* trainees have to demonstrate their complete engagement through a *proactive* role by carefully understanding the learning objectives, self-directed learning, problem solving, openness and readiness to apply what they have learned by reflective practice following feedback and formative assessment, self-care, and seeking support when needed. The program director plays a vital role in successfully implementing this curriculum. Training committee members, particularly program administrators and chief residents, have a significant impact on the program's implementation. Trainees must share the responsibility of implementing the curriculum. The Saudi Commission for Health Specialties (SCFHS) will apply the best training governance models to ensure that the training's quality is the best. Academic affairs in training centers and regional supervisory training committees will play a major role in the training supervision and implementation. The Specialty scientific committee will be responsible for ensuring that the content of this curriculum is constantly updated to match the best-known standards in their specialty's postgraduate education.

VI. ABBREVIATIONS USED IN THIS DOCUMENT

Abbreviation	Details
ADLS	Advanced Disaster Life Support
AHLS	Advanced Hazmat life support
BDLS	Basic Disaster Life Support
DM	Disaster Medicine
DOPS	Direct Observation for Procedural Skills
EM	Emergency Management
EMS	Emergency Medical Services
EMT	Emergency medical technician
EOP	Emergency operations plan
EVOC	Emergency vehicle operations course
F1	First year fellow
F2	Second year fellow
FITER	Final In-Training Evaluation Report
HEMS	Helicopter Emergency Medical Services
ITER	In-Training Evaluation Report
Mini-CEX	Mini-Clinical Evaluation Exercise
OSCE	Objective Structured Clinical Examination
SOE	Structured Oral Examinations
SOLO	Structure of the Observed Learning Outcome

TECC	Tactical Emergency Causality Care
OSPE	Objective Structured Practical Examination
MVC	Motor Vehicle Collision
ECMO	Extra Corporal Membrane Oxygenation
DNR	Do Not Resuscitate order
AND	Allow Natural Death order
ICRC	International Committee of the Red Cross
JC	Joint Commission
GIS	Geographic Information Systems
COOP	Continuity of Operations Planning
BCM	Business Continuity Management
HVA	Hazard Vulnerability Analysis
PCR	Patient Care Record
HICS	Hospital Incident Command System
ICS	Incident Command System
US	Ultrasound
CPG	Clinical Practice Guidelines
BSI	Body Surface Isolation
MD	Medical Director

VII. PROGRAM ENTRY REQUIREMENTS

- Candidates must be Board Eligible/Board Certified in emergency medicine by the SCHS or its equivalent.
- Candidates must maintain a minimum of 40 hours of clinical work, per month, as independent providers of emergency medicine (senior registrars or consultants) throughout the fellowship program.
- The following documents must be submitted to the selection committee:
  - Curriculum Vitae
  - Copy of board certification
  - Completed SCHS registration as (senior registrar or consultant)
  - Three recent letters of recommendation (within the past 6 months)
  - Written permission from the sponsoring organization allowing full-time participation for the duration of the program
  - Copy of their national ID/Passport
  - Three passport size photographs

VIII. THE SAUDI EMS AND DM FELLOWSHIP

1. Learning Outcomes

Learning outcomes are descriptions of an educational program's results, while competencies are descriptions of the graduates. The former is more detailed and specific, while the latter tends to be a general statement about a graduate. We chose to describe this fellowship using learning outcomes since DM and EMS are relatively new.

Graduates of the DM and EMS fellowship programs are expected to be able to:

1. Design an EMS system that values service and clinical quality, improvement, resilience, accountability, and economy in an emerging healthcare system's context.
    - 1.1. Analyze an EMS system's components and optimize its integration with public safety, public health, and healthcare.
    - 1.2. Depict a patient's journey through an EMS episode of care and highlight opportunities for improvement.
    - 1.3. Justify alterations to the point of entry (POE) for emergency response vehicles, in a healthcare facility, based on the patient's condition
    - 1.4. Debate the benefits and harms of ambulance diversion, the patient's input on destination choice, and hospital bypass.
    - 1.5. Compare the different types of EMS systems and their advantages/disadvantages.
    - 1.6. Compare service delivery models, which include fire and public safety response, third service, and privatization.
    - 1.7. Utilize the latest evidence-based guidelines to develop appropriate patient transport and destination policies for an EMS system.
    - 1.8. Develop and implement quality assurance and quality improvement systems to enhance patient care and promote patient safety in a prehospital setting.
    - 1.9. Critique system status management to achieve a more cost-effective resource management model.

1.10 Propose costing and billing schemes that enhance the service's quality and ensure economic viability.

2. Operate an EMS system that provides triage, pre-arrival instructions, basic and advanced life support, specialized EMS, assessment and treatment, overwhelming response, critical care transport, aeromedical transport, prevention and public education, event response, and community paramedicine in a clinical expert's capacity.

2.1. Dispatch operations:

2.1.1. Debate medical dispatch design—from a public safety access point link to an emergency department service availability monitoring.

2.1.2. Integrate emergency medical dispatch operations with public safety incident detection programs.

2.1.3. Compare medical dispatch systems that are event-based with those that are disease-based, by listing their advantages and disadvantages.

2.1.4. Design prearrival instructions to be used by an emergency medical dispatcher for an event-based dispatch system.

2.1.5. Monitor the quality of dispatch center operations in a medical director's capacity.

2.2. Offline medical control:

2.2.1. Write a clinical practice guideline for a common clinical condition, which passes a vigorous review process and can be used by prehospital providers.

2.2.2. Develop a patient care protocol that is specific to a common clinical condition, which passes a vigorous review process and can be used by a prehospital healthcare provider.

2.2.3. Update an existing patient care protocol based on scientific evidence and direct field feedback.

2.2.4. Design a patient care protocol review process, based on scientific evidence, that enhances frontline workers engagement.

2.3. Online medical control:

2.3.1. Provide online medical control to prehospital healthcare providers, using approved patient care protocols.

2.3.2. Review the quality of online medical control provided by another physician, using approved patient care protocols.

2.3.3. Provide specialized online medical control for other healthcare providers in healthcare facilities, including physicians in remote settings.

2.3.4. Judge the need to transfer a patient from one healthcare facility to another and choose the most appropriate mode of transfer while evaluating the patient's ability to tolerate the transfer.

2.3.5. Evaluate other healthcare providers' requests for patient transfers.

2.4. Medical direction:

2.4.1. Review prehospital providers' scope of practice and propose alterations based on scientific evidence and frontline workers' feedback.

2.4.2. Defend the dynamic scope of practice's approach in ensuring patient safety.

2.4.3. Describe due process and pillars of malpractice.

2.4.4. Conduct performance review sessions with prehospital healthcare providers and help them map their plans for improvement.

2.4.5. Review complaints related to inferior quality provision and devise a response plan.

2.4.6. Review patient care records to identify areas for improvement.

2.4.7. Monitor prehospital healthcare providers' performance using evidence-based practices that maximize their engagement.

2.4.8. Design didactic educational programs for EMS personnel in collaboration with EMS education program directors and EMS instructors.

2.5. Medical oversight:

2.5.1. Represent EMS in national and international forums, advocating the specialty and its providers.

2.5.2. Review EMS provision strategies and provide evidence-based input on modifications.

2.5.3. Educate healthcare providers, public safety officers, leaders, and others on the roles and responsibilities of EMS systems.

2.6. Specialized EMS care:

2.6.1. Teach prehospital care providers about healthcare provisions, in austere environments, including:

2.6.1.1. Tactical events

2.6.1.2. Wilderness events

2.6.1.3. Hazardous material response

2.6.1.4. Critical care transport

2.6.1.5. Aeromedical transport

2.6.1.6. Resource to patient transport

2.6.2. Provide prehospital care in austere environments and solve issues that are commonly encountered.

3. Assess the three dimensions of an EMS system—healthcare provision, public health, and public safety—and propose interventions to improve its performance.
   - 3.1. Devise an assessment plan for an EMS agency and provide suggestions for its improvement.
   - 3.2. Assess a national EMS system model, by highlighting its strengths and weaknesses.
   - 3.3. Participate in an audit program that grants or reviews the accreditation of an EMS agency as an auditing team member.
   - 3.4. Summarize an EMS agency's performance using simple language and advocate for its improvement to decision makers.
   - 3.5. Develop and implement specific quality assurance and quality improvement systems.
   - 3.6. Defend the epidemiologic approach to trauma and other safety risks in the environment.
   - 3.7. Study public safety hazards using Haddon matrix and summarize the interventions to be implemented.

4. Respond to scenes of incidents as an expert healthcare provider with a unique skill set that accelerates patients' recovery.
   - 4.1. Lead a safe approach to scene response while teaching other healthcare providers about occupational safety's importance.
   - 4.2. Perform certain tasks, in a prehospital environment when required, including:
     - 4.2.1. Field amputation
     - 4.2.2. Emergency thoracotomy
     - 4.2.3. Blood products transfusion
     - 4.2.4. Extra corporal membrane oxygenation initiation
     - 4.2.5. Critical care management for pinned patients
     - 4.2.6. Difficult airway management
   - 4.3. Act as a competent prehospital provider in all capacities, including emergency medical technicians, emergency medical specialists (senior paramedics), senior emergency medical specialists (paramedics), and consultant emergency medical specialists (consultant paramedics).

4.4. Lead the field response during a major incident by coordinating healthcare provisions with other response agencies.

5. Investigate the validity of new interventions in EMS through research and scholarly activities.
   5.1. Apply the fundamental principles of epidemiology and scientific critique including:
      5.1.1. Risk measurement
      5.1.2. A test's characteristics
      5.1.3. Sensitivity and specificity
      5.1.4. Statistical analysis
   5.2. Write a successful research proposal that addresses a clinical question.
   5.3. Participate in investigating an intervention's validity by applying common data collection methods in prehospital patient care.
   5.4. Discuss relevant research questions related to EMS that need to be investigated.

6. Build an EM program for a healthcare facility or a system that contains an emergency organizational structure, disaster cycle plans, and an educational program, and meets international accreditation standards.
   6.1. Compare different leadership organization systems, during an emergency response, include the Incident Command System, and Major Incident Management System.
   6.2. Justify unity of command, chain of command, devolution, and succession planning concepts as the foundations of emergency management.
   6.3. Validate emergency management's role in healthcare.
   6.4. Analyze disaster response phases and the key activities within each phase.
   6.5. Perform incident command functions during a disaster exercise or response.
   6.6. Use the Incident Command System efficiently during an emergency response.
   6.7. Build an organizational chart that is to be used by a healthcare institution during an emergency.
   6.8. Formulate and execute a triage plan to sort patients based on the injury's severity, their medical needs, and the prehospital resources.

6.9. Apply knowledge of evacuation principles to implement a systematic patient evacuation plan.

6.10. Analyze and design casualty evacuation policies and protocols.

6.11. Demonstrate mastery of various mass casualty triage methods.

6.12. Conduct a successful full-scale exercise in the capacity of a conductor or an evaluator.

6.13. Classify services in a healthcare institution into mission essential and non-essential functions.

6.14. Define the maximum tolerable downtime for healthcare services as part of a business continuity management plan.

6.15. Use common risk assessment methods and prioritization techniques.

6.16. Build a business continuity management program for a healthcare institution.

6.17. Participate in writing and reviewing an emergency operations plan, mitigation plan, preparedness plan, continuity of operations plan, and recovery plan.

7. Collaborate in building healthcare resilience against weapons of mass destruction, consequences of conflict, consequences of terrorism and urban violence, and other major incidents as the healthcare experts. Such collaborations would involve mitigating, preparing for, responding to, and recovering from such events in a highly efficient manner.

7.1. Apply the core concepts behind the planning and response to chemical, biological, radiological, nuclear, and explosive (CBRNE) events.

7.2. Map the roles and responsibilities of all agencies which respond to CBRNE events.

7.3. Describe the principles of scene safety which relates to the EMS' response to toxins/poisons/HAZMAT (hazardous materials) events.

7.4. Identify the common substances/chemicals/situations that may constitute a toxin/poison/HAZMAT response.

7.5. Select appropriate personal protective equipment (PPE) level in response to these events. Assess and mitigate PPE's effects on emergency responders' health.

7.6. Overcome the difficulties in delivering medical care while wearing PPE (levels 1, 2, 3, and 4).

7.7. Formulate and execute an appropriate treatment plan to manage patients in austere environments.

7.8. Apply decontamination principles, including differentiating between dry, wet, general, and secondary decontamination.

8. Act as expert healthcare consultants for healthcare policies, disaster medicine toxicology, disaster medicine public health, and emergency management in a healthcare system, when requested by policymakers.
   8.1. Apply fundamental principles and methods to plan and implement a comprehensive medical care system at mass gatherings/special events.
   8.2. Mitigate the unique challenges related to field medical care provisions at mass gatherings/special events.
   8.3. Analyze data from previous events to determine appropriate medical requirements for various types of events.
   8.4. Coordinate with event workers, emergency responders, and public officials to design large-scale medical care plans.
   8.5. Locate, design, and implement temporary medical treatment facilities.
   8.6. Determine the proper types and distribution of medical resources at mass gatherings/special events.
   8.7. Develop and implement a comprehensive documentation and communications system to ensure the coordinated delivery of medical care at mass gatherings/special events.
   8.8. Execute and supervise the delivery of medical care at mass gatherings/special events.
   8.9. Collect and analyze event data and apply quality improvement processes to improve medical responses for future events.
   8.10. Collaborate with response agencies, event planners, public health departments, and definitive care facilities to optimize event reporting, surveillance, patient management, and follow-up.

9. Coach healthcare providers and leaders on crisis leadership and emergency management and build their capacity to respond to major incidents.
   9.1. Teach the difference between crisis response decision-making and regular decision-making techniques.
   9.2. Provide psychological first aid during a critical incident response.

9.3. Explain resource classification and resource management cycle.

9.4. Guide the planning for increasing the providers' capacity and capability during crisis response.

9.5. Analyze healthcare consequences related to common disasters.

9.6. Describe the difference between an incident-based and all-hazard approach in emergency response planning.

9.7. Advocate emergency management's importance as a leadership function in healthcare.

10. Represent healthcare and their nation as experts of humanitarian response in national and international forums; such representation must include active collaboration and participation in humanitarian aid.

10.1. Review the international humanitarian law, Geneva Convention, and the additional protocols pertaining to the importance of providing healthcare during a humanitarian crisis.

10.2. Advocate for disadvantage groups' rights in diplomatic forums as a healthcare representative.

10.3. Plan an international healthcare provision response using international agencies' standards.

2. Program Durations

The duration of the fellowship program in EMS and DM is two years.

3. Program Rotations

Training year	Mandatory core rotations*	
	Rotation name	Duration
F1	EMS 1 (System design and management)	3 blocks
	EMS 2 (Online and offline medical control)	3 blocks
	EMS 3 (Medical direction [quality and administration])	3 blocks
	EMS 4 (Specialized EMS and scene response: austere environment response, aeromedical services, tactical response, critical care transport, and HazMat response)	2 blocks
	Field response skills (ICU, ECMO, and OR)	1 block
F1	Annual leave	1 block

F2	Emergency management in healthcare	2 blocks
	Humanitarian response, conflict zone response, refugee camp healthcare, and healthcare diplomacy	2 blocks
	Healthcare planning and response for mass gatherings.	1 block
	Developing and conducting of emergency management training and education programs	2 blocks
	Risk assessment and management in healthcare	3 blocks
	CBRNE, WMD, and counterterrorism medicine	2 blocks
F2	Annual leave	1 block

(*Mandatory core rotation: Set of rotations that represent the program's core components are mandatory.

4. Mapping Learning Objectives and Competency Roles for Program Rotations

This section aims to match each rotation's competencies and objectives. Trainees and trainers should work together to fulfill these objectives during teaching and formative assessment. Expectations should evolve as the training level progresses (training stage).

Rotation: EMS 1 (System design and management)

Rotation sitting	Training stage	Training years	Rotation's duration (Months/weeks/ block)	Rotation specific outcomes	Competency roles**
EMS	Junior	1	3 blocks	Design an EMS system that values service and clinical quality, improvement, resilience, accountability, and economy in an emerging healthcare system's context.	L, HA, S
				Draw a patient journey through an EMS episode of care and highlight opportunities for improvement.	L
				Justify alterations to the point of entry (POE), for emergency response vehicles, in a healthcare facility, based on patients' condition.	L, HA
				Debate the benefits and harms of ambulance diversion, patients' input on destination choice and hospital bypass.	S

				Compare the different types of EMS systems and their advantages and disadvantages.	S
				Compare service delivery models, which include fire and public safety response, third service, and privatization.	S
				Utilize the latest evidence-based guidelines to develop appropriate patient transport and destination policies for an EMS system.	HA, S
				Develop and implement quality assurance and quality improvement systems to enhance patient care and promote patients' safety in the prehospital setting.	ME, HA
				Critique system status management to achieve a more cost-effective resource management model.	HA, S
				Propose costing and billing schemes that enhance quality of service and ensure economic viability.	ME, HA

ME medical expert, L leader, COL collaborator, COM communicator, HA health advocate, P professional, S scholar.

Rotation: EMS 2 (Online and offline medical control)

Rotation sitting	Training stage	Training years	Rotation's duration (Months/weeks/ block)	Rotation specific outcomes	Competency roles**
EMS	Junior	1	3 blocks	Operate an EMS system that provides triage, pre-arrival instructions, basic and advanced life support, specialized EMS, assessment and treatment, overwhelming response, critical care transport, aeromedical transport, prevention and public education, event response and community paramedicine in a clinical expert's capacity.	ME, COM, COL, L, HA, S
				Dispatch operations:	ME, L, HA, S
				Debate medical dispatch design—from a public safety access point link to emergency departments service availability monitoring.	S
				Integrate emergency medical dispatch operations with public safety incident detection programs.	L, HA

				Compare medical dispatch systems that are event-based with those that are disease-based, by listing their advantages and disadvantages.	S
				Design prearrival instructions to be used by an emergency medical dispatcher for an event-based dispatch system.	ME, HA
				Monitor the quality of a dispatch center operations in a medical director's capacity.	ME
				Offline medical control:	HA, S
				Write a clinical practice guideline for a common clinical condition— to be used by prehospital providers and passes a vigorous review process	HA, S
				Develop a patient care protocol that is specific to a common clinical condition, which passes a vigorous review process and can be used by a prehospital healthcare provider.	HA, S
				Update an existing patient care protocol based on scientific evidence and direct field feedback.	HA, S
				Design a patient care protocol review process, based on scientific evidence, that enhances frontline wrokers' engagement.	HA, S
				Online medical control:	ME, COL
				Provide online medical control to prehospital healthcare providers, using approved patient care protocols.	ME
				Review the quality of online medical control provided by another physician, using approved patient care protocols.	ME, COL
				Provide specialized online medical control for other healthcare providers in healthcare facilities, including physicians in remote settings.	ME

				Judge the need to transfer a patient from one healthcare facility to another and choose the most appropriate mode of transfer while evaluating the patient's ability to tolerate the transfer.	ME
				Evaluate other healthcare providers' requests for patient transfers.	ME
				Medical direction:	ME, COM, COL, L, P, S
				Review prehospital providers' scope of practice and propose alterations based on scientific evidence and frontline workers feedback.	S
				Defend the dynamic scope of practice approach in ensuring patient safety.	S
				Describe due process and pillars of malpractice.	P, S
				Conduct performance review sessions with prehospital healthcare providers and help them map their plans for improvement.	COL, COM, L
				Review complains related to inferior quality provision and device a response plan.	L, P
				Review patient care records to identify areas for improvement.	ME
				Monitor prehospital healthcare providers' performance using evidence-based practices that maximize their engagement.	ME, L
				Design didactic educational programs for EMS personnel in collaboration with EMS education program directors and EMS instructors.	S
				Medical oversight:	ME, L, HA, S
				Represent EMS in national and international forums advocating the specialty and its providers.	L
				Review EMS provision strategies and provide evidence-based input on modifications.	L, HA
				Educate healthcare providers, public safety officers, leaders and others on the roles and responsibilities of EMS systems.	ME, HA, S

ME medical expert, L leader, COL collaborator, COM communicator, HA health advocate, P professional, S scholar.

Rotation: EMS 3 (Medical direction [quality and administration])

Rotation sitting	Training stage	Training years	Rotation's duration (Months/weeks/block)	Rotation specific outcomes	Competency roles**
EMS	Junior	1	3 blocks	Assess the three dimensions of an EMS system—healthcare provision, public health, and public safety—and propose interventions to improve its performance.	ME, COM, L, HA, S
				Device an assessment plan for an EMS agency and provide suggestions for its improvement.	ME, S
				Assess a national EMS service model, by highlighting its strengths and weaknesses.	ME, S
				Participate in an audit program that grants or reviews an EMS agency's the accreditation.	ME
				Summarize the performance of an EMS agency using simple language and advocate for its improvement to decision-makers.	ME, HA
				Develop and implement specific quality assurance and quality improvement systems.	L, S
				Defend the epidemiologic approach to trauma and other safety risks in the environment.	ME, HA, S
				Study a public safety hazard using Haddon matrix and summarize the interventions to be implemented.	HA, S
				Investigate the validity of new interventions in EMS through research and scholarly activities.	ME, S
				Apply the fundamental principles of epidemiology and scientific critique including: Risk measurement A test's characteristics Sensitivity and specificity Statistical analysis	S
				Write a successful research proposal that addresses a clinical question.	COM, S
				Participate in investigating an intervention's validity by applying common data collection methods in prehospital patient care.	ME, S
				Discuss relevant research questions, related to EMS, that need to be investigated.	S

ME medical expert, L leader, COL collaborator, COM communicator, HA health advocate, P professional, S scholar.

Rotation: EMS 4 (Specialized EMS and scene response: austere environment response, aeromedical services, tactical response, critical care transport, and HazMat response)

Rotation sitting	Training stage	Training years	Rotation's duration (Months/weeks/block)	Rotation specific outcomes	Competency roles**
EMS	Junior	1	2 blocks	Specialized EMS care:	ME, COM, COL, P
				Teach healthcare provisions, to prehospital care providers, in austere environments including: Tactical events Wilderness events Hazardous material response Critical care transport Aeromedical transport Resource to patient transport	ME, COM, COL
				Master the information regarding the prehospital care provision in austere environments and solve issues that are commonly encountered.	ME, COL, P

ME medical expert, L leader, COL collaborator, COM communicator, HA health advocate, P professional, S scholar.

Rotation: Field response skills (ICU, ECMO, and OR)

Rotation sitting	Training stage	Training years	Rotation's duration (Months/weeks/block)	Rotation specific outcomes	Competency roles**
EMS	Junior	1	1 block	Respond to scenes of incidents as an expert healthcare provider with unique set of skills that accelerate the recovery of patients.	ME, COM, COL, L HA, P
				Lead a safe approach to scene response while teaching other healthcare providers on the importance of occupational safety.	L, HA
				Perform certain skills in a prehospital environment when indicated including: Field amputation Emergency thoracotomy Blood products transfusion Extra corporal membrane oxygenation initiation Critical care management for pinned patients Difficult airway management	ME
				Act as a competent prehospital provider in all capacities including emergency medical technician, emergency medical specialist (senior paramedic), senior emergency medical specialist (paramedic) and consultant emergency medical specialist (consultant paramedic).	ME, COM, COL, L, HA, P
				Lead the field response to a major incident coordinating healthcare provision with other response agencies.	ME, COM, COL, L, HA

ME medical expert, L leader, COL collaborator, COM communicator, HA health advocate, P professional, S scholar.

Rotation Name: Emergency management in healthcare

Rotation Sitting	Training stage	Training years	Rotation's duration (Months/weeks/block)	Rotation specific outcomes	competency roles**
Hospital emergency management	Senior	2	2 blocks	Build an emergency management program for a healthcare facility or system that contains an emergency organizational structure, disaster cycle plans, and an educational program, and meets international accreditation standards.	ME, COL, L, HA, S
				Compare the different leadership organization systems during an emergency response, including the Incident Command System, and Major Incident Management System.	L, S
				Justify unity of command, chain of command, devolution, and succession planning as foundations of emergency management concepts.	ME, S
				Validate emergency management's role in healthcare.	L, HA
				Analyze disaster response's phases and the key activities within each phase.	ME, S
				Perform incident command functions during a disaster exercise or response.	L
				Use the Incident Command System efficiently during an emergency response.	L
				Build an organizational chart that is to be used by a healthcare institution, during an emergency .	ME, L
				Formulate and execute a triage plan to sort patients based on their injury's severity, their medical needs, and the prehospital resources.	ME, COL
				Apply knowledge of evacuation principles to implement a systematic patient evacuation plan.	ME
				Analyze and design casualty evacuation policies and protocols.	ME
				Demonstrate mastery of various mass casualty triage methods.	ME
				Conduct a successful full-scale exercise in a conductor's or an evaluator's capacity.	ME

ME medical expert, L leader, COL collaborator, COM communicator, HA health advocate, P professional, S scholar.

Rotation: Humanitarian response, conflict zone response, refugee camp healthcare, and healthcare diplomacy

Rotation sitting	Training stage	Training years	Rotation's duration (Months/weeks/block)	Rotation specific outcomes	Competency roles**
Hospital emergency management	Senior	2	2 blocks	Represent healthcare and their nation as experts in humanitarian response in national and international forums; such representation must include active collaboration and participation in humanitarian aid.	ME, COL, L, HA, S
				Review the international humanitarian law, Geneva Convention, and the additional protocols pertaining to the importance of providing healthcare in a humanitarian scenario.	ME, S
				Advocate for disadvantage groups' rights in diplomatic forums as a healthcare representative.	HA, L
				Plan an international healthcare provision response using international agencies' standards.	ME, COL

ME medical expert, L leader, COL collaborator, COM communicator, HA health advocate, P professional, S scholar.

Rotation: Healthcare planning and response for mass gatherings.

Rotation sitting	Training stage	Training years	Rotation's duration (Months/weeks/block)	Rotation specific outcomes	Competency roles**
Seasons and events	Senior	2	2 blocks	Consult as healthcare experts on healthcare policy, disaster medicine toxicology, disaster medicine public health, and emergency management in healthcare for decision makers upon their request.	ME, COM, COL, L, HA, S
				Apply fundamental principles and methods to plan and implement a comprehensive medical care system at mass gatherings/special events.	ME, HA
				Mitigate the unique challenges related to field medical care provisions at mass gatherings/special events.	ME
				Analyze data from previous events to determine appropriate medical requirements for various types of events.	S
				Coordinate with event workers, emergency responders, and public officials to design large-scale medical care plans.	COL
				Locate, design, and implement temporary medical treatment facilities.	ME

				Determine the proper types and distribution of medical resources at mass gatherings/special events.	ME
				Develop and implement a comprehensive documentation and communications system to ensure the coordinated delivery of medical care at mass gatherings/special events.	COM, COL
				Execute and supervise the delivery of medical care during mass gatherings/special events.	ME, L
				Collect and analyze event data and apply quality improvement processes to improve medical responses at future events.	ME, COL, S
				Collaborate with response agencies, event planners, public health departments, and definitive care facilities to optimize event reporting, surveillance, patient management, and follow-up.	COM, COL

ME medical expert, L leader, COL collaborator, COM communicator, HA health advocate, P professional, S scholar.

Rotation: Developing and conducting emergency management training and education programs

Rotation sitting	Training stage	Training years	Rotation's duration (Months/ weeks/block)	Rotation specific outcomes	Competency roles**
Emergency management	Senior	2	2 blocks	Coach healthcare providers and leaders on crisis leadership and emergency management and build their capacity to respond to major incidents.	ME, COM, COL, L, HA, P
				Teach the difference between a crisis response decision making and regular decision-making techniques.	ME, COL, L
				Provide psychological first aid during a critical incident response.	ME, P
				Explain resource classification and resource management cycle.	ME
				Guide the planning related to capacity and capability increase during crisis response.	ME, COM, COL
				Analyze healthcare consequences related to common disasters.	ME
				Describe the difference between an incident-based and all hazard approaches in emergency response planning.	ME
				Advocate emergency management's importance as a leadership function in healthcare.	ME, L, HA

ME medical expert, L leader, COL collaborator, COM communicator, HA health advocate, P professional, S scholar.

Rotation: Risk assessment and management

in healthcare

Rotation sitting	Training stage	Training years	Rotation's duration (Months/ weeks/block)	Rotation specific outcomes	Competency roles**
Risk management units	Senior	2	3 blocks	Classify a healthcare institution's services into mission essential and non-essential functions.	ME, COL
				Define the maximum tolerable downtime to healthcare services as part of a business continuity management plan.	ME
				Use common risk assessment methods and prioritization techniques.	ME
				Build a business continuity management program for a healthcare institution.	ME, COL
				Participate in writing and reviewing plans for emergency operations, mitigation, preparedness, continuity of operations, and recovery.	ME, COL

ME medical expert, L leader, COL collaborator, COM communicator, HA health advocate, P professional, S scholar.

Rotation: CBRNE, WMD, and counterterrorism medicine

Rotation sitting	Training stage	Training years	Rotation's duration (Months/weeks /block)	Rotation specific outcomes	Competency roles**
EMS	Senior	2	2 blocks	Collaborate in building healthcare resilience, as healthcare experts, against weapons of mass destruction, consequences of conflict, consequences of terrorism and urban violence, and other major incidents. Such collaborations would involve mitigation, preparation, response, and recovery from such events in a highly efficient manner.	ME, COL, L
				Apply the core concepts behind the planning for and response to CBRNE events.	L, ME
				Map the roles and responsibilities of all agencies which respond to a CBRNE event.	L, COL
				Describe the principles of scene safety which relates to EMS response to toxins/poisons/HAZMAT events.	ME
				Identify the common substances/chemicals/situations which may constitute a toxin/poison/HAZMAT response.	ME
				Select appropriate PPE level in response to these events. Assess and mitigate PPE's effect on emergency responders' health.	ME
				Understand and overcome the difficulties in delivering medical care while wearing PPE (Level 1, 2, 3, and 4).	ME
				Formulate and execute an appropriate treatment plan to manage patients in austere environments.	ME
				Understand and apply decontamination principles, including differentiating between dry, wet, general, and secondary decontamination.	ME

ME medical expert, L leader, COL collaborator, COM communicator, HA health advocate, P professional, S scholar.

X. TEACHING METHODS

The teaching methods used in postgraduate fellowship training programs are primarily based on adult learning theory principles. The trainees understand the importance of learning and, thus, play active roles in their learning process. All training programs' activities are based on adult learning theory principles, where the residents are responsible for meeting their learning requirements.. Formal training time includes the following three formal teaching activities: specific learning activities, universal topics, and general learning opportunities.

Program Specific Learning Activities

Program specific activities are educational activities that are specifically designed and intended for teaching trainees. The trainees are required to attend these activities, and non-compliance can subject them to disciplinary actions. Attendance and participation in these activities are part of the continuous assessment tools (see the formative assessment section below). Program administration must support these activities by providing protected time for trainees to attend and participate in such activities. These activities include academic half-days, practical clinical teaching, reusable learning objects, and practice-based learning.

Program Academic Half-day

The academic half-day cover the core specialty topics that are aligned with the specialty-defined competencies and teaching methods. The core specialty topics will ensure that the important problems of the specialty are taught well. It is recommended that the lectures are conducted in an interactive, case-based discussion format. The learning objectives of each core topic need to be clearly defined, and it is preferable to distribute learning materials in advance to ensure maximum gain of learners during the session. Whenever applicable, core specialty topics should include workshops, team-based learning (TBL), and simulations to develop skills in core procedures. Regional supervisory committees in coordination with academic and training affairs, program directors, and chief residents should work together to ensure academic activities' planning and implementation, as indicated in the

curriculum. The trainee should be actively involved in developing and delivering the topics, under faculty supervision; their involvement might include delivery, content development, and research. The supervisor's educator should ensure that each topic is stratified into three learning domain categories: knowledge, skill, and attitude. The recommended number of half-day activities, that should be conducted annually, is 40 sessions per training academic year, with reserved time for other forms of teaching methods such as journal clubs and clinical/practical teaching. The residency training committee, program directors, and chief residents should work together with academic and training affairs and regional supervisory committees to ensure academic activities' planning and implementation, as indicated in the curriculum. They should aim to utilize the available resources efficiently and optimize the exchange of expertise. A complete map of academic half-days is presented in Appendix A. A list of clinical skills expected to be mastered by the graduates is presented in Appendix B. A sample one-month schedule is presented in Appendix C.

Clinical/Practical Teaching

It is mandatory that the learners are certified in the following courses:

- Psychological first aid course
- Donning and doffing PPEs
- Mass casualty triage
- Medical care in austere environment simulation
- Wilderness medicine primer course
- EMT skills course
- EVOC, TECC, BDLS, ADLS, and HEMS safety courses
- Medical deployment simulation

- Incident Command 300
- Incident Command 400

Other specialty courses i.e. AHLS and chemical warfare simulations are strongly recommended but not obligatory.

Reusable Learning Objects (RLOs)

Reusable learning objects are educational opportunities that are available online for learners. Learners in this fellowship must enroll in these RLOs for two chief purposes: gaining knowledge and identifying good educational resources that they can uses for teaching, later in their careers. Learners must complete the following RLOs:

- Incident Command 100
- Incident Command 200
- Incident Command 700
- Incident Command 800
- Disaster Health Core Curriculum
- An Introduction to Exercises IS 120
- Fundamentals of Emergency Management IS 230
- Emergency Planning IS 235
- Leadership and Influence IS 240
- Decision Making and Problem Solving IS 241
- Effective Communication IS 242
- Developing and Managing Volunteers IS 244
- Psychological First Aid
- UN Basic Security in the Field
- Chem Pack Training Program
- Emergency Operations Planning: Awareness
- Continuity of Operations Planning: Awareness
- Hazard Vulnerability Analysis Planning: Awareness
- Incident Management for Hospitals
- Mass Casualty Incident (MCI) Triage: Awareness
- Mass Dispensing Clinics: Just-in-Time Training (JITT)

- All Hazards Disaster Response and Protection for Healthcare Personnel
- CERT Triage: Handling Mass Casualty Situations
- Crisis emergency risk communication
- Stephen M. Lawlor Medical Intelligence Center

Appendix D contains the links to access these RLOs.

Universal Topics

Universal topics, such as e-learning via personalized access for each trainee (to access the online modules), have been developed by SCFHS and are available to them. Each universal topic will have a self-assessment at the end of the module. As indicated in the "executive policies of continuous assessment and annual promotion," universal topics are a mandatory component of the criteria for the trainees' annual promotion from their current level to the subsequent level.

Training Year	UT Module	Subjects	Objectives
F1	Module-1	Ethics in Healthcare	As per the universal topics' curriculum
	Module-2	Trainees' wellbeing	As per the universal topics' curriculum

General Learning Opportunities

A formal training time will be supplemented by other practice-based learning (PBL) activities, such as:

- Journal Club
- Involvement in quality improvement committees and meetings
- Continuous professional development activities (CPD) relevant to the specialty

XI. ASSESSMENT AND EVALUATION

1. Purpose of the Assessment

The assessment plays a vital role in the success of postgraduate training. It will guide trainees and trainers to achieve the defined standards, learning outcomes, and competencies. Furthermore, the assessment will provide feedback to learners and faculty regarding curriculum development, teaching methods, and the learning environment's quality. A reliable and valid assessment is an excellent tool for assessing curriculum alignments between objectives, learning methods, and assessment methods. Finally, assessment assures patients and the public that health professionals are safe and competent to practice. This assessment can serve the following purposes:

A. Assessment for learning: Educators are expected to conduct assessment activities to evaluate the learning needs of trainees. Such assessment might involve triangulation techniques to identify consensus of learning needs and learning gaps. Educators will evaluate the learning needs through the input of employers, patients and learners themselves.
B. Assessment while learning: Formative assessment activities are designed to help trainees learn through the evaluation process. Educators are expected to conduct 'mock' exams and other assessment activities with the purpose of exposing knowledge gaps of learners. Learners are expected to participate in such activities to further enhance their abilities of self-assessment.
C. Assessment of learning is used to demonstrate the achievement of learning. This is a graded assessment and usually counts towards the trainee's end-of-training degree.
D. Feedback and evaluation: The assessment's outcomes represent quality metrics that can improve the learning experience.

For the purpose of organization, the assessment will be further classified into two main categories: formative and summative.

2. Formative Assessment

2.1 General Principles

Trainees, as adult learners, should strive for feedback throughout their competency journey, from “novice” to “mastery” levels. Formative assessment (also referred to as continuous assessment) is the assessment’s component that is distributed throughout the academic year, primarily to provide trainees with effective feedback. Every four weeks at least 1 hour will be allocated for trainees to meet their mentors and review their performance reports (e.g., ITER, e-portfolio, mini-CEX, etc.). Input from the overall formative assessment tools will be utilized at the end of the year to decide whether each trainee will be promoted from F1 to F2. Formative assessment will be defined based on scientific (council/committee) recommendations (usually updated and announced at the beginning of the academic year). According to the executive policy on continuous assessment (available online: www.scfhs.org.sa), formative assessment will have the following features that will be used based on Miller’s pyramid:

I. Multisource: minimum four assessment tools.
II. Comprehensive: covering all learning domains (knowledge, skills, and attitude).
III. Relevant: focusing on workplace-based observations.
IV. Outcome oriented: reflecting the trainee’s expected learning outcomes that match the trainee’s skill level.

Trainees should play an active role in seeking feedback during training. However, trainers are expected to provide timely and formative assessments. The SCFHS will provide an e-portfolio system to enhance communication and analysis of the data arising from formative assessments.

Trainers and trainees are directed to follow the scientific council’s recommendations regarding the updated forms, frequency, distribution, and deadlines related to the evaluation forms’ implementation.

2.2 Formative Assessment Tools

Learning domain	Formative assessment tools	Important details

Knowledge	Capstone project	Trainees are expected to write and complete a capstone project, annually, reflective of what they have learned during that year. The capstone projects can be an EOP, Offline Medical Control Protocol, or other planning documents, and should be submitted before they take their final exam.
	Promotion exam	At the end of 1st year only.
Skills	Logbook	Trainees are required to maintain a logbook, of the skills they learn during rotations, which should be submitted before they take their final exam. Details regarding the logbook are provided in Appendix B.
	Mini-CEX: mini-Clinical Evaluation Exercise	Trainee patient interaction will be assessed once in every rotation.
Attitude	ITER: In-Training Evaluation Report	Every training rotation will conclude with an ITER.

Each component's evaluation will be based on the following equation:

PERCENTAGE	< 50%	50-59.4%	60-69.4%	>70%
DESCRIPTION	Clear fail	Borderline fail	Borderline pass	Clear pass

To achieve unconditioned promotion, the candidate must receive a minimum of “borderline pass” in all five components. However, even if the aforementioned criterion is not met, the program director can still recommend candidates’ promotion, in the following situations:

- If the candidate received “borderline failure” in a maximum of one or two components, and these scores should not belong to the same area of assessment (for example, both borderline failures should not belong to the same skills).
- The candidate must have passed all the other components and received a minimum of “clear pass” in at least two components.

3. Summative Assessment

3.1 General Principles

Summative assessment is the assessment’s component that primarily aims to make informed decisions regarding the trainees’ competency. Compared to formative assessment, summative assessment does not aim to provide constructive feedback. For further details on this section, please refer to the general bylaws and executive policy regarding assessment (available online: www.scfhs.org). To be eligible to participate in the final exams, a trainee should be granted “Certification of Training-Completion.”

3.2 End of Fellowship Exam

3.3 Certification of Training-Completion

To be eligible to participate in the final specialty exams, each trainee is required to obtain “Certification of Training-Completion.” Based on the training bylaws and executive policy (please refer to www.scfhs.org) trainees will be granted the “Certification of Training-Completion” once the following criteria are fulfilled:

I. Successful completion of all training rotations.
II. Completion of training requirements (e.g., logbook, ITER, others).
III. Clearance from SCFHS training affairs ensures compliance with tuition payments and the completion of universal topics.

"Certification of Training-Completion" will be issued and approved by the supervisory committee or its equivalent according to the SCFHS' policies.

3.4 Final Specialty Exams

The final specialty exam is the summative assessment component, through which the trainees can gain the specialty certification. It has two elements:

A. Final written exam: To be eligible for this exam, trainees are required to have "Certification of Training-Completion."
B. Final clinical/practical exam: Trainees will be required to pass the final written exam to be eligible to participate in the final clinical/practical exam.

Due to the nature of the fellowship, the final specialty exam will be conducted in two parts. The first is at the end of F1, and the second is at the end of F2. The cumulative score will be the trainees' final score. The two parts are identical in weight, but the content will be specific to the previous year (EMS vs. DM).

3.5 Summative Assessment Tools

Learning domain	Summative assessment tools	Passing score
Knowledge	Final written exam	At least "borderline pass" in each tool, in accordance with the standard setting method used by the executive administration of assessment.
Skills	OSCE & OSPE	
Attitude	FITER	Successfully pass FITER.

Final Written Exam

Blueprint of the end of fellowship exam is shown in the following table:

ILO	Weight
Design an EMS system that values service and clinical quality, improvement, resilience, accountability, and economic value in an emerging healthcare system's context.	15%
Operate an EMS system that provides triage, pre-arrival instructions, basic and advanced life support, specialized EMS, assessment and treatment, overwhelming response, critical care transport, aeromedical transport, prevention and public education, event response, and community paramedicine in a clinical expert's capacity.	15%
Assess the three dimensions of an EMS system—healthcare provision, public health, and public safety—and propose interventions to improve its performance.	15%
Respond to scenes of incidents as an expert healthcare provider with a unique skill set that accelerates patients' recovery.	15%
Investigate the validity of new interventions in EMS through research and scholarly activities.	5%
Build an emergency management program for a healthcare facility or system that contains an emergency organizational structure, disaster cycle plans, and an educational program and meets international accreditation standards.	10%
Collaborate in building healthcare resilience, as healthcare experts, against weapons of mass destruction, consequences of conflict, consequences of terrorism and urban violence, and other major incidents. Such collaborations would involve mitigation, preparation, response, and recovery from such events in a highly efficient manner.	5%
Act as expert healthcare consultants for healthcare policies, disaster medicine toxicology, disaster medicine public health, and emergency management in a healthcare system, when requested by policymakers.	10%
Coach healthcare providers and leaders on crisis leadership and emergency management and build their capacity to respond to major incidents.	5%
Represent healthcare and their nation as experts in humanitarian response in national and international forums; such representation must include active collaboration and participation in humanitarian aid.	5%

This blueprint is made for demonstration purposes, and an updated version will be published on SCFHS' website before the final exam.

OSCE Final Exam

Blueprint of the end of fellowship OSCE exam is shown in the following table:

Skill group	Weight
Online medical control	10%
Field amputation and thoracotomy	10%
Critical incident debriefing	5%
Difficult airway management including nasal intubation and cricothyroidotomy	15%
Disaster scene leadership	10%
Crisis leadership coaching	10%
Field delivery including breach	10%
Critical care for unmovable patients	10%
Psychological first aid	10%
Radiological and chemical major incident technical guidance	10%

XII. PROGRAM AND COURSES EVALUATION

The SCFHS utilizes variable measures to evaluate this curriculum's implementation. This program's training outcomes will undergo the quality assurance framework endorsed by the Central Training Committee at SCFHS. Trainees' assessment (both formative and summative) results will be analyzed and mapped according to the curriculum's content. Triangulation of the curriculum's performance will be sought through multiple sources of feedback, including the performance of trainees, their evaluation of the curriculum, the educator's evaluation, and the employer's evaluation of the trainees' performance. Other indicators that will be incorporated are as follows:

- Annual reports of the trainees' satisfaction survey.
- Reports from trainees' evaluation of faculty members.
- Reports from trainees' evaluation of rotations.
- Reports from the annual survey about the program directors.
- Data available from program accreditations.
- Reports from direct field communications with trainees and trainers.

Goal-based Evaluation: The expected milestones will be evaluated at the end of each stage to assess the progress related to the delivery of the curriculum, and any deficiency—found during this process—will be addressed in the following stage, utilizing the time devoted to the topics selected by the trainees and professional sessions.

In addition to subject-matter opinions and best practices based on benchmark international programs, the SCFHS will apply a robust method to ensure that this curriculum will utilize all the data that is be available during this curriculum's revision in the future.

XIII. POLICIES AND PROCEDURES

This curriculum represents the means and materials outlining learning objectives with which trainees and trainers will interact to achieve the identified educational outcomes. The SCFHS has a full set of “General Bylaws” and “Executive Policies” (published on SCFHS’ official website) that regulate all processes related to training. General bylaws regarding training, assessment, and accreditation, as well as executive policies on admission, registration, continuous assessment and promotion, examination, trainees’ representation and support, duty hours, and leaves are examples of regulations that need to be applied. Trainees, trainers, and supervisors need to apply this curriculum in compliance with the most updated bylaws and policies that can be accessed online (via SCFHS’ official website).

Appendix A

THEME	WEEK	TOPICS
EMS system design	1	EMS system design and service models
	1	EMS system assessment and evaluation
	1	International EMS designs
	2	National EMS strategies
	2	MD scope of practice in EMS
	2	Deployment, posting, and response
EMS operations	3	Scene size up and BSI
	3	Overwhelming response operations
	3	Medical response for in-transit emergencies
	4	Emergency medical dispatch
	4	Prearrival instructions
	4	Triage over phone evidence and practice
	5	Interfacility transport
	5	Telemedicine implications in EMS
	5	Dispatching EMS for interfacility care
	6	EMS communications
	6	Logistics of EMS
	6	Business intelligence and GIS in EMS
	7	Air medical services
	7	Rural and community EMS
	7	Dignitary EMS services
	8	Fireground EMS
	8	International EMS operations
	8	Army EMS response
	9	High rise building issues
	9	Technical rescue operations
	9	Tourism and resort EMS

Special EMS operations	10	Mass gathering EMS response and rules for EMS during disasters
	10	EMS disaster triage and patient evacuation operations
	10	Field care and major interventions (amputations, thoracotomy, etc.)
	11	Tactical EMS
	11	Wilderness EMS
	11	Hazmat EMS
EMS medical oversight	12	Strategic planning
	12	Leadership and team building
	12	Politics and public speaking
	13	Offline medical control
	13	Online medical control
	13	CPG vs Protocols vs best practice
	14	Proactive public health response in EMS
	14	Haddon’s matrix applications in EMS
	14	Public safety leadership
	15	Airway in EMS
	15	Special airway care in EMS
	15	Airway procedures
	16	Cardiac arrest systems of care
	16	Cardiac arrest clinical management
	16	Chest pain in EMS
	17	Water rescue operations
	17	Shock and hemorrhage in EMS
	17	Anaphylaxis and respiratory failure
	18	Cardiac procedures
	18	Submission and drowning
	18	Choking
	19	Trauma systems of care
	19	Blunt trauma and MVCs
	19	Penetrating trauma
	20	Electrical injuries
	20	Blast injuries
	20	Bites stings and envenomation

	21	Ocular trauma
	21	Orthopedic injuries
	21	Crush injury
	22	Hemorrhage control
	22	Field trauma triage
	22	Trauma stabilizing procedures
	23	Agitated patients' response
	23	Mental illness and substance abuse
	23	Behavioral emergencies
	24	Bariatric patients
	24	Geriatric patients
	24	Special needs patients
	25	Pediatric trauma
	25	Pediatric medical problems
	25	Technology dependent children
	26	Pregnancy and EMS implications
	26	Normal childbirth
	26	Childbirth emergencies
	27	Domestic violence
	27	Sexual assault
	27	Child maltreatment
	28	Analgesia and sedation in EMS
	28	Point of care testing in EMS
	28	US in EMS
	29	DNR and AND
	29	Termination of resuscitation in EMS
	29	End of life issues
	30	Stroke and neurologic emergencies
	30	Syncope
	30	Seizures
	31	Diabetes
	31	Renal emergencies
	31	Infectious and communicable diseases

Health care policy and EMS	32	EMS rule in access to care
	32	Regionalization of care
	32	Ambulance bypass and diversion
	33	Capacity and refusal of care
	33	Patient physician relationship in EMS
	33	Public health implications of EMS
	34	Planned event response and size up
	34	ICS in EMS
	34	EMS crisis standards of care
EMS management	35	EMS finance and billing
	35	Human Resources in EMS
	35	Legal considerations
	36	EMS personnel scope of practice
	36	Dynamic scope of practice application
	36	Wellness in EMS
	37	Ambulance safety
	37	Medical surveillance of EMS personnel
	37	Injury prevention
	38	Due process
	38	PCR audits
	38	Complain investigation
EMS quality	39	Quality concepts and practices in EMS
	39	Improving quality in EMS
	39	Data management and performance measurement
EMS current discussions	40	Trauma
	40	Cardiac care
	40	Economics of EMS
Emergency management	41	Emergency management programs in healthcare
	41	Emergency management leadership structures
	41	unity of command, chain of command, devolution, succession planning
	42	Crisis leadership principles
	42	Crisis leadership principles

	42	Crisis leadership principles
	43	Crisis communication
	43	Crisis communication
	43	Crisis communication
	44	Incident Command System basics
	44	Incident Command System for expanding incidents
	44	Incident Command System local applications
	45	HICS
	45	HICS
	45	HICS
	46	Disaster triage options and principles
	46	Disaster triage options and principles
	46	Disaster triage options and principles
	47	EM planning
	47	EOPs
	47	EOPs
	48	Preparedness plans
	48	Mitigation plans and rounds
	48	Levels of activations, waves of response, tired response
	49	COOP
	49	BCM
	49	Recovery principles
	50	Risk management
	50	Risk management
	50	Risk management
	51	All hazard planning
	51	HVA
	51	HVA
	52	Psychological first aid
	52	Alternative care sites
	52	Alternative care sites
	53	Surge capacity planning
	53	Surge capacity planning

	53	Surge capacity planning
	54	Mass evacuations
	54	Hospital evacuation
	54	Mass gathering planning
	55	Training and education on EM
	55	Training and education on EM
	55	Training and education on EM
CBRNE	56	Chemical incidents
	56	Chemical incidents
	56	Chemical incidents
	57	Biological incidents
	57	Biological incidents
	57	Radiological and nuclear incidents
	58	Explosives
	58	Explosives
	58	Explosives
	59	counter terrorism medicine
	59	counter terrorism medicine
	59	counter terrorism medicine
	60	Hostage incidents
	60	Active shooters
	60	Soft target fortification
	61	High value target protection
	61	Dignitary medicine
	61	VIP medicine ethics, scope of practice, essentials
	62	Decontamination
	62	Decontamination
	62	Decontamination
	63	PPEs
	63	PPEs
	63	PPEs
Disaster response	64	Mass causality incidents
	64	Mass causality incidents

	64	Mass causality incidents
	65	Flash floods
	65	Pandemics
	65	Nuclear plants failures
	66	Severe winds
	66	Sand storms
	66	Hospital fires
	67	Oil spills
	67	Infrastructure failures
	67	Infrastructure failures
	68	Mass fatality
	68	Cyber security incidents
	68	Cyber security incidents
	69	Effective EM evaluation
	69	JC EM accreditation
	69	EM accreditation others
	70	Social media
	70	Surveillance
	70	GIS in disaster medicine
	71	Volunteers and donations
	71	Volunteers and donations
	71	Volunteers and donations
International response	72	International humanitarian law
	72	International humanitarian law
	72	International humanitarian law
	73	Military response coordination
	73	International mission planning
	73	ICRC movement
	74	WHO clusters
	74	WHO clusters
	74	Medical kits and go bags
	75	Field security
	75	Field security

	75	Refugee camp medicine
	76	Refugee camp medicine
	76	Refugee camp medicine
	76	Famine
	77	Mudslides
	77	Tsunamis
	77	Earthquakes
Coaching and leadership	78	Psychological principles of coaching
	78	Psychological principles of coaching
	78	Psychological principles of coaching
	79	Leadership and coaching
	79	Leadership and coaching
	79	Leadership and coaching
	80	Leadership and coaching
	80	Leadership and coaching
	80	Leadership and coaching

Appendix B

Skill	Minimum performance under indirect observation
Field amputation or equivalent	3
Field thoracotomy or equivalent	3
Field nasal intubation or equivalent	10
Field insertion of ECMO lines or equivalent	5
Burr-hole application	3
Normal spontaneous vaginal delivery	10
Breach delivery	5
Water rescue	3
Field triage	1
Disaster field leadership	1
Lateral canthotomy	3

Pinned patient critical care	3
Conduction of tabletop exercises	3
Conduction of functional exercises	3
Conduction of full-scale exercises	3
Pediatric intubation	10
Neonatal intubation	10
Cricothyroidotomy	3
Online medical control (calls)	2000
Offline medical control (protocols)	3
PCR audits (cases)	200

Appendix C

Time	Week 1	Week 2	Week 3	Week 4
0800	EMS system design and service models	National EMS strategies	Scene size up and BSI	Emergency medical dispatch
0900				Prearrival instructions
1000	EMS system assessment and evaluation	MD scope of practice in EMS	Overwhelming response operations	Triage over phone evidence and practice
1100				
1200	Prayer break and lunch			
1300	International EMS designs	Deployment, posting and response	Medical response for in transit emergencies	Journal club
1400				

Appendix D

RLO	Link
Incident Command 100	https://training.fema.gov/is/courseoverview.aspx?code=IS-100.c
Incident Command 200	https://training.fema.gov/is/courseoverview.aspx?code=IS-200.c
Incident Command 700	https://training.fema.gov/is/courseoverview.aspx?code=IS-700.b
Incident Command 800	https://training.fema.gov/is/courseoverview.aspx?code=IS-800.d
Disaster Health Core Curriculum	https://www.usuhs.edu/ncdmph/core-curriculum
An Introduction to Exercises IS 120	https://training.fema.gov/is/courseoverview.aspx?code=is-120.c
Fundamentals of Emergency Management IS 230	https://training.fema.gov/is/courseoverview.aspx?code=is-230.d#:~:text=This%20course%20presents%20emergency%20management,independent%20study%20Professional%20Development%20Series.
Emergency Planning IS 235	https://training.fema.gov/is/courseoverview.aspx?code=is-235.c
IS-29.A: Public Information Officer Awareness	https://training.fema.gov/is/courseoverview.aspx?code=IS-29.a
Leadership and Influence IS 240	https://training.fema.gov/is/courseoverview.aspx?code=is-240.b
Decision Making and Problem Solving IS 241	https://training.fema.gov/is/courseoverview.aspx?code=is-241.b
Effective Communication IS 242	https://training.fema.gov/is/courseoverview.aspx?code=is-242.b
Developing and Managing Volunteers IS 244	https://training.fema.gov/is/courseoverview.aspx?code=is-244.b
Psychological First Aid	https://learn.nctsn.org/enrol/index.php?id=555
Skills for Psychological Recovery	https://learn.nctsn.org/enrol/index.php?id=535
UN Basic Security in the Field	https://training.dss.un.org/course/category/1#:~:text=Overview-,Overview,regardless%20of%20grade%20or%20function.
Chem Pack Training Program	https://delvalle.bphc.org/enrol/index.php?id=955

Emergency Operations Planning: Awareness	https://delvalle.bphc.org/course/info.php?id=801
Continuity of Operations Planning: Awareness	https://delvalle.bphc.org/course/info.php?id=573
Hazard Vulnerability Analysis Planning: Awareness	https://delvalle.bphc.org/course/info.php?id=939
Incident Management for Hospitals	https://www.calhospitalprepare.org/hics-courses
Incident Action Plan Course	https://www.calhospitalprepare.org/hics-courses
Mass Casualty Incident (MCI) Triage: Awareness	https://delvalle.bphc.org/enrol/index.php?id=938
Mass Dispensing Clinics: Just-in-Time Training (JITT)	https://delvalle.bphc.org/enrol/index.php?id=954
All Hazards Disaster Response and Protection for Healthcare Personnel	https://delvalle.bphc.org/enrol/index.php?id=431
CERT Triage: Handling Mass Casualty Situations	https://www.lomalindacert.com/trainingandeducation.html
Crisis emergency risk communication	https://emergency.cdc.gov/cerc/training/basic/index.asp
Stephen M. Lawlor Medical Intelligence Center	https://delvalle.bphc.org/course/info.php?id=331