# Saudi Board Emergency Medicine Curriculum

2014

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*Any amendment to this document shall be approved by the Specialty Scientific Council and the Executive Council of the commission and shall be considered effective from the date of updating the electronic version of this curriculum published on the commission website unless different implementation date has been mentioned*

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Acknowledgment:

The Emergency Medicine core curriculum team appreciates the valuable contributions and feedback received from the members of the supervisory committee and the student representative, Dr. Salma Qattan, in the construction of this manual. This work could not have been accomplished without their support.

We would like to acknowledge that the CanMEDS framework copyright is held by the Royal College of Physicians and Surgeons of Canada, and many of the descriptions and emergency medicine competencies have been acquired from their resources.
INTRODUCTION

Definition
Emergency medicine is the branch of specialty practice that is concerned with the management of a broad spectrum of acute illnesses and injuries in all age groups. The specialist in emergency medicine is foremost a clinician who uses highly developed clinical skills to care for patients with acute and often undifferentiated medical problems, frequently before complete clinical or diagnostic information is available.

The specialist in emergency medicine is an academic and community resource, providing leadership in the administration of emergency departments (EDs), emergency medical systems and programs, and the conduct of relevant research and education. He/she assumes these roles with the goal of advancing knowledge and improving individual and/or community health outcomes.

History
The Saudi Board of Emergency Medicine (SBEM) program is a substantial residency-training program that is considered the largest emergency program in the region, includes residents from the Gulf Cooperation Council (GCC) countries (more than 70 residents), and is the largest joint program in Saudi Arabia. In addition, it is one of a number of Saudi Commission for Health Specialties (SCFHS) programs that collaborate with the Omani Medical Specialty Board (OMSB) with respect to examination preparation and certification through the SCFHS examination department. The SBEM program began October 2001 by enrolling 4 residents and was mainly established at King Fahad National Guard Hospital Dr. Musaad Alsaman was the first chairman of the program, and Dr. Abdullah Alhudaib was the first program director. Emergency medicine now extends over the central, eastern, southern, and western regions of the kingdom.

Vision:
To be a premier training program in emergency medicine and inspire residents to make a positive difference in the lives of their patients, the organizations to which they belong, their communities, and beyond.
**Mission:**
Our mission is to train residents, in a supportive environment, to practice emergency medicine at the highest level, both clinically and academically, while maintaining the highest standards of ethical, humanistic, and professional behavior.

The emergency medicine residency at the SBEM is a comprehensive four-year training program designed to allow residents to demonstrate sufficient professional ability to practice emergency medicine competently and independently.

During four years of postgraduate training, the emergency medicine resident should become progressively accomplished in mastering the core competencies of the practice of emergency medicine. By graduation, all emergency medicine trainees should be able to provide complete, effective, and compassionate emergency medical care to the entire range of patients who present to EDs and treat the complete spectrum of acute illnesses and injuries. These emergency medicine residents will develop progressive improvement in clinical skills and increasing ability to manage a substantial number of patients simultaneously, with expertise developed to make clinical decisions and appropriate patient dispositions efficiently. Further, the trainees will be provided with the skills required to develop their careers through scholarly activity, research, and lifelong learning in evidence-based medicine. This will allow them to become leaders at local, regional, state, national, and international levels in clinical and academic settings.

**Educational Goals, Objectives, and Learning Outcome**

**Goals and Objectives**
Upon completion of training, a resident is expected to be a competent specialist in emergency medicine, capable of assuming a consultant’s role in the specialty. The resident must acquire a working knowledge of the theoretical basis of the specialty, including its foundations in the basic medical sciences and research.

The specialist emergency physician employs pertinent methods of prioritization, assessment, intervention, resuscitation, and further management of patients to the point of transfer. Appropriate procedural and pharmacotherapeutic maneuvers are central to these abilities.

The specialist emergency physician possesses organizational skills in the ED and disaster management and the ability to interface with and play a leadership role in the development and organization of emergency medical services and pre-
hospital care.

The specialist emergency physician possesses the knowledge, skills, and attitudes required to provide effective patient-centered care and service to a diverse population with respect to age, gender, culture, ethnicity, and ethics. The specialist emergency physician has the ability to incorporate these perspectives into research methodology, data presentation, and analysis.

Learning outcome
At the completion of training, the resident will have acquired the following competencies and will function effectively as per CanMEDS roles framework competencies (see Appendix A for further details):

- Medical expert
- Communicator
- Collaborator
- Manager
- Health advocate
- Scholar
- Professional

Program Framework

General training requirements
1. Admission into the program is in accordance with the Commission Training Rules and Regulations.
2. Trainees shall abide by the training regulations and obligations established by the SCFHS.
3. Training is a full-time commitment. Residents shall be enrolled in full-time, continuous education for the entire duration of the program.
4. Training is to be conducted in institutions accredited for training by the SBEM.
5. Training shall be comprehensive and include emergency, inpatients, and ambulatory care.
6. Trainees shall be actively involved in patient care with gradual progression of responsibility.

Structure of training program
a) This is a structured four-year postgraduate training program in emergency medicine, which is divided into two parts: junior residency (the first 2 years) and senior residency (the final 2 years).
b) The junior years are designed to provide training in the practice of core emergency medicine in emergency rotation, together with rotations in selected specialized fields.

c) During the senior residency years (R3 & R4), after passing the PART 1 EXAM, residents are allocated to various subspecialties in emergency medicine in addition to approximately 6 rotations per year training in the ED. This is arranged through the regional training committee.

d) Residents are required to complete the allocated rotations satisfactorily for a given year and pass the end-of-year evaluation exam (Unified Emergency Promotion Examination) before passing from academic one year to the next.

e) The sequence of the rotations will be under the direction of the regional training committee.

f) After successful completion of all program requirements throughout the four-year training period and obtaining the Final In-Training Evaluation Report (FITER), candidates will receive a training completion certificate issued by the regional supervising training committee. The candidate will then be eligible to undertake the Final Saudi Board Certification Examination in emergency medicine.

g) Successful candidates in the “Final Certification Exam” will receive the “Saudi Board in Emergency Medicine” certificate.

Program Supervision

The residency program is supervised by various layers of authorities including the following:

- Chairman of the scientific board
- Director of the regional supervisory committee
- Program director at the training center
- SBEM secretary

Minimum training requirements for emergency medicine residency

The SCFHS requires four years of training for eligibility to sit the SBEM exam. The SBEM program is unique in its development of the inclusion of a mass gathering rotation and a clinical epidemiology rotation. This program is mandatory for all candidate residents.

The program is divided into 12 clinical rotations per year, which involve rotation through the various major disciplines in addition to approximately 6 rotations per year for training in the ED. These rotations are as follows:
# Emergency Medicine Training Rotations (Blocks)

<table>
<thead>
<tr>
<th>Rotation</th>
<th>R1 Duration (Weeks)</th>
<th>R2 Rotation</th>
<th>Duration (Weeks)</th>
<th>R3 Rotation</th>
<th>Duration (Weeks)</th>
<th>R4 Rotation</th>
<th>Duration (Weeks)</th>
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<tbody>
<tr>
<td>Anesthesia</td>
<td>4</td>
<td>Elective§</td>
<td>4</td>
<td>Pediatric ICU (PICU)</td>
<td>4</td>
<td>Pediatric Emergency Medicine</td>
<td>8</td>
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<tr>
<td>Obstetrics and Gynecology</td>
<td>4</td>
<td>ICU</td>
<td>8</td>
<td>EMS (prehospital care)</td>
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<td>Community Emergency Medicine</td>
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<tr>
<td>Psychiatry</td>
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<td>CCU1</td>
<td>4</td>
<td>Hajj EM</td>
<td>4</td>
<td>Elective§</td>
<td>12</td>
</tr>
<tr>
<td>Orthopedics</td>
<td>4</td>
<td>Pediatric Emergency Medicine</td>
<td>4</td>
<td>Research (if not taken earlier) / Elective§</td>
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<tr>
<td>Research / Elective§</td>
<td>4</td>
<td>Neuroscience</td>
<td>4</td>
<td>Pediatric Emergency Medicine</td>
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<tr>
<td>Pediatric Emergency Medicine</td>
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§: Elective (e.g., ENT, ophthalmology, radiology, dermatology, trauma, toxicology). All elective rotations should be discussed with the program director and approved by local/supervisory committees following the submission of a written proposal with clear objectives accommodating the CanMEDS Framework.
Learning Objectives and Clinical Competencies

Descriptions of Residents’ Clinical Rotations

EMERGENCY MEDICINE ROTATION (R1 – R2)

Objective:
Emergency medicine rotations are the heart and soul of the Emergency Medicine Residency Training Program EMRTP. This is where most of the knowledge is put into practice, and most lessons are learned. In the junior years of the program, the resident is expected to be paired up with a senior resident, assistant consultant, or consultant, while he/she is on shift. This is the home rotation and a reflection of the resident’s future professional life.

During the junior years, the resident is expected to hone history-taking skills, adopting and perfecting a directed approach to physical examination. Time is usually a rare commodity in the ED setting. The resident must master thinking on their feet and spending no more than a few minutes taking the patient’s history, completing the necessary physical examination, and emerging with a differential diagnosis and management plan.

Not only are residents expected to learn to provide medical management and diagnosis in emergency cases, they must also learn how and when to refer to colleagues and agree with or take a stand against a course of action in the patient’s care. In the ED, evidence-based medicine becomes evidence-based practice, and medical decision making ensures the best outcome for the patient.

There is never a dull moment in the ED, and the resident in this rotation is exposed to what should be a comfortable setting. Learning to run a trauma team or mega code contributes to the development of necessary leadership qualities in the emergency medicine physician. Dealing with a wide array of patients with various complaints and acuities is instrumental in teaching the resident how to shift mental gears quickly and handle almost anything that he/she is confronted with.

It is in this rotation that all of the expertise and knowledge gained from off-service rotations are put to good use. No other environment in the hospital can duplicate the ED setting; therefore, all of the skills and knowledge gained throughout the training program serve to produce graduate physicians who are of and for this acute and busy environment and at their best when situations are at their worst.

Medical Expert
A. Demonstrate diagnostic and therapeutic skills for ethical and effective patient care.
B. Access and apply relevant information to clinical practice.
C. Demonstrate effective consultation services with respect to patient care, education, and legal opinion.
D. Develop competency in patient care and decision making for the emergency patient.
E. Demonstrate an understanding of the pathophysiology of disease and injury and the natural history of disease and illness.
F. Demonstrate the prompt recognition of acute illness and injury.
G. Demonstrate an understanding of the principles of resuscitation, investigation, diagnosis, and management decision making.
H. Perform a clinical assessment and collect all appropriate information.
I. Develop appropriate differential diagnosis and initiate the management of the following:
   1. Acute cardiopulmonary events
   2. Unresponsive patients
   3. Patients in need of immediate resuscitation
   4. Traumatized patients
   5. Acute age, gender and immune-related disorders
      a. Pediatrics
      b. Geriatrics
      c. Obstetrics and Gynecology (OBGYN)
      d. Immunocompromised patients
   6. Toxicological disorders
   7. Environmental disorders
   8. Behavioral disorders
   9. Acute illness/injury
J. Understand the requirements for follow-up care.
K. Proper and prompt documentation
L. The resident should be able to demonstrate the following techniques:
   1. Airway management
   2. Analgesia (procedural sedation)
   3. Anesthesia (local and nerve blocks)
   4. Arterial and venous access
   5. Bladder catheterization and irrigation
   6. Cardiopulmonary resuscitation at Advanced Cardiovascular Life Support course (ACLS) level
   7. Chest decompression
   8. Ascitic tapping
   9. Epistaxis management
  10. Fractures: stabilization, reduction, and immobilization
  11. Naso and orogastric tube insertion
  12. Joint aspiration
  13. Joint dislocation: reduction and immobilization
  14. Removal of foreign bodies
  15. Tonometry
16. Use of slit lamp
17. Wound management: abscess or infection, animal or human bites, local anesthesia, and suturing
18. Plain radiography interpretation
19. Computed tomography interpretation
20. Extended Focused Assessment with Sonography for Trauma (eFAST) scan

**Communicator**
A. Communicate effectively and compassionately with the patient and his/her family.
B. Establish therapeutic relationships with patients and their families.
C. Obtain and synthesize relevant history from patients, families, and communities.
D. Listen effectively.
E. Address concerns, conflict, and complaints within the multidisciplinary team.
F. Complete the emergency chart in a comprehensive and legible manner.
G. Discuss appropriate information with patients, their families, and the healthcare team.
H. Understand the importance of a multidisciplinary team and interact with consultant physicians, nurses, and other healthcare professionals in an appropriate and effective manner.
I. Inform patients and their families about management and discharge plans, including what to expect in terms of improvement or deterioration, which signs to look out for, and when it will be necessary to present to the ED again.
J. Assert the importance of adherence to and compliance with discharge medication, outpatient studies, investigations, and follow-up.

**Collaborator**
A. Understand the importance of a multidisciplinary team and interact effectively with physicians, nurses, and other healthcare professionals.
B. Consult effectively with other physicians and healthcare professionals.
C. Contribute to other interdisciplinary team activities effectively.
D. Demonstrate an understanding of the relationship between the ED and the EMS.

**Manager**
A. Allocate finite healthcare resources wisely.
B. Use information technology to optimize patient care, lifelong learning, and other activities.
C. Use resources effectively to balance patient care, learning needs, and outside activities.
D. Work effectively and efficiently in a healthcare organization.
E. Manage one section of the ED, with respect to flow, efficiency, and best patient care, for the duration of a shift.
F. Understand the basics of department management with respect to the function of the patient board and role of the charge nurse.
G. Understand the principles of quality assurance, risk management, and standards of care.

Health Advocate
A. Identify the important determinants of health that affect patients.
B. Demonstrate an understanding of the bioethical issues that affect patients.
C. Contribute effectively to the improvement of the health of patients and communities.
D. Understand various approaches to healthcare advocacy and policy change.
E. Recognize and respond to issues for which advocacy is appropriate.
F. Demonstrate an understanding of support services in the community, such as home care and primary healthcare center services, for patients undergoing discharge from the ED.

Scholar
A. Apply best practice, based on critical appraisal of relevant literature, to patient care decisions.
B. Contribute to the development of new knowledge through involvement in medical research pertaining to the specialty.
C. Demonstrate self-assessment and self-directed learning skills by identifying areas for self-improvement and addressing them with the resources available.
D. Develop, implement, and monitor a personal continuing-education strategy.
E. Facilitate learning for patients, medical trainees, students, and other healthcare professionals.

Professional
A. Deliver care of the highest quality with integrity, honesty, and compassion.
B. Demonstrate the maturity and responsibility expected of all professionals through the following:
   1. Reliability, punctuality, and attendance
   2. Self-assessment and insight
   3. Exhibiting appropriate personal and interpersonal professional behavior
   4. Practicing medicine that is ethically consistent with both Islam and the obligations of a physician
C. Demonstrate an understanding of the following:

1. The concept of informed consent in the care of children, adults, and the elderly.
2. Advanced directives, do-not-resuscitate (DNR) requests, and their application to the emergency care of patients.
3. The concept of futility applied to emergency situations.

EMERGENCY MEDICINE ROTATION (R3 – R4)

Objective:
As the residents advance through the program, their responsibilities change. Duties usually shift from learning to care for a single patient and contemplating the possibilities of diagnosis and management, to knowing about all patients in the ED, managing patient flow, and resolving administrative issues. Senior residents in the ED rotation have great demands placed upon them. While they are still expected to see, diagnose, and administer medical care to emergency patients, they are also charged with a full set of new challenges. Senior residents in the ED are assigned junior residents and interns, whom they supervise, teach, and instruct with respect to the wonderful art that is emergency medicine. They are therefore viewed as educators in their own right and expected to facilitate learning and provide instruction for younger residents. They become responsible for instructing others with respect to how procedures are performed and medical decisions are made.

Coincidentally, they are also expected to run the ED shift under the supervision of the assistant consultant or consultant. Being the “shift in-charge” presents the senior resident with exposure to administrative issues, conflict resolution, and resource management. It is almost impossible to care for an ED patient adequately while running a shift. Therefore, this is where seniors learn to delegate responsibility and use resources as best they can, to serve as many patients as possible and provide the best care possible with the resources given.

It is the final years that shape senior residents into emergency medicine consultants and prepare them for practice once they have passed their board exams. Learning to look at the big picture as well as the fine details gives one a very unique perspective, which is the framework upon which the specialty is built.

Medical Expert
A. Demonstrate diagnostic and therapeutic skills for ethical and effective patient care.
B. Access and apply relevant information to clinical practice.
C. Demonstrate effective consultation services with respect to patient care, education, and legal opinion.
D. The emergency medicine resident should know the following:
   1. The pathophysiology of disease and injury
   2. The prompt recognition of acute illness and injury
   3. The natural history of disease and illness
   4. Specific clinical presentations
   5. The principles of resuscitation
   6. The principles of investigation
   7. The principles of diagnosis and management decisions
   8. The requirements for follow-up care
   9. The principles of ED organization with respect to the corporate hospital structure
   10. The principles of quality assurance, risk management, and standards of care
   11. The relationship between the ED and the EMS

E. The emergency medicine resident should be able to do the following:
   1. Demonstrate competence and efficiency in physical examination including special examination techniques for specific diagnoses.
   2. Develop an appropriate differential diagnosis and initiate comprehensive management of the following:
      a. Acute cardiopulmonary events
      b. Unresponsive patients
      c. Patients in need of immediate resuscitation
      d. Traumatized patients
      e. Acute age, gender, and immune-related disorders
         i. Pediatrics
         ii. Geriatrics
         iii. OB/GYN
         iv. Immunocompromised patients
      f. Toxicological disorders
      g. Environmental disorders
      h. Behavioral disorders
      i. Acute illness/injury
   3. Function as team leader for all resuscitation.
   4. Function in the capacity of emergency physician with responsibility for the management of the department during the course of a shift.
   5. Perform a clinical assessment and collect all appropriate information.
   6. Perform consultations.
   7. Create appropriate records and reports.
   8. Supervise and teach interns and clinical clerks.
F. The resident should be able to demonstrate proficiency in the following techniques:
1. Airway management, rapid sequence induction, and difficult intubation
2. Analgesia (procedural sedation)
3. Surgical airway
4. Anesthesia (local and nerve blocks)
5. Bladder catheterization/irrigation
6. Cardiopulmonary resuscitation at ACLS level
7. Chest decompression
8. Emergency chest tube insertion
9. Ascitic and pleural tapping
10. Mega code team leadership
11. Emergency delivery
12. Epistaxis management
13. Lumbar puncture
14. Pacemaker insertion
15. Fractures: stabilization, reduction, and immobilization
16. Naso and orogastric tube insertion
17. Joint aspiration
18. Joint dislocation: reduction and immobilization
19. Removal of foreign bodies
20. Tonometry
21. Use of slit lamp
22. Wound management: abscess or infection, animal or human bites, local anesthesia, and suturing
23. Plain radiography interpretation
24. Computed tomography interpretation
25. Rapid ultrasound for shock and hypotension protocol and eFAST scan
26. Central line insertion using landmarks, under US guidance for arterial access

Communicator
A. Communicate effectively and compassionately with the patients and their families.
B. Establish therapeutic relationships with patients and their families.
C. Obtain and synthesize relevant history from patients, families, and communities.
D. Listen effectively.
E. Complete the emergency chart in a comprehensive and legible manner.
F. Discuss appropriate information with patients, their families, and the healthcare team.
G. Understand the importance of a multidisciplinary team and interact with consultant physicians, nurses, and other healthcare professionals in an appropriate and effective manner.

H. Discuss appropriate information with patients, their families, and the healthcare team.

I. Inform patients and their families about management and discharge plans, including what to expect in terms of improvement or deterioration, which signs to look out for, and when it will be necessary to present to the ED again.

J. Assert the importance of adherence to and compliance with discharge medication, outpatient studies, investigations, and follow-up.

K. Resolve consultation conflicts between medical services in a professional manner that is in the best interests of the patient.

L. Manage concerns, conflict, and/or complaints within the multidisciplinary team.

M. Coordinate with patients, their families, and other services regarding patient referral to the ED.

Collaborator
A. Understand the importance of a multidisciplinary team and interact effectively with physicians, nurses, and other healthcare professionals.

B. Consult effectively with other physicians and healthcare professionals.

C. Contribute to other interdisciplinary team activities effectively.

Manager
A. Allocate finite healthcare resources wisely.

B. Use information technology to optimize patient care, lifelong learning, and other activities.

C. Use resources effectively to balance patient care, learning needs, and outside activities.

D. Work effectively and efficiently in a healthcare organization.

E. Manage all sections of the ED, with respect to flow, efficiency, and best patient care, during the course of a shift.

F. Delegate responsibility to other staff, junior residents, and interns.

G. Oversee all critical care patients for the duration of the shift.

H. Understand the basics of department management with respect to the function of the patient board and role of the charge nurse.

I. Resolve administrative issues in a timely and professional manner.

J. Understand the principles of quality assurance, risk management, and standards of care.
Health Advocate
A. Identify the important determinants of health that affect patients.
B. Demonstrate an understanding of the bioethical issues that affect patients.
C. Contribute effectively to the improvement of the health of patients and communities.
D. Understand various approaches to healthcare advocacy and policy change.
E. Recognize and respond to issues for which advocacy is appropriate.
F. Demonstrate an understanding of support services in the community, such as home care and primary healthcare center services, for patients undergoing discharge from the ED.

Scholar
A. Apply best practice, based on critical appraisal of relevant literature, to patient care decisions.
B. Contribute to the development of new knowledge through involvement in medical research pertaining to the specialty.
C. Demonstrate self-assessment and self-directed learning skills by identifying areas for self-improvement and addressing them with the resources available.
D. Develop, implement, and monitor a personal continuing-education strategy.
E. Facilitate learning for patients, medical trainees/students, and other healthcare professionals.
F. Evaluate junior residents’, interns’, and students’ training during the course of the shift.

Professional
A. Deliver care of the highest quality with integrity, honesty, and compassion.
B. Demonstrate the maturity and responsibility expected of all professionals through the following:
   1. Reliability, punctuality, and attendance
   2. Self-assessment and insight
   3. Exhibiting appropriate personal and interpersonal professional behavior
   4. Practicing medicine ethically consistent with Islam and the obligations of a physician
C. Demonstrate an understanding of the following:
   1. The concept of informed consent in the care of children, adults, and the elderly
   2. Advanced directives, DNR requests, and their application to the emergency care of patients.
   3. The concept of futility applied to emergency situations.
ANESTHESIA ROTATION

Objective
The main objective of the anesthesia rotation is to familiarize the emergency medicine resident with the wide range of pharmacology for sedation, anesthesia, and intubation. In addition, the rotation aims to allow the resident to practice intubation and airway management using various types of airway equipment in a controlled, relaxed setting with one-to-one consultant supervision; this is vital to build up the resident’s confidence in the management of the emergent airway in the ED.

Attendance on this rotation is required once during one of the junior years and once during the senior year and provides the resident with the chance to identify and remedy any weaknesses or deficiencies he/she might have noticed during the ED rotation. Acquiring knowledge regarding anesthetic agents, patient monitoring while under anesthesia, and assessment of the patient for extubation is vital to becoming the airway expert the emergency medicine specialist is required to be.

In this rotation, the resident is also expected to try his/her hand at practicing peripheral and central IV access, arterial line access, and lumbar puncture. The resident is expected to spend all of his/her time in the operating theater to learn how patients are assessed for difficult airway ahead of intubation attempts and how the issue is dealt with.

Medical Expert
A. Demonstrate diagnostic and therapeutic skills for ethical and effective patient care.
B. Access and apply relevant information to clinical practice.
C. The emergency medicine resident should know the following:
   1. The principles of upper airway assessment for anticipated difficult intubation and anesthesia problems
   2. The principles of mechanical ventilation
   3. Fluid resuscitation
   4. Administration of blood and blood products
   5. Regional anesthesia
   6. General anesthesia
   7. Presentation, pathophysiology, and management of upper airway disease (traumatic and nontraumatic)
   8. Invasive monitoring
   9. Pharmacology of applicable anesthetic agents
   10. Surgical airway control (cricothyrotomy)
D. The resident should be able to demonstrate the following techniques:
   1. Insertion of oral and nasopharyngeal airways
3. Proper techniques for direct laryngoscopy with Macintosh and Miller blades
4. Insert an ET tube (both oral and nasal)
5. Understanding and performing tracheal intubation with different intubating equipment (e.g., GlideScope, Airtaq, and Bougie)
6. Proficient use of extraglottic devices
7. Setting parameters and initiating mechanical ventilation
8. Initiating venous access (peripheral and central)
9. Managing fluid status of an ill, anesthetized patient
10. Inducing general anesthesia by pharmacological and gaseous means (with and without paralysis)
11. Understanding and performing rapid sequence induction
12. Safe procedural sedation in adults and children
13. Administration of selective regional anesthesia
14. Anticipating and handling emergency situations appropriately
15. Understanding methods of assessment in patient extubation

**Communicator**
A. Communicate effectively and compassionately with the patient and his/her family.
B. Establish therapeutic relationships with patients and their families.
C. Obtain and synthesize relevant history from patients, families, and communities.
D. Listen effectively.
E. Discuss appropriate information with patients, their families, and the healthcare team.

**Collaborator**
A. Understand the importance of a multidisciplinary team and interact effectively with physicians, nurses, and other healthcare professionals.
B. Consult effectively with other physicians and healthcare professionals.
C. Contribute to other interdisciplinary team activities effectively.

**Manager**
A. Allocate finite healthcare resources wisely.
B. Understand the basic principles of quality assurance and risk management issues.
C. Use information technology to optimize patient care, lifelong learning, and other activities.
D. Use resources effectively to balance patient care, learning needs, and outside activities.
E. Work effectively and efficiently in a healthcare organization.
Health Advocate
A. Identify the important determinants of health that affect patients.
B. Develop an understanding of the bioethical issues that affect patients.
C. Contribute effectively to the improvement of the health of patients and communities.
D. Understand various approaches to healthcare advocacy and policy change.
E. Recognize and respond to issues for which advocacy is appropriate.

Scholar
A. Apply best practice, based on critical appraisal of relevant literature, to patient care decisions.
B. Contribute to the development of new knowledge.
C. Demonstrate self-assessment and self-directed learning skills by identifying areas for self-improvement and addressing them with the resources available.
D. Develop, implement, and monitor a personal continuing-education strategy.
E. Facilitate learning for patients, medical trainees/students, and other healthcare professionals.

Professional
A. Deliver care of the highest quality with integrity, honesty, and compassion.
B. Demonstrate the maturity and responsibility expected of all professionals.
C. Exhibit appropriate personal and interpersonal professional behavior.
D. Practice medicine that is ethically consistent with the obligations of a physician.
E. Anesthetic care.

CARDIAC INTENSIVE CARE ROTATION
Objective:
The main objective of the CCU rotation is to provide the EMRTP resident with an opportunity to manage critical cardiac patients following their admission. In addition, the rotation aims to allow residents to experience continuity of care and complications that might arise from ED management, such as bleeding secondary to administered thrombolytics or development of cardiogenic shock, first hand. Rotation in the CCU also has the benefit of exposing the resident to a group of patients who are not seen at all in the ED: the postsurgical patients and those who have had a pacemaker inserted. Attending CCU rounds provides the resident with an opportunity to learn and understand the benefits and
limitations of echocardiography and electrocardiography. Learning about the wide range of cardiac pharmacology is also an essential part of this rotation, as is the need to consider long-term prognosis and the benefits of medications for different cardiac illnesses. The resident is expected to become moderately competent in electrocardiogram (ECG) reading and cardiac examination, a skill that, if later perfected, constitutes one of the cornerstone abilities of an emergency medicine physician.

**Medical Expert**
A. Demonstrate diagnostic and therapeutic skills for ethical and effective patient care.
B. Access and apply relevant information to clinical practice.
C. Demonstrate effective consultation services with respect to patient care, education, and legal opinion.
D. The emergency medicine resident should know the following:
   1. Principles of resuscitation
   2. Principles of invasive monitoring
   3. Fluid resuscitation
   4. Management of a cardiac arrest team
   5. Management of cardiogenic shock in patients who have experienced acute infarction and undergone cardiac surgery
   6. Mechanical ventilation in the critically ill
   7. Disease processes necessitating admission to a cardiac care unit (ACS, valvular emergencies, and decompensated failure)
   8. The pharmacology of resuscitation, antiarrhythmic medication, and hemodynamic support
   9. Assessment of clinical cases requiring percutaneous cardiac catheterization
   10. Medicolegal issues pertaining to the release of medical information, informed consent, implied consent, and power of attorney in medical decision making, in the context of Islamic law regarding incapacitated patients

E. The resident should be able to demonstrate the following techniques:
   1. Perform a clinical assessment and collect all appropriate information.
   2. Document the progression of the patient’s clinical condition.
   3. Develop appropriate differential diagnoses for specific clinical presentations.
   4. Ascertain the need for admission or transfer to a cardiac care unit
   5. Demonstrate continuity of care, development of discharge plans, and patient transfer to step-down units.
   6. Choose the appropriate laboratory and radiological investigations to meet the immediate needs of the critically ill patient.
7. Interpret data collected from laboratory and radiological investigations.
8. Interpret data from both noninvasive and invasive monitoring.
9. Initiate the resuscitation, stabilization, and investigation of seriously ill patients.
10. Demonstrate competencies in the following techniques:
    a. ECG interpretation
    b. Echocardiogram (ECHO) interpretation
    c. Persantine thallium scan interpretation
    d. Noninvasive cardiopulmonary testing
    e. Defibrillation and cardioversion
    f. Central venous access using landmarks, under US guidance for arterial access
    g. Arterial monitoring
    h. Pericardiocentesis
    i. Pacemaker insertion
    j. Chest tube insertion

Communicator
A. Communicate effectively and compassionately with the patient and his/her family.
B. Establish therapeutic relationships with patients and their families.
C. Obtain and synthesize relevant history from patients, families, and communities.
D. Listen effectively.
E. Discuss appropriate information with patients, their families, and the healthcare team.

Collaborator
A. Understand the importance of a multidisciplinary team and interact effectively with physicians, nurses, and other healthcare professionals.
B. Consult effectively with other physicians and healthcare professionals.
C. Contribute effectively to other interdisciplinary team activities.

Manager
A. Allocate finite healthcare resources wisely.
B. Understand the basic principles of quality assurance and risk management issues.
C. Use information technology to optimize patient care, lifelong learning, and other activities.
D. Use resources effectively to balance patient care, learning needs, and outside activities.
E. Work effectively and efficiently in a healthcare organization.
Health Advocate
A. Identify the important determinants of health that affect patients.
B. Demonstrate an understanding of the bioethical issues that affect patients.
C. Contribute effectively to the improvement of the health of patients and communities.
D. Understand various approaches to healthcare advocacy and policy change.
E. Recognize and respond to issues for which advocacy is appropriate.

Scholar
A. Apply best practice, based on critical appraisal of relevant literature, to patient care decisions.
B. Contribute to the development of new knowledge.
C. Demonstrate self-assessment and self-directed learning skills by identifying areas of self-improvement and addressing them with resources available.
D. Develop, implement, and monitor a personal continuing-education strategy.
E. Facilitate learning for patients, medical trainees/students, and other healthcare professionals.

Professional
A. Deliver care of the highest quality with integrity, honesty, and compassion.
B. Demonstrate the maturity and responsibility expected of all professionals.
C. Exhibit appropriate personal and interpersonal professional behavior.
D. Practice medicine that is ethically consistent with the obligations of a physician.

Note: The EMRTP resident in this rotation is not expected or required to cover cardiology clinics or outpatient departments (OPDs). This is not a cardiology rotation but an intensive cardiac care unit rotation. Attending the ECHO, ECG, and cardiac catheterization laboratories is acceptable. However, the main bulk of the education in this round should come from the intensive care unit (ICU).

EMERGENCY MEDICAL SERVICES (EMS) ROTATION
Objective:
The main objective of the EMS rotation is to give the EMRTP resident the feel of what prehospital care is all about. In this rotation, the resident learns about the structure of the EMS system, the logic behind the operational command center, and how transportation medicine is practiced. Far from the comfort and safety of the ED, where equipment, personnel, and medications are readily available, the prehospital setting presents residential and EMS practitioners with unique challenges.
This rotation reflects the essence of being the first responder at a medical emergency. Often, what the paramedics do or do not do within the first few minutes of response probably have the greatest impact on the victim’s outcome. The resident in this rotation is expected to ride along and observe first response being carried out. Trauma victims differ from medical victims, and while both are medical emergencies, they are managed in very different ways.

The EMS rotation is the gateway to disaster medicine, should the resident wish to pursue such a fellowship in the future. However, learning the techniques involved from victim extraction to transportation of a critical patient is a necessary component of the education of the emergency medicine physician.

**Medical Expert**

A. Demonstrate diagnostic and therapeutic skills for ethical and effective patient care.

B. Access and apply relevant information to clinical practice.

C. The emergency medicine resident should know the following:
   1. The development of EMS in Saudi Arabia
   2. The legislation affecting delivery of EMS
   3. Systems organization and design (components)
   4. The roles of the physician, dispatch, methods of communication, base hospital, and funding
   5. The medicolegal issues that involve EMS consent, DNR, and refusal of care
   6. Identify risk management issues in EMS
   7. Standards of care and quality assurance in the EMS
   8. How the EMS is integrated with regional disaster planning
   9. The relationship between the local EMS and the provincial and national structure
   10. Foreign models of EMS
   11. Management principles in disaster planning

D. The emergency medicine resident should be able to do the following:
   1. Function as the base hospital physician.
   2. Develop patient management protocols.
   3. Develop quality assurance methods.
   4. Demonstrate immobilization techniques.
   5. Demonstrate victim extraction.
   6. Evaluate the prehospital literature.
   7. Use communication equipment.
   8. Organize patient transfer.
   9. Act as an on-site physician in disaster exercises.
   10. Act as the ED triage physician in disaster exercises.
   11. Develop a disaster plan.
   12. Organize patient decontamination.
Communicator
A. Communicate effectively and compassionately with the patient and his/her family.
B. Obtain and synthesize relevant history from patients, families, and communities.
C. Listen effectively.
D. Discuss appropriate information with patients, their families, and the healthcare team.
E. Demonstrate quick, efficient, and effective handover of transported cases to facility personnel.

Collaborator
A. Understand the importance of a multidisciplinary team and interact effectively with physicians, nurses, and other healthcare professionals.
B. Contribute effectively to other interdisciplinary team activities.

Manager
A. Allocate finite healthcare resources wisely.
B. Use information technology to optimize patient care, lifelong learning, and other activities.
C. Use resources effectively to balance patient care, learning needs, and outside activities.
D. Work effectively and efficiently in an EMS system.
E. Understand the principles of quality assurance, risk management, and standards of care.

Health Advocate
A. Identify the important determinants of health that affect patients.
B. Demonstrate an understanding of the bioethical issues that affect patients.
C. Contribute effectively to the improvement of the health of patients and communities.
D. Understand various approaches to healthcare advocacy and policy change.
E. Recognize and respond to issues for which advocacy is appropriate.

Scholar
A. Apply best practice, based on critical appraisal of relevant literature, to patient care decisions.
B. Contribute to the development of new knowledge.
C. Demonstrate self-assessment and self-directed learning skills by identifying areas of self-improvement and addressing them with the resources available.

D. Develop, implement, and monitor a personal continuing-education strategy.

Professional
A. Deliver care of the highest quality with integrity, honesty, and compassion.

B. Demonstrate the maturity and responsibility expected of all professionals.

C. Exhibit appropriate personal and interpersonal professional behavior.

D. Practice medicine that is ethically consistent with Islam and the obligations of a physician.

HAJJ MISSION - ROTATION
Objective:
The main objective of the Hajj Mission is to provide the EMRTP resident with a multitude of perspectives. This is the only rotation of its kind available to emergency physicians on a regular basis. Hajj is unique to this country; therefore, no other program in the world provides emergency medicine residents with the opportunity to participate in a mass-gathering rotation.

The challenges brought about by the Hajj mission rotation include the following:

- Exposure of the EMRTP resident to a substantial number of patients within a compressed period, with long shift hours, 24-hour on-call coverage, and no rest day between shifts
- Exposure of the EMRTP resident to the nearest thing to disaster management
- It is a true mass-gathering rotation
- Working as a senior consultant in managing the entire ED rather than concentrating on single cases
- Extremely high turnover of critical care patients who require multiple lifesaving interventions
- Delivering medical care to patients with language barriers
- Management of very finite medical and human resources

The Hajj Mission represents an opportunity for EMRTP residents to attempt to manage entire ED departments, serving thousands of patients with varying illness acuity and medical needs, within a few short days. Often with considerable language barriers and no continuity of care, sophisticated laboratory tests, or scans, residents are required to deliver high-quality medical
care. This is the only rotation that feels unlike a clinical rotation but akin to a group outing or a camping trip, putting the EMRTP residents’ newly honed skills to the test to an extreme degree, in the hope that they will become emergency medicine physicians.

**Medical Expert**

A. Demonstrate diagnostic and therapeutic skills in ethical and effective patient care.

B. Access and apply relevant information to clinical practice.

C. Demonstrate effective consultation services with respect to patient care, education, and legal opinion.

D. The emergency medicine resident should know the following:
   1. The principles and inherent underlying difficulties of medical practice in Hajj
   2. The principles of trauma resuscitation, stabilization, and disposition
   3. The presentation and pathophysiology of the unknown pilgrim presenting to the ED with a serious illness
   4. Principles of “treat and release” medical practice
   5. The indications, limitations, mechanism of action, interactions, and complications of pharmacologic agents
   6. The indications, techniques, and complications of manipulative procedural skills
   7. Management and ED flow facilitation and control and when to declare a state of disaster
   8. Principles of mass-gathering medicine
   9. Difficult transport logistics and pharmacological and equipment limitations
   10. Principles of coordination with the EMS, civil defense, and military services during Hajj time

E. The emergency medicine resident should be able to do the following:
   1. Perform a clinical assessment and collect all appropriate information.
   2. Assess and develop appropriate differential diagnoses for specific and generalized clinical presentations.
   3. Demonstrate the required manipulative and procedural skills in the management of the acutely ill patient.
   4. Make use of interpreters to overcome language barriers.
   5. Identify the need for prompt consultation, admission, and transfer of patients presenting to the ED.
   6. Set priorities and initiate resuscitation, stabilization, investigation, and disposition of traumatized and critically ill patients.
7. Demonstrate the following techniques:
   a. Airway management, rapid sequence induction, and difficult intubation
   b. Analgesia (Procedural sedation)
   c. Surgical airway
   d. Anesthesia (local and nerve blocks)
   e. Bladder catheterization/irrigation
   f. Cardiopulmonary resuscitation at ACLS level
   g. Manage multisystem trauma at Advanced Trauma Life Support (ATLS) course level
   h. Chest decompression
   i. Emergency chest tube insertion
   j. Mega code team leadership
   k. ED crisis management
   l. Emergency delivery
   m. Epistaxis management
   n. Lumbar puncture
   o. Fractures: stabilization, reduction, and immobilization
   p. Naso and orogastric tube insertion
   q. Joint aspiration
   r. Joint dislocation: reduction and immobilization
   s. Wound management: abscess or infection, animal or human bites, local anesthesia, and suturing
   t. Central line insertion using landmarks, under US guidance for arterial access

**Communicator**
A. Communicate effectively and compassionately with the patient and his/her family directly or through an interpreter.
B. Establish therapeutic relationships with patients and their families.
C. Obtain and synthesize relevant history from patients, families, and communities.
D. Discuss appropriate information with patients, their families, and the healthcare team.

**Collaborator**
A. Understand the importance of a multidisciplinary team and interact effectively with physicians, nurses, and other healthcare professionals.
B. Consult effectively with other physicians and healthcare professionals.
C. Contribute effectively to other interdisciplinary team activities.
Manager
A. Allocate finite healthcare resources wisely.
B. Use information technology to optimize patient care, lifelong learning, and other activities.
C. Use resources effectively to balance patient care, learning needs, and outside activities.
D. Work effectively and efficiently in a healthcare organization.
E. Understand the principles of quality assurance, risk management, and standards of care.

Health Advocate
A. Identify the important determinants of health that affect patients.
B. Demonstrate an understanding of the bioethical issues that affect patients on their religious journeys.
C. Contribute effectively to the improvement of the health of patients and communities.
D. Understand various approaches to healthcare advocacy and policy change.
E. Recognize and respond to issues for which advocacy is appropriate.

Scholar
A. Apply best practice, based on critical appraisal of relevant literature, to patient care decisions.
B. Demonstrate self-assessment and self-directed learning skills by identifying areas of self-improvement and addressing them with the resources available.
C. Develop, implement, and monitor a personal continuing-education strategy.
D. Facilitate learning for patients, medical trainees/students, and other healthcare professionals.

Professional
A. Deliver care of the highest quality with integrity, honesty, and compassion.
B. Demonstrate respect for cultural and religious laws held dear by Hajji patients.
C. Be prepared for exposure to working long hours during disasters and in understaffed areas to maintain the functions of the ED in a reasonable and appropriate manner.
D. Demonstrate the maturity and responsibility expected of all professionals.
E. Exhibit appropriate personal and interpersonal professional behavior.
F. Accommodate and apply medical ethics through Islamic law and regulations in this unique environment.
ADULT INTENSIVE CARE ROTATION

Objective:
The main objective of the intensive care unit (ICU) rotation is to provide the EMRTP resident with an opportunity to manage critical care patients following admission. The rotation also aims to allow residents to experience the continuity of care and complications that might arise in ED management, in cases such as sepsis, trauma, and ARDS, first hand.

Attending ICU rounds provides the resident with the opportunity to learn and understand how invasive monitoring is performed and patients are assessed for intubation and extubation. Learning the mechanics and waveforms of mechanical ventilation is an aspect that is somewhat unique to this rotation and a very valuable skill later on. The ICU rotation is rich in procedures that the resident can perform and use to improve his/her skills through a widely diverse range of cases, and high turnover; therefore, EMRTP residents are scheduled to undertake this rotation once during one of the junior years and once during one of the senior years. ICU training is one of the rotations that provide significant knowledge and practice potential to EMRTP residents on the way to becoming emergency medicine physicians.

Medical Expert
A. Demonstrate diagnostic and therapeutic skills for ethical and effective patient care.
B. Access and apply relevant information to clinical practice.
C. Demonstrate effective consultation services with respect to patient care, education, and legal opinion.
D. The emergency medicine resident should know the following:
   1. Principles of resuscitation
   2. Airway management in the critically ill
   3. Principles of invasive monitoring
   4. Fluid resuscitation
   5. Management of a cardiac arrest team
   6. Management of shock and multisystem disease and failure
   7. Mechanical ventilation in the critically ill
   8. Disease processes necessitating admission to a critical care unit (e.g., trauma, toxicology, or environmental processes)
   9. The pharmacology of resuscitation, sedation, and critical care
   10. Principles of infection in the critically ill and administration of antimicrobial therapy
   11. Assessment of clinical criteria to increase the possibility of successful extubation
   12. Assessment of brain death criteria and end-of-life care and protocols
13. The medicolegal issues pertaining to the release of medical information, informed consent, implied consent, and power of attorney in medical decision making regarding incapacitated patients in the context of Islamic law regarding incapacitated patients.

E. The resident should be able to demonstrate the following techniques:
   1. Perform a clinical assessment and collect all appropriate information.
   2. Document the progression of the patient’s clinical condition.
   3. Develop appropriate differential diagnoses for specific clinical presentations.
   4. Ascertain the need for admission or transfer to a critical care unit.
   5. Demonstrate continuity of care, development of discharge plans, and patient transfer to step-down units.
   6. Choose the appropriate laboratory and radiological investigations to meet the immediate needs of the critically ill or injured patient.
   7. Interpret data collected from laboratory and radiological investigations.
   8. Interpret data from both noninvasive and invasive monitoring.
   9. Initiate the resuscitation, stabilization, and investigation of seriously ill patients.
   10. Demonstrate the following techniques:
       a. ECG interpretation
       b. Defibrillation and cardioversion
       c. Central venous access using landmarks, under US guidance for arterial access
       d. Endotracheal intubation
       e. Arterial access
       f. Arterial monitoring
       g. Pericardiocentesis
       h. Pacemaker insertion
       i. Chest tube insertion
       j. Tracheostomy insertion

**Communicator**

A. Communicate effectively and compassionately with the patient and his/her family.
B. Establish therapeutic relationships with patients and their families.
C. Obtain and synthesize relevant history from patients, families, and communities.
D. Listen effectively.
E. Discuss appropriate information with patients, their families, and the healthcare team.
Collaborator
A. Understand the importance of a multidisciplinary team and interact effectively with physicians, nurses, and other healthcare professionals.
B. Consult effectively with other physicians and healthcare professionals.
C. Contribute effectively to other interdisciplinary team activities.

Manager
A. Allocate finite healthcare resources wisely.
B. Understand the basic principles of quality assurance and risk management issues.
C. Use information technology to optimize patient care, lifelong learning, and other activities
D. Use resources effectively to balance patient care, learning needs, and outside activities.
E. Work effectively and efficiently in a healthcare organization.

Health Advocate
A. Identify the important determinants of health that affect patients.
B. Demonstrate an understanding of the bioethical issues that affect patients.
C. Contribute effectively to the improvement of the health of patients and communities.
D. Understand various approaches to healthcare advocacy and policy change.
E. Recognize and respond to issues for which advocacy is appropriate.

Scholar
A. Apply best practice, based on critical appraisal of relevant literature, to patient care decisions.
B. Contribute to the development of new knowledge.
C. Demonstrate self-assessment and self-directed learning skills by identifying areas of self-improvement and addressing them with the resources available.
D. Develop, implement, and monitor a personal continuing-education strategy.
E. Facilitate learning for patients, medical trainees/students, and other healthcare professionals.

Professional
A. Deliver care of the highest quality with integrity, honesty, and compassion.
B. Demonstrate the maturity and responsibility expected of all professionals.
C. Exhibit appropriate personal and interpersonal professional behavior.
D. Practice medicine that is ethically consistent with the obligations of a physician.
E. Demonstrate an understanding of the following:
   1. End-of-life care and how it is applied in the critical care setting
   2. The role of substitute decision maker and how this is applied to the care of incapacitated patients

NEUROSCIENCE ROTATION

Objective:
The main objective of the neuroscience rotation is to provide the EMRTP resident with exposure to the assessment and management of the neurological patient. The neurological physical exam has its subtleties and tricks. This rotation provides the training resident with an opportunity to become very familiar with performing the neurological exam in a systematic way. It also provides a good tutoring forum for understanding, reading, and interpreting neurological scans such as computerized tomography (CT) and magnetic resonance imaging scans of the head. In this rotation, the resident should work on perfecting his/her understanding of neuroanatomy and the clinical presentation of neurological disease.

Exposure to the neurosurgical patient in the neurological ICU is also incorporated into this rotation. The issues involved in the management of intracranial pressure, practice of lumbar puncture, and interpretation of laboratory analysis of cerebrospinal fluid (CSF) are fundamental to the training of the emergency medicine physician.

Medical Expert
A. Demonstrate diagnostic and therapeutic skills for ethical and effective patient care.
B. Access and apply relevant information to clinical practice.
C. Demonstrate effective consultation services with respect to patient care, education, and legal opinion.
D. The emergency medicine resident should know the following:

   1. The principles of neuroanatomy and neurophysiology
   2. The presentation and pathophysiology of acute disorders of the central nervous system (CNS) in adult, pediatric, and geriatric patients
   3. The indications, contraindications, and complications of radiological and CSF assessment modalities
   4. The mechanisms of action and pathophysiology of trauma to the head, axial skeleton, and appendicular skeleton
   5. The effects of acute disorders of other body systems in the presentation of neurological and neurosurgical conditions
6. The effects of toxicological and environmental disorders in the presentation of neurological and neurosurgical conditions
7. The principles of pharmaceutical agents in the assessment and treatment of neurological and neurosurgical disorders
8. Clinical measurement and severity scales
9. The guidelines for brain death

E. The emergency medicine resident should be able to do the following:
   1. Perform a clinical assessment of a patient with a neurological problem and collect all appropriate information.
   2. Interpret radiological and CSF assessment modalities.
   3. Assess and monitor intracranial shunt function and pressure.
   4. Immobilize the axial skeleton.
   5. Initiate control of raised intracranial pressure.
   6. Perform a lumbar puncture.
   7. Resuscitate, prioritize, and stabilize patients presenting with acute neurological emergencies.
   8. Resuscitate, prioritize, and stabilize patients presenting with trauma to the head, axial skeleton, or appendicular skeleton.

Communicator
A. Communicate effectively and compassionately with the patient and his/her family.
B. Establish therapeutic relationships with patients and their families.
C. Obtain and synthesize relevant history from patients, families, and communities.
D. Listen effectively.
E. Discuss appropriate information with patients, their families, and the healthcare team.

Collaborator
A. Understand the importance of a multidisciplinary team and interact effectively with physicians, nurses, and other healthcare professionals.
B. Consult effectively with other physicians and healthcare professionals.
C. Contribute effectively to other interdisciplinary team activities.

Manager
A. Allocate finite healthcare resources wisely.
B. Use information technology to optimize patient care, lifelong learning, and other activities.
C. Use resources effectively to balance patient care, learning needs, and outside activities.
D. Work effectively and efficiently in a healthcare organization.
E. Understand the principles of quality assurance, risk management, and standards of care.

Health Advocate
A. Identify the important determinants of health that affect patients.
B. Demonstrate an understanding of the bioethical issues that affect patients.
C. Contribute effectively to the improvement of the health of patients and communities.
D. Understand various approaches to healthcare advocacy and policy change.
E. Recognize and respond to issues for which advocacy is appropriate.

Scholar
A. Apply best practice, based on critical appraisal of relevant literature, to patient care decisions.
B. Contribute to the development of new knowledge through involvement in medical research pertaining to the specialty.
C. Demonstrate self-assessment and self-directed learning skills by identifying areas of self-improvement and addressing them with the resources available.
D. Develop, implement, and monitor a personal continuing-education strategy.
E. Facilitate learning for patients, medical trainees/students, and other healthcare professionals.

Professional
A. Deliver care of the highest quality with integrity, honesty, and compassion.
B. Demonstrate the maturity and responsibility expected of all professionals.
C. Exhibit appropriate personal and interpersonal professional behavior.
D. Practice medicine that is ethically consistent with Islam and the obligations of a physician.

Note: The EMRTP resident in this rotation is not qualified, expected, or required to cover the neurology or neurosurgery clinics or OPD.

OBSTETRICS AND GYNECOLOGY ROTATION
Objective:
The main objective of the OBGYN rotation is to train the EMRTP resident in the techniques of childbirth and delivery. Learning to assess the stages of labor and
the clinical condition of the patient undergoing delivery is an essential skill. In the labor room, the training resident will learn how to deal with clinical scenarios, such as breech delivery, shoulder dystocia, and obstructed labor, first hand. Management of obstetric emergencies, such as postpartum hemorrhage, cervical laceration, and uterine atony can be learned from experts in this field of medicine. Training to perform episiotomy and repair and learning how to deal with gynecological emergencies, such as hyperstimulation syndrome, are vital to the emergency medicine physician’s education.

**Medical Expert**

A. Demonstrate diagnostic and therapeutic skills for ethical and effective patient care.

B. Access and apply relevant information to clinical practice.

C. Demonstrate effective consultation services with respect to patient care, education, and legal opinion.

D. The emergency medicine resident should know the following:
   1. Principles of the anatomy and physiology of the urogenital tract
   2. Pathophysiology of obstetrical and gynecological disorders
   3. Principles of resuscitation and stabilization of the pregnant patient
   4. Indications and limitations of investigative modalities
   5. Indications, mechanism of action, and interactions of pharmacologic agents in genital tract disorders
   6. Drug effects in pregnancy, breastfeeding, and uterine motility
   7. Principles of fertility and contraception
   8. Principles of menstruation

E. The emergency medicine resident should be able to do the following:
   1. Perform a clinical assessment of a patient with a urogenital problem and collect all appropriate information.
   2. Assess and initiate management of the pregnant patient with the following:
      a. Trauma
      b. Preeclampsia or eclampsia
      c. Assessment of the patient in labor
   3. Perform episiotomy
   4. Perform episiotomy repair
   5. Recognize and initiate the management of the following complications during labor and delivery:
      a. Premature labor
      b. Premature rupture of the membranes
      c. Placenta previa
      d. Abruptio placenta
6. Perform uncomplicated deliveries
7. Initiate management and investigation of the following:
   a. Abnormal vaginal bleeding
   b. Amenorrhea
   c. Vaginal discharge
   d. Dysmenorrhea
   e. Dyspareunia
   f. Vaginal foreign bodies
   g. Pelvic mass
   h. Pelvic pain
   i. Ectopic pregnancy
   j. Sexually transmitted diseases

**Communicator**
A. Communicate effectively and compassionately with the patient and his/her family.
B. Establish therapeutic relationships with patients and their families.
C. Obtain and synthesize relevant history from patients, families, and communities.
D. Listen effectively.
E. Discuss appropriate information with patients, their families, and the healthcare team.

**Collaborator**
A. Understand the importance of a multidisciplinary team and interact effectively with physicians, nurses, and other healthcare professionals.
B. Consult effectively with other physicians and healthcare professionals.
C. Contribute effectively to other interdisciplinary team activities.

**Manager**
A. Allocate finite healthcare resources wisely.
B. Use information technology to optimize patient care, lifelong learning, and other activities.
C. Use resources effectively to balance patient care, learning needs, and outside activities.
D. Work effectively and efficiently in a healthcare organization.
E. Understand the principles of quality assurance, risk management, and standards of care.

Health Advocate
A. Identify the important determinants of health that affect patients.
B. Demonstrate an understanding of the bioethical issues that affect patients.
C. Contribute effectively to the improvement of the health of patients and communities.
D. Understand various approaches to healthcare advocacy and policy change.
E. Recognize and respond to issues for which advocacy is appropriate.
F. Demonstrate an understanding of support services in the community, such as home care and primary healthcare center services, for patients being discharged from the ED.

Scholar
A. Apply best practice, based on critical appraisal of relevant literature, to patient care decisions.
B. Contribute to the development of new knowledge through involvement in medical research pertaining to the specialty.
C. Demonstrate self-assessment and self-directed learning skills by identifying areas of self-improvement and addressing them with the resources available.
D. Develop, implement, and monitor a personal continuing-education strategy.
E. Facilitate learning for patients, medical trainees/students, and other healthcare professionals.

Professional
A. Deliver care of the highest quality with integrity, honesty, and compassion.
B. Demonstrate respect for the cultural and religious beliefs of patients with regard to male physicians assessing OBGYN patients.
C. Demonstrate the maturity and responsibility expected of all professionals.
D. Exhibit appropriate personal and interpersonal professional behavior.
E. Practice medicine that is ethically consistent with Islam and the obligations of a physician.

Note: The EMRTP resident in this rotation is not qualified, expected, or required to cover the OBGYN clinics or OPD.

ORTHOPEDIC SURGERY ROTATION
Objective:
The main objective of the orthopedic rotation is to train the EMRTP resident in the techniques of fracture assessment and management. In this rotation, the
resident should work on perfecting his/her orthopedic examination technique, which has been generally found to be a weak point for most residents. In this rotation, the trainee should become proficient in reading plain radiographs and describing the fractures they show. Reduction of dislocations and closed fractures is a basic skill that is very often needed in the ED. The resident should learn how to examine joints, muscle groups, and the axial skeleton. Immobilization methods and techniques and anticipation of complications, such as compartment syndrome, avascular necrosis, and malunion, must also be learned and constitute a vital part of the skills possessed by the emergency physician.

Medical Expert
A. Demonstrate diagnostic and therapeutic skills for ethical and effective patient care.
B. Access and apply relevant information to clinical practice.
C. Demonstrate effective consultation services with respect to patient care, education, and legal opinion.
D. The emergency medicine resident should know the following:
   1. Principles of the anatomy and physiology of the musculoskeletal system
   2. Mechanisms of injury in trauma to specific anatomical areas
   3. Principles of healing in bone, tendon, muscle, and ligament injuries
   4. Pathogenesis and pathophysiology of infectious and inflammatory disorders of the musculoskeletal system
   5. Presentation of syndromes of the axial skeleton and appendicular skeleton
   6. Presentation of muscle disorder syndromes
   7. Recognition and management of limb-threatening conditions
   8. Principles of pharmacological agents in musculoskeletal and rheumatologic disorders
   9. Classification of fractures and dislocation
   10. Manifestations of trauma in pediatrics
   11. Manifestation of musculoskeletal syndromes in pediatrics
   12. Manifestation of injuries in the athlete
   13. Early and late sequelae of injuries to the musculoskeletal system
   14. Principles of ED management of fractures and dislocations
   15. Complications of immobilization
   16. The principles of rehabilitation

E. The emergency medicine resident should be able to do the following:
   1. Perform a clinical assessment and collect all appropriate information.
   2. Evaluate specific symptoms and signs that occur in the following:
      a. Disease states
b. Injury to the musculoskeletal system

3. Select the most appropriate imaging and laboratory investigations for the identification of the following:
   a. Musculoskeletal injuries
   b. Occult fractures
   c. Compound fractures
   d. Pathological fractures

4. Assess the risk of associated injuries in patients with multiple trauma or trauma to defined anatomical areas.

5. Set priorities and direct the initial management of the multiply traumatized patient.

6. Demonstrate the following techniques:
   a. Stabilization of fractures and dislocations pending investigation
   b. Reduction of simple fractures and dislocations
   c. Immobilization of axial and appendicular fractures
   d. Joint aspiration

**Communicator**
A. Communicate effectively and compassionately with the patient and his/her family.
B. Establish therapeutic relationships with patients and their families.
C. Obtain and synthesize relevant history from patients, families, and communities.
D. Listen effectively.
E. Discuss appropriate information with patients, their families, and the healthcare team.

**Collaborator**
A. Understand the importance of a multidisciplinary team and interact effectively with physicians, nurses, and other healthcare professionals.
B. Consult effectively with other physicians and healthcare professionals.
C. Contribute effectively to other interdisciplinary team activities.

**Manager**
A. Allocate finite healthcare resources wisely.
B. Use information technology to optimize patient care, lifelong learning, and other activities.
C. Use resources effectively to balance patient care, learning needs, and outside activities.
D. Work effectively and efficiently in a healthcare organization.
E. Understand the principles of quality assurance, risk management, and standards of care.
**Health Advocate**
A. Identify the important determinants of health that affect patients.
B. Demonstrate an understanding of the bioethical issues that affect patients.
C. Contribute effectively to the improvement of the health of patients and communities.
D. Understand various approaches to healthcare advocacy and policy change.
E. Recognize and respond to issues for which advocacy is appropriate.

**Scholar**
A. Apply best practice, based on critical appraisal of relevant literature, to patient care decisions.
B. Contribute to the development of new knowledge through involvement in medical research pertaining to the specialty.
C. Demonstrate self-assessment and self-directed learning skills by identifying areas of self-improvement and addressing them with the resources available.
D. Develop, implement, and monitor a personal continuing-education strategy.
E. Facilitate learning for patients, medical trainees/students, and other healthcare professionals.

**Professional**
A. Deliver care of the highest quality with integrity, honesty, and compassion.
B. Demonstrate the maturity and responsibility expected of all professionals.
C. Exhibit appropriate personal and interpersonal professional behavior.
D. Practice medicine that is ethically consistent with Islam and the obligations of a physician.

Note: The EMRTP resident in this rotation is not qualified, expected, or required to cover the orthopedics clinics or OPD.

**PEDIATRIC EMERGENCY MEDICINE ROTATION**

**Objective:**
The main objective of the pediatric emergency medicine rotation is to expose the EMRTP resident to a subspecialty of emergency medicine. In this rotation, the resident intensifies his/her exposure to the pediatric demographic of the patients who present to the ED. This allows the resident to improve on and modify his/her thought processes regarding forming differential diagnoses according to the age of the patient, underlying etiology, avenues of management, and subsequent complications. Pediatric patients are not merely small adults; they present with different
problems, pose different challenges, and have requirements that differ from those of adults. The resident must make use of this rotation to improve his/her ability to assess, diagnose, and treat these patients. Pediatric emergency is therefore an essential part of the emergency medicine physician's training.

**Medical Expert**

A. Demonstrate diagnostic and therapeutic skills for ethical and effective patient care.
B. Access and apply relevant information to clinical practice.
C. Demonstrate effective consultation services with respect to patient care, education, and legal opinion.
D. The emergency medicine resident should know the following:
   1. Growth and development milestones of children
   2. Clinical measurements of dehydration and volume depletion
   3. Causes, forms, and pathophysiology of fluid and electrolyte disorders
   4. Calculations for the correction of fluid and electrolyte disorders
   5. Calculation for correction of acid/base abnormalities
   6. Pharmacology and dosage calculation for resuscitation drugs
   7. Pathophysiology of acute pediatric disorders according to body system
   8. Etiology and complications of common congenital and developmental syndromes
   9. Pathophysiology and pharmacokinetics of toxicological syndromes
   10. Pharmacology and dosage for antidotes
   11. Pathophysiology of infectious disorders
   12. Pharmacology and dosage for antibiotics
   13. Immunization: timing, efficacy, and side effects
   14. Causes of immune deficiency and compromise in children
   15. Prophylaxis for infectious diseases
   16. Presentation of anemia and purpura.
   17. Presentation of common malignancies
   18. Access to social agencies for psychosocial disorders
   19. Assessment of cardiopulmonary emergencies in children
   20. Assessment management in pediatric trauma
   21. Risk factors for child abuse, deprivation, and family dysfunction
   22. Reporting responsibilities and SCAN team activation in suspected child abuse or neglect

e. The emergency medicine resident should be able to do the following:
   1. Perform clinical assessment of an ill or injured child and collect all appropriate information.
   2. Screen patients for procedural sedation and administer procedural sedation in a safe and monitored environment for appropriate patients.
3. Develop differential diagnoses for specific clinical presentations in the infant or child
4. Initiate management of toxicological syndromes, infectious disorders, and acute disorders of body systems
5. Initiate management of issues related to child abuse, deprivation, or family dysfunction
6. Choose the appropriate laboratory and radiological investigations to meet the immediate needs of the critically ill or injured child
7. Recognize common congenital and developmental syndromes
8. Recognize and measure normal and abnormal vital signs
9. Recognize and treat symptoms of the following:
   a. Airway obstruction
   b. Abnormal ventilation
   c. Volume depletion
   d. Burns
   e. Trauma
10. Initiate resuscitation in a neonate, infant, or child
11. Initiate management of single or multisystem trauma

F. Perform manipulative and diagnostic procedures required for the ill or injured child, including the following:
   1. Arterial access
   2. Chest decompression
   3. Resuscitation at PALS level
   4. Advanced airway management, RSI, and difficult intubation
   5. Facial trauma
   6. Foreign bodies
   7. External auditory canal curettage
   8. Fracture reduction and immobilization
   9. Lumbar puncture
   10. Venous access
   11. Intraosseous access
   12. Wound management

**Communicator**

A. Communicate effectively and compassionately with the patient and his/her family.
B. Establish therapeutic relationships with patients and their families.
C. Obtain and synthesize relevant history from patients, families, and communities.
D. Listen effectively.
E. Discuss appropriate information with patients, their families, and the healthcare team.
Collaborator
A. Understand the importance of a multidisciplinary team and interact effectively with physicians, nurses, and other healthcare professionals.
B. Consult effectively with other physicians and healthcare professionals.
C. Contribute effectively to other interdisciplinary team activities.

Manager
A. Allocate finite healthcare resources wisely.
B. Use information technology to optimize patient care, lifelong learning, and other activities.
C. Use resources effectively to balance patient care, learning needs, and outside activities.
D. Work effectively and efficiently in a healthcare organization.
E. Understand the principles of quality assurance, risk management, and standards of care.

Health Advocate
A. Identify the important determinants of health that affect patients.
B. Demonstrate an understanding of the bioethical issues that affect patients.
C. Contribute effectively to the improvement of the health of patients and communities.
D. Understand various approaches to healthcare advocacy and policy change.
E. Recognize and respond to issues for which advocacy is appropriate.

Scholar
A. Apply best practice, based on critical appraisal of relevant literature, to patient care decisions.
B. Contribute to the development of new knowledge through involvement in medical research pertaining to the specialty.
C. Demonstrate self-assessment and self-directed learning skills by identifying areas of self-improvement and addressing them with the resources available.
D. Develop, implement, and monitor a personal continuing-education strategy.
E. Facilitate learning for patients, medical trainees/students, and other healthcare professionals.

Professional
A. Deliver care of the highest quality with integrity, honesty, and compassion.
B. Demonstrate the maturity and responsibility expected of all professionals.
C. Exhibit appropriate personal and interpersonal professional behavior.
D. Practice medicine that is ethically consistent with Islam and the obligations of a physician.
E. Understand the medicolegal issues pertaining to the release of medical information, informed consent, implied consent, and parents’ and legal guardians’ rights in medical decision making in the context of Islamic law regarding minors in need of emergency care.

PEDIATRIC/NEONATAL INTENSIVE CARE ROTATION

Objective:
The main objective of the pediatric/neonatal intensive care (PICU) rotation is to expose the EMRTP resident to critically ill pediatric patients. PICU patients differ from adult patients in intensive care units. In this section, the disease and its natural course have different implications for the patient. Congenital and metabolic diseases are two major factors to consider when managing this population. Appreciation of the differences between adult and pediatric patients is brought into focus in this rotation. Continuing medical care for patients transferred from the pediatric ED is provided here. Mechanical ventilation knowledge is reinforced, with the addition of further techniques such as the high-frequency oscillating ventilator and its applications in pediatric cases. The experience and knowledge gained in this rotation is invaluable in the emergency medicine physician’s training.

Medical Expert
A. Demonstrate diagnostic and therapeutic skills for ethical and effective patient care.
B. Access and apply relevant information to clinical practice.
C. Demonstrate effective consultation services with respect to patient care, education, and legal opinion.
D. The emergency medicine resident should know the following:
   1. Principles of resuscitation
   2. Airway management in the critically ill child or neonate
   3. Principles of invasive monitoring
   4. Fluid resuscitation
   5. Management of a cardiac arrest team
   6. Management of shock and multisystem disease and failure
   7. Mechanical ventilation in the critically ill child or neonate
   8. Assessment of congenital and syndromic abnormalities
   9. Disease processes necessitating admission to a critical care unit (e.g., trauma, toxicology, or environmental processes)
   10. The pharmacology of resuscitation, sedation, and critical care
   11. Principles of infection in the critically ill and administration of antimicrobial therapy
12. Assessment of clinical criteria to increase the possibility of successful extubation
13. Assessment of brain death criteria and end-of-life care and protocols
14. Assessment of suspected child abuse or neglect and activation of the SCAN team
15. The medicolegal issues pertaining to the release of medical information, informed consent, implied consent, and parents’ and legal guardians’ rights in medical decision making in the context of Islamic law regarding minors in critical condition
16. Differences between adult and pediatric critical care in terms of physiological, clinical, and epidemiological presentation and etiology

E. The resident should be able to demonstrate the following techniques:
   1. Perform a clinical assessment and collect all appropriate information.
   2. Document the progression of the patient’s clinical condition.
   3. Develop appropriate differential diagnoses for specific clinical presentations.
   4. Ascertain the need for admission or transfer to a critical care unit.
   5. Demonstrate continuity of care, development of discharge plans, and patient transfer to step-down units.
   6. Choose the appropriate laboratory and radiological investigations to meet the immediate needs of the critically ill or injured child.
   7. Interpret data collected from laboratory and radiological investigations.
   8. Interpret data from noninvasive and invasive monitoring.
   9. Initiate the resuscitation, stabilization, and investigation of seriously ill patients.
10. Demonstrate the following techniques:
    a. ECG interpretation
    b. Defibrillation/cardioversion
    c. Central venous access using landmarks, under US guidance for arterial access
    d. Intraosseous line insertion
    e. Endotracheal intubation
    f. Arterial Access
    g. Arterial monitoring
    h. Chest tube insertion
    i. Tracheostomy insertion

**Communicator**

A. Communicate effectively and compassionately with the patient and his/her family.
B. Establish therapeutic relationships with patients and their families.
C. Obtain and synthesize relevant history from patients, families, and communities.
D. Listen effectively.
E. Discuss appropriate information with patients, their families, and the healthcare team.

Collaborator
A. Understand the importance of a multidisciplinary team and interact effectively with physicians, nurses, and other healthcare professionals.
B. Consult effectively with other physicians and healthcare professionals.
C. Contribute effectively to other interdisciplinary team activities.

Manager
A. Allocate finite healthcare resources wisely.
B. Understand the basic principles of quality assurance and risk management issues.
C. Use information technology to optimize patient care, lifelong learning, and other activities
D. Use resources effectively to balance patient care, learning needs, and outside activities.
E. Work effectively and efficiently in a healthcare organization.

Health Advocate
A. Identify the important determinants of health that affect patients.
B. Demonstrate an understanding of the bioethical issues that affect patients
C. Contribute effectively to the improvement of the health of patients and communities.
D. Understand various approaches to healthcare advocacy and policy change
E. Recognize and respond to issues for which advocacy is appropriate.

Scholar
A. Apply best practice, based on critical appraisal of relevant literature, to patient care decisions.
B. Contribute to the development of new knowledge.
C. Demonstrate self-assessment and self-directed learning skills by identifying areas of self-improvement and addressing them with the resources available.
D. Develop, implement, and monitor a personal continuing-education strategy.
E. Facilitate learning for patients, medical trainees/students, and other healthcare professionals.
Professional
A. Deliver care of the highest quality with integrity, honesty, and compassion.
B. Demonstrate the maturity and responsibility expected of all professionals
C. Exhibit appropriate personal and interpersonal professional behavior.
D. Practice medicine that is ethically consistent with obligations of a physician.
E. Demonstrate an understanding of the following:
   1. End-of-life care and how it is applied in the critical care setting.
   2. The role of substitute decision maker and how this is applied to the care of incapacitated children or neonates

PSYCHIATRY ROTATION
Objective:
Emergency medicine residents are required to complete a one-month rotation in psychiatry during the first year. The purpose of this rotation is to expand the resident’s knowledge base and the psychiatry skills learned in medical school and set the stage for further skill development during residency training in emergency medicine. The number of patients seen in the ED with psychiatric problems is ever increasing, and this is an essential component of the curriculum. They will spend time assessing patients in the ED on a regular, scheduled basis during both day shifts and nights on call, in addition to other daily duties and teaching sessions. It is also hoped that they will have the opportunity to further develop their interviewing skills during this rotation. Residents must study the rotational goals and objectives below. It is essential that the resident gain as much as possible from the rotation.

Medical Expert
A. Understand the major categories of psychiatric illness.
B. Learn relevant interviewing techniques in dealing with patients with various psychiatric disorders.
C. Develop familiarity with common psychopharmacologic agents.
D. Learn the principles of managing violent patients.
E. Develop knowledge regarding community support offered for patients with psychiatric illness.

Communicator
A. Demonstrate good interviewing skills in simple situations.
B. Demonstrate the ability to deal effectively with family members and other healthcare providers to facilitate optimal healthcare for the patient.
C. Demonstrate empathy and the ability to understand nonverbal cues.
D. Produce concise yet thorough charts that are legibly written and contain pertinent patient history, physical findings, clear diagnosis, a treatment plan, and follow-up.

Collaborator
A. Demonstrate effective skills in dealing with allied health professionals and medical staff from other services.

Health Advocate
A. Understand the clinical determinants of diseases that affect patients with mental illness.

Manager
A. Demonstrate the ability to manage individual patients throughout the entire hospital course effectively.
B. Develop multitasking skills.
C. Understand the importance of efficient patient flow.

Scholar
A. Complete the postgraduate research methodology course offered.
B. Explore scholarly interests (e.g., research idea, education).
C. Follow a personal study strategy: reading for junior house staff rounds, core rounds, and individual cases.
D. Recognize personal knowledge gaps.
E. Provide teaching and supervision for clinical clerks.

Professional
A. Prepare well for clinical and academic work.
B. Exhibit a professional demeanor (appearance, punctuality, and work ethic).
C. Exhibit the following qualities: reliability, honesty, maturity, respect for others, acceptance of constructive criticism, and sincere concern for others.

RESEARCH ROTATION
Objective:
Emergency medicine residents are required to complete a one-month rotation with a certified researcher or in a recognized research department or facility during the first two years of training. The purpose of this rotation is to expand the resident’s knowledge base and research skills and increase his/her
understanding of epidemiology and the use and interpretation of statistical data. During this rotation, the resident should be able to create and initiate a minimum of two research ideas and conduct research projects during his/her training years.

**Medical Expert**

A. Generate patient-centered clinical questions to drive knowledge acquisition when designing a research study, as follows:

1. Identify one’s knowledge deficiencies and develop a system for generating and answering clinical questions based on patient cases.
2. Use a standard format to phrase clinical questions (e.g., PICO = Patient/Problem, Intervention, Comparison Intervention, Outcome) to aid in the performance of an efficient literature search to assess what has already been studied.
3. Assess the type of question being asked in order to identify the type of study that would best answer the question.

B. Identify and locate the best available information resources to address one’s question in developing a research project, as follows:

2. Use methodological filters to limit searches to articles dealing with therapy, diagnosis, or prognosis.
3. Use secondary sources (e.g., Cochrane, CAT databases, or ACP Journal Club) to obtain evidence efficiently.
4. Use practice guidelines (e.g., www.guidelines.gov or American College of Emergency Physicians [ACEP] Practice Guidelines) to identify and review recommended care plans for a variety of common emergency medicine problems.

C. Select the appropriate study design with which to answer one’s question.

D. Know the indications that can compromise confidentiality with respect to IRB approval, including studies involving patients, patient medical records, and other data, specifically with respect to patients.

**Communicator**

A. Present one’s project as grand rounds or an academic or research day upon conclusion of the project.

B. Write a scientific abstract for potential submission to a regional or national research meeting (i.e., SCFHS, the Society for Academic Emergency Medicine [SAEM], ACEP, or CAEP).

C. Strive to write a scientific paper reporting the project upon its conclusion.

D. Complete final IRB reporting.
Collaborator
A. Discuss the project with an advisor and appropriate consultants including statisticians and other specialists in research design or scientific knowledge.

Health Advocate
A. Consider healthcare delivery, management of specific disease processes, screening for diseases, or other aspects of healthcare as areas to study.
B. Advocate for research to promote the understanding of various disease processes or means of delivering care.
C. Demonstrate an understanding of whether research is appropriate or inappropriate, considering the health of the patient and his/her understanding of the project.

Manager
A. Understand the cost of research.
B. Determine the best methods for performing research within the constraints of the residency and medical system.

Scholar
A. Compare one’s data to those previously collected and determine differences.
B. Read current literature to substantiate one’s findings.
C. Determine how one’s study can be applied to patient care and describe how patient care can be changed accordingly.

Professional
A. Respect patients’ privacy, with respect to medical information, when performing research.
B. Understand the function of an IRB and how it serves to protect patients.
C. Discuss the ethics of research, including subject recruitment, informed consent, patient privacy, and the role IRBs.
D. In research that involves seeking information from patients and their families, respect privacy when obtaining such information.
E. Be honest in reporting one’s data.
F. Present data in an aggregate manner to eliminate identification of specific patients in one’s report.
G. Submit one’s proposal to the IRB.
H. Complete the IRB test for ethics in research.
Clinical Rotation Structure

A. Program rotations and clinical experience
   1. The residents will rotate through different hospitals, as arranged by the local supervising committee.
   2. At each rotation, the resident will gain a unique experience in patient care in the emergency field.

B. Clinical duties
   1. These should comprise a significant part of the resident’s development and education.
   2. Sufficient time during which supervising consultants can teach and advise trainees must always be made available during the performance of these duties.
   3. The trainee should be able to conduct the common procedures carried out during the shift.
   4. Trainees should be involved in taking care of patients with illness of all severities.
   5. Senior trainees must run an ER shift under the direct supervision of the consultant.
   6. In each rotation, the trainee should gain the maximum benefit and meet the rotation goals and objectives.

C. Each resident must choose a minimum of two cases in which patients were hospitalized through the ED (regardless of ED site or location) and create a short case summary or report for each case, outlining the following:
   1. Door-to-door (admission-to-discharge) care, correct diagnosis, and the condition’s progression and complications
   2. Laboratory data and imaging used during admission and their indications and interpretation.
   3. Discharge and management planning during admission and after discharge
   4. In short format and summary, what are the differences or gaps in diagnosis and management, if any, between emergency medicine and inpatient care, why do they exist, and what are the suggested solutions to help to minimize such gaps?
   5. List a minimum of three new specific learning points related to the condition or the patient’s care and management plan.

Core Clinical Problem List and Representative Disease

Each disease, categorized according to core specialty level, should fall into one of the following four categories:

- Common (C)
- Treatable (T)
- Life, limb, vision threatening (L)
- Preventable (P)
Each core clinical problem is a cardinal sign or symptom in emergency medicine. They are categorized into:
- Core specialty level
- Mastery Level

**Core Specialty Level:** These are high-priority topics, and trainees are expected to attain competency in comprehensive management of these conditions during Years 1 and 2 of their training.

**Mastery Level:** These are topics that are good to know during Years 1 and 2, and trainees are expected to attain competency in managing these conditions during Years 3 and 4 of their training.

<table>
<thead>
<tr>
<th>Core Clinical Problem</th>
<th>Core Specialty level</th>
<th>Mastery Level</th>
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<tbody>
<tr>
<td>Fever</td>
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<tr>
<td>Fever</td>
<td>Meningitis (T, L)</td>
<td>Peritonsillar abscess (T)</td>
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<td></td>
<td>Bacterial pneumonia (C, T)</td>
<td>Diverticulitis(C, T)</td>
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<td></td>
<td>Appendicitis (C, T)</td>
<td>Thyroid storm (T, L, P)</td>
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<td>Cholecystitis(C, T)</td>
<td>Drug fever (T, P)</td>
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<td></td>
<td>Pyelonephritis(C, T)</td>
<td>Neuroleptic malignant syndrome (T, L)</td>
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<td></td>
<td>Cellulitis(C, T)</td>
<td>Malignancy (T)</td>
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<td></td>
<td>Encephalitis/ brain abscess (T, L)</td>
<td>Myocarditis (L)</td>
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<td>Cystitis, epididymitis, prostatitis (C, T)</td>
<td>Acute chest syndrome (L)</td>
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<td>ENT infections (pharyngitis, otitis media, sinusitis; C, T)</td>
<td>Reaction transfusions (T, L)</td>
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<td>Sepsis syndrome (C, T, L, P)</td>
<td>Tubo-ovarian abscess (T)</td>
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<td>Osteomyelitis (C, T)</td>
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<td>Headache</td>
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<tr>
<td>Headache</td>
<td>Subarachnoid hemorrhage (C, L)</td>
<td>Temporal arteritis (T, L)</td>
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<td>Hypertensive crisis (T, L)</td>
<td>Trigeminal neuralgia</td>
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<td>Subdural hematoma (C, L)</td>
<td>Tumors (T, L)</td>
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<td>Meningitis/encephalitis/CNS abscess (T, L)</td>
<td>Postlumbar headache (T, P)</td>
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<td>Increased ICP (T, L)</td>
<td>Effort-dependent/coital headaches (T)</td>
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<td>Cerebellar venous sinus thrombosis (L)</td>
<td>Acute mountain sickness (T, P)</td>
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<td>CO poisoning (T, L, P)</td>
<td>Glaucoma (T, L)</td>
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<td>Headaches/ migraines (C, T, P)</td>
<td>Headaches/ migraines (C, T, P)</td>
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<td>Post traumatic (C)</td>
<td>Post traumatic (C)</td>
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<td>Core Clinical Problem</td>
<td>Core Specialty level</td>
<td>Mastery Level</td>
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<tr>
<td><strong>Weakness</strong></td>
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<tr>
<td>Diphtheria (T)</td>
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<td>Organophosphate/Carbamate poisoning (L, P)</td>
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<td>Electrolyte imbalance (C, T, L, P)</td>
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<td>Transverse myelitis (L)</td>
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<td>Metabolic disorder (C, T, P)</td>
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<td>Amyotrophic lateral sclerosis (L)</td>
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<td><strong>Dizziness and vertigo</strong></td>
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<td>Foreign body in ear (C, T)</td>
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<td>Acoustic neuroma (T)</td>
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<td>Trauma (temporal bone fracture, labyrinth concussion; T)</td>
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<td>Multiple sclerosis (C)</td>
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<td>Vertebral basilar migraine (L)</td>
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<td>Systemic disease (Hypothyroid, diabetes; C, T)</td>
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<td>Post concussive syndrome (P)</td>
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<td>Cerebellar hemorrhage/infarction (C, L)</td>
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<td>Hypoglycemia (C, T, L, P)</td>
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<td>Arrhythmia/myocardial infarction (C, T, L, P)</td>
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<td>Nutrition (Wernicke’s encephalopathy; P, L)</td>
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<td>Shock (C, T, L)</td>
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<td>Hypertensive encephalopathy (T, L, P)</td>
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<td>Neoplasm</td>
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<td>Endocrine disease (C, T, L, P)</td>
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<td>Hepatic failure (C, L)</td>
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<td><strong>Depressed consciousness and coma</strong></td>
<td>Trauma (subdural/epidural hematoma, cerebral concussion/contusion; C, L, P) Subarachnoid hemorrhage (L) Pontine hemorrhage (L) Intracerebral hemorrhage (L) Intoxicated patient (C, T, L, P) Endocrine disorders (hypo/hyperglycemia, thyrotoxicosis, myxedema crisis, Cushing's syndrome; C, T, L, P) Hypovolemic (C, T, L) Stroke (C, L) Heat stroke (L, P) Acute hydrocephalus (L) Cerebral venous sinus thrombosis (L)</td>
<td>Fat embolism (L) Brainstem tumors (L) Tumors (angiomas, pituitary apoplexy; L) Pheochromocytoma (L) High-altitude cerebral edema (L) Cerebral pontine myelinolysis (L, P) Co factor deficiency (thiamine, pyridoxine; P) Thrombotic thrombocytopenic purpura (L) Disseminated intravascular coagulation (L) Cerebral lupus vasculitis Malignant hyperthermia (L) Pheochromocytoma (L) High-altitude cerebral edema (L) Progressive multifocal leukoencephalopathy (L)</td>
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<tr>
<td><strong>Syncope</strong></td>
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<td>Ruptured ectopic pregnancy (T, L)</td>
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<td>Pulmonary Embolism (C, T, L, P)</td>
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<td>Arrhythmia (Wolff–Parkinson–White syndrome, ventricular fibrillation, supraventricular tachycardia, long QT, atrioventricular block; C, T, L, P)</td>
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<td>Aortic dissection (T, L)</td>
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<td>Pacemaker/implantable cardioverter defibrillator malfunction (C, T, P)</td>
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<td>Medication side effect (C, P)</td>
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<td>Cardiac tamponade (T, L)</td>
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<td>Esophageal rupture (L)</td>
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<td>Postherpetic neuralgia</td>
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<td><strong>Constipation</strong></td>
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<td>Irritable bowel syndrome (C, T)</td>
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<td>Spinal cord injury (C, L)</td>
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<td>Medication side effect (opiates, antacids, antidepressants, iron; T, P)</td>
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<td>Stricture, colon cancer</td>
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<td>Electrolyte imbalance (hypocalcaemia, hypokalemia, hypomagnesaemia; C, T, L, P)</td>
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<td>Crohn’s disease (T, L, P)</td>
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<td>Inadequate fiber, sedentary (C, T, P)</td>
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<td>Myopathic (scleroderma, multiple sclerosis, Parkinson’s, Amyotrophic lateral sclerosis (C, T, L)</td>
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<td>Psychological (depression, anxiety, sexual abuse; C, T)</td>
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<td>Uremia (T, P)</td>
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<td>Paraneoplastic syndrome (C, T, L)</td>
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<td>Nausea and vomiting</td>
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<td>Peritonitis (L)</td>
<td>CNS tumor (C, T, L)</td>
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<td>Diabetic ketoacidosis (C, T, L, P)</td>
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<td>Raised intracranial pressure (T, L)</td>
<td>Spontaneous bacterial peritonitis (T, L)</td>
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<td>Gonadal torsion (T, L)</td>
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<td>Electrolyte disorders (C, T, L, P)</td>
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<td>Bowel obstruction (T)</td>
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<td>Cholecystitis/cholangitis (C, T)</td>
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<td>Hyperemesis gravidarum (C, T)</td>
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<td>Hepatitis (C, P)</td>
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<td>Drug toxicity (aspirin, digoxin, acetaminophen; C, T, L, P)</td>
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<td>Diabetic ketoacidosis (C, T, L, P)</td>
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<td>Gastritis/gastroenteritis (C, T, P, L)</td>
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<td>Intussusception (T, L)</td>
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<td>Ruptured ectopic pregnancy (T, L)</td>
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<td>Ruptured abdominal aortic aneurysm (L)</td>
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<td>Mesenteric ischemia (L)</td>
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<td>Viscus perforation (T, L)</td>
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<tr>
<td><strong>Diarrhea</strong></td>
<td>Infectious diarrhea (viral, parasitic, invasive bacterial, toxigenic; C, T, P, L)</td>
<td>Fish-associated toxins (P, L)</td>
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<td>Systemic disease (alcoholism, amyloidosis, Henoch–Schönlein purpura, hemolytic uremic syndrome, lymphoma, cystic fibrosis; C, T, L)</td>
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<td>Drug induced (Nonsteroidal anti-inflammatory drugs, digitalis, antibiotics; C, T)</td>
<td>Hormonal hypersecretion (T, P, L)</td>
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<td>Gastrointestinal pathology (gastrointestinal bleed, cirrhosis, malrotation, Hirschsprung’s disease, toxic megacolon; C, T, L)</td>
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<td><strong>Vaginal bleeding</strong></td>
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</tr>
<tr>
<td>Vaginal bleeding</td>
<td>Polyps (C, T)</td>
<td>Atrophic vaginitis</td>
</tr>
<tr>
<td></td>
<td>Endometrial cancer (C, L)</td>
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<tr>
<td></td>
<td>Complications of pregnancy (C, L, T)</td>
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<tr>
<td></td>
<td>Uterine fibroids (C, T)</td>
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<tr>
<td></td>
<td>Dysfunctional uterine bleed (C, T)</td>
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<tr>
<td></td>
<td>Thyroid dysfunction (T, L)</td>
<td></td>
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<tr>
<td></td>
<td>Vaginal foreign bodies (T)</td>
<td></td>
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<tr>
<td></td>
<td>Trauma (T)</td>
<td></td>
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<tr>
<td></td>
<td>Coagulopathy (T, L)</td>
<td></td>
</tr>
<tr>
<td><strong>Back pain</strong></td>
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<tr>
<td>Back pain</td>
<td>Aortic dissection (L)</td>
<td>Epidural abscess/hematoma (T, L)</td>
</tr>
<tr>
<td></td>
<td>Cauda equina syndrome (T, L)</td>
<td>Spinal stenosis (T)</td>
</tr>
<tr>
<td></td>
<td>Ruptured/expanding abdominal aortic aneurysm (T, L)</td>
<td>Transverse myelitis</td>
</tr>
<tr>
<td></td>
<td>Malignancy (T, L)</td>
<td>Vertebral (T, L) osteomyelitis (T, L)</td>
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<tr>
<td></td>
<td>Peptic ulcer disease (C, T)</td>
<td>Ankylosing spondylitis</td>
</tr>
<tr>
<td></td>
<td>Cholecystitis (C, T)</td>
<td>Spondylolisthesis (C, T)</td>
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<tr>
<td></td>
<td>Ovarian torsion/cyst (T)</td>
<td></td>
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<td></td>
<td>Pyelonephritis (C, T)</td>
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<td></td>
<td>Spinal fracture/subluxation (P)</td>
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<tr>
<td></td>
<td>Muscle strain (C, T)</td>
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<td></td>
<td>Degenerative joint disease (T)</td>
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<td></td>
<td>Intervertebral disc disease (T)</td>
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<tr>
<td></td>
<td>Pancreatitis (T, L)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Retroperitoneal mass/hemorrhage (T, L)</td>
<td></td>
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<tr>
<td><strong>Sore throat</strong></td>
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<tr>
<td>Sore throat</td>
<td>Epiglottitis (T, L)</td>
<td>Peritonsilar cellulitis (T)</td>
</tr>
<tr>
<td></td>
<td>Ludwig’s angina (T, L)</td>
<td>Uvulitis (T)</td>
</tr>
<tr>
<td></td>
<td>Tracheitis (T, L)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lingual abscess (T, L)</td>
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<tr>
<td></td>
<td>Tumor (T)</td>
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<tr>
<td></td>
<td>Foreign body (T, P)</td>
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<tr>
<td></td>
<td>Trauma (C, T)</td>
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<tr>
<td></td>
<td>Caustic ingestion (L, P)</td>
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<td></td>
<td>Congenital anomaly</td>
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<tr>
<td></td>
<td>Tonsillitis (C, T)</td>
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<tr>
<td></td>
<td>Pharyngitis (C, T)</td>
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<tr>
<td></td>
<td>Retropharyngeal abscess (T)</td>
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<tr>
<td></td>
<td>Parapharyngeal abscess (T)</td>
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<td></td>
<td>Peritonsilar abscess (T)</td>
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<tr>
<td>Core clinical Problem</td>
<td>Core Specialty level</td>
<td>Mastery Level</td>
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</tr>
</tbody>
</table>
| **Gastrointestinal bleeding** | Peptic ulcer disease (C, T, L)  
Mallory Weiss tear (C, T)  
Diverticulosis (T)  
Inflammatory bowel disease (T)  
Anal fissure (C, T)  
Varices (T, L)  
Infectious colitis (C, T, P) | Gastric erosions (C, T)  
Esophagitis (C, T)  
Polyps/cancer (L)  
Angiodysplasia (T, L)  
Duodenitis (C, T) |
| **Hemoptysis** | Bronchitis (C, T)  
Bronchiectasis (C, T, L)  
Neoplasm (L)  
Trauma foreign body (C, T, L)  
Tuberculosis (C, T, L)  
Pneumonia/lung abscess (C, T)  
Pulmonary embolism (C, T, L)  
Aortic aneurysm (T, L)  
Endocarditis (T, L)  
Thrombocytopenia (T)  
Disseminated intravascular coagulation (T, L)  
Coagulopathy (T, L)  
Valvular heart disease (T, L)  
Pulmonary hypertension (C, T) | Vasculitis (T, L)  
Arteriovenous malformation (T, L)  
Tracheo-arterial fistula (T, L)  
Cocaine (T, L)  
Congenital heart disease (T, L) |
| **Red and painful eye** | Caustic keratoconjunctivitis (T, L, P)  
Blepharitis (C, T)  
Chalazion (C, T)  
Dacryocystitis/dacryoadenitis (T)  
Orbital tumor (T, L)  
Hordeolum (T)  
Retrobulbar hematoma (T, L)  
Hyphema (T, L)  
Ruptured globe (T, L)  
Glaucoma (T, L)  
Uveitis (T)  
Scleritis (T)  
Episcleritis (T)  
Subconjunctival hemorrhage (C, T)  
Keratitis (C, T, P)  
Conjunctivitis (C, T, P) | Retrobulbar emphysema (T, L)  
Retrobulbar abscess (T, L)  
Endophthalmitis (L)  
Pterygium (C, T) |
<table>
<thead>
<tr>
<th>Core clinical Problem</th>
<th>Core Specialty level</th>
<th>Mastery Level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cyanosis</strong></td>
<td>Pulmonary embolism (C, T, L, P)</td>
<td>Arteriovenous fistula (C, T, P)</td>
</tr>
<tr>
<td></td>
<td>Methemoglobinemia (T)</td>
<td>Glucose-6-phosphate dehydrogenase deficiency (C, T)</td>
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<tr>
<td></td>
<td>Upper airway obstruction (T, L)</td>
<td>Cyanotic heart disease (C, T, L)</td>
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<tr>
<td></td>
<td>Hypoventilation (C, T)</td>
<td>Sulfhemoglobinemia (T, L)</td>
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<tr>
<td></td>
<td>Pneumonia (C, T, L)</td>
<td>High altitude (T, L, P)</td>
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<tr>
<td></td>
<td>Left ventricular failure (C, T, L, P)</td>
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<tr>
<td></td>
<td>Pulmonary hypertension (T, P)</td>
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<tr>
<td></td>
<td>Acute respiratory distress syndrome (L)</td>
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<td></td>
<td>Pneumothorax (T, L)</td>
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</table>

<table>
<thead>
<tr>
<th>Core clinical Problem</th>
<th>Core Specialty level</th>
<th>Mastery Level</th>
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</thead>
<tbody>
<tr>
<td><strong>Rash</strong></td>
<td>Rash differential diagnoses (Exanthems, maculopapular, erythematous, petechial, purpuric, vesicular rash; C, T, L, P)</td>
<td>Immune thrombocytopenic purpura (T)</td>
</tr>
<tr>
<td></td>
<td>Erythema multiforme and Steven Johnson's syndrome (C, T, L)</td>
<td>Thrombotic thrombocytopenic purpura (T, L)</td>
</tr>
<tr>
<td></td>
<td>Meningococcemia (L, T, P)</td>
<td>Tinea infections (C, T, P)</td>
</tr>
<tr>
<td></td>
<td>Allergic reaction/urticaria/eczema (C, T, L, P)</td>
<td>Toxic epidermal Necrolysis (I, T)</td>
</tr>
<tr>
<td></td>
<td>Toxic shock syndrome (L, T)</td>
<td>Primary blistering disorders (pemphigus and pemphigoid) (T, L)</td>
</tr>
<tr>
<td></td>
<td>Shingles (C, T)</td>
<td>Rocky Mountain spotted fever (T)</td>
</tr>
<tr>
<td></td>
<td>Herpes simplex (C, T)</td>
<td>Chilblains/prickly heat (C, T, P)</td>
</tr>
<tr>
<td></td>
<td>Disseminated GC (T)</td>
<td>Biological warfare (smallpox, anthrax, plague; L)</td>
</tr>
<tr>
<td></td>
<td>Pityriasis rosea (T)</td>
<td>Lyme disease (T)</td>
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<tr>
<td></td>
<td>Chicken Pox (C, T)</td>
<td>Rheumatic heart disease (T)</td>
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<td></td>
<td></td>
<td>Psoriasis (C)</td>
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<tr>
<td></td>
<td></td>
<td>Erythema Nodosum (C, T)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vasculitis (C, T, L)</td>
</tr>
</tbody>
</table>
EMERGENCY MEDICINE TRAINING PROGRAM MILESTONES

**General training mapping**

**1. Emergency Stabilization**

The resident prioritizes critical initial stabilization action and mobilizes hospital support services in the resuscitation of critically ill or injured patients, with reassessment following the stabilizing intervention.

<table>
<thead>
<tr>
<th>R1</th>
<th>R2</th>
<th>R3</th>
<th>R4</th>
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</thead>
<tbody>
<tr>
<td>• Recognizes abnormal vital signs</td>
<td>• Performs a primary assessment of a critically ill or injured patient</td>
<td>• Manages and prioritizes critically ill or injured patients</td>
<td>• Recognizes, in a timely fashion, when further clinical intervention is futile</td>
</tr>
<tr>
<td>• Recognizes situations in which a patient is unstable and requires immediate intervention</td>
<td>• Discerns relevant data to formulate a diagnostic impression and plan</td>
<td>• Prioritizes critical initial stabilization action in the resuscitation of a critically ill or injured patient</td>
<td>• Integrates hospital support services into a management strategy for problematic stabilization situations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Performs a reassessment after implementing a stabilizing intervention</td>
<td>• Develops policies and protocols for the management and/or transfer of critically ill or injured patients</td>
</tr>
<tr>
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<td></td>
<td>• Evaluates the validity of a do-not-resuscitate order</td>
<td></td>
</tr>
</tbody>
</table>

Suggested evaluation methods: Standardized Direct Observation Tool (SDOT), observed resuscitation, simulation, checklist, and videotape review

**2. Performance of Focused History and Physical Exam**

The resident abstracts current findings in patients with multiple chronic medical problems and, when appropriate, compares findings with prior medical records and identifies significant differences between current and past presentation.

<table>
<thead>
<tr>
<th>R1</th>
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</thead>
<tbody>
<tr>
<td>• Performs and communicates a reliable, comprehensive history and physical exam</td>
<td>• Performs and communicates a focused history and physical exam, which effectively addresses the chief complaint and urgent patient issues</td>
<td>• Prioritizes essential components of a history, given limited or dynamic circumstances</td>
<td>• Synthesizes essential data necessary for the correct management of patients using all potential data sources</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Prioritizes essential components of a physical examination, given limited or dynamic circumstances</td>
<td>• Identifies obscure, occult, or rare patient conditions based solely on historical and physical exam findings</td>
</tr>
</tbody>
</table>
3. Diagnostic Studies

The resident applies the results of diagnostic testing based on the probability of disease and the likelihood that test results will alter management.

<table>
<thead>
<tr>
<th>R1</th>
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<th>R3</th>
<th>R4</th>
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</thead>
<tbody>
<tr>
<td>• Determines the necessity of diagnostic studies</td>
<td>• Orders appropriate diagnostic studies</td>
<td>• Interprets results of a diagnostic study, recognizing limitations and risks, seeking interpretive assistance as appropriate</td>
<td>• Practices cost effective ordering of diagnostic studies</td>
</tr>
<tr>
<td>• Performs appropriate bedside diagnostic studies and procedures</td>
<td>• Reviews risks, benefits, contraindications, and alternatives to a diagnostic study or procedure</td>
<td>• Uses diagnostic testing based on pretest probability of disease and the likelihood that the test results will alter management</td>
<td>• Understands the implications of false positives and negatives for posttest probability</td>
</tr>
<tr>
<td>• Prioritizes essential testing</td>
<td>• Uses all available medical information to develop a list of ranked differential diagnoses, including those with the greatest potential for morbidity or mortality</td>
<td>• Correctly identifies “sick versus well” patients</td>
<td>• Discriminates between subtle and conflicting diagnostic results in the context of patient presentation</td>
</tr>
</tbody>
</table>

Suggested evaluation methods: SDOT, oral boards, standardized exams, chart review, and simulation

4. Diagnosis

Based on all of the available data, the resident narrows and prioritizes the list of weighted differential diagnoses to determine appropriate management.

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<th>R1</th>
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</thead>
<tbody>
<tr>
<td>• Constructs a list of potential diagnoses based on the chief complaint and initial assessment</td>
<td>• Constructs a list of potential diagnoses based on the greatest likelihood of occurrence</td>
<td>• Uses all available medical information to develop a list of ranked differential diagnoses, including those with the greatest potential for morbidity or mortality</td>
<td>• Synthesizes all of the available data and narrows and prioritizes the list of weighted differential diagnoses to determine appropriate management</td>
</tr>
</tbody>
</table>
| • Constructs a list of potential diagnoses with the greatest potential for morbidity or mortality | • Correctly identifies “sick versus well” patients | • Uses pattern recognition to identify discriminating features between
5. Pharmacotherapy

The resident selects and prescribes appropriate pharmaceutical agents based upon relevant considerations, such as mechanism of action, intended effect, financial considerations, possible adverse effects, patient preferences, allergies, potential drug-food and drug-drug interactions, institutional policies, and clinical guidelines, and effectively combines agents and monitors and intervenes in the advent of adverse effects in the ED.

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<th>R1</th>
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<tbody>
<tr>
<td>• Knows the different classifications of pharmacologic agents and their mechanisms of action.</td>
<td>• Applies medical knowledge for the selection of appropriate agents for therapeutic intervention</td>
<td>• Considers an array of drug therapy for treatment. Selects appropriate agents, based on mechanism of action and intended effect, and anticipates potential adverse side effects</td>
<td>• Selects the appropriate agent based on mechanism of action, intended effect, possible adverse effects, patient preferences, allergies, potential drug-food and drug-drug interactions, financial considerations, institutional policies, and clinical guidelines including patient’s age, weight, and other modifying factors</td>
</tr>
<tr>
<td>• Consistently asks patient about drug allergies</td>
<td>• Considers potential adverse effects of pharmacotherapy</td>
<td>• Considers and recognizes potential drug-drug interactions</td>
<td>• Participates in developing institutional policies on pharmacy and therapeutics</td>
</tr>
</tbody>
</table>

Suggested evaluation methods: SDOT, portfolio, simulation, oral boards, global ratings, and medical knowledge examinations
6. Observation and Reassessment
The resident re-evaluates patients undergoing ED observation and monitoring, and using appropriate data and resources, determines the differential diagnosis, treatment plan, and disposition.

R1  
- Recognizes the need for patient re-evaluation

R2  
- Ensures that necessary therapeutic interventions are administered during a patient’s ED stay

R3  
- Identifies patients who require observation in the ED
- Evaluates the effectiveness of therapies and treatments administered during observation
- Monitors the patient’s clinical status at timely intervals during his/her stay in the ED

R4  
- Considers additional diagnoses and therapies for patients under observation and changes treatment plans accordingly
- Identifies and complies with government and other regulatory requirements, which must be met for patients under observation
- Develops protocols to avoid potential complications in interventions and therapies

Suggested evaluation methods: SDOT, multisource feedback, oral boards, and simulation

7. Disposition
The resident establishes and implements a comprehensive disposition plan that uses appropriate consultation resources, patient education regarding diagnosis, treatment plans, medications, and time- and location-specific disposition instructions.

R1  
- Describes basic resources available for the care of patients in the ED

R2  
- Formulates a specific follow-up plan for common ED complaints, with appropriate use of resources

R3  
- Formulates and provides patient education regarding diagnosis, treatment plans, medication review, and primary care physician (PCP)/consultant appointments for patients in complicated cases
- Involves appropriate resources (e.g., PCP/consultant or social worker) in a timely manner
- Makes correct decisions regarding the admission or discharge of patients

R4  
- Formulates suitable admission plans or discharge instructions, including future diagnostic or therapeutic interventions for ED patients
- Engages patient or surrogate in the effective
8. Multitasking (Task switching)
The resident employs task switching in an efficient and timely manner in order to manage the ED.

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<tbody>
<tr>
<td>Manages a single patient amidst distractions</td>
<td>Switches tasks between patients</td>
<td>Employs task switching in an efficient and timely manner in order to manage multiple patients</td>
<td>Employs task switching in an efficient and timely manner in order to manage the ED under high-volume or surge situations</td>
</tr>
</tbody>
</table>

Suggested evaluation methods: simulation, SDOT, mock oral examination, and multisource feedback

9. General Approach to Procedures
The resident performs the procedure indicated for all appropriate patients (including those who are uncooperative, at the extremes of age, hemodynamically unstable, or have multiple comorbidities, poorly defined anatomy, a high risk of pain or procedural complications, or sedation requirements), takes steps to avoid potential complications, and recognizes the outcome and/or complications resulting from the procedure.
10. Airway Management
The resident performs airway management for all appropriate patients (including those who are uncooperative, at the extremes of age, hemodynamically unstable, or have multiple comorbidities, poorly defined anatomy, a high risk of pain or procedural complications, or sedation requirements), takes steps to avoid potential complications, and recognizes the outcome and/or complications resulting from the procedure.

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<tbody>
<tr>
<td>• Describes upper airway anatomy</td>
<td>• Describes elements of airway assessment and indications impacting airway management</td>
<td>• Uses airway algorithms in decision making for complicated patients, employing airway adjuncts as indicated</td>
<td>• Performs airway management under any circumstances, taking steps to avoid potential complications, and recognizes the outcome and/or complications resulting from the procedure</td>
</tr>
<tr>
<td>• Performs basic airway maneuvers or adjuncts (jaw thrust/chin lift/oral airway/nasopharyngeal airway) and ventilates or oxygenates patients using bag-valve-mask ventilation</td>
<td>• Describes the pharmacology of agents used for rapid sequence intubation, including specific indications and contraindications</td>
<td>• Performs rapid sequence intubation in patients using airway adjuncts</td>
<td>• Performs a minimum of 35 intubations</td>
</tr>
<tr>
<td>• Performs rapid sequence intubation in patients without adjuncts</td>
<td>• Confirms proper endotracheal tube</td>
<td>• Implements postintubation management</td>
<td>• Demonstrates the ability to perform a cricothyrotomy</td>
</tr>
<tr>
<td>• Determines a backup strategy in case initial attempts to perform a procedure are unsuccessful</td>
<td>• Correctly interprets the results of a diagnostic procedure</td>
<td>• Employs appropriate methods of</td>
<td>• Uses advanced instruments</td>
</tr>
</tbody>
</table>

Suggested evaluation methods: procedural competency forms, checklist assessment of procedure and simulated laboratory performance, and global ratings
placement using multiple modalities  mechanical ventilation based on specific patient physiology  airway modalities for complicated patients  • Teaches airway management skills to healthcare providers

Suggested evaluation methods: Airway Management Competency Assessment Tool, airway management assessment cards, SDOT, checklist, procedure log, and simulation

11. Anesthesia and Acute Pain Management
The resident provides safe acute pain management, anesthesia, and procedural sedation to patients of all ages, regardless of the clinical situation

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<tr>
<td></td>
<td>• Discusses indications, contraindications, and possible complications of local anesthesia with the patient</td>
<td>• Knows the indications, contraindications, potential complications, and appropriate doses of analgesic and sedative medications</td>
<td>• Knows the indications, contraindications, potential complications, and appropriate doses for medications used for procedural sedation</td>
<td>• Performs procedural sedation, providing effective sedation with the least risk of complications and minimal recovery time through selective dosing, route, and choice of medication</td>
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<td>• Administers local anesthesia using appropriate doses of local anesthetic and appropriate techniques to provide skin or subdermal anesthesia for procedures.</td>
<td>• Knows the anatomic landmarks, indications, contraindications, potential complications, and appropriate doses of local anesthetics used for regional anesthesia</td>
<td>• Performs patient assessment, discusses the most appropriate analgesic/sedative medication with the patient, and administers the most appropriate dose via the best route</td>
<td>• Develops pain management protocols and care plans</td>
</tr>
</tbody>
</table>

Suggested evaluation methods: procedural competency forms, checklist assessment of procedure and simulated laboratory performance, global ratings, patient survey, and chart review
12. Other Diagnostic and Therapeutic Procedures: Goal-directed Focused Ultrasound (Diagnostic/Procedural)

The resident uses goal-directed focused ultrasound for the bedside diagnostic evaluation of emergency medical conditions and diagnoses, resuscitation of the acutely ill or injured patient, and procedural guidance.

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<tbody>
<tr>
<td>• Describes the indications for emergency ultrasound</td>
<td>• Explains how to optimize ultrasound images and identifies the proper probe for each of the focused ultrasound applications</td>
<td>• Performs goal-directed focused ultrasound examinations</td>
<td>• Performs a minimum of 150 focused ultrasound examinations</td>
</tr>
<tr>
<td></td>
<td>• Performs an eFAST scan</td>
<td>• Correctly interprets acquired images</td>
<td>• Expands ultrasonography skills to include advanced echo, transesophageal echocardiogram, bowel, adnexal and testicular pathology, and transcranial Doppler (see Ultrasound section)</td>
</tr>
</tbody>
</table>

Suggested evaluation methods: OSCE, SDOT, videotape review, written examination, and checklist

13. Other Diagnostic and Therapeutic Procedures: Wound Management

The resident assesses and manages wounds in patients of all ages appropriately, regardless of the clinical situation.

<table>
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<th>R1</th>
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<tbody>
<tr>
<td>• Prepares a simple wound for suturing (identify appropriate suture material, anesthetize wound, and irrigate)</td>
<td>• Uses medical terminology to describe and classify a wound (e.g., stellate, abrasion, avulsion, laceration, deep vs. superficial) clearly</td>
<td>• Performs complex wound repairs (deep sutures, layered repair, or corner stitch)</td>
<td>• Achieves hemostasis in a bleeding wound using advanced techniques such as cautery, ligation, deep suture, injection, topical hemostatic agents, and tourniquet</td>
</tr>
<tr>
<td>• Demonstrates sterile technique</td>
<td>• Classifies burns with respect to depth and body surface area</td>
<td>• Manages a severe burn</td>
<td>• Repairs wounds that are at high risk of cosmetic complications (such as eyelid margin, nose, or ear)</td>
</tr>
<tr>
<td>• Places a simple interrupted suture</td>
<td>• Compares and contrasts modes of wound management (adhesives, Steri-Strips, hair)</td>
<td>• Determines which wounds should not be closed</td>
<td>• Describes indications and procedures for an</td>
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<td></td>
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<td>• Demonstrates appropriate use of consultants</td>
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<td></td>
<td></td>
<td>• Identifies wounds that may be high risk and require more extensive evaluation (e.g., X-ray, ultrasound, and/or exploration)</td>
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</tbody>
</table>

70 SAUDI BOARD EMERGENCY MEDICINE CURRICULUM
apposition, staples)
- Identifies wounds that require antibiotics or tetanus prophylaxis
- Educates patients with respect to appropriate outpatient wound management

Suggested evaluation methods: direct observation, procedure checklist, medical knowledge quiz, portfolio, global ratings, and procedure log

14. Other Diagnostic and Therapeutic Procedures: Vascular Access
The resident successfully obtains vascular access in patients of all ages, regardless of the clinical situation.

<table>
<thead>
<tr>
<th>R1</th>
<th>R2</th>
<th>R3</th>
<th>R4</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Performs a venipuncture</td>
<td>• Describes the indications, contraindications, anticipated undesirable outcomes, and complications for various vascular access modalities</td>
<td>• Inserts a central venous catheter without ultrasound when appropriate</td>
<td>• Successfully performs 20 central venous lines</td>
</tr>
<tr>
<td>• Places a peripheral intravenous line</td>
<td>• Inserts an arterial catheter</td>
<td>• Places an ultrasound-guided deep vein catheter (e.g., basilic, brachial, or cephalic veins)</td>
<td>• Routinely gains venous access in patients with difficult vascular access</td>
</tr>
<tr>
<td>• Performs an arterial puncture</td>
<td>• Assesses indications in conjunction with the patient’s anatomy/pathophysiology and selects the optimal site for a central venous catheter</td>
<td>• Inserts a central venous catheter using ultrasound and universal precautions</td>
<td>• Teaches advanced vascular access techniques</td>
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<tr>
<td></td>
<td>• Confirm appropriate placement of a central venous catheter</td>
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<tr>
<td></td>
<td>• Performs intraosseous access</td>
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</table>

Suggested evaluation methods: knowledge assessment using a multiple-choice questionnaire, checklist-driven task analysis, and procedure log
15. Medical Knowledge
The resident demonstrates appropriate medical knowledge in the care of emergency medicine patients.

<table>
<thead>
<tr>
<th>R1</th>
<th>R2</th>
<th>R3</th>
<th>R4</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Passes promotion (end-of-year/in-training) examination, achieving an appropriate score</td>
<td>• Completes objective residency training program examinations and/or assessments, achieving an acceptable score for specific rotations</td>
<td>• Passes promotion (end-of-year/in-training) examination, achieving an appropriate score</td>
<td>• Passes promotion (end-of-year/in-training) examination, with a score that indicates a high likelihood of passing the certification examination</td>
</tr>
<tr>
<td></td>
<td>• Passes promotion (end-of-year/in-training) examination, achieving an appropriate score</td>
<td>• Demonstrates improvement in the proportion of correct answers in the training examination or maintains an acceptable percentile ranking</td>
<td>• Successfully completes all objective residency training program examinations and assessments</td>
</tr>
<tr>
<td></td>
<td>• Passes SBEM Part I</td>
<td></td>
<td>• Passes SBEM Part II and oral examination (the certification examinations)</td>
</tr>
</tbody>
</table>

Suggested evaluation methods: promotion examination, SBEM Parts I and II, Saudi Board Oral Examination (developed by the SCFHS), question & answer bank tests, and local residency examinations

16. Professional values
The resident demonstrates compassion, integrity, and respect for others, as well as adherence to the ethical principles relevant to the practice of medicine.

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<thead>
<tr>
<th>R1</th>
<th>R2</th>
<th>R3</th>
<th>R4</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Demonstrates behavior that conveys caring, honesty, genuine interest, and tolerance when interacting with a diverse population of patients and their families</td>
<td>• Demonstrates an understanding of the importance of compassion, integrity, respect, sensitivity, and responsiveness and exhibits these attitudes consistently in common/uncomplicated situations and with diverse populations</td>
<td>• Recognizes how personal beliefs and values impact medical care and consistently manages his/her own values and beliefs to optimize relationships and medical care</td>
<td>• Develops and applies a consistent and appropriate approach to evaluating appropriate care, possible barriers, and intervention strategies, consistently prioritizing the patient’s best interest in all relationships and situations</td>
</tr>
<tr>
<td></td>
<td>• Develops alternate care plans when patients’ personal decisions/beliefs preclude the use of commonly accepted practices</td>
<td></td>
<td>• Effectively analyzes and manages ethical issues in complicated and situations</td>
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</tbody>
</table>

**SAUDI BOARD EMERGENCY MEDICINE CURRICULUM**
17. Accountability

The resident demonstrates accountability to patients, society, the medical profession, and him/herself.

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<thead>
<tr>
<th>R1</th>
<th>R2</th>
<th>R3</th>
<th>R4</th>
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</thead>
<tbody>
<tr>
<td>• Demonstrates basic professional responsibilities such as reporting for duty in a timely manner, appropriate dress/grooming, being rested and ready to work, and delivery of patient care as a functional physician</td>
<td>• Identifies basic principles of physician wellness, including sleep hygiene</td>
<td>• Consistently recognizes his/her own limits regarding knowledge in common and frequent clinical situations and asks for assistance</td>
<td>• Is able to form a plan to address impairment in oneself or a colleague in a professional and confidential manner</td>
</tr>
<tr>
<td>• Maintains patient confidentiality</td>
<td>• Consistently recognizes his/her own limits regarding knowledge in uncommon and complicated clinical situations; develops and implements plans to ensure the best possible patient care</td>
<td>• Recognizes and avoids the inappropriate influence of marketing and advertising</td>
<td>• Manages medical errors according to principles of responsibility and accountability, in accordance with institutional policy</td>
</tr>
<tr>
<td>• Uses social media ethically and responsibly</td>
<td>• Demonstrates knowledge of alertness, management, and fatigue mitigation principles</td>
<td></td>
<td>• Develops institutional and organizational strategies to improve physician insight into and management of professional responsibility</td>
</tr>
<tr>
<td>• Adheres to professional responsibilities such as conference attendance, timely chart completion, duty hour reporting, and procedure reporting</td>
<td></td>
<td>• Trains physicians and educators regarding responsibility, wellness, fatigue, and physician impairment</td>
<td></td>
</tr>
</tbody>
</table>

Suggested evaluation methods: direct observation, SDOT, portfolio, simulation, oral boards, multisource feedback, and global ratings
18. Patient Centered Communication
The resident demonstrates interpersonal and communication skills that result in effective exchange of information and collaboration with patients and their families.

<table>
<thead>
<tr>
<th>R1</th>
<th>R2</th>
<th>R3</th>
<th>R4</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Establishes a rapport with and demonstrates empathy toward patients and their defined family units</td>
<td>• Negotiates and manages simple patient/family-related conflicts</td>
<td>• Manages the expectations of those who receive care in the ED and uses communication methods that minimize the potential for stress, conflict, and misunderstanding</td>
<td>• Establishes optimal rapport and communicates effectively with speed and accuracy under all circumstances</td>
</tr>
<tr>
<td>• Listens effectively to patients and their defined family units</td>
<td>• Communicates effectively with vulnerable populations including patients at risk and their defined family units</td>
<td>• Uses flexible communication strategies and adjusts them according to the clinical situation to resolve specific ED challenges, such as drug-seeking behavior, delivering bad news, unexpected outcomes, medical errors, and high-risk refusal of care patients</td>
<td>• Teaches patient-centered communication</td>
</tr>
<tr>
<td>• Communicates clearly and accurately with patients and colleagues in uncomplicated situations.</td>
<td>• Recognizes, stabilizes, and seeks further advice in difficult communication situations including those involving the delivery of bad news with empathy</td>
<td>• Begins to learn strategies to communicate in difficult situations.</td>
<td>• Participates in review and counsel of colleagues with communication deficiencies</td>
</tr>
<tr>
<td>• Elicits patients’ reasons for seeking healthcare and expectations of the ED visit</td>
<td>• Demonstrates accurate and concise written communication skills.</td>
<td>• Maintains effective professional and patient-centered communication in a complex environment.</td>
<td>• Expands skills repertoire to adapt their communication in most circumstances.</td>
</tr>
</tbody>
</table>

Suggested evaluation methods: direct observation, SDOT, simulation, multisource feedback, OSCE, global ratings, oral boards
19. Team Management
Residents lead patient-centered care teams, ensuring effective communication and mutual respect between members of the team.

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<tr>
<th>R1</th>
<th>R2</th>
<th>R3</th>
<th>R4</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Participates as a member of a patient care team</td>
<td>• Communicates pertinent information to emergency physicians and other healthcare colleagues</td>
<td>• Develops working relationships across specialties and with ancillary staff</td>
<td>• Uses flexible communication strategies to resolve specific ED challenges, such as difficulties with consultants and other healthcare providers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ensures that transition of care is communicated accurately and efficiently</td>
<td>• Communicates with out-of-hospital and nonmedical personnel, such as the police, media, and hospital administrators</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ensures clear communication and respect among team members</td>
<td>• Participates in and leads interdepartmental groups in the patient setting and collaborative meetings outside of the patient care setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Recommends changes in team performance as necessary for optimal efficiency</td>
<td>• Designs patient care teams and evaluates their performance</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>• Seeks leadership opportunities within professional organizations</td>
</tr>
</tbody>
</table>

Suggested evaluation methods: direct observation, multisource feedback, OSCE, global ratings, and oral boards SDOT, simulation, OSCE, global ratings, and oral boards
20. Practice-Based Performance Improvement
The resident participates in performance improvement to optimize ED function, self-learning, and patient care.

<table>
<thead>
<tr>
<th>R1</th>
<th>R2</th>
<th>R3</th>
<th>R4</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Describes basic principles of evidence-based medicine</td>
<td>• Performs patient follow-up</td>
<td>• Performs self-assessment to identify areas for continued self-improvement and implements learning plans</td>
<td>• Applies performance improvement methodologies</td>
</tr>
<tr>
<td>• Continually assesses performance by evaluating feedback and assessment</td>
<td>• Demonstrates the ability to critically appraise scientific literature and apply evidence-based medicine to improve individual performance</td>
<td>• Demonstrates mastery of evidenced-based clinical practice and information retrieval</td>
<td></td>
</tr>
<tr>
<td>• Demonstrates the ability to critically appraise scientific literature and apply evidence-based medicine to improve individual performance</td>
<td></td>
<td>• Participates in a process improvement plan to optimize ED practice</td>
<td></td>
</tr>
<tr>
<td>• Applies performance improvement methodologies</td>
<td></td>
<td>• Independently teaches evidenced-based medicine and information mastery techniques</td>
<td></td>
</tr>
</tbody>
</table>

Suggested evaluation methods: SDOT, simulation, global ratings, checklist, or ratings of portfolio work products including a literature review, Vanderbilt matrix evaluation of a clinical issue, and critical appraisal

21. Patient Safety
The resident participates in performance improvement to optimize patient safety.

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<thead>
<tr>
<th>R1</th>
<th>R2</th>
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<th>R4</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Adheres to standards for maintenance of a safe working environment</td>
<td>• Routinely uses basic patient safety practices such as time-outs and “calls for help”</td>
<td>• Describes patient safety concepts</td>
<td>• Leads team reflection such as code debriefings, root cause analysis, or M &amp; M to improve ED performance</td>
</tr>
<tr>
<td>• Describes medical errors and adverse events</td>
<td>• Employs processes (e.g., checklists), personnel, and technologies that optimize patient safety</td>
<td>• Uses system resources appropriately to improve both patient care and medical</td>
<td>• Identifies situations in which a breakdown in teamwork or communication may contribute to medical error</td>
</tr>
<tr>
<td></td>
<td>• Uses analytical tools to assess healthcare quality and safety and</td>
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</tr>
<tr>
<td>R1</td>
<td>R2</td>
<td>R3</td>
<td>R4</td>
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</tr>
<tr>
<td>• Describes members of the ED team (e.g., nurses, technicians, or security staff)</td>
<td>• Mobilizes the institution’s resources to assist in patient care</td>
<td>• Practices cost-effective care</td>
<td>• Recommends strategies by which patients’ access to care can be improved</td>
</tr>
<tr>
<td>• Participates in patient satisfaction initiatives</td>
<td>• Demonstrates the ability to call on other resources in the system to provide optimal healthcare</td>
<td>• Participates in processes and logistics to improve patient flow and decrease turnaround times (e.g., rapid triage, bedside registration, fast tracking, bedside testing, rapid treatment units, standard protocols, and observation units)</td>
<td>• Coordinates system resources to optimize patient care in complicated medical situations</td>
</tr>
</tbody>
</table>

Suggested evaluation methods: direct observation, SDOT, chart review, global ratings, simulation, multisource feedback, and outcome data including throughput numbers and patients per hour.
23. Technology
The resident uses technology to accomplish and document safe healthcare delivery.

<table>
<thead>
<tr>
<th>R1</th>
<th>R2</th>
<th>R3</th>
<th>R4</th>
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</thead>
<tbody>
<tr>
<td>Uses the electronic health record (EHR) to order tests, medications, and document notes and respond to alerts</td>
<td>Ensures that medical records are complete, with attention paid to preventing confusion and error</td>
<td>Recognizes the risk of computer shortcuts and reliance upon computer information in accurate patient care and documentation</td>
<td>Uses decision support systems in EHRs (as applicable to the institution) Recommends systems redesign for improved computerized processes</td>
</tr>
<tr>
<td>Reviews medications for patients</td>
<td>Uses technology for patient care, medical communication, and learning effectively and ethically</td>
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</tbody>
</table>

Suggested evaluation methods: direct observation, SDOT, chart review, global ratings, simulation, and multisource feedback

Procedures and skills integral to the practice of emergency medicine
The resident performs procedures that are indicated for all appropriate patients (including those who are uncooperative, at the extremes of age, hemodynamically unstable, or have multiple comorbidities, poorly defined anatomy, a high risk of pain or procedural complications, or sedation requirements), takes steps to avoid potential complications, and recognizes the outcome and/or complications resulting from the procedure.

What is expected from junior residents:
- Identification of pertinent anatomy and physiology for a specific procedure
- Appropriate use of universal precautions
- Performance of patient assessment, obtaining informed consent, and ensuring monitoring equipment is in place in accordance with patient safety standards
- Knowledge of indications, contraindications, anatomic landmarks, equipment, anesthetic and procedural techniques, and potential complications for common ED procedures
- Performance of the indicated common procedure, with moderate urgency, for a patient who has identifiable landmarks and low to moderate risk of complications
• Performance of postprocedural assessment and identification of potential complications

**What is expected from senior residents:**
• Determination of backup strategies in case initial attempts to perform a procedure are unsuccessful
• Correct interpretation of the results diagnostic procedures
• Performance of procedures indicated for patients with challenging features (e.g., poorly identifiable landmarks, extremes of age, or comorbid conditions)
• Performance of the procedure indicated, taking steps to avoid potential complications, and recognition of the outcome and/or complications resulting from the procedure
• Teaching procedural competency and correcting mistakes
The following table contains procedures and skills that trainees are required to learn.

<table>
<thead>
<tr>
<th>Procedures/skills</th>
<th>Junior</th>
<th>Senior</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Airway</strong></td>
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<tr>
<td>Performs basic airway maneuvers or adjuncts (jaw thrust/chin lift/oral airway/nasopharyngeal airway)</td>
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<tr>
<td>Ventilates/oxygenates patient using BVM</td>
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<tr>
<td><strong>Intubation:</strong> direct laryngoscopy, insertion of oral endotracheal tubes, and use of the rapid sequence induction technique</td>
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<tr>
<td>Insertion of laryngeal mask airway</td>
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<tr>
<td>Use of an additional difficult airway device (e.g., stylet, bougie, or intubating laryngeal mask airway)</td>
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<tr>
<td>Video laryngoscopy and associated devices (e.g., optical stylet or flexible fiber optic laryngoscope)</td>
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<tr>
<td>Securing and caring for endotracheal tubes, including during transport</td>
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<tr>
<td>Surgical/needle cricothyrotomy</td>
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<tr>
<td>Percutaneous transtracheal ventilation</td>
<td>*</td>
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<tr>
<td>Percutaneous tracheostomy</td>
<td>*</td>
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<tr>
<td>Replacing tracheostomy tube</td>
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<tr>
<td>Selection of appropriate mode and parameters for mechanical ventilation</td>
<td>*</td>
<td>*</td>
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<tr>
<td>Noninvasive ventilatory management</td>
<td>*</td>
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<tr>
<td>Ventilatory monitoring</td>
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<tr>
<td><strong>Breathing</strong></td>
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<tr>
<td>Decompression thoracostomy</td>
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<td>*</td>
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<tr>
<td>Pleurocentesis</td>
<td>*</td>
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<tr>
<td>Pneumothorax / hemothorax detection</td>
<td>*</td>
<td>*</td>
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<tr>
<td>Thoracocentesis-microcatheter aspiration/drainage of pneumothorax</td>
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<tr>
<td>Thoracocentesis-needle aspiration pneumothorax</td>
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<tr>
<td>Tube thoracostomy and post tube care</td>
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<td>*</td>
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<tr>
<td>Spirometry and peak flow measurement</td>
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<tr>
<td><strong>Circulating</strong></td>
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<tr>
<td>Vascular access</td>
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<tr>
<td><strong>Pediatric:</strong></td>
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<tr>
<td>Scalp vein</td>
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<tr>
<td>Peripheral vein</td>
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<tr>
<td>Intraosseous</td>
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<tr>
<td>External jugular</td>
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<tr>
<td>Ultrasound-guided Femoral</td>
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<tr>
<td>Femoral central venous catheter without ultrasound guides</td>
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<tr>
<td>Umbilical vein</td>
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<tr>
<td>Venous cutdown</td>
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<tr>
<td><strong>Adult:</strong></td>
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<tr>
<td>Peripheral vein</td>
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<tr>
<td>External jugular</td>
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<td>*</td>
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<tr>
<td>Ultrasound-guided central line</td>
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<td>*</td>
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<tr>
<td>Internal jugular</td>
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<td>*</td>
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<tr>
<td>Subclavian</td>
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<tr>
<td>Anesthesia and Acute Pain Management</td>
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<tr>
<td>Topical anesthesia</td>
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<tr>
<td>Local anesthesia</td>
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<tr>
<td>Hematoma blocks</td>
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<tr>
<td>Intra-articular blocks</td>
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<tr>
<td>Procedural sedation and analgesia</td>
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<tr>
<td>Nerve block anesthesia:</td>
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<tr>
<td>Digital</td>
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<tr>
<td>Supraorbital</td>
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<tr>
<td>Infraorbital</td>
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<tr>
<td>Mental</td>
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<tr>
<td>Mandibular</td>
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<tr>
<td>Lingual</td>
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<td>Median</td>
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<tr>
<td>Radial</td>
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<tr>
<td>Ulnar</td>
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<tr>
<td>Intercostal</td>
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<tr>
<td>Femoral</td>
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<tr>
<td>Sural</td>
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<tr>
<td>Posterior tibial</td>
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<tr>
<td>Penile</td>
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<table>
<thead>
<tr>
<th>Diagnostic and Therapeutic Procedures</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Abdominal and Gastrointestinal</td>
<td></td>
</tr>
<tr>
<td>Nasogastric/orogastric tube insertion</td>
<td>*</td>
</tr>
<tr>
<td>Abdominal paracentesis</td>
<td>*</td>
</tr>
<tr>
<td>Gastrostomy tube replacement</td>
<td>*</td>
</tr>
<tr>
<td>Abdominal hernia reduction</td>
<td>*</td>
</tr>
<tr>
<td>Diagnostic Peritoneal Lavage</td>
<td>*</td>
</tr>
<tr>
<td>Balloon tamponade of gastroesophageal varices</td>
<td>*</td>
</tr>
<tr>
<td>Anoscopy/proctoscopy</td>
<td>*</td>
</tr>
<tr>
<td>Incision thrombosed external hemorrhoids</td>
<td>*</td>
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<tr>
<td>Fecal disimpaction</td>
<td>*</td>
</tr>
</tbody>
</table>

<p>| Cutaneous                             |         |
| Application of bandages/dressings     | *       |
| Suturing: single- and multiple-layer closure | * |</p>
<table>
<thead>
<tr>
<th>Head, Ear, Eye, Nose, and Throat</th>
<th>Musculoskeletal</th>
</tr>
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<tbody>
<tr>
<td><em>Closure with staples</em></td>
<td><em>Arthrocentesis of the knee</em></td>
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<tr>
<td><em>Closure with tissue adhesive glue</em></td>
<td><em>Arthrocentesis of the shoulder, elbow, ankle, wrist, or digits</em></td>
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<tr>
<td><em>Wound hematoma evacuation</em></td>
<td><em>Application and removal of cervical collar/spinal immobilization</em></td>
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<tr>
<td><em>Incision and drainage of abscess</em></td>
<td><em>Immobilization of unstable pelvic fractures</em></td>
</tr>
<tr>
<td><em>Basic wound debridement</em></td>
<td><em>Application and removal of femoral traction device</em></td>
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<tr>
<td><em>Wound closure techniques</em></td>
<td><em>Rigid splint immobilization of extremity fractures</em></td>
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<tr>
<td><em>Trephination, nails</em></td>
<td><em>Circumferential cast immobilization of extremity fractures</em></td>
</tr>
<tr>
<td><em>Nailbed laceration repair</em></td>
<td><em>Application of walking cast</em></td>
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<tr>
<td><em>Extensor tendon repair</em></td>
<td><em>Fracture/dislocation immobilization techniques</em></td>
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<tr>
<td><em>Debridement of burn blisters/frostbite</em></td>
<td><em>Application of upper-extremity slings</em></td>
</tr>
<tr>
<td><em>Escharotomy</em></td>
<td><em>Stabilization and immobilization of uncomplicated upper- and lower-extremity</em></td>
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</table>

**Head, Ear, Eye, Nose, and Throat**

- Control of epistaxis:
  - *Anterior intranasal packing*
  - *Posterior intranasal packing*
  - *Nasal cautery*
  - *Pupil dilatation*
  - *Ocular irrigation*
  - *Ocular patching*
  - *Tonometry*
  - *Slit-lamp examination*
  - *Lateral canthotomy*
  - *Drainage of auricular hematoma*
  - *Insertion of external auditory canal wick*
  - *Drainage of peritonsillar abscess*
  - *Tooth stabilization*

**Systemic Infectious**

- Personal protection (equipment and techniques)
- Universal precautions and exposure management

**Musculoskeletal**

- *Application and removal of cervical collar/spinal immobilization*
- *Immobilization of unstable pelvic fractures*
- *Application and removal of femoral traction device*
- *Rigid splint immobilization of extremity fractures*
- *Circumferential cast immobilization of extremity fractures*
- *Application of walking cast*
- *Fracture/dislocation immobilization techniques*
- *Application of upper-extremity slings*
- *Stabilization and immobilization of uncomplicated upper- and lower-extremity*
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<th>Nervous System</th>
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<tr>
<td>Fractures</td>
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<tr>
<td>Temporary reduction and immobilization of displaced fracture for the relief of pain and/or neurovascular compromise</td>
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<tr>
<td>Definitive reduction and immobilization of the following displaced fractures when appropriate</td>
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<tr>
<td>Distal radius</td>
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<tr>
<td>Fifth metacarpal neck</td>
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<tr>
<td>Phalanx</td>
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<tr>
<td>Reduction of subluxations and dislocations including:</td>
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<tr>
<td>Glenohumeral</td>
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<tr>
<td>Radial head subluxation</td>
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<tr>
<td>Metacarpal-phalangeal</td>
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<tr>
<td>Interphalangeal</td>
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<td>Temporomandibular</td>
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<td>Sternoclavicular</td>
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<td>Elbow</td>
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<td>Knee</td>
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<td>Patella</td>
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<td>Ankle</td>
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<tr>
<td>Splinting of tendon and ligament injuries of the hand, including</td>
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<tr>
<td>Volar plate injury</td>
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<td>Mallet finger injury</td>
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<tr>
<td>Swan neck deformity</td>
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<tr>
<td>Boutonnière deformity</td>
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<tr>
<td>Removal of motorcycle helmet in traumatized patient</td>
<td>*</td>
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<tr>
<td>Management of fingertip amputation</td>
<td>*</td>
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<tr>
<td>Compartment pressure measurement</td>
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<td>Lumbar puncture and measurement of CSF pressure</td>
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<tr>
<th>Obstetrics and Gynecology</th>
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<tr>
<td>Manage normal and complicated delivery, including (but not limited to)</td>
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<tr>
<td>Normal vaginal delivery</td>
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<tr>
<td>Newborn and premature resuscitation</td>
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<tr>
<td>Postpartum hemorrhage</td>
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<td>Episiotomy</td>
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<tr>
<td>Shoulder dystocia</td>
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<td>Breech presentation</td>
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<td>Cord prolapse</td>
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<td>Perimortem C-section</td>
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<td>Sexual assault examination</td>
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<th>Psychobehavioral</th>
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<td>Violent patient management/restraint</td>
<td>*</td>
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<tr>
<td>Urethral bladder catheterization</td>
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<tr>
<td>Suprapubic bladder catheterization</td>
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<tr>
<th>Renal and Urogenital</th>
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<tr>
<td>Toxicological</td>
<td>Bladder irrigation</td>
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<tr>
<td>Other Diagnostic and Therapeutic Procedures</td>
<td>Foreign body removal</td>
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$\dagger$ Rare but must demonstrate the ability & knowledge required

$\ddagger$ Preferred if able to perform.

$\ddagger$ See Appendix B for more details of emergency medicine ultrasound curriculum
Teaching and Academic Activities

General Principles

1. Teaching and learning will be structured and programmatic, with more responsibility for self-directed learning.
2. Every week, at least 4–6 hours of formal training time should be reserved. Formal teaching time is planned in advance with an assigned tutor, time slots, and a venue. Formal teaching time excludes bedside teaching and clinic postings.
3. The core education program (CEP) includes formal teaching and learning activities with the source of topics shown below:
   a) Core specialty topics (70–80%)
   b) Trainee-selected topics relevant to the practice (20–30%)
4. Trainee-selected topics are to be presented within the CEP according to the following guidelines:
   a) Trainees will be given the choice to develop a list of topics alone.
   b) They can choose any topics relevant to their needs.
   c) All of these topics must be planned and cannot be random.
   d) All of the topics must be approved by the local education committee.
   e) Delivery will be local, within the program activities.
   f) Institutions can work with trainees to determine topics.
5. At least 3 hours per week should be allocated to CEP.
6. CEP will be supplemented by other practice-based learning (PBL) such as
   a) Morning reports or case presentations
   b) Morbidity and mortality reviews
   c) Journal clubs
   d) Systematic reviews
   e) Hospital grand rounds and other CMEs
7. Every four weeks, at least 1 hour should be assigned to activities such as meeting with mentors (or the program director), review of portfolio, or mini-CEX

Formal teaching sessions (See Appendices D and E for examples)
The residents’ weekly activities consist of a full-day (8:00 am to 4:00 pm) educational session tailored to the needs of specific training levels, with a specific theme each week. It covers the whole clinical curriculum of the emergency medicine residency every 2 years. Attendance is mandatory for all residents, and the sessions consist of the following:

- **Morning Activity** (8:00 am to 12:00 pm): The morning activity is divided into separate tracks for junior (R1-2) and senior (R3-4) residents.
1. **Junior Activity** (4 hours): The junior resident activity aims to establish a baseline of knowledge of emergency medicine topics for junior residents and consists of the following:
   - **Oral Presentation** (1 hour): The resident's presentation aims to cover the pathophysiology, approach, and initial management of common or life-threatening diseases. It is also a chance to practice and improve the junior resident's oral presentation skills.
   - **Case Series** (3 hours): This is a discussion session moderated by an emergency medicine consultant, with topics from the week's theme presented in a clinical-scenario format.

2. **Senior Activity** (4 hours): The senior resident activity aims to improve and update existing knowledge of emergency medicine topics, with a focus on the latest updates in management, avoiding clinical pitfalls, and reviewing uncommon presentations of disease in emergency medicine. Senior residents' oral presentation skills are also evaluated. The activity comprises two oral presentations (2 hours each) from one of the following categories:
   - **Literature Review**: Discussion of the latest studies and guidelines regarding a common topic.
   - **Core Review**: A concentrated review of a highly diverse topic.
   - **Case Series**: A focus on pearls and pitfalls in a clinical-scenario format (see Appendix for topic case series).

**Afternoon Activity** (12:30 to 4:00 pm):

1. **Combined Activities**: Consultants and residents at all training levels attend.
   - **Grand Rounds** (1.5 hours): The grand rounds involve discussions regarding topics that affect emergency medicine practice from a broad perspective. Emergency medicine consultants present them, with occasional panel discussions involving guests from other clinical departments.
   - **Journal Club** (2 hours): In this once-monthly activity, residents present and critically appraise the latest articles published in emergency medicine journals.

2. **Level-Specific Activities**:
   - **R1 Activity** (2 hours): Focuses on skills that most junior residents need to improve (e.g., ECG analysis). Senior emergency medicine residents present the activities.
   - **R2 Activity, Simulation** (2 hours): Places the residents in high-definition simulated critical scenarios, to test and improve their teamwork, leadership, and stress management skills.
c. **R4 Activity** (2 hours): Prepares the most senior residents for their board certification process, with practice for written and oral exams.

- **Daily morning report:** covers one or more of the previous day’s cases in discussions with the consultant who attends the sessions.
- **Research project:** Each resident is required to conduct one research project throughout his 4 years of training. In chronological order, by the end of the first year, the resident should formulate a research question and find a supervisor; by the second year, a proposal should be written and approved; by the third year, the resident should conduct the study; and by the final year, the resident should produce an abstract presentation on the research day held by the program and publication.

### Emergency Medicine Core Specialty Topics

The following is a short list summarizing the levels of specialty topics; it includes, but is not limited to, the following (for more details please see Appendix C):

#### Critical management principles
- Airway
- Mechanical ventilation
- Emergency monitoring
- Shock
- Blood and blood components
- Brain resuscitation
- Adult resuscitation
- Pediatric resuscitation
- Neonatal resuscitation
- Peripheral vascular injury

#### Orthopedic injury
- Hand
- Wrist and forearm
- Humerus and elbow
- Shoulder
- Musculoskeletal back pain
- Pelvic trauma
- Femur and hip
- Knee and lower leg
- Ankle and foot

#### General concepts in trauma
- Multiple trauma management
- Trauma in pregnancy
- Pediatric trauma
- Geriatric trauma
- Injury prevention and control

#### Soft tissue injury
- Wound management
- Foreign bodies
- Mammalian bites
- Venomous animal injuries
- Thermal and chemical

#### System injuries
- Head injury
- Facial injury
- Spinal injury
- Neck injury
- Thoracic trauma
- Abdominal trauma
- Genitourinary Trauma
- Forensic emergency medicine
- Child maltreatment
- Sexual assault
- Intimate partner violence
- Elder abuse and neglect
Head and neck medicine

- Oral medicine
- Ophthalmology
- Otolaryngology

Pulmonology

- Asthma and chronic obstructive pulmonary disease
- Upper respiratory tract infection
- Pneumonia
- Pleural disease

Cardiology

- Acute coronary syndrome
- Dysrhythmia
- Implantable cardiac devices
- Heart failure
- Pericardial and myocardial disease
- Infective endocarditis
- Valvular heart disease

Vascular system

- Hypertension
- Aortic dissection
- Abdominal aortic aneurysm
- Peripheral arteriovascular disease
- Pulmonary embolism and deep vein thrombosis

Gastroenterology

- Disorders of the esophagus, stomach, and duodenum
- Disorders of the liver and biliary tract
- Disorders of the pancreas
- Disorders of the small intestine
- Acute appendicitis
- Gastroenteritis
- Disorders of the large intestine
- Disorders of the anorectum

Genitourinary medicine and gynecology

- Renal failure
- Sexually transmitted diseases
- Urological emergencies
- Gynecological emergencies

Neurology

- Stroke
- Seizure
- Headache
- Delirium and dementia
- Brain and cranial nerve disorders
- Spinal cord disorders
- Peripheral nerve disorders
- Neuromuscular disorders

Psychiatric and behavioral disorders

- Thought disorders
- Mood disorders
- Anxiety disorders
- Somatoform disorders
- Suicide

Immunologic and inflammatory disease

- Arthritis, bursitis, and tendinopathy
- Systemic lupus erythematosus and vasculitis
- Allergy, hypersensitivity, and anaphylaxis
- Dermatological presentations

Hematology and Oncology

- Anemia, polycythemia, and white blood cell disorders
- Disorders of hemostasis
- Oncological emergencies
Metabolism and endocrinology
- Acid base disorders
- Electrolyte imbalance
- Disorders of glucose homeostasis
- Rhabdomyolysis
- Thyroid and adrenal disorders

Infective diseases
- Bacterial diseases
- Viral diseases
- Rabies
- AIDS and HIV
- Parasitic infections
- Tick borne illnesses
- Tuberculosis
- Bone, joint, and soft tissue infections
- Sepsis syndromes

Environmental hazards
- Accidental hypothermia
- Heat illnesses
- Electrical and lightening injuries
- Scuba diving and dysbarism
- High altitude medicine
- Drowning
- Radiation injuries

Toxicology
- Approach to the poisoned patient
- Acetaminophen
- Aspirin and nonsteroidal agents
- Anticholinergic medication
- Antidepressants
- Cardiovascular agents
- Caustics
- Cocaine and sympathomimetic agents
- Toxic alcohols
- Hallucinogens
- Heavy metals
- Hydrocarbons
- Inhaled toxins
- Antipsychotics
- Opioids
- Pesticides
- Sedative hypnotics
- Alcohol abuse and alcohol-related diseases

Pain management and procedural sedation

Special populations
- Pediatrics
- Approach to the pediatric patient
- Pediatric fever
- Pediatric respiratory emergencies
- Cardiac disorders
- Gastrointestinal disorders
- Neurologic disorders
- Musculoskeletal disorders
- Obstetrics and gynecology
- Approach to the pregnant patient
- Acute complications in pregnancy
- Labor and delivery and their complications
- Geriatric patients
- Immunocompromised patients and organ transplant patients
- Physically disabled patients
- Difficult and combative patients

Emergency medical services
- Emergency medical service system
- Patient transport
- Hajj emergency medicine
- Tactical emergency medical
- Disaster preparedness
- Weapons of mass destruction
Clinical practice and administration

Universal Topics

Intent
These are high-value, interdisciplinary topics of the utmost importance to the trainee. The reason for delivering the topics centrally is to ensure that every trainee receives high-quality teaching and develops essential core knowledge. These topics are common to all specialties, and the topics included here meet one or more of the following criteria:

- Impactful: topics that are common or life threatening
- Interdisciplinary: topics that are difficult to teach in a single discipline
- Orphan: topics that are poorly represented in the undergraduate curriculum
- Practical: topics that trainees will encounter in hospital practice

Development and Delivery:
These topics will be developed and delivered by the commission centrally via an e-learning platform, which is didactic in nature with a focus on practical aspects of care. These topics will be more content heavy relative to workshops and other face-to-face interactive sessions. The suggested duration for each topic is 90 minutes. The topics will be delivered in a modular fashion via e-learning. There is an online formative assessment to complete at the end of each learning unit. Upon completion of all topics, trainees complete a combined summative assessment in the form of a context-rich multiple-choice question (MCQ). All trainees must attain minimum competency in the summative assessment. Alternatively, these topics can be assessed in a summative manner alongside a specialty examination. The titles of these universal topics are listed and described in the following modules:

Module 1: Introduction
A. Safe drug prescribing  
B. Hospital-acquired infections (HAI)  
C. Sepsis, systemic inflammatory response syndrome (SIRS), and disseminated intravascular coagulation (DIC)  
D. Antibiotic stewardship  
E. Blood transfusion  

**Safe drug prescribing:** Upon completion of the learning unit, the trainee should be able to do the following:

a) Recognize the importance of safe drug prescribing in healthcare.  
b) Describe various adverse drug reactions with examples of commonly prescribed drugs that can cause such reactions.  
c) Apply principles of drug-drug interactions, drug-disease interactions, and drug-food interactions to common situations.  
d) Apply principles of prescribing drugs to special situations such as renal and liver failure.  
e) Apply principles of prescribing drugs to elderly, pediatric, pregnant, and lactating patients.  
f) Promote evidence-based, cost-effective prescribing.  
g) Discuss ethical and legal frameworks governing safe drug prescribing in Saudi Arabia.  

**HAI:** Upon completion of the learning unit, the trainee should be able to do the following:

a) Discuss the epidemiology of HAI with special reference to Saudi Arabia.  
b) Recognize HAI as one of the major emerging threats in healthcare.  
c) Identify the common sources of HAI.  
d) Describe the risk factors for common HAIs such as ventilator-associated pneumonia, methicillin-resistant staphylococcus aureus, central line-associated bloodstream infection, and vancomycin-resistant enterococcus.  
e) Identify the role of healthcare workers in the prevention of HAI.
f) Determine appropriate pharmacological (e.g., selected antibiotic) and nonpharmacological (e.g., removal of indwelling catheter) measures in the treatment of HAI.

g) Propose a plan to prevent HAI in the workplace.

**Sepsis, SIRS, and DIVC:** Upon completion of the end of the learning unit, the trainee should be able to do the following:

a) Explain the pathogenesis of sepsis, SIRS, and DIVC.
b) Identify the patient-related and non-patient related predisposing factors of sepsis, SIRS, and DIVC.
c) Recognize patients at risk of developing sepsis, SIRS, and DIVC.
d) Describe the complications of sepsis, SIRS, and DIVC.
e) Apply the principles of management of patients with sepsis, SIRS, and DIVC.
f) Describe the prognosis of sepsis, SIRS, and DIVC.

**Antibiotic Stewardship:** Upon completion of the learning unit, the trainee should be able to do the following:

a) Recognize antibiotic resistance as one of the most pressing global public health threats.
b) Describe the mechanism of antibiotic resistance.
c) Determine appropriate and inappropriate use of antibiotics.
d) Develop a plan for safe and proper antibiotic use, to include indications, duration, types of antibiotic, and discontinuation.
e) Apprise oneself of the local guidelines for the prevention of antibiotic resistance.

**Blood Transfusion:** Upon completion of the learning unit, the trainee should be able to do the following:

a) Review the different components of blood products available for transfusion.
b) Recognize the indications and contraindications of blood product transfusion.

c) Discuss benefits, risks, and alternatives with respect to transfusion.

d) Obtain consent for specific blood product transfusion.

e) Perform steps necessary for safe transfusion.

f) Develop an understanding of the special precautions and procedures necessary during major transfusions.

g) Recognize transfusion-associated reactions and provide immediate management.

Module 2: Cancer

A. Principles of the management of cancer

B. Side effects of chemotherapy and radiation therapy

C. Oncological emergencies

Principles of the Management of Cancer: Upon completion of the learning unit, the trainee should be able to do the following:

a) Discuss the basic principles of the staging and grading of cancers.

b) Enumerate the basic principles (e.g., indications, mechanism, and types) of the following:
   1. Cancer surgery
   2. Chemotherapy
   3. Radiotherapy
   4. Immunotherapy
   5. Hormone therapy

Side Effects of Chemotherapy and Radiation Therapy: Upon completion of the learning unit, the trainee should be able to do the following:

a) Describe the important side effects (e.g., frequent or life- or organ-threatening effects) of common chemotherapy drugs.

b) Explain the principles of monitoring side effects in patients undergoing chemotherapy.
c) Describe the measures (pharmacological and nonpharmacological) available to ameliorate the side effects of commonly prescribed chemotherapy drugs.

d) Describe the important (e.g., common and life-threatening) side effects of radiation therapy.

e) Describe the measures (pharmacological and nonpharmacological) available to ameliorate the side effects of radiotherapy.

**Oncological Emergencies:** Upon completion of the learning unit, the trainee should be able to do the following:

a) Enumerate important oncologic emergencies encountered in both hospital and ambulatory settings.

b) Discuss the pathogenesis of important oncological emergencies.

c) Recognize oncological emergencies.

d) Institute immediate measures to treat patients with oncological emergencies.

e) Counsel patients in an anticipatory manner to recognize and prevent oncological emergencies.

**Module 3: Diabetes and Metabolic Disorders**

A. Recognition and management of diabetic emergencies

B. Management of diabetic complications

C. Abnormal ECG

**Recognition and Management of Diabetic Emergencies:** Upon completion of the learning unit, the trainee should be able to do the following:

a) Describe the pathogenesis of common diabetic emergencies, including their complications.

b) Identify risk factors and groups of patients vulnerable to such emergencies.

c) Recognize patients who present with diabetic emergencies.

d) Institute immediate management.
e) Refer the patient for the appropriate level of care.
f) Counsel the patient and his/her family to prevent such emergencies.

Management of Diabetic Complications: Upon completion of the learning unit, the trainee should be able to do the following:

a) Describe the pathogenesis of the important complications of Type 2 diabetes mellitus.
b) Screen patients for such complications.
c) Provide preventive measures for such complications.
d) Treat such complications.
e) Counsel patients and their families, with a particular emphasis on prevention.

Abnormal ECG: Upon completion of the learning unit, the trainee should be able to do the following:

a) Recognize common and important ECG abnormalities.
b) Institute immediate management if necessary.

Module 4: Medical and Surgical Emergencies

A. Management of acute chest pain
B. Management of acute breathlessness
C. Management of altered sensorium
D. Management of hypotension and hypertension
E. Management of upper gastrointestinal bleeding
F. Management of lower gastrointestinal bleeding

For all the above, the following learning outcomes apply:

Upon completion of the learning unit, the trainee should be able to do the following:

a) Triage and categorize patients.
b) Identify patients who need prompt medical or surgical attention.
c) Generate preliminary diagnoses based on history and physical examination.

d) Order and interpret urgent investigations.

e) Provide appropriate immediate management to patients.

f) Refer the patients to the next level of care if necessary.

Module 5: Acute Care

A. Preoperative assessment
B. Postoperative care
C. Acute pain management
D. Chronic pain management
E. Management of fluid in the hospitalized patient
F. Management of electrolyte imbalances

Preoperative Assessment: Upon completion of the learning unit, the trainee should be able to do the following:

a) Describe the basic principles of preoperative assessment.

b) Perform preoperative assessment of uncomplicated patients, with particular emphasis on the following:
   1. General health assessment
   2. Cardiorespiratory assessment
   3. Medication and medical device assessment
   4. Drug allergy
   5. Pain relief requirements

c) Categorize patients according to risk

Postoperative Care: Upon completion of the learning unit, the trainee should be able to do the following:

a) Devise a postoperative care plan that includes monitoring vital signs, pain management, fluid management, medication, and laboratory investigations.

b) Hand patients over to the appropriate facilities properly.

c) Describe the process of postoperative recovery.
d) Identify common postoperative complications.
e) Monitor patients for possible postoperative complications.
f) Institute immediate management of postoperative complications.

**Acute Pain Management:** Upon completion of the learning unit, the trainee should be able to do the following:

a) Review the physiological basis of pain perception.
b) Proactively identify patients in acute pain.
c) Assess patients with acute pain.
d) Apply the various pharmacological and nonpharmacological modalities available for acute pain management.
e) Provide adequate pain relief for uncomplicated patients with acute pain.
f) Identify and refer patients with acute pain who could benefit from specialized pain services.

**Chronic Pain Management:** Upon completion of the learning unit, the trainee should be able to do the following:

a) Review the biopsychosocial and physiological bases of chronic pain perception.
b) Discuss the various pharmacological and nonpharmacological options available for chronic pain management.
c) Provide adequate pain relief for uncomplicated patients with chronic pain.
d) Identify and refer patients with chronic pain who could benefit from specialized pain services.

**Management of Fluid in Hospitalized Patients:** Upon completion of the learning unit, the trainee should be able to do the following:

a) Review the physiological basis of water balance in the body.
b) Assess the patient’s hydration status.
c) Recognize patients with over or underhydration.
d) Order fluid therapy (oral and intravenous) for hospitalized patients.
e) Monitor fluid status and response to therapy via history, physical examination, and selected laboratory investigations.

Management of Acid-Base Electrolyte Imbalances: Upon completion of the learning unit, the trainee should be able to do the following:
   a) Review the physiological basis of electrolyte and acid-base balance in the body.
   b) Identify diseases and conditions that are associated with or likely to cause acid-base and electrolyte imbalances.
   c) Correct electrolyte and acid-base imbalances.
   d) Perform careful calculations, checks, and other safety measures while correcting acid-base and electrolyte imbalances.
   e) Monitor response to therapy through history, physical examination, and selected laboratory investigations.

Module 6: Frail Elderly Patients
   A. Assessment of frail elderly patients
   B. Mini-Mental State Examination (MMSE)
   C. Prescribing medication to elderly patients
   D. Care of elderly patients

Assessment of Frail Elderly Patients: Upon completion of the learning unit, the trainee should be able to do the following:
   a) Enumerate the differences and similarities in comprehensive assessment between elderly and other patients.
   b) Perform comprehensive assessment of frail elderly patients, in conjunction with other members of the healthcare team, with particular emphasis on social factors, functional status, quality of life, diet and nutrition, and medication history.
   c) Develop a problem list based on the assessment of the elderly patient.

Mini-Mental State Examination: Upon completion of the learning unit, the trainee should be able to do the following:
a) Review the appropriate uses, advantages, and potential pitfalls of the MMSE.

b) Identify patients suitable for assessment via the MMSE.

c) Screen patients for cognitive impairment using the MMSE.

Prescribing Medication to Elderly Patients: Upon completion of the learning unit, the trainee should be able to do the following:

a) Discuss the principles of prescribing in elderly patients.

b) Recognize polypharmacy, the prescribing cascade, inappropriate dosage, inappropriate medication, and deliberate medication exclusion as major causes of morbidity in elderly patients.

c) Describe the physiological and functional decline that contributes to increased drug-related adverse events in elderly patients.

d) Discuss drug-drug interactions and drug-disease interactions in elderly patients.

e) Familiarize him/herself with the Beers criteria.

f) Develop rational prescribing habits for elderly patients.

g) Counsel elderly patients and their families regarding safe medication use.

Care of Elderly Patients: Upon completion of the learning unit, the trainee should be able to do the following:

a) Describe the factors that require consideration in planning care for elderly patients.

b) Recognize caregivers’ needs with respect to their well-being.

c) Identify local and community resources available to care for elderly patients.

d) With input from other healthcare professionals, develop individualized care plans for elderly patients.

Module 7: Ethics and Healthcare

A. Occupational hazards for healthcare workers

B. Evidence-based approach to smoking cessation

C. Patient advocacy

D. Ethical issues: transplantation/organ harvesting and withdrawal of care
E. Ethical issues: treatment refusal and patient autonomy
F. Role of doctors in death and dying

**Occupational Hazards for Healthcare Workers:** Upon completion of the learning unit, the trainee should be able to do the following:

a) Recognize common sources and risk factors of occupational hazards for healthcare workers.
b) Describe common occupational hazards in the workplace.
c) Develop familiarity with legal and regulatory frameworks governing occupational hazards for healthcare workers.
d) Develop a proactive attitude to the promotion of workplace safety.
e) Protect him/herself and colleagues against potential occupational hazards in the workplace.

**Evidence Based Approach to Smoking Cessation:** Upon completion of the learning unit, the trainee should be able to do the following:

a) Describe the epidemiology of smoking and tobacco use in Saudi Arabia
b) Review the effects of smoking on the smoker and his/her family members.
c) Use pharmacological and nonpharmacological measures to treat tobacco use and dependence effectively.
d) Use pharmacological and nonpharmacological measures to treat tobacco use and dependence in special population groups, such as pregnant ladies, adolescents, and patients with psychiatric disorders, effectively.

**Patient Advocacy:** Upon completion of the learning unit, the trainee should be able to do the following:

a) Define patient advocacy.
b) Recognize patient advocacy as a core value governing medical practice.
c) Describe the role of the patient advocate in the care of patients.
d) Develop a positive attitude toward patient advocacy.
e) Be a patient advocate in conflicting situations.
f) Be familiar with local and national patient advocacy groups.
**Ethical issues: transplantation/organ harvesting and withdrawal of care:** Upon completion of the learning unit, the trainee should be able to do the following:

a) Apply key ethical and religious principles governing organ transplantation and withdrawal of care.
b) Be familiar with the legal and regulatory guidelines regarding organ transplantation and withdrawal of care.
c) Counsel patients and families in the light of applicable ethical and religious principles.
d) Guide patients and families in making informed decisions.

**Ethical issues: treatment refusal and patient autonomy:** Upon completion of the learning unit, the trainee should be able to do the following:

a) Predict situations in which patients or their families are likely to decline prescribed treatment.
b) Describe the concept of the “rational adult” in the context of patient autonomy and treatment refusal.
c) Analyze key ethical, moral, and regulatory dilemmas pertaining to treatment refusal.
d) Recognize the importance of patient autonomy in the decision-making process.
e) Counsel patients and families who decline medical treatment in the best interests of the patients.

**Role of Doctors in Death and Dying:** Upon completion of the learning unit, the trainee should be able to do the following:

a) Recognize the important role a doctor can play during the dying process.
b) Provide emotional and physical care to dying patients and their families.
c) Provide appropriate pain management for dying patients.
d) Identify patients suitable for referral to palliative care services and make appropriate referrals.
Supplementary Courses and workshops

The following list of courses and workshops should help the resident to enhance his/her skills during training.

1. Advanced Trauma Life Support Course (ATLS)
The Advanced Trauma Life Support course teaches a systematic, concise approach to the early care of the trauma patient. This course is vital in guiding care for the injured patient in the ED.
**Duration:** three days  **Target Audience:** junior residents (R1 and R2)

2. Advanced Cardiovascular Life Support Course (ACLS)
The Advanced Cardiovascular Life Support course teaches systematic management of cardiopulmonary arrest and other cardiovascular emergencies.
**Duration:** three days  **Target Audience:** junior residents (R1 and R2)

3. Pediatric Advanced Life Support (PALS)
The Pediatric Advanced Life Support Course is for healthcare providers who respond to emergencies in infants and children.
**Duration:** three days  **Target Audience:** junior residents (R1 and R2)

4. Point-of-Care Ultrasound
An introduction to point-of-care ultrasound, in which residents learn the six basic diagnostic assessments (including trauma, cardiac, gallbladder, aorta, pelvic, and deep vein thrombosis) and procedural guidance (such as peripheral or central venous catheter insertion) using ultrasound.
**Duration:** two days  **Target Audience:** Level 1: junior residents (R1 and R2); Level 2: senior residents (R3 and R4)

5. Introduction to Clinical Research Course
This introduction to clinical research teaches the development of research ideas, research methodology, and basic statistics for scientific research.
**Duration:** two days  **Target Audience:** senior residents (R3 and R4)

6. Evidence-Based Medicine Foundation course (EBM)
Completion of the EBM course is a requirement for all residents, as stipulated by the Saudi Commission for Health Specialties. The course focuses on the principles of EBM, electronic evidence searches, and critical appraisal skills.
**Duration:** two days  **Target Audience:** senior residents (R3 and R4)
7. Critical Procedures in Trauma: A Hands-On Workshop
This workshop covers the main procedures involved in managing trauma patients and includes open and closed cricothyrotomy, chest tube insertion, and video laryngoscopy.
**Duration:** one day  **Target Audience:** junior residents (R1 and R2)

8. Procedural Sedation Course
The course covers common therapeutic agents and the finer points of sedation in the ED setting and includes key pearls and avoidable pitfalls.
**Duration:** one day  **Target Audience:** junior residents (R1 and R2)

9. Slit-Lamp Skills Workshop
The course covers the basics of slit-lamp equipment and examination for the emergency physician.
**Duration:** one day  **Target Audience:** junior residents (R1 and R2)

10. Pediatric Procedures Workshop
This course covers the main life-saving procedures for infants and children and includes the Seldinger technique, intraosseous line placement, umbilical vein catheters, and airway management techniques such as intubation and the laryngeal mask.
**Duration:** one day  **Target Audience:** junior residents (R1 and R2)

11. Reading a Head CT Workshop: What Every Emergency Physician Needs to Know
The course teaches residents how to read CT scans of the head through case-based discussion. The case studies include trauma, fractures, hemorrhage, infarcts, edema, and shear injuries. It also covers methods for avoiding errors associated with reading CT scans of the head.
**Duration:** one day  **Target Audience:** junior residents (R1 and R2)

12. Mechanical Ventilation Workshop
This workshop teaches residents the basics of mechanical ventilation physiology. Upon completion, workshop participants should be able to understand the different modes of ventilation, set up a ventilator, and ventilate patients with specific diseases.
**Duration:** two days  **Target Audience:** senior residents (R3 and R4)
Assessment

Purpose: The purposes of assessment during the training are as follows:

- Supporting learning
- Development of professional growth
- Monitoring progression
- Competency judgment and certification
- Evaluation of the quality of the training program

General Principles:

- Judgment should be based on holistic profiling of a trainee rather than individual traits or instruments.
- Assessment should be continuous in nature.
- The resident and faculty must meet to review the resident’s performance.
- Assessment should be strongly linked to the curriculum and course content.

Residents' evaluation and assessment throughout the program is undertaken in accordance with the Commission's training and examination rules and regulations. This includes the following:

A. Annual Assessment:

1. Continuous Appraisal
   This assessment is conducted toward the end of each training rotation throughout the academic year and at the end of each academic year as continuous assessment in the form of formative and summative evaluation.

   1.1 Formative Continuous Evaluation:
   To fulfill the CanMEDS competencies based on the end of rotation evaluation, the resident's performance will be evaluated jointly by relevant staff for the following competencies:
   1. Performance of the trainee during daily work.
   2. Performance and participation in academic activities.
   3. Performance in a 10–20-minute direct observation assessment of trainee-patient interactions. Trainers are encouraged to perform at least one assessment per clinical rotation, preferably near the end of the rotation. Trainers should provide timely and specific feedback to the trainee after each assessment of a trainee-patient encounter.
4. Performance of diagnostic and therapeutic procedural skills by the trainee. Timely and specific feedback for the trainee after each procedure is mandatory.

5. The CanMEDS-based competencies end-of-rotation evaluation form must be completed within two weeks following the end of each rotation (preferably in an electronic format) and signed by at least two consultants. The program director will discuss the evaluation with the resident, as necessary. The evaluation form will be submitted to the Regional Training Supervisory Committee of the SCFHS within four weeks following the end of the rotation.

6. The assessment tools, in a form of educational portfolio (i.e., monthly evaluation, rotational Mini-CEX* and CBDs**, etc.).

7. The academic or clinical assignments should be documented by an electronic tracking system (e-Logbook when applicable) on an annual basis. Evaluations will be based on accomplishment of the minimum requirements of the procedures and clinical skills as determined by the program.

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*Mini-clinical Evaluation Exercise  
**Case-based Discussion

**1.2 Summative Continuous Evaluation:**
This is a summative continuous evaluation report prepared for each resident at the end of each academic year, which might also involve clinical, oral examination, OSPE, and OSCE.

**2. End-of-year Examination:**
The end-of-year examination will be limited to R1, R2, and R3. The number of exam items, eligibility, and passing score will be in accordance with the commission's training and examination rules and regulations. Examination details and blueprint are published on the commission website, www.scfhs.org.sa

**B. Principles of Emergency Medicine Examination (Saudi Board Examination: Part I)**
This exam is conducted in the form of a written examination with a MCQ format, and it is held at least once a year. The number of exam items, eligibility, and passing score will be in accordance with the Commission's training and examination rules and regulations. Examination details and blueprint are published on the commission website, www.scfhs.org.sa
C. Final In-training Evaluation Report (FITER)/Comprehensive Competency Report (CCR)

In addition to the approval of completion of the clinical requirements (resident’s logbook) by the local supervising committee, the FITER is also prepared by the program’s directors for each resident at the end of his/her final year in residency (R4). This might also involve clinical, oral exams, and completing other academic assignmen(s).

D. Final Emergency Medicine Board Examination (Saudi Board Examination: Part II)

The final Saudi Board Examination comprises two parts:

1. Written Examination

This examination assesses the theoretical knowledge base (including recent advances) and problem-solving capabilities of candidates in the specialty of emergency medicine. It is delivered in a MCQ format and is held at least once a year. The number of exam items, eligibility, and passing score will be in accordance with the Commission's training and examination rules and regulations. Examination details and blueprint are published on the commission website, www.scfhs.org.sa

2. Clinical Examination

This examination assesses a broad range of high-level clinical skills, including data gathering, patient management, communication, and counseling skills. The examination is held at least once a year, preferably in an objective structured clinical examination (OSCE) format in the form of patient management problems (PMPs). The exam eligibility and passing score will be in accordance with the Commission's training and examination rules and regulations. Examination details and blueprint are published on the commission website, www.scfhs.org.sa

E. Certification:

Certificate of training completion will only be issued upon the resident’s successful completion of all program requirements. Candidates passing all components of the final specialty examination are awarded the “Saudi Board of Emergency Medicine” certificate.
Suggested reading for clinical practice

There is no single recommended resource but the following are highly recommended:

- *Rosen's Emergency Medicine - Concepts and Clinical Practice*
- *Tintinalli’s Emergency Medicine: A Comprehensive Study Guide*
- *Atlas of Emergency Medicine by The McGraw-Hill Companies, Inc*
- *Roberts and Hedges’ Clinical Procedures in Emergency Medicine*
- *Manual of Emergency Airway Management* by Ron Wall and Michael Murphy
- *Textbook of Pediatric Emergency Medicine* by Fleisher
- *Bouncebacks! Emergency Department Cases: ED Returns* by Michael Weinstock
- *Goldfrank’s Toxicologic Emergencies*
- *Haddad and Winchester's Clinical Management of Poisoning and Drug Overdose*
- Emergency medicine journals and EM-related articles in top medical journals
References:

- Objectives of Training of Emergency Medicine by The Royal College of Physicians and Surgeons of Canada, 2008
- 2011 Model of the Clinical Practice of Emergency Medicine, Academic Emergency Medicine (online only), by collaborating organizations including the American College of Emergency Physicians, the SAEM, and others, 2012
- The Emergency Medicine Milestone Project by A Joint Initiative of The Accreditation Council for Graduate Medical Education and The American Board of Emergency Medicine, 2012
- MOH, Health Statistical Year Book, 2011
Appendices

APPENDIX A

Emergency Medicine CanMEDS Competencies

The CanMEDS competencies published by the Royal College of Physicians and Surgeons are provided below for guidance. Upon completion of training, the resident will have acquired the following competencies and will function effectively as a:

**Medical Expert**

**Definition**

As medical experts, specialist emergency physicians integrate all of the CanMEDS roles, applying medical knowledge, clinical skills, and professional attitudes to their provision of patient-centered care. The medical expert is the central physician in the CanMEDS framework.

Key and enabling competencies: specialist emergency physicians are able to do the following:

1. **Function effectively as consultants, integrating all of the CanMEDS roles to provide optimal, ethical, patient-centered medical care**
   1.1 Perform consultations, including the presentation of well-documented assessments and recommendations in written and/or verbal format, effectively in response to requests from other healthcare professionals, including community family physicians, referring emergency physicians, and other specialists, on behalf of patients requiring emergency care.
   1.2 Recognize and respond to the ethical dimensions of medical decision making, particularly in the context of practicing emergency medicine, for which consent is not always obtainable.
   1.3 Demonstrate compassionate and patient-centered care.
   1.4 Demonstrate medical expertise in situations other than patient care, such as advising hospital and/or regional health authorities or government agencies or providing expert legal opinion.

2. **Establish and maintain the clinical knowledge, skills, and attitudes necessary to assess and manage a full spectrum of patients, rapidly and often concomitantly with acute or undifferentiated illness and injury**
   2.1 Describe the CanMEDS framework of competencies relevant to emergency medicine.
   2.2 Possess knowledge of the clinical, sociobehavioral, and fundamental biomedical sciences relevant to emergency medicine.
2.3 Apply the basic scientific and clinical knowledge necessary to rapidly assess and manage patients with acute and/or undifferentiated illness or injury, ranging from life-threatening events to common minor presentations.

2.4 Contribute to the improvement of quality care and patient safety in the practice of emergency medicine, integrating the best evidence and practices available.

2.5 Be aware of his/her knowledge, skills, and personal limitations and be able to seek advice as necessary, resulting in subsequent performance enhancement.

2.6 Apply the lifelong learning skills applicable to the role of scholar to the implementation of a personal program to maintain and enhance areas of professional competence in emergency medicine.

3. Perform a complete and appropriate patient assessment consisting of a selective, accurate, and well-organized history and physical examination

3.1 Triage and set appropriate priorities when dealing with any number of critically ill patients.

3.2 Perform accurate and complete clinical assessment of patients presenting with nonspecific clinical complaints and syndromes.

3.3 Identify and explore issues to be addressed, including the patient’s context, beliefs, and preferences, in patient encounters within emergency medicine practice.

3.4 For the purposes of prevention, health promotion, diagnosis, and management, elicit a history that is relevant, concise, and accurate with respect to context, beliefs, and preferences.

3.5 When necessary, make appropriate use of alternative sources of information to complete or substantiate clinical information.

3.6 For the purposes of prevention, health promotion, diagnosis, and management, perform a focused physical examination that is relevant and accurate in emergency medicine practice.

3.7 Generate differential diagnoses that are well organized and compatible with known clinical and laboratory information and include both likely entities and less common but serious or life-threatening conditions.

3.8 Demonstrate effective clinical problem solving and judgment, including interpreting available data and integrating information to generate differential diagnoses and management plans, to address patient problems.

3.9 Understand the concept of diagnostic uncertainty and use presumptive management appropriately in the resolution of these circumstances.

3.10 Use timely and selective clinical reassessment to optimize and facilitate patient care.
4. Select appropriate investigations, including laboratory and diagnostic imaging with careful attention to patient safety, diagnostic utility, and cost, and interpret the results accurately within their clinical context

4.1 Plan an effective and appropriate investigation, in the context of practicing emergency medicine, in collaboration with the patient and his/her defined family unit, when possible.
4.2 Select medically appropriate investigative methods in a resource-effective and ethical manner, with consideration of their diagnostic utility, safety, availability, and cost.
4.3 Ensure that informed consent is obtained for investigations when indicated and feasible.
4.4 When circumstances dictate, perform selective clinical investigations concurrently with emergency patient management.
4.5 Document and disseminate information related to the investigations appropriately.
4.6 Ensure that adequate follow-up is arranged for the results of investigations.

5. Use preventive and therapeutic interventions relevant to emergency medicine in a safe, effective, appropriate, and timely manner

5.1 Use sound clinical reasoning and judgment to guide diagnosis and management and arrive at appropriate decisions, even in circumstances in which clinical or diagnostic information is not immediately available.
5.2 Recognize and manage crisis situations/critically ill patients in a calm, prompt, and skillful manner.
5.3 Prioritize professional duties effectively and appropriately when faced with multiple patients and problems.
5.4 Implement an effective and appropriate management plan in collaboration with the patient and his/her defined family unit when possible.
5.5 Ensure that informed consent is obtained for therapies when indicated and feasible.
5.6 Ensure that patients receive appropriate end-of-life care.
5.7 Seek consultation from other healthcare professionals when appropriate
5.8 Arrange appropriate follow-up care
5.9 Use appropriate measures to protect healthcare providers in order to avoid exposure to contamination from biological, chemical, or radiation threats.

6. Demonstrate proficient and appropriate use of procedural skills, both diagnostic and therapeutic, and select and perform these medical
procedures in an appropriate, safe, and skillful manner, minimizing patient risk and discomfort

6.1 Possess detailed knowledge of the indications, contraindications, methods, and potential complications of the common medical therapeutic and investigative procedures employed in the practice of emergency medicine and demonstrate proficiency in the performance of these procedures, either in a clinical setting or via simulation:

6.1.1 Select and perform minor diagnostic procedures relevant to all age groups and the daily practice of emergency medicine.

6.1.2 Select and perform diagnostic procedures relevant to all age groups and critically ill patients.

6.1.3 Select and interpret appropriate plain film radiographs.

6.1.4 Select appropriate computed tomographic examinations.

6.1.5 Perform and interpret targeted ED ultrasound examinations.

6.1.6 Demonstrate effective, appropriate, and timely performance of therapeutic procedures relevant to emergency medicine.

6.1.7 Select and perform therapeutic procedures relevant to all age groups and critically ill patients.

6.1.8 Select and perform techniques in peripheral and central vascular access and line insertion/monitoring that are relevant to all age groups.

6.1.9 Select and perform minor therapeutic procedures relevant to the daily practice of emergency medicine for all age groups.

6.1.10 Select and perform local/regional anesthesia and procedural sedation for all patient populations when indicated.

6.1.11 Select and perform care and techniques in simple and complex wound repair for all age groups.

6.1.12 Select and perform various means of foreign body extraction from body orifices and soft tissue for all age groups.

6.1.13 Manage fractures and dislocations in all age groups.

6.1.14 Manage normal and complicated delivery.

6.2 Possess fundamental knowledge of the indications, contraindications, methods, and potential complications of less common but necessary medical therapeutic and investigative procedures employed in the practice of emergency medicine. At minimum, demonstrate the ability to describe these procedures.

6.3 Ensure that informed consent is obtained for procedures when feasible and indicated.

6.4 Understand and practice appropriate infection control precautions.
consistently in the performance of medical procedures.

6.5 Document and disseminate information related to the procedures performed and their outcomes.

6.6 Ensure that adequate follow-up is arranged for procedures performed.

7. Seek appropriate consultation from other healthcare professionals, recognizing the limits of their expertise
- Demonstrate insight into the limitations of one's own expertise.
- Demonstrate effective, appropriate, and timely consultation of another healthcare professional as required for optimal patient care.
- Arrange appropriate follow-up care services for patients and their defined family units.

**COMMUNICATOR**

**Definition**
As communicators, specialist emergency physicians effectively facilitate the doctor-patient relationship and the dynamic exchanges that occur before, during, and after the medical encounter.

**Description**
Physicians enable patient-centered therapeutic communication through shared decision making and effective dynamic interactions with patients, families, caregivers, other professionals, and other important individuals. The competencies of this role are essential for establishing rapport and trust, formulating a diagnosis, delivering information, striving for mutual understanding, and facilitating a shared plan of care.

1. Develop rapport, trust, and positive and ethical therapeutic relationships with patients and their defined family units
   1.1. Recognize that being a good communicator is a core clinical skill for the specialist emergency physician, and effective physician-patient communication can foster patient satisfaction, physician satisfaction, adherence, and improved clinical outcomes.
   1.2. Establish positive therapeutic relationships that are characterized by understanding, trust, respect, honesty, and empathy with patients and their defined family units.
   1.3. Respect patient confidentiality, privacy, and autonomy.
   1.4. Use language and terminology that facilitates understanding and decision making in patients and their defined family units.
   1.5. Listen effectively.
   1.6. Be aware of and responsive to nonverbal cues.
   1.7. Effectively facilitate a structured clinical encounter.
1.8. Be knowledgeable of and attentive to different ethnic, social, and cultural backgrounds.

2. Accurately elicit and synthesize relevant information and the perspectives of patients, defined family units, colleagues, and other professionals
   2.1. Gather information about a disease in addition to the patient’s beliefs, concerns, expectations, and illness experience.
   2.2. Act professionally and tactfully when screening for sensitive issues or information.
   2.3. Seek out and synthesize relevant information from other sources, such as a patient’s defined family units, caregivers, family physicians, nonhospital personnel (e.g., police, fire fighters, and EMS personnel), and other professionals.

3. Convey relevant information and explanations accurately to patients and their defined family units, colleagues, and other professionals, providing effective, clear, and thorough explanations of diagnosis, investigation, management and expected outcomes in an empathetic manner, even during times of crisis
   3.1. Deliver information that is concise, relevant, useful, and respectful to patients, their defined family units, colleagues, and other professionals.
   3.2. Deliver information to patients, their defined family units, colleagues, and other professionals in a humane manner in which information is understandable and discussion and participation in decision making are encouraged.
   3.3. Respect the patient’s privacy in accordance with privacy and confidentiality legislation, regulations, and policies.
   3.4. Exchange necessary information on expected, active, and discharged patients concisely.
   3.5. Communicate effectively during crisis situations in the ED.
   3.6. Communicate effectively during disasters involving the ED, hospital, and/or region.
   3.7. Deliver useful and insightful information regarding emergency medicine or general medical issues to the public or media when appropriate.

4. Develop a common understanding of issues, problems, and plans with patients, their defined family units, and other professionals, to develop a shared plan of care
   4.1. Effectively identify and explore problems to be addressed, including the patient’s context, responses, concerns, and preferences, in patient encounters.
4.2. Respect diversity and difference including, but not limited to, the impact of gender, religion, and cultural beliefs on decision making.
4.3. Encourage discussion, questions, and interaction in patient encounters.
4.4. Engage patients, their defined family units, and relevant healthcare professionals in shared decision making to develop a plan of care in the context of practicing emergency medicine.
4.5. Effectively address challenging communication issues such as obtaining informed consent (when possible), delivering bad news, and addressing anger, confusion, and misunderstanding.

5. Convey effective, clear, accurate, and timely oral and written information regarding medical encounters
   5.1 Maintain appropriate records of clinical encounters and plans.
   5.2 Present verbal reports of clinical encounters and plans effectively and efficiently.
   5.3 Provide appropriate consultation reports to referring healthcare professionals.

Collaborator
Definition:
As collaborators, specialist emergency physicians work effectively within a healthcare team to achieve optimal patient care.

Key and enabling competencies: specialist emergency physicians are able to do the following:

1. Participate effectively and appropriately in an interprofessional healthcare team
   1.1 Describe the roles and responsibilities of an emergency medicine specialist.
   1.2 Describe their roles and responsibilities to other professionals within the ED.
   1.3 Recognize and respect the diversity of the roles, responsibilities, and competences of other professionals in relation to those of the emergency medicine specialist.
   1.4 Work with others via a multidisciplinary approach to assess, plan, provide, and integrate care for individual patients.
   1.5 Optimize and expedite patient care through the involvement of other healthcare professionals and delegate responsibilities appropriately.
   1.6 In complex cases, coordinate the activities and interactions of multiple consulting services.
   1.7 Facilitate the management of unexpected surges in patient numbers
and/or acuity.

1.8 Solicit input from appropriate members of the healthcare team and keep the team apprised of management plans and rationale.

1.9 Facilitate the management of real or simulated disaster situations.

1.10 Work with others to assess, plan, provide, and review other tasks such as research problems, educational work, program reviews, quality assurance, addressing patients’ complaints or concerns, or administrative responsibilities.

1.11 Describe the principles of team dynamics.

1.12 Respect team ethics issues including confidentiality, resource allocation, and professionalism.

1.13 Demonstrate leadership in a healthcare team.

1.14 Respond positively to requests for help or advice.

1.15 Accommodate requests for assistance or advice regarding patient management from community or hospital physicians.

2. Work effectively with other healthcare professionals to prevent, negotiate, and resolve interprofessional conflict

2.1. Demonstrate a respectful attitude toward other colleagues and members of an interprofessional team.

2.2. Work with other professionals to prevent conflict.

2.3. Use collaborative negotiation to resolve conflict.

2.4. Recognize that differences and limitations in scope of practice may contribute to misunderstandings and interprofessional tension between professionals.

Manager

Definition:

As managers, specialist emergency physicians are integral participants in healthcare organizations, organizing sustainable practices, making decisions regarding the allocation of resources, and contributing to the effectiveness of the healthcare system.

Key and enabling competencies: specialist emergency physicians are able to do the following:

1. Participate in activities that contribute to the effectiveness of the ED, EMS, prehospital systems, disaster management, healthcare organizations, and systems

1.1. Work collaboratively with others in their organizations.

1.2. Recognize the importance of fair allocation of healthcare resources, balancing effectiveness, efficiency, and access with optimal patient care.
1.3. Participate in systemic quality process evaluation and improvements such as patient safety initiatives.
1.4. Describe the structure and function of the healthcare system, including the roles of physicians, as it relates to emergency medicine.
1.5. Describe principles of healthcare finance including physician remuneration, budgeting, and organizational funding.
1.6. Understand the process of performance review and accreditation.
1.7. Apply the best available medical evidence and management processes for cost-appropriate care.
1.8. Possess the fundamental knowledge and skills required to provide medical leadership of an EMS system.

2. Demonstrate the ability to assume the combined clinical, academic, and managerial responsibilities of the physician in charge of an ED

2.1 Prioritize interventions and use effective coping strategies to deal with the stress involved in decision making in a leadership role.
2.2 Demonstrate the ability to develop patient care and triage protocols.
2.3 Know and use specific strategies to manage ED crowding.
2.4 Understand and practice the principles of crisis resource management and act as an effective team leader in crisis situations.
2.5 Know and employ strategies to ameliorate the negative effects of crises that affect patients on the care of other ED patients.
2.6 Demonstrate the ability to address complaints from patients, family members, and colleagues.
2.7 Describe the process for managing adverse events.

3. Manage practice and career effectively

3.1 Manage his/her practice and career in alignment with a group of emergency physicians in an ED.
3.2 Balance clinical, academic, and administrative duties in an emergency medicine practice.
3.3 Implement processes to ensure personal practice improvement.

4. Set realistic priorities and use time and resources efficiently to reach goals and meet personal and professional commitments

4.1. Set priorities and manage time to balance patient care, practice requirements, outside activities, and personal life.

5. Serve in administration and leadership roles as appropriate

5.1. Chair or participate in committees and meetings effectively.
5.2. Identify priorities for change in emergency healthcare.
5.3. Plan relevant elements of healthcare delivery (e.g., work schedules).
6. Improve efficiency and performance through appropriate understanding and use of information technology
   6.1 Use information technology in a manner appropriate for patient care.
   6.2 Understand the utility and application of ED information systems.
   6.3 Use electronic information systems to access relevant scientific, clinical, and administrative information efficiently.
   6.4 Plan relevant change in ED operations, based upon evidence gathered through the use of information technology.

**Health Advocate**

**Definition:**
As health advocates, specialist emergency physicians use their expertise and influence responsibly to advance the health and well-being of individual patients, communities, and populations.

Key and enabling competencies: specialist emergency physicians are able to do the following:

1. **Respond to individual patients’ health needs and issues as part of patient care**
   1.1 Identify the health needs of individual patients.
   1.2 Identify opportunities for advocacy, health promotion, and disease prevention with individuals for whom care is provided.

2. **Respond to the health needs of the communities served**
   2.1 Describe the communities served.
   2.2 Identify opportunities for advocacy, health promotion, and disease prevention in the communities served and respond appropriately.
   2.3 Appreciate the possibility of competing interests between the communities served and other populations.

3. **Identify the determinants of health for the populations served**
   3.1 Identify the determinants of health, including barriers to access to care and resources, for the populations served.
   3.2 Identify vulnerable or marginalized populations within those served and respond appropriately.

4. **Promote the health of individual patients, communities, and populations**
   4.1 Describe an approach to implementing change to a determinant of health for the populations served.
   4.2 Describe how public policy impacts upon the health of the populations served.
   4.3 Identify points of influence in the healthcare system and its structure.
   4.4 Describe the ethical and professional issues, including altruism, social
justice, autonomy, integrity, and idealism, inherent in health advocacy.

4.5. Appreciate the possibility of conflict between the role of health advocate for a patient or community and that of manager or gatekeeper of emergency care.

4.6. Describe the role of the medical profession in advocating collectively for health and patient safety.

**Scholar Definition:**
As scholars, specialist emergency physicians demonstrate a lifelong commitment to reflective learning and the creation, dissemination, application, and translation of medical knowledge.

Key and enabling competencies: specialist emergency physicians are able to do the following:

1. **Maintain and enhance professional activities through ongoing learning**
   1.1 Describe the principles of continuing professional development
   1.2 Describe principles and strategies for implementing a personal knowledge management system.
   1.3 Recognize and reflect learning issues in practice.
   1.4 Conduct a personal practice audit.
   1.5 Pose an appropriate learning question.
   1.6 Access and interpret relevant evidence.
   1.7 Integrate new learning into practice.
   1.8 Evaluate the impact of any change in practice.
   1.9 Document the learning process.

2. **Critically evaluate medical information and its sources and apply this to practice decisions appropriately**
   2.1 Describe the principles of critical appraisal.
   2.2 Critically appraise evidence in order to address a clinical question.
   2.3 Integrate critical appraisal conclusions into clinical care.

3. **Facilitate learning for patients, defined family units, students, residents, other healthcare professionals, the public, and others as appropriate**
   3.1 Describe principles of learning that are relevant to medical education.
   3.2 Identify the learning needs and desired learning outcomes of others collaboratively.
   3.3 Select effective teaching strategies and content to facilitate others’ learning.
   3.4 Deliver an effective lecture or presentation.
   3.5 Assess and reflect on a teaching encounter.
3.6 Provide effective feedback.
3.7 Describe the principles of ethics with respect to teaching.

4. Contribute to the development, dissemination, and translation of new knowledge and practice
   4.1 Describe the principles of research and scholarly inquiry.
   4.2 Describe the principles of research ethics.
   4.3 Pose a scholarly question.
   4.4 Conduct a systematic search for evidence.
   4.5 Select and apply the appropriate methods with which to address the question.
   4.6 Appropriately disseminate the findings of a study.

**Professional Definition:**
As professionals, specialist emergency physicians are committed to maintaining the health and well-being of individuals and society through ethical practice, profession-led regulation, and high personal standards of behavior.

Key and enabling competencies: specialist emergency physicians are able to do the following:

1. **Demonstrate a commitment to patients, the profession, and society through ethical practice**
   1.1 Exhibit appropriate professional behavior, including honesty, integrity, commitment, compassion, respect, and altruism, in practice.
   1.2 Demonstrate a commitment to the maintenance of competence and delivering care of the highest quality.
   1.3 Recognize and appropriately respond to the ethical issues encountered in practice.
   1.4 Manage conflicts of interest appropriately.
   1.5 Recognize the principles and limits of patient confidentiality, as defined by professional practice standards and the law.
   1.6 Maintain appropriate relationships with patients.

2. **Demonstrate a commitment to patients, the profession, and society through participation in profession-led regulation**
   2.1 Appreciate the professional, legal, and ethical codes of practice.
   2.2 Fulfill the regulatory and legal obligations required for current practice.
   2.3 Demonstrate accountability to professional regulatory bodies.
   2.4 Recognize and respond to others’ unprofessional behavior in practice.
2.5 Participate in peer review.

3. Demonstrate a commitment to physician health and sustainable practice
   3.1 Balance personal and professional priorities to ensure personal health and a sustainable practice.
   3.2 Strive to heighten personal and professional awareness and insight.
   3.3 Recognize other professionals in need and respond appropriately.
Appendix B
Emergency Medicine Ultrasound Curriculum

Introduction

- Define limited, goal-directed emergency ultrasound.
- List the primary emergency applications.
- Describe position statements for various organizations affiliated with emergency ultrasound (e.g., ACEP, SAEM, American Medical Association, and ABEM).
- Define terms for training, proficiency, and credentialing as they apply to limited, goal-directed ultrasound.

Physics & Instrumentation

- Understand the role of physics in modern ultrasound.
  - Define necessary terms to include the following:
    - Piezoelectric effect
    - Frequency
    - Resolution
    - Attenuation
    - Echogenicity
    - Doppler
  - Understand the role of instrumentation in the image acquisition Image mode.
    - Gain
    - Dynamic range probe types
  - Understand types of ultrasound artifact and their roles in image acquisition.
    - Reverberation
    - Side lobe
    - Mirror
    - Shadowing
    - Enhancement
    - Ring-down

Trauma

- Describe the indications, clinical algorithms, and limitations of bedside ultrasound in blunt and penetrating thoracoabdominal trauma.
- Define relevant local anatomy including the liver, spleen, kidneys, bladder, uterus, pericardium, and lung bases.
- Understand the standard ultrasound protocol for evaluating a patient with regard to hemoperitoneum, hemopericardium, hemothorax, and pneumothorax.
- Recognize the relevant focused findings and pitfalls related to the
detection of hemoperitoneum, hemopericardium, and hemothorax.
- Describe how volume status can be assessed and monitored by evaluating left ventricular function and inferior vena cava compliance.

First-Trimester Pregnancy

- Describe relevant local anatomy including the uterus, cervix, adnexa, bladder, and cul-de-sac.
- Describe the indications and limitations of focused sonography in first-trimester pregnancy pain and bleeding.
- Understand the standard ultrasound protocol, including transabdominal and endovaginal views, for performing focused pelvic ultrasound in early pregnancy.
- Understand the role of ultrasound and quantitative beta hCG in a clinical algorithm for first-trimester pregnancy pain and bleeding.
- Understand the differential diagnosis of early pregnancy including intrauterine pregnancy, embryonic demise, molar pregnancy, ectopic pregnancy, and indeterminate classes.
- Recognize relevant focused findings and pitfalls when evaluating early intrauterine and ectopic pregnancy.
  - Early embryonic structures
  - Location of embryonic structures in pelvis
  - Findings in ectopic pregnancy
  - Pseudogestational sac
  - Adnexal masses

Abdominal Aortic Aneurysm

- Describe the indications and limitations of focused ultrasound in the evaluation of abdominal aortic aneurysms.
- Define relevant local anatomy including the aorta with major branches, inferior vena cava, and vertebral bodies.
- Understand the standard ultrasound protocol for evaluating patients with suspected abdominal aortic aneurysms.
- Recognize the relevant focused findings and pitfalls when evaluating suspected abdominal aortic aneurysms.
- Types of aneurysm
- Measurement techniques

Echocardiography

- Describe the indications and limitations of focused emergency echocardiography.
- Define relevant cardiac anatomy including cardiac chambers, valves, pericardium, and aorta.
• Understand the standard ultrasound windows (subcostal, parasternal, and apical) and planes (four chamber, long axis, and short axis) necessary to perform focused echocardiography when evaluating for cardiac activity and pericardial effusions.
• Recognize the relevant focused findings to detect cardiac activity and pericardial effusions with or without tamponade.
• Estimate qualitative left ventricular function.
• Estimate central venous pressure via examination of inferior vena cava compliance.
• Understand how ultrasound allows the examiner to estimate cardiac function and central venous pressure and guide resuscitation in patients with cardiopulmonary instability.
• Recognize a dilated aortic root and/or descending thoracic aorta and understand the clinical relevance and potential pitfalls.

Biliary Tract
• Describe the indications and limitations of focused biliary tract ultrasound.
• Define the relevant local anatomy including the gallbladder, portal triad, inferior vena cava, and liver.
• Understand standard ultrasound protocol for performing focused biliary ultrasound.
• Recognize the relevant focused findings and pitfalls when evaluating patients for cholelithiasis and cholecystitis.

Urinary Tract Ultrasound
• Describe the indications and limitations of focused urinary tract ultrasonography.
• Define relevant local anatomy including the kidneys and collecting systems, bladder, liver, and spleen.
• Understand standard ultrasound protocol for performing focused urinary tract ultrasound.
• Recognize the relevant focused findings and pitfalls when evaluating patients with respect to hydronephrosis, renal calculi, renal masses, and bladder size.

Deep Venous Thrombosis
• Describe the indications and limitations of focused ultrasound for the detection of deep venous thrombosis.
• Understand standard ultrasound protocol for performing a focused examination to detect deep venous thrombosis of the upper and lower extremities.
  o Vessel identification
  o Compression
Augmentation

- Define relevant local anatomy associated with ultrasonic detection of deep venous thrombosis in the upper and lower extremities.
- Develop an understanding of Doppler physics and instrumentation to include color Doppler and power Doppler imaging.
- Recognize the relevant focused findings and pitfalls when evaluating patients for deep venous thrombosis.

**Soft Tissue & Musculoskeletal**

- Describe the indications and limitations of focused ultrasound of soft tissue and musculoskeletal structures.
- Define the relevant local anatomy associated with ultrasonic evaluation of soft tissue and musculoskeletal structures to include the following:
  - Skin
  - Soft tissue
  - Bones
  - Muscle
  - Tendon
  - Lymph
  - Nodes
- Recognize the relevant focused findings and pitfalls when evaluating the following:
  - Soft-tissue infections
  - Abscess versus cellulitis
  - Foreign body location and removal
  - Fractures
  - Tendon injury (laceration, rupture)
  - Joint identification
  - Upper extremity
  - Lower extremity
  - Subcutaneous fluid collection identification

**Thoracic Ultrasound**

- Describe the indications and limitations of focused ultrasound of the thorax.
- Define relevant local anatomy associated with ultrasonic evaluation of thoracic structures.
- Understand the standard ultrasound protocol when performing a focused examination to detect pleural effusion and pneumothorax.
- Recognize the relevant focused findings and pitfalls when evaluating for thoracic pathology.

**Ocular Ultrasound**
Describe the indications and limitations of focused ultrasound of the ocular structures and orbit.

- Define relevant local anatomy associated with ultrasonic evaluation of eye and orbital structures.
  Understand the standard ultrasound protocol when performing a focused examination to detect **posterior chamber hemorrhage**, retinal detachment, or other structural disruption.

- Recognize relevant focused findings and pitfalls when evaluating patients for ocular pathology.

**Procedural Ultrasound**

- Describe the indications and limitations of using ultrasound to assist in bedside procedures.
- Understand the transverse and longitudinal 2D approaches to procedural guidance, along with their advantages and disadvantages.
- Define local anatomy relevant to the particular application.
- Understand the standard protocols for using ultrasound to assist in procedures, which may include the following:
  - Vascular access (central and peripheral)
  - Pericardiocentesis
  - Paracentesis
  - Thoracentesis
  - Foreign body detection removal
  - Bladder aspiration
  - Arthrocentesis
  - Pacemaker placement and capture
  - Abscess identification and drainage

Recognize the relevant focused findings in performing ultrasound as procedural assistance.
APPENDIX C

Emergency Medicine Specialty Level
Topics

1.0 SIGNS, SYMPTOMS, AND PRESENTATIONS

1.1 General
- Altered mental status
- Anxiety
- Apnea
- Ataxia
- Back pain
- Bleeding
- Coma
- Confusion
- Crying/fussiness
- Cyanosis
- Decreased level of consciousness
- Dehydration
- Dizziness
- Edema
- Failure to thrive
- Fatigue
- Feeding problems
- Fever
- Hypotension
- Jaundice
- Joint pain/Swelling
- Limp
- Lymphadenopathy
- Malaise
- Multiple trauma
- Needlestick injuries
- Pain
- Paralysis
- Paresthesia/Dysesthesia
- Poisoning
- Pruritus
- Rash
- Shock
- Sudden infant death syndrome (SIDS; see 3.1)
- Sleeping problems
- Syncope
- Tremor
- Weakness
- Weight loss
- Mechanical and in-dwelling devices

1.2 Abdominal
- Abnormal vaginal bleeding
- Anuria
- Ascites
- Colic
- Constipation
- Cramps
- Diarrhea
- Dysmenorrhea
- Dysuria
- Hematemesis
- Hematochezia
- Hematuria
- Nausea or vomiting
- Pain
- Pelvic pain
- Peritonitis
- Rectal bleeding
- Rectal pain
- Urinary incontinence
- Urinary retention

1.3 Chest
- Chest pain
- Cough
- Dyspnea
- Hemoptysis
- Hiccups
- Palpitations
- Shortness of breath
- Tachycardia
- Wheezing

1.4 Head and Neck
- Congestion
- Diplopia
- Dysphagia
- Eye pain
- Headache (see 12.3)
2.0 **ABDOMINAL AND GASTROINTESTINAL DISORDERS**

2.1 Abdominal Wall

**Hernias**

2.2 Esophagus

**Infectious disorders**

*Candida* (see 4.4, 7.5)

**Inflammatory disorders**

*Esophagitis*  
*Gastroesophageal reflux (GERD)*  
*Toxic effects of caustic substances* (see 17.1)

**Acid**  
**Alkali**

**Motor abnormalities**  
**Spasms**

**Structural disorders**  
*Boerhaave’s syndrome*  
*Diverticula*  
*Foreign body*  
*Hernias*  
*Mallory-Weiss syndrome*

2.3 Liver

**Cirrhosis**  
**Alcoholic**  
**Biliary obstructive**  
**Drug-induced**  
**Hepatorenal failure**  
**Infectious disorders**  
**Abscess**  
**Hepatitis**  
**Acute**  
**Chronic**  
**Tumors**

2.4 Gall Bladder and Biliary Tract

**Cholangitis**  
**Cholecystitis**  
**Cholelithiasis/Choledocholithiasis**  
**Tumors**

2.5 Pancreas

**Pancreatitis**  
**Tumors**

2.6 Peritoneum

**Spontaneous bacterial peritonitis**  
**Tumors**

2.7 Stomach

**Infectious disorders**  
**Inflammatory disorders**

2.8 Small Bowel

**Infectious disorders**  
**Inflammatory disorders**  
*Regional enteritis/Crohn’s disease*  
**Motor abnormalities**  
*Obstruction*  
*Paralytic ileus*  
**Structural disorders**  
*Aortoenteric fistula*  
*Congenital anomalies*  
*Intestinal malabsorption*  
*Meckel's diverticulum*  
**Tumors**  
*Vascular insufficiency*

2.9 Large Bowel

**Infectious disorders**  
*Antibiotic associated*  
*Bacterial*  
*Parasitic*  
*Viral*  
**Inflammatory disorders**

**Stricture and stenosis**  
**Tracheoesophageal fistula**  
**Varices**  
**Tumors**

**2.0 ABDOMINAL AND GASTROINTESTINAL DISORDERS**

Loss of hearing  
Loss of vision  
Rhinorrhea  
Sore throat  
Stridor  
Tinnitus  
Vertigo
Inflammatory disorders
- Appendicitis
- Necrotizing enterocolitis (NEC)
- Radiation colitis
- Ulcerative colitis

Motor abnormalities
- Hirschsprung's disease
- Irritable bowel
- Obstruction

Structural disorders
- Congenital anomalies
- Diverticula
- Intussusception
- Volvulus

Tumors

2.10 Rectum and Anus

Infectious disorders
- Perianal/anal abscess
- Perirectal abscess
- Pilonidal cyst and abscess

Inflammatory disorders
- Proctitis

Structural disorders
- Anal fissure
- Anal fistula
- Congenital anomalies
- Foreign body
- Hemorrhoids
- Rectal prolapse

Tumors

2.11 Spleen

3.0 CARDIOVASCULAR DISORDERS

3.1 Cardiopulmonary Arrest
- SIDS (see 1.1)

3.2 Congenital Abnormalities of the Cardiovascular System

3.3 Disorders of Circulation
- Arterial
- Aneurysm
- Aortic dissection
- Thromboembolism

3.4 Disturbances of Cardiac Rhythm
- Ventricular
- Supraventricular

3.5 Diseases of the Myocardium, Acquired
- Cardiac failure
- Cor pulmonale
- High output
- Low output
- Hypertrophic
- Congestive heart failure

3.6 Diseases of the Pericardium
- Pericarditis
- Pericardial tamponade (see 18.1)

3.7 Endocarditis

3.8 Hypertension

3.9 Tumors

3.10 Valvular disorders

4.0 CUTANEOUS DISORDERS

4.1 Cancers of the Skin
- Basal cell
- Kaposi's sarcoma
- Melanoma
- Squamous cell

4.2 Decubitus Ulcer

4.3 Dermatitis
- Atopic
- Contact
- Eczema
- Psoriasis
- Sebaceous cyst
- Seborrhea

4.4 Infections
- Bacterial
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<tr>
<th>Skin Infections</th>
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<tr>
<td>Abscess</td>
<td>Lipoma</td>
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<td>Cellulitis</td>
<td>Sebaceous cyst</td>
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<td>Erysipelas</td>
<td>4.7 Vesicular/Bullous Lesions</td>
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<td>Impetigo</td>
<td>Pemphigus</td>
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<tr>
<td>Necrotizing infection</td>
<td>Staphylococcal scalded skin syndrome</td>
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<td>Fungal</td>
<td>Stevens-Johnson syndrome</td>
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<tr>
<td>Candida (see 2.2, 7.5)</td>
<td>Toxic epidermal necrolysis</td>
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<td>Tinea</td>
<td>Bullous pemphigoid</td>
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<td>Parasitic</td>
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<td>Pediculosis infestation</td>
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<td>Scabies</td>
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<td>Viral</td>
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<td>Aphthous ulcers</td>
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<td>Erythema infectiosum</td>
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<tr>
<td>Herpes simplex (see 10.6 and 13.1)</td>
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<tr>
<td>Herpes zoster (see 10.6)</td>
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<tr>
<td>Human papillomavirus (HPV; see 13.1)</td>
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<tr>
<td>Molluscum contagiosum</td>
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<td>Warts</td>
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### 5.0 ENDOCRINE, METABOLIC, AND NUTRITIONAL DISORDERS

#### 5.1 Acid-base Disturbances
- Metabolic or respiratory
  - Acidosis
  - Alkalosis
- Mixed acid-base balance disorder

#### 5.2 Adrenal Disease
- Corticoadrenal insufficiency
- Cushing’s syndrome

#### 5.3 Fluid and Electrolyte Disturbances
- Calcium metabolism
- Fluid overload/volume depletion
- Potassium metabolism
- Sodium metabolism
- Magnesium metabolism
- Phosphorus metabolism

#### 5.4 Glucose Metabolism
- Diabetes mellitus
  - Type I
  - Type II
- Complications in glucose metabolism
  - Diabetic ketoacidosis
  - Hyperglycemia
  - Hyperosmolar coma
  - Hypoglycemia
  - Systemic

#### 5.5 Nutritional Disorders
- Vitamin deficiencies
- Wernicke-Korsakoff syndrome

#### 5.6 Parathyroid Disease

#### 5.7 Pituitary Disorders
- Panhypopituitarism

#### 5.8 Thyroid Disorders
- Hyperthyroidism
- Hypothyroidism
- Thyroiditis

#### 5.9 Tumors of Endocrine Glands
- Adrenal
- Pituitary
- Thyroid

### 6.0 ENVIRONMENTAL DISORDERS

#### 6.1 Bites and Envenomation (see 18.1)
- Arthropods
- Insects
- Spiders
- Scorpions
- Mammals
Marine organisms (see 17.1)
Snakes

6.2 Dysbarism
Air embolism
Barotrauma
Decompression syndrome

6.3 Electrical Injury (see 18.1)
Lightning

6.4 High-altitude Illness
Acute mountain sickness
Barotrauma of ascent
High-altitude cerebral edema
High-altitude pulmonary edema

6.5 Submersion Incidents
Cold water immersion
Drowning

6.6 Temperature-related Illness
Heat
Heat exhaustion
Heat stroke
Cold
Frostbite
Hypothermia

6.7 Radiation Emergencies

7.0 HEAD, EAR, EYE, NOSE, THROAT DISORDERS

7.1 Ear
Foreign body
Impacted cerumen
Labyrinthitis
Mastoiditis
Meniere's disease
Otitis externa
Infective
Malignant
Otitis media
Perforated tympanic membrane (see 18.1)

7.2 Eye
External eye
Blepharitis
Burn confined to eye and adnexa (see 18.1)
Conjunctivitis
Corneal abrasions (see 18.1)
Dacryocystitis
Disorders of lacrimal system
Foreign body
Inflammation of the eyelids
Chalazion
Hordeolum
Keratitis
Anterior pole
Glaucoma
Hyphema (see 18.1)
Iritis (see 18.1)
Hypopyon
Posterior pole
Choroiditis/Chorioretinitis
Optic neuritis
Papilledema
Retinal detachments and defects (see 18.1)
Retinal vascular occlusion
Orbit
Cellulitis
Preseptal
Postseptal
Purulent endophthalmitis

7.3 Cavernous Sinus Thrombosis

7.4 Nose
Epistaxis
Foreign body
Rhinitis
Sinusitis

7.5 Oropharynx/Throat
Dentalgia
Diseases of the oral soft tissue
Ludwig's angina
Stomatitis
Diseases of the salivary glands
Sialolithiasis
Suppurative parotitis
Foreign body
Gingival and periodontal disorders
Gingivostomatitis
Larynx/trachea
Epiglottitis (see 16.1)
Laryngitis
8.0 HEMATOLOGIC DISORDERS

8.1 Blood Transfusion
Complications

8.2 Hemostatic Disorders
Coagulation defects
Acquired
Hemophilia
Disseminated intravascular coagulation
Platelet disorders
Thrombocytopenia

8.3 Lymphomas

8.4 Pancytopenia

8.5 Red Blood Cell Disorders
Anemias
Aplastic
Hemoglobinopathy
Sickle cell disease
Hemolytic
Hypochromic
Iron deficiency

Megaloblastic
Polycythemia
Methemoglobinemia (see 17.1)

8.6 White Blood Cell Disorders
Leukemia
Multiple myeloma
Leukopenia

9.0 IMMUNE SYSTEM DISORDERS

9.1 Collagen Vascular Disease
Raynaud’s disease
Reiter’s syndrome
Rheumatoid arthritis (see 11.3)
Scleroderma
Systemic lupus erythematosus
Vasculitis

9.2 Hypersensitivity
Allergic reaction
Anaphylaxis
Angioedema
Drug allergies

9.3 Transplant-related Problems
Immunosuppression
Rejection

9.4 Immune Complex Disorders
Kawasaki syndrome
Rheumatic fever
Sarcoidosis
Poststreptococcal glomerulonephritis (see 15.3)

10.0 SYSTEMIC INFECTIOUS DISORDERS

10.1 Bacterial
Bacterial food poisoning
Botulism
Chlamydia
Gonococcus
Meningococcus
Mycobacterium
Atypical mycobacteria
Tuberculosis
Other bacterial diseases
Gas gangrene (see 11.6)
Sepsis/bacteremia
Shock
Systemic inflammatory response syndrome (SIRS)
Toxic shock syndrome
Spirochetes
Syphilis
Tetanus

10.2 Biological Warfare Agents

10.3 Fungal Infections

10.4 Protozoan/Parasites
Malaria
Toxoplasmosis

10.5 Tick-borne
Ehrlichiosis
10.6 Viral
Infectious mononucleosis
Influenza/parainfluenza
Hantavirus
Herpes simplex (see 4.4 and 13.1)
Herpes zoster/varicella (see 4.4)
HIV/AIDS
Rabies
Roseola
Rubella

10.7 Emerging Infections, Pandemics, and Drug Resistance

11.0 MUSCULOSKELETAL DISORDERS (NONTRAUMATIC)
11.1 Bony Abnormalities
Aseptic necrosis of hip
Osteomyelitis
Tumors

11.2 Disorders of the Spine
Disc disorders
Inflammatory spondylopathy
Low back pain
Cauda equina syndrome (see 18.1)
Sacroiliitis
Sprains/strains

11.3 Joint Abnormalities
Arthritis
Septic
Crystal arthropathy
Rheumatoid (see 9.1)
Juvenile
Osteoarthritis
Congenital dislocation of the hip
Slipped capital femoral epiphysis

11.4 Muscle Abnormalities
Myalgia/myositis
Rhabdomyolysis

11.5 Overuse Syndromes
Bursitis
Muscle strains
Peripheral nerve syndrome
Carpal tunnel syndrome
Tendonitis

11.6 Soft Tissue Infections
Fasciitis
Felon
Gangrene (see 10.1)
Paronychia
Synovitis/tenosynovitis

12.0 NERVOUS SYSTEM DISORDERS
12.1 Cranial Nerve Disorders
Idiopathic facial nerve paralysis (Bell’s palsy)
Trigeminal neuralgia

12.2 Demyelinating Disorders
Multiple sclerosis

12.3 Headaches (see 1.4)
Muscle contraction
Vascular

12.4 Hydrocephalus
Normal pressure
VP shunt

12.5 Infections/Inflammatory Disorders
Encephalitis
Intracranial and intraspinal abscess
Meningitis
Bacterial
Viral
Myelitis
Neuralgia/neuritis

12.6 Movement Disorders
Dystonic reaction

12.7 Neuromuscular Disorders
Guillain-Barré syndrome
Myasthenia gravis
Peripheral neuropathy

12.8 Other Conditions of the Brain
Dementia (see 14.5)
Parkinson’s disease
Pseudotumor cerebri

12.9 Seizure Disorders
Febrile
Neonatal
Status epilepticus
12.10 Spinal Cord Compression
12.11 Stroke (Cerebral Vascular Events)
   Hemorrhagic
      Intracerebral
      Subarachnoid
   Ischemic
      Embolic
      Thrombotic
12.12 Transient Cerebral Ischemia
12.13 Tumors

13.0 OBSTETRICS AND GYNECOLOGY
13.1 Female Genital Tract
   Cervix
      Cervicitis and endocervicitis
   Tumors
   Infectious disorders
      Pelvic inflammatory disease
      Fitz-Hugh-Curtis syndrome
      Tubo-ovarian abscess
   Lesions
      Herpes simplex (see 4.4, 10.6)
      Human papillomavirus (HPV; see 4.4)
   Ovary
      Cyst
      Torsion
      Tumors
   Uterus
13.2 Normal Pregnancy
13.3 Complications of Pregnancy
   Abortion
   Ectopic pregnancy
   Hemolysis, elevated liver enzymes, low platelets (HELLP) syndrome
   Hemorrhage, antepartum
      Abruptio placentae (see 18.2)
      Placenta previa
   Hyperemesis gravidarum
   Pregnancy-induced hypertension
      Eclampsia
      Pre-eclampsia
   Infections
      Rh isoimmunization
      First trimester bleeding
13.4 High-Risk Pregnancy
13.5 Normal Labor and Delivery
13.6 Complications of Labor
   Dysfunctional bleeding
   Endometriosis
   Prolapse
   Tumors
   Gestational trophoblastic disease
      Leiomyma
   Vagina and vulva
      Bartholin’s abscess
      Foreign body
      Vaginitis/vulvovaginitis
   Lesions
   Herpes simplex (see 4.4, 10.6)
   Human papillomavirus (HPV; see 4.4)

14.0 PSYCHOBehAVIORAL DISORDERS
14.1 Addictive Behavior
   Alcohol dependence
   Drug dependence
   Eating disorders
   Substance abuse
14.2 Mood Disorders and Thought Disorders
   Acute psychosis
   Bipolar disorder
   Depression
      Suicidal risk
   Grief reaction
   Schizophrenia
14.3 Factitious Disorders
   Drug-seeking behavior
   Munchausen syndrome/Munchausen
syndrome by proxy
14.4 Neurotic Disorders
  Anxiety/Panic
  Obsessive compulsive
  Phobic
  Post-traumatic stress
14.5 Organic Psychoses
  Chronic organic psychotic conditions
    Alcoholic psychoses
    Drug psychoses
  Delirium
  Dementia (see 12.8)
14.6 Patterns of Violence/Abuse/Neglect
  Interpersonal violence
    Child, intimate partner, elder
  Homicidal Risk
  Sexual assault
  Staff/patient safety
14.7 Personality disorders
14.8 Psychosomatic disorders
  Hypochondriasis
  Hysteria/conversion

15.0 RENAL AND UROGENITAL DISORDERS
15.1 Acute and Chronic Renal Failure
15.2 Complications of Renal Dialysis
15.3 Glomerular Disorders
  Glomerulonephritis
  Nephrotic syndrome
15.4 Infection
  Cystitis
  Pyelonephritis
  Urinary tract infection (UTI)
15.5 Male Genital Tract
  Genital lesions
  Hernias
  Inflammation/infection
    Balanitis/balanoposthitis
    Epididymitis/orchitis
    Gangrene of the scrotum (Fournier's gangrene)
  Prostatitis
  Urethritis
15.6 Nephritis
  Hemolytic uremic syndrome
15.7 Structural Disorders
  Calculus of urinary tract
  Obstructive uropathy
  Polycystic kidney disease
15.8 Tumors

16.0 THORACIC-RESPIRATORY DISORDERS
16.1 Acute Upper Airway Disorders
  Infections
    Croup
    Epiglottitis (see 7.5)
    Pertussis
    Upper respiratory infection
  Obstruction
  Tracheostomy/complications
16.2 Disorders of Pleura, Mediastinum, and Chest Wall
  Costochondritis
  Mediastinitis
  Pleural effusion
  Pleuritis
  Pneumomediastinum
  Pneumothorax (see 18.1)
    Simple
    Tension
    Empyema
16.3 Noncardiogenic Pulmonary Edema
16.4 Obstructive/Restrictive Lung Disease
   Asthma/reactive airway disease
   Bronchitis and bronchiolitis
   Bronchopulmonary dysplasia
   Chronic obstructive pulmonary disease
   Cystic fibrosis
   Environmental/industrial exposure
   Foreign body
16.5 Physical and Chemical Irritants/Insults
   Pneumoconiosis
   Toxic effects of gases, fumes, vapors (See 18.1)
16.6 Pulmonary Embolism/Infarct
   Septic emboli
   Venous thromboembolism (see 3.3)
16.7 Pulmonary Infections
   Lung abscess
   Pneumonia
      Aspiration
      Community acquired
      Healthcare associated
   Pulmonary tuberculosis
16.8 Tumors
   Breast
   Pulmonary
16.9 Pulmonary Hypertension

17.0 TOXICOLOGIC DISORDERS
17.1 Drug and Chemical Classes
   Analgesics
      Acetaminophen
      Nonsteroidal anti-inflammatory drugs (NSAIDs)
      Opiates and related narcotics
      Salicylates
   Alcohol
      Ethanol
      Glycol
      Isopropyl
      Methanol
   Anesthetics
      Anticholinergics/cholinergics
      Anticoagulants
      Anticonvulsants
      Antidepressants
      Antiparkinsonism drugs
      Antihistamines and antiemetics
      Antipsychotics
      Bronchodilators
      Carbon monoxide
      Cardiovascular drugs
      Antiarrhythmics
      Digitalis
      Antihypertensives
      Beta blockers
      Calcium channel blockers
   Caustic agents
   Acid
   Alkali
   Cocaine
   Cyanides, hydrogen sulfide
   Hallucinogens
   Hazardous materials
   Heavy metals
   Herbicides, insecticides, and rodenticides
   Household/industrial chemicals
   Hormones/steroids
   Hydrocarbons
   Hypoglycemics/Insulin
   Inhaled toxins
   Iron
   Isoniazid
   Marine toxins (see 6.1)
   Methemoglobinemia (see 8.5)
   Mushrooms/poisonous plants
   Neuroleptics
   Nonprescription drugs
   Organophosphates
   Recreational drugs
   Sedatives/hypnotics
   Stimulants/sympathomimetic drugs
   Strychnine
   Lithium
   Nutritional supplements
   Chemical warfare agents
18.0 TRAUMATIC DISORDERS

18.1 Trauma

Abdominal trauma
Diaphragm
Hollow viscus
Penetrating
Retroperitoneum
Solid organ
Vascular

Chest trauma
Aortic dissection/disruption
Contusion
Cardiac
Pulmonary
Fracture
Clavicle
Ribs/flail chest
Sternum

Hemothorax
Penetrating chest trauma
Pericardial tamponade (see 3.6)
Pneumothorax (see 16.2)

Simple
Tension

Cutaneous injuries
Avulsions
Bite wounds (see 6.1)
Burns

Electrical (see 6.3)

Chemical (see 16.5)

Thermal
Lacerations
Puncture wounds

Facial fractures
Dental
Le Fort
Mandibular
Orbital

Genitourinary trauma
Bladder
External genitalia
Renal
Ureteral

Head trauma
Intracranial injury
Scalp lacerations/avulsions
Skull fractures
Injuries of the spine
Dislocations/subluxations
Fractures
Sprains/strains

Lower extremity bony trauma
Dislocations/subluxations
Fractures (open and closed)

Neck trauma
Laryngotracheal injuries
Penetrating neck trauma
Vascular injuries

Carotid artery
Jugular vein

Ophthalmologic trauma
Corneal abrasions/lacerations (see 7.2)

Corneal burns
Acid
Alkali
Ultraviolet

Eyelid lacerations
Foreign body
Hyphema (see 7.2)
Lacrimal duct injuries
Penetrating globe injuries
Retinal detachments (see 7.2)

Traumatic iritis (see 7.2)
Retrolubular Hematoma

Otologic trauma
Hematoma
Penetrated tympanic membrane (see 7.1)

Pediatric fractures
Epiphyseal
Greenstick
Torus

Pelvic fracture

Soft-tissue extremity injuries
Amputations/replantation
Compartment syndromes
High-pressure injection
Injuries to joints
   Knee
   Penetrating
Penetrating soft tissue
Periarticular
Sprains and strains
Tendon injuries
   Lacerations/transections
   Ruptures
   Achilles tendon

19.0 Miscellaneous and Special Situations
19.1 Emergency medical services
   Overview of the EMS system
   Prehospital equipment and adjuncts
   Patient transport
      Ground transportation
      Air transportation
   Mass Gathering
   Hajj emergency medicine
      Principles of care during Hajj
      Treat and release principle
      Hajj unique environment and challenges
      Triage
      Ministry of Health system overview during Hajj season
   Prehospital care: emergency medicine mobile and fixed units during Hajj
      Equipment list for mobile and fixed units
      Triage
      Transportation

18.2 Trauma in Pregnancy
   Abruptio placenta (See 13.3)
   Perimortem C-section
   Premature labor (See 13.6)
   Rupture of uterus (See 13.6)

18.3 Multisystem trauma
   Blast injury

Patellar tendon
Vascular injuries
   Spinal cord and nervous system trauma
   Cauda equina syndrome (see 11.2)
   Injury to nerve roots
   Peripheral nerve injury
   Spinal cord injury
   Spinal cord injury without radiologic abnormality
   Upper extremity bony trauma
   Dislocations/subluxations

Fractures (open and closed)
Communication
Documentation
Public health concerns
   Respiratory infections
   Diarrheal diseases
   Outbreaks
Special situation and population
   Geriatric patients
   Cardiac arrest
   Traumatic injuries
   Stampedes
   Heat-related illnesses
   Heat stroke
Administrative and leadership role during Hajj

Disaster preparedness
   Disaster preparedness and response
   Natural disasters
   Bomb, blast, and crush injuries
   Chemical agents and mass casualties
   Bioterrorism recognition and response
   Radiation injuries
Clinical practice and administration
19.2 Special populations
   Pediatrics
      Approach to the pediatric patient
      Specific diseases and illnesses
   Obstetrics and gynecology
      Approach to the pregnant patient
Specific diseases and illnesses

Geriatric patients
Immunocompromised patients and organ transplant patients
Physically disabled patients
The adult with intellectual disabilities
Difficult and combative patients
Injection drug users
The morbidly obese patient

19.3 Pain Management and Procedural Sedation
19.4 Forensic Emergency Medicine
19.5 Palliative Care in the ED
19.6 Legal Issues and Risk Management in Emergency Medicine
19.7 Grief, Death and Dying, DNR/do-not-intubate Orders
    Delivering effective death notifications in the ED
19.9 Emergency Department Process Improvements and Patient Safety
19.10 Observational Medicine and Clinical Decision Units
19.11 Military Medicine
    The prepared combat physician
    Tactical emergency medical support and urban search and rescue
    Goals of tactical emergency medical support
    Tactical team structure, training, and integrated medical support
    Phases of tactical combat care
        Care under fire
        Tactical field care
            Advanced hemostatic agents
            Point compression devices and trunk tourniquets
            Triage and advanced vital signs
        Combat casualty evacuation care
    Considerations for remote operation
Tactical emergency medical support (TEMS) environment
Urban search and rescue
  Components and structure of an urban search and rescue team
  Medical team operations in urban search and rescue
  Medical team tasks
  Issues related to confined space
  Specific disorders in urban search and rescue

20.0 The Principles of Emergency Medical Imaging
  20.1 Emergency plain radiographic imaging
  20.2 Emergency CT Scan
  20.3 Emergency ultrasonography (see below for more details)
## APPENDIX D

### Annual Academic schedule (Example)

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>R1</th>
<th>R2</th>
<th>R3</th>
<th>R4 Activity: Introduction to Feedback and Evaluation</th>
<th>Staff</th>
<th>Theme</th>
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<tbody>
<tr>
<td>1/10/2013</td>
<td>08:00-09:00</td>
<td>Introduction / Orientation to the Program</td>
<td></td>
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<td>Intro</td>
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<td>Intro</td>
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<tr>
<td></td>
<td>12:30-14:00</td>
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<td>Intro</td>
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<tr>
<td></td>
<td>14:00-16:00</td>
<td>Journal club</td>
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<td>Intro</td>
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<td>8/10/2013</td>
<td>08:00-09:00</td>
<td>Peri-Intubation Management</td>
<td>Peri-Intubation Management (LR)</td>
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<td>R4 Activity: Introduction to Feedback and Evaluation</td>
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<td>Resus</td>
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<td></td>
<td>09:00-12:00</td>
<td>Airway Case Series</td>
<td>Airway Management (CS + LR)</td>
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<td>Resus</td>
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<tr>
<td></td>
<td>12:30-14:00</td>
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<td></td>
<td></td>
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<td>Resus</td>
</tr>
<tr>
<td></td>
<td>14:00-16:00</td>
<td>Procedures: Airway Devices</td>
<td>Simulation</td>
<td></td>
<td>R4 Activity: Introduction to Feedback and Evaluation</td>
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<td>Resus</td>
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<tr>
<td>15/10/2013</td>
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<td>Shock</td>
<td>Mechanical Ventilation (CS)</td>
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<td>09:00-12:00</td>
<td>Shock Case Series</td>
<td>Fluids &amp; Blood Products (LR)</td>
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<td>Resus</td>
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<td>Resus</td>
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<tr>
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<td>14:00-16:00</td>
<td>Procedures: Surgical Airway</td>
<td>Simulation</td>
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<td>R4 Activity: Introduction to Oral Exam</td>
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<td>Resus</td>
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<td>29/10/2013 (KFMC)</td>
<td>08:00-09:00</td>
<td>Mechanical Ventilation</td>
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<td>09:00-12:00</td>
<td>Cardiac Arrest (CS + CR)</td>
<td>Post Arrest Care (LR)</td>
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<td>KFMC</td>
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<td>14:00-16:00</td>
<td>Procedures: Central Venous Line Insertion</td>
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<td>R4 Activity: Mock Oral Exam</td>
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<td>5/11/2013</td>
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<td>Blood Products</td>
<td>Peds &amp; Neonatal Resuscitation (CS &amp; CR)</td>
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<td>09:00-12:00</td>
<td>Anaesthesia Guest Speaker</td>
<td>Brain Resuscitation (CR)</td>
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<td>Research Day</td>
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<td>12:30-14:00</td>
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<td>Research Day</td>
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<td>Ethical Issues</td>
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<td>Medicolegal Issues</td>
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<td>Dealing With the Difficult Patient</td>
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<td>19/11/2013 (KFSC)(KFSH&amp;RC)</td>
<td>08:30-09:30</td>
<td>Patient Safety</td>
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<td>Advanced Applications in US</td>
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<td>Stress Management And Burnout</td>
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Saudi Emergency medicine Program (Riyadh)

Academic Calendar for the Year 2013/2014
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<thead>
<tr>
<th>Date</th>
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<th>Activity</th>
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<tbody>
<tr>
<td>3/12/2013</td>
<td>08:00-09:00</td>
<td>Approach to Chest Pain</td>
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<tr>
<td>3/12/2013</td>
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<td>Acute Coronary Syndrome</td>
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<td>3/12/2013</td>
<td>12:30-14:00</td>
<td>Grand Round</td>
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<tr>
<td>3/12/2013</td>
<td>14:00-16:00</td>
<td>Journal club</td>
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<tr>
<td>10/12/2013</td>
<td>08:00-09:00</td>
<td>Slideshow: ECG in ACS Simulation</td>
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<tr>
<td>10/12/2013</td>
<td>09:00-12:00</td>
<td>R4 Activity: Mock Oral Exam</td>
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<tr>
<td>10/12/2013</td>
<td>12:30-14:00</td>
<td>Cardiogenic Pulmonary Edema (LR)</td>
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<tr>
<td>17/12/2013</td>
<td>08:00-09:00</td>
<td>Syncope And Sudden Death</td>
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<tr>
<td>17/12/2013</td>
<td>09:00-12:00</td>
<td>Sudden Cardiac Arrest (CS &amp; LR)</td>
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<td>17/12/2013</td>
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<td>Grand Round</td>
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<td>17/12/2013</td>
<td>14:00-16:00</td>
<td>R4 Activity: Communication Skills</td>
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<td>31/12/2013</td>
<td>08:00-09:00</td>
<td>Pulmonary Case Series</td>
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<td>Pneumonia (CS &amp; LR)</td>
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<td>R4 Activity: Mock Oral Exam</td>
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<td>Lung Disease Case Series</td>
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<td>Bronchial Asthma (CS + LR)</td>
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<td>R4 Activity: Written Exam 1</td>
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<td>DVT / PE</td>
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<td>Unusual Causes of Pneumonia (CS)</td>
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<td>R4 Activity: Oral Exam</td>
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<td>CXR slideshow 1</td>
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<td>CXR slideshow 2</td>
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<td>Forensic Medicine in EM</td>
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<td>Dermatology in EM</td>
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**Cardio**

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<th>Activity</th>
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<tr>
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<td>Acute Coronary Syndrome</td>
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<td>Grand Round</td>
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<td>10/12/2013</td>
<td>14:00-16:00</td>
<td>Slideshow: ECG in ACS Simulation</td>
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<tr>
<td>17/12/2013</td>
<td>08:00-09:00</td>
<td>slide show: radiography in cardiology</td>
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<td>17/12/2013</td>
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<td>R4 Activity: Communication Skills</td>
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<td>17/12/2013</td>
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**Pulmo**

<table>
<thead>
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<td>Pneumonia Case Series</td>
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<tr>
<td>14/1/2014</td>
<td>12:30-14:00</td>
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<td>14/1/2014</td>
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**Forensic**

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<td>Emergency Pleural Diseases (CS &amp; LR)</td>
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<td>14:00-16:00</td>
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**Derma**

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<td>Simulation</td>
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<td>Systemic Lupus Erythematosis</td>
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<td>Approach to Multiple Trauma</td>
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<td>6/5/2014</td>
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<td>Depression and Suicide Assessment</td>
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<td>Simulation</td>
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<tr>
<td>20/5/2014</td>
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<td>Dysrhythmia for junior. Diagnosis of PE &amp; Peri-intubation Mx for seniors</td>
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<td>Grand Round</td>
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<td>27/5/2014</td>
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<td>OSCE</td>
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## APPENDIX E

### Example of the Topics and Case Series Schedule

<table>
<thead>
<tr>
<th>Title of Case series</th>
<th>The objectives / topics covered in the cases</th>
<th>Prepared By</th>
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<tbody>
<tr>
<td><strong>Airway</strong></td>
<td>Modes of Intubation (Crash/RSI)</td>
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<td></td>
<td>Evaluation of the Difficult Airway (Difficult Intubation/BVM/Supraglottic)</td>
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<td>Failed Airway (Management)</td>
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<td></td>
<td>Pharmacological Agents (Pretreatment/Sedation/Paralysis)</td>
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<td>Non-invasive and Mechanical Ventilation</td>
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<td>Monitoring in the ED</td>
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<tr>
<td><strong>Shock</strong></td>
<td>Hypovolemic Shock (Hemorrhagic / Dehydration / Burns)</td>
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<td>Distributive Shock (Anaphylactic / Neurogenic)</td>
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<td>Didistributive Shock (Septic)</td>
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<td></td>
<td>Obstructive Shock (Tamponade / PE / Tension Pneumothorax)</td>
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<tr>
<td></td>
<td>Cardiogenic Shock</td>
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<td>Vasopressors and Inotropes (Choice of Vasopressor / Side Effects)</td>
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<tr>
<td><strong>Cardiac Non ACS 1</strong></td>
<td>Pericarditis (Pathophysiology / Etiology / Diagnostic Strategy / Management)</td>
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<td>Myocarditis (Pathophysiology / Etiology / Diagnostic Strategy / Management)</td>
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<td></td>
<td>Pericardial Effusion/Tamponade</td>
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<td>Infective Endocarditis And Rheumatic Heart Disease</td>
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<td>Valvular Heart Disease (Aortic, Mitral)</td>
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<td>Prosthetic Valves</td>
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<td><strong>Cardiac ACS</strong></td>
<td>Clinical Features and Risk Stratification</td>
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<td>Diagnostic Strategies (ECGs, Serum Markers, CP units and Stress testing, CT)</td>
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<td>Unstable Angina/STEMI</td>
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<td>STEMI (Pharmacological options, Inferior/RV considerations)</td>
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<td>STEMI (Considerations for Reperfusion, Transport and STEMI Systems)</td>
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<td>ACS Complications (Microcases: Cardiogenic Shock / Arrhythmias / Pericarditis / Aneurysm)</td>
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<td><strong>Cardiac Non ACS 2</strong></td>
<td>Chronic Heart Failure</td>
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<td>Pulmonary Edema</td>
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<td>Cardiomyopathies</td>
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<td>Aortic Dissection</td>
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<td><strong>Cardiac Dysrhythmia</strong></td>
<td>AAA (Pathophysiology / Diagnostic Strategy / Management / Complications of Repair)</td>
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<td>Uncontrolled HTN / HTN Emergency (Pathophysiology / Diagnostic Strategy / Management)</td>
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<td>Atrial Fibrillation (Etiology / Diagnostic Strategy / Risk Stratification / Management)</td>
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<td>Bradycardia (AV Blocks, Pacing)</td>
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<td>Wide Complex Tachycardia (Microcases: Sinus Tachycardia / SVT / MAT)</td>
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<td>Unstable Dysrhythmias (Definition / Management)</td>
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<td>Implantable Devices (Pacemakers and ICDs)</td>
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<td>Asthma (Risk Stratification, Early Management)</td>
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<td>The Critical Asthmatic (Management / Special Considerations)</td>
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<td>COPD Exacerbations</td>
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<td>Pneumothorax</td>
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<td>Complicated URTIs (Soft tissue infections and Abscesses)</td>
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<td>Community Acquired Pneumonia (Causative Agents / Management / Special Considerations)</td>
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<td>Health Care Associated Pneumonia (Causative Agents / Management / Special Considerations)</td>
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<td>Tuberculosis (Pathophysiology / Diagnosis / Contact Precautions / Management)</td>
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<td>DVT (Risk Stratification / Diagnostic Strategy / Treatment)</td>
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<td>Chronic Central Lines and AV Fistulae</td>
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<td>Polycythemia (Etiology / Diagnostic Strategy / Management)</td>
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<td>Febrile Neutropenia (Etiology / Diagnostic Strategy / Management)</td>
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<td>Tumor Lysis Syndrome / Hyperuricemia (Diagnostic Strategy / Management)</td>
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<td>Superior Vena Cava Syndrome / Tamponade (Etiology / Diagnostic Strategy / Management)</td>
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<td>Hyperviscosity Syndrome (Etiology / Diagnostic Strategy / Management)</td>
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<td>Malignancy CNS Effects (Microcases: Herniation / Seizures / Spinal Compression / CNS Infections)</td>
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<td>Title of Case series</td>
<td>The objectives / topics covered in the cases</td>
<td>Prepared By</td>
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<td>Normal Anion Gap Metabolic Acidosis (Approach / Etiology)</td>
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<td>Pediatric Trauma (Approach / Special Considerations)</td>
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<td>Trauma in Pregnancy (Approach / Special Considerations / Monitoring)</td>
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<td>Head trauma</td>
<td>Head Injury</td>
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<td>Facial Trauma</td>
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<td>Facial Trauma // (Microcases: Mandibular Fracture / Dislocation)</td>
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<td>Spine trauma</td>
<td>Spinal Cord Injury (C-spine)</td>
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<td>Neck Trauma// Renal / Ureteral Trauma (Classifications / Diagnostic Strategy / Management)</td>
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Appendix F
Recommended Methods for Progressive Assessment

1. Clinical Skills/Patient Management

- Portfolio and logbook
- Mini-CEX
- DOPS
- Case-Based Discussion

2. Professionalism

- Provision of 360-degree feedback by peers, supervisors, allied health staff, and coworkers

3. Portfolio

- The portfolio will be an integral component of training.
- Each trainee will be required to maintain a logbook.
- An educational supervisor should in charge of monitoring and reviewing the portfolio and provide continuous feedback to the trainee.
- The portfolio should include the following:
  - Curriculum vitae
  - Professional development plan
  - Records of educational training events
  - Reports from educational supervisors
  - E-Logbook
  - Case write ups (selected)
  - Reflection
  - Others (e.g., patient feedback and clinical audits)

4. E-Logbook

The E-Logbook will be part of the portfolio. The purposes of the logbook are as follows:

1. Monitor trainees’ performance on a continual basis.
2. Document and record cases treated and managed by the trainees.
3. Maintain a record of the procedures and technical interventions performed.
4. Enable both trainee and supervisor to determine learning gaps.
5. Provide a basis of feedback to the trainee.

6. Mini-CEX and DOPS

- Customized mini-CEX for the most important conditions in the specialty
- Customized DOPS for the most frequently performed procedures in the specialty
- Mini-CEX and DOPS will be open, joint exercises between trainees and supervisors.
- Should emphasize formative development very strongly
  At least 15 minutes should be dedicated to feedback