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SAUDI BOARD EMERGENCY MEDICINE CURRICULUM

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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 Alsalman 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

Please refer to the updated executive policy of SCFHS on admission and registration.

Website: www.scfhs.org.sa

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)

R1		R2		R3		R4	
Rotation	Duration (Weeks)	Rotation	Duration (Weeks)	Rotation	Duration (Weeks)	Rotation	Duration (Weeks)
Emergency Medicine	28	Emergency Medicine	28	Emergency Medicine	28	Emergency Medicine	28
Anesthesia	4	Elective§	4	Pediatric ICU (PICU)	4	Pediatric Emergency Medicine	8
Obstetrics and Gynecology	4	ICU	8	EMS (prehospital care)	4	Community Emergency Medicine	4
Psychiatry	4	CCU1	4	Hajj EM	4	Elective§	12
Orthopedics	4	Pediatric Emergency Medicine	4	Research (if not taken earlier)/ Elective§	4		
Research / Elective§	4	Neuroscience	4	Pediatric Emergency Medicine	8		
Pediatric Emergency Medicine	4						

§: 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. OBGYN
 - 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

2. Manual ventilation (bag-valve-mask)
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.
 9. Initiate airway control in patients with raised intracranial pressure.

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

- e. Dystocia
- f. Prolapsed cord
- g. Breech presentation
- h. Fetal distress
- i. Postpartum hemorrhage
- j. Postpartum infection
- 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:
 - 1. Conduct a computerized literature search using Medline, PubMed, or an equivalent method.
 - 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.

Core Clinical Problem	Core Specialty level	Mastery Level
<i>Fever</i>	Meningitis (T, L) Bacterial pneumonia (C, T) Appendicitis (C, T) Cholecystitis(C, T) Pyelonephritis(C, T) Cellulitis(C, T) Encephalitis/ brain abscess (T, L) Cystitis, epididymitis, proctitis (C, T) ENT infections (pharyngitis, otitis media, sinusitis; C, T) Sepsis syndrome (C, T, L, P)	Peritonsillar abscess (T) Diverticulitis(C, T) Thyroid storm (T, L, P) Drug fever (T, P) Neuroleptic malignant syndrome (T, L) Malignancy (T) Myocarditis (L) Acute chest syndrome (L) Reaction transfusions (T, L) Tubo-ovarian abscess (T) Osteomyelitis (C, T)

Core Clinical Problem	Core Specialty level	Mastery Level
<i>Headache</i>	Subarachnoid hemorrhage (C, L) Hypertensive crisis (T, L) Subdural hematoma (C, L) Meningitis/encephalitis/CNS abscess (T, L) Increased ICP (T, L) Cerebellar venous sinus thrombosis (L) CO poisoning (T, L, P) Glaucoma (T, L) Headaches/ migraines (C, T, P) Post traumatic (C)	Temporal arteritis (T, L) Trigeminal neuralgia Tumors (T, L) Postlumbar headache (T, P) Effort-dependent/coital headaches (T) Acute mountain sickness (T, P)

Core Clinical Problem	Core Specialty level	Mastery Level
<i>Weakness</i>	Diphtheria (T) Myasthenia gravis (T, L, P) Gillian Barre Syndrome (T, L, P) Eaton Lambert syndrome (T) Spinal cord trauma (L, P) Electrolyte imbalance (C, T, L, P) Metabolic disorder (C, T, P)	Botulism (T, L, P) Organophosphate/ Carbamate poisoning (L, P) Tetanus (T, L, P) Tick paralysis (T) Ciguatoxin (T) Transverse myelitis (L) Polymyositis (L) Amyotrophic lateral sclerosis (L)

Core Clinical Problem	Core Specialty level	Mastery Level
<i>Dizziness and vertigo</i>	Foreign body in ear (C, T) Otitis media (C, T) Motion sickness (C, T) Benign positional vertigo (C, T) Multiple sclerosis (C) Systemic disease (Hypothyroid, diabetes; C, T) Post concussive syndrome (P) Cerebellar hemorrhage/infarction (C, L) Hypoglycemia (C, T, L, P) Intoxicated patient (C, T, L, P) Vasovagal (C, T) Anemia (C, T, L) Arrhythmia/myocardial infarction (C, T, L, P) Hypovolemic (C, T) Panic attack (C, T, P)	Acoustic neuroma (T) Meniere's disease (T) Vestibular neuritis (T) Trauma (temporal bone fracture, labyrinth concussion; T) Vertebral basilar migraine (L) Subclavian steal syndrome Temporal lobe epilepsy (T, P)

Core Clinical Problem	Core Specialty level	Mastery Level
<i>Confusion</i>	CNS infection (T, L, P) Hypoglycemia (C, T, L, P) Elevated intracranial pressure (T, L) Shock (C, T, L) Hypertensive encephalopathy (T, L, P) Electrolyte imbalance (C, T, L, P) Intoxicated patient (C, T, L, P) Epilepsy (C, T) CNS trauma (C, T, L, P) Neoplasm Stroke (C, L) Endocrine disease (C, T, L, P) Hepatic failure (C, L)	Nutrition (Wernicke's encephalopathy; P, L) nonconvulsive epilepsy (T, L)

Core Clinical Problem	Core Specialty level	Mastery Level
<i>Depressed consciousness and coma</i>	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)	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) Porphyria (L) Creutzfeldt-Jakob disease (L) Progressive multifocal leukoencephalopathy (L)
Core clinical Problem	Core Specialty level	Mastery Level
<i>Seizure</i>	Epilepsy/status epilepticus (C, T, L, P) Neonatal seizure (C, T, L) Long QT syndrome (T, L) Alcohol abuse/withdrawal (T, L, P) Panic attacks (C) Transient ischemic attack (C, T, P) Hypoglycemia (C, T, L, P) Extrapyramidal reaction (C, T, P)	Tetanus (T, P) Camphor/strychnine poisoning (L, P) Phencyclidine overdose (P) Carotid sinus hypersensitivity (T, L, P) Hemiparetic migraine (T, L) Hemiballismus/Tics (T, L) Pseudoseizures (C, T, P)
Core clinical Problem	Core Specialty level	Mastery Level
<i>Dyspnea</i>	Asthma (C, T, L, P) Aspiration pneumonia (C, L, P) Airway obstruction (L) Pulmonary Edema (C, T, L, P) Pulmonary Embolism (C, T, L, P) Cardiac tamponade (T, L) Tension/spontaneous pneumothorax (C, T, L) Carbon monoxide poisoning (T, L, P) Renal failure (C, T, L, P) Electrolyte imbalance (C, T, L, P) Peri/myocarditis (T, L) Anaphylaxis (T, L, P) Flail chest/rib fracture (C, T) Chronic obstructive pulmonary disease (C, T, L, P) Pleural effusion (C, T) Cardiomyopathy (C, L) Anemia (C, T)	Acute chest syndrome (L) Cor pulmonale (L) ALS (L) Porphyria (L) Polymyositis Organophosphate poisoning (L, P) Diaphragmatic rupture (T) Epiglottitis (T, L) Somatization disorder (C, T) Hyperventilation syndrome (C) Toxic inhalation/ingestion (T, L, P)

Core clinical Problem	Core Specialty level	Mastery Level
<i>Syncope</i>	Subarachnoid hemorrhage (L) Hypovolemic (C, T, L, P) Ruptured ectopic pregnancy (T, L) Pulmonary Embolism (C, T, L, P) Valvular heart disease (T, L) Arrhythmia (Wolff–Parkinson–White syndrome, ventricular fibrillation, supraventricular tachycardia, long QT, atrioventricular block; C, T, L, P) Myocardial infarction (C, T, L, P) Hypoglycemia (C, T, L, P) Aortic dissection (T, L) Intoxicated patient (C, T, L, P) Psychogenic (conversion, somatization, anxiety; C, T)	Subclavian steal (T, P) Basilar artery migraine (L) Cerebral syncope (L, P) Pacemaker/implantable cardioverter defibrillator malfunction (C, T, P) Cardiomyopathy (T, L) Emotional (C) Medication side effect (C, P)

Core clinical Problem	Core Specialty level	Mastery Level
<i>Chest pain</i>	Myocardial infarction Acute coronary syndrome (C, T, L, P) Aortic dissection (T, L) Cardiac tamponade (T, L) Pulmonary embolism (C, T, L) Trauma (flail chest; T) Muscle strain (C, T) Pneumothorax (C, T, L) Mallory Weiss tear (C, T) Pneumonia (C, T) Valvular heart disease (T, L) Hypertrophic cardiomyopathy (C, T, L) Pancreatitis (T, L) Spinal root compression (C, T) Gastroesophageal reflux disease (C, T) Peptic ulcer disease (C, T)	Esophageal rupture (L) Mediastinitis (L) Prinzmetal angina (T) Cocaine-induced peri/myocarditis (L, P) Pleuritis (T) Pneumomediastinitis Costochondritis (C) Postherpetic neuralgia

Core clinical Problem	Core Specialty level	Mastery Level
<i>Constipation</i>	Irritable bowel syndrome (C, T) Spinal cord injury (C, L) Medication side effect (opiates, antacids, antidepressants, iron; T, P) Stricture, colon cancer Electrolyte imbalance (hypocalcaemia, hypokalemia, hypomagnesaemia, (C, T, L, P) Crohn's disease (T, L, P) Inadequate fiber, sedentary (C, T, P)	Myopathic (scleroderma, multiple sclerosis, Parkinson's, Amyotrophic lateral sclerosis (C, T, L) Porphyria (T) Psychological (depression, anxiety, sexual abuse; C, T) Uremia (T, P) Cerebrovascular accident (C) Paraneoplastic syndrome (C, T, L)

Core clinical Problem	Core Specialty level	Mastery Level
<i>Nausea and vomiting</i>	Ischemic bowel (C, L) Peritonitis (L) Diabetic ketoacidosis (C, T, L, P) Meningitis (T, L) Gastroenteritis (C, T) Sepsis (C, T, L) Raised intracranial pressure (T, L) Gonadal torsion (T, L) Electrolyte disorders (C, T, L, P) Motion sickness (C, T) Biliary colic (C, T) Pancreatitis (T, L) Appendicitis (C, T) Peptic ulcer disease (C, T) Pyelonephritis (T) Renal colic (C, T) Bowel obstruction (T) Cholecystitis/cholangitis (C, T) Hyperemesis gravidarum (C, T) Hepatitis (C, P) Drug toxicity (aspirin, digoxin, acetaminophen; C, T, L, P)	Uremia (T, L, P) CNS tumor (C, T, L) Drug withdrawal (T, L) Labyrinthitis (C) Adrenal insufficiency (T, L) Boerhaave's syndrome (L) Spontaneous bacterial peritonitis (T, L)

Core clinical Problem	Core Specialty level	Mastery Level
<i>Abdominal pain</i>	Diabetic ketoacidosis (C, T, L, P) Constipation (C, T) Gastritis/gastroenteritis (C, T, P, L) Biliary tract disease (C, T) Acute appendicitis (C, T) Myocardial infarction (C, T, P, L) Intussusception (T, L) Ruptured ectopic pregnancy (T, L) Ruptured abdominal aortic aneurysm (L) Mesenteric ischemia (L) Viscus perforation (T, L) Intestinal obstruction (C, T) Pancreatitis (C, L) Pyelonephritis (C, T) Renal colic (C, T, P)	Diverticulitis (T) Porphyria (T, P) Vasculitis (L) Alcoholic ketoacidosis (T, L, P) Rocky Mountain spotted fever (T) Muscle hematoma (T) Snake/black widow spider bite (C, T, L) Heavy metal toxicity (T, P)

Core clinical Problem	Core Specialty level	Mastery Level
<i>Diarrhea</i>	Infectious diarrhea (viral, parasitic, invasive bacterial, toxigenic; C, T, P, L) Systemic disease (alcoholism, amyloidosis, Henoch–Schönlein purpura, hemolytic uremic syndrome, lymphoma, cystic fibrosis; C, T, L) Drug induced (Nonsteroidal anti-inflammatory drugs, digitalis, antibiotics; C, T) Gastrointestinal pathology (gastrointestinal bleed, cirrhosis, malrotation, Hirschsprung's disease, toxic megacolon; C, T, L)	Fish-associated toxins (P, L) Carcinoid syndrome (T) Hormonal hypersecretion (T, P, L) Radiation therapy Poisoning (T, P, L)

Core clinical Problem	Core Specialty level	Mastery Level
<i>Jaundice</i>	Hepatitis (C, L, P) Cholangitis (T, L) Transfusion reaction (T, P, L) Heatstroke (T, L, P) Hemolytic anemia (T, L) Pancreatic head cancer (L) HELLP syndrome (T, L) Liver transplant rejection (L) Physiological neonatal jaundice (C, T) Hyperemesis gravidarum (C, T) Gilbert's syndrome (T)	Budd-Chiari syndrome (T, L) Wilson's disease Sarcoidosis (T) Obstructing abdominal aortic aneurysm (L) Post-traumatic hematoma resorption (T) Inborn errors of metabolism (L) Reye's syndrome (L)

Core clinical Problem	Core Specialty level	Mastery Level
<i>Acute pelvic pain in women</i>	Ovarian torsion (T, L) Salpingitis (T, L) Endometritis (C, T) Ectopic pregnancy (T, L) Placenta previa (T, L) Diverticulitis (T) Ischemic bowel (T, L) Inflammatory bowel disease (T) Cystitis (C, T) Biliary disease (C, T) Incarcerated/ strangulated hernia (T, L) Dysmenorrhea (C, T) Bowel obstruction (T, L) Gastroenteritis (C, T) Endometriosis (C, T) Threatened abortion (C) Pyelonephritis (C, T) Appendicitis (C, T)	Ovarian hyperstimulation syndrome (C, T, L) Tubo-ovarian abscess (T, L) Uterine perforation (T, L)

Core clinical Problem	Core Specialty level	Mastery Level
<i>Vaginal bleeding</i>	Polyps (C, T) Endometrial cancer (C, L) Complications of pregnancy (C, L, T) Uterine fibroids (C, T) Dysfunctional uterine bleed (C, T) Thyroid dysfunction (T, L) Vaginal foreign bodies (T) Trauma (T) Coagulopathy (T, L)	Atrophic vaginitis

Core clinical Problem	Core Specialty level	Mastery Level
<i>Back pain</i>	Aortic dissection (L) Cauda equina syndrome (T, L) Ruptured/expanding abdominal aortic aneurysm (T, L) Malignancy (T, L) Peptic ulcer disease (C, T) Cholecystitis (C, T) Ovarian torsion/cyst (T) Pyelonephritis (C, T) Spinal fracture/subluxation (P) Muscle strain (C, T) Degenerative joint disease (T) Intervertebral disc disease (T) Pancreatitis (T, L) Retroperitoneal mass/hemorrhage (T, L)	Epidural abscess/hematoma (T, L) Spinal stenosis (T) Transverse myelitis Vertebral (T, L) osteomyelitis (T, L) Ankylosing spondylitis Spondylolisthesis (C, T)

Core clinical Problem	Core Specialty level	Mastery Level
<i>Sore throat</i>	Epiglottitis (T, L) Ludwig's angina (T, L) Tracheitis (T, L) Lingual abscess (T, L) Tumor (T) Foreign body (T, P) Trauma (C, T) Caustic ingestion (L, P) Congenital anomaly Tonsillitis (C, T) Pharyngitis (C, T) Retropharyngeal abscess (T) Parapharyngeal abscess (T) Peritonsillar abscess (T)	Peritonsillar cellulitis (T) Uvulitis (T)

Core clinical Problem	Core Specialty level	Mastery Level
<i>Gastrointestinal bleeding</i>	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)

Core clinical Problem	Core Specialty level	Mastery Level
<i>Hemoptysis</i>	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) Tracheal-arterial fistula (T, L) Cocaine (T, L) Congenital heart disease (T, L)

Core clinical Problem	Core Specialty level	Mastery Level
<i>Red and painful eye</i>	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)

Core clinical Problem	Core Specialty level	Mastery Level
<i>Cyanosis</i>	Pulmonary embolism (C, T, L, P) Methemoglobinemia (T) Upper airway obstruction (T, L) Hypoventilation (C, T) Pneumonia (C, T, L) Left ventricular failure (C, T, L, P) Pulmonary hypertension (T, P) Acute respiratory distress syndrome (L) Pneumothorax (T, L)	Arteriovenous fistula (C, T, P) Glucose-6-phosphate dehydrogenase deficiency (C, T) Cyanotic heart disease (C, T, L) Sulfhemoglobinemia (T, L) High altitude (T, L, P)

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

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.

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

R1	R2	R3	R4
• Performs and communicates a reliable, comprehensive history and physical exam	• Performs and communicates a focused history and physical exam, which effectively addresses the chief complaint and urgent patient issues	• Prioritizes essential components of a history, given limited or dynamic circumstances • Prioritizes essential components of a physical examination, given limited or dynamic circumstances	• Synthesizes essential data necessary for the correct management of patients using all potential data sources • Identifies obscure, occult, or rare patient conditions based solely on historical and physical exam findings

Suggested evaluation methods: global ratings of live performance, checklist assessments of live performance, SDOT, oral boards, and simulation

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.

R1	R2	R3	R4
• Determines the necessity of diagnostic studies	• Orders appropriate diagnostic studies • Performs appropriate bedside diagnostic studies and procedures • Prioritizes essential testing	• Interprets results of a diagnostic study, recognizing limitations and risks, seeking interpretive assistance as appropriate • Reviews risks, benefits, contraindications, and alternatives to a diagnostic study or procedure • Uses diagnostic testing based on pretest probability of disease and the likelihood that the test results will alter management	• Practices cost effective ordering of diagnostic studies • Understands the implications of false positives and negatives for posttest probability • Discriminates between subtle and conflicting diagnostic results in the context of patient presentation
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.

R1	R2	R3	R4
• Constructs a list of potential diagnoses based on the chief complaint and initial assessment	• Constructs a list of potential diagnoses based on the greatest likelihood of occurrence • Constructs a list of potential diagnoses with the greatest potential for morbidity or mortality	• Uses all available medical information to develop a list of ranked differential diagnoses, including those with the greatest potential for morbidity or mortality • Correctly identifies “sick versus well” patients	• Synthesizes all of the available data and narrows and prioritizes the list of weighted differential diagnoses to determine appropriate management • Uses pattern recognition to identify discriminating features between

Revises a differential diagnosis in response to changes in a patient's course over time	similar patients and avoids premature closure
Suggested evaluation methods: SDOT as baseline, global ratings, simulation, oral boards, and chart review	

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.

R1	R2	R3	R4
- Knows the different classifications of pharmacologic agents and their mechanisms of action. - Consistently asks patient about drug allergies	- Applies medical knowledge for the selection of appropriate agents for therapeutic intervention - Considers potential adverse effects of pharmacotherapy	- 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 - Considers and recognizes potential drug-drug interactions	- 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 - Participates in developing institutional policies on pharmacy and therapeutics
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	R2	R3	R4
Recognizes the need for patient re-evaluation	Ensures that necessary therapeutic interventions are administered during a patient's ED stay	- 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	- 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	R2	R3	R4
Describes basic resources available for the care of patients in the ED	Formulates a specific follow-up plan for common ED complaints, with appropriate use of resources	- 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	- Formulates suitable admission plans or discharge instructions, including future diagnostic or therapeutic interventions for ED patients - Engages patient or surrogate in the effective

• Correctly assigns admitted patients to an appropriate level of care (intensive care/telemetry/floor/observation unit)	• Works within the institution to develop hospital systems that enhance safe patient disposition and maximize the use of resources
Suggested evaluation methods: SDOT, shift evaluations, simulation cases/Objective Structure Clinical Exam (OSCE), multisource feedback, and chart review	

8. Multitasking (Task switching)

The resident employs task switching in an efficient and timely manner in order to manage the ED.

R1	R2	R3	R4
• Manages a single patient amidst distractions	• Switches tasks between patients	• Employs task switching in an efficient and timely manner in order to manage multiple patients	• Employs task switching in an efficient and timely manner in order to manage the ED • Employs task switching in an efficient and timely manner in order to manage the ED under high-volume or surge situations
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.

R1	R2	R3	R4
- Identifies pertinent anatomy and physiology for a specific procedure - Uses appropriate universal precautions	- Performs patient assessment, obtains informed consent, and ensures that monitoring equipment is in place in accordance with patient safety standards - Knows indications, contraindications, anatomic landmarks, equipment, anesthetic and procedural techniques, and potential complications for common ED procedures - Performs the indicated common procedure with moderate urgency for a patient who has identifiable landmarks and a low to moderate risk of complications - Performs postprocedural assessment and identifies any	- Determines a backup strategy in case initial attempts to perform a procedure are unsuccessful - Correctly interprets the results of a diagnostic procedure	- Performs indicated procedures for patients with challenging features (e.g., poorly identifiable landmarks, extremes of age, or comorbid conditions) - Performs the indicated procedure, takes steps to avoid potential complications, and recognizes the outcome and/or complications resulting from the procedure - Teaches procedural competency and corrects mistakes
Suggested evaluation methods: procedural competency forms, checklist assessment of procedure and simulated laboratory performance, and global ratings			

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.

R1	R2	R3	R4
- Describes upper airway anatomy - Performs basic airway maneuvers or adjuncts (jaw thrust/chin lift/oral airway/nasopharyngeal airway) and ventilates or oxygenates patients using bag-valve-mask ventilation	- Describes elements of airway assessment and indications impacting airway management - Describes the pharmacology of agents used for rapid sequence intubation, including specific indications and contraindications - Performs rapid sequence intubation in patients without adjuncts - Confirms proper endotracheal tube	- Uses airway algorithms in decision making for complicated patients, employing airway adjuncts as indicated - Performs rapid sequence intubation in patients using airway adjuncts - Implements postintubation management - Employs appropriate methods of	- Performs airway management under any circumstances, taking steps to avoid potential complications, and recognizes the outcome and/or complications resulting from the procedure - Performs a minimum of 35 intubations - Demonstrates the ability to perform a cricothyrotomy - Uses advanced

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

R1	R2	R3	R4
• Discusses indications, contraindications, and possible complications of local anesthesia with the patient • Administers local anesthesia using appropriate doses of local anesthetic and appropriate techniques to provide skin or subdermal anesthesia for procedures.	• Knows the indications, contraindications, potential complications, and appropriate doses of analgesic and sedative medications • Knows the anatomic landmarks, indications, contraindications, potential complications, and appropriate doses of local anesthetics used for regional anesthesia	• Knows the indications, contraindications, potential complications, and appropriate doses for medications used for procedural sedation • Performs patient assessment, discusses the most appropriate analgesic/sedative medication with the patient, and administers the most appropriate dose via the best route • Performs pre-sedation assessment, obtains informed consent, and orders appropriate choice and dosage of medication for procedural sedation • Obtains informed consent and performs regional anesthesia correctly • Ensures appropriate monitoring of patients during procedural sedation	• Performs procedural sedation, providing effective sedation with the least risk of complications and minimal recovery time through selective dosing, route, and choice of medication • Develops pain management protocols and care plans
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.

R1	R2	R3	R4
Describes the indications for emergency ultrasound	- Explains how to optimize ultrasound images and identifies the proper probe for each of the focused ultrasound applications - Performs an eFAST scan	- Performs goal-directed focused ultrasound examinations - Correctly interprets acquired images	- Performs a minimum of 150 focused ultrasound examinations - Expands ultrasonography skills to include advanced echo; transesophageal echocardiogram; bowel, adnexal and testicular pathology; and transcranial Doppler (see Ultrasound section)
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.

R1	R2	R3	R4
- Prepares a simple wound for suturing (identify appropriate suture material, anesthetize wound, and irrigate) - Demonstrates sterile technique - Places a simple interrupted suture	- Uses medical terminology to describe and classify a wound (e.g., stellate, abrasion, avulsion, laceration, deep vs. superficial) clearly - Classifies burns with respect to depth and body surface area - Compares and contrasts modes of wound management (adhesives, Steri-Strips, hair	- Performs complex wound repairs (deep sutures, layered repair, or corner stitch) - Manages a severe burn - Determines which wounds should not be closed - Demonstrates appropriate use of consultants - Identifies wounds that may be high risk and require more extensive evaluation (e.g., X-ray, ultrasound, and/or exploration)	- Achieves hemostasis in a bleeding wound using advanced techniques such as cautery, ligation, deep suture, injection, topical hemostatic agents, and tourniquet - Repairs wounds that are at high risk of cosmetic complications (such as eyelid margin, nose, or ear) - Describes indications and procedures for an

apposition, staples) • Identifies wounds that require antibiotics or tetanus prophylaxis • Educates patients with respect to appropriate outpatient wound management	escharotomy • Performs advanced wound repairs such as tendon repairs and skin flaps
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.

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

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

R1	R2	R3	R4
• Demonstrates behavior that conveys caring, honesty, genuine interest, and tolerance when interacting with a diverse population of patients and their families	• 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	• Recognizes how personal beliefs and values impact medical care and consistently manages his/her own values and beliefs to optimize relationships and medical care • Develops alternate care plans when patients' personal decisions/beliefs preclude the use of commonly accepted practices	• 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 • Effectively analyzes and manages ethical issues in complicated and

	challenging clinical situations • Develops institutional and organizational strategies to protect and maintain professional and bioethical principles
Suggested evaluation methods: direct observation, SDOT, portfolio, simulation, oral board, multisource feedback, and global ratings	

17. Accountability

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

R1	R2	R3	R4
• 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 • Maintains patient confidentiality • Uses social media ethically and responsibly • Adheres to professional responsibilities such as conference attendance, timely chart completion, duty hour reporting, and procedure reporting	• Identifies basic principles of physician wellness, including sleep hygiene • Consistently recognizes his/her own limits regarding knowledge in common and frequent clinical situations and asks for assistance • Demonstrates knowledge of alertness, management, and fatigue mitigation principles	• 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 • Recognizes and avoids the inappropriate influence of marketing and advertising	• Is able to form a plan to address impairment in oneself or a colleague in a professional and confidential manner • Manages medical errors according to principles of responsibility and accountability, in accordance with institutional policy • Develops institutional and organizational strategies to improve physician insight into and management of professional responsibility • Trains physicians and educators regarding responsibility, wellness, fatigue, and physician impairment
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.

R1	R2	R3	R4
- Establishes a rapport with and demonstrates empathy toward patients and their defined family units - Listens effectively to patients and their defined family units - Communicates clearly and accurately with patients and colleagues in uncomplicated situations. - Elicits patients' reasons for seeking healthcare and expectations of the ED visit	- Negotiates and manages simple patient/family-related conflicts - Communicates effectively with vulnerable populations including patients at risk and their defined family units - Recognizes, stabilizes, and seeks further advice in difficult communication situations including those involving the delivery of bad news with empathy - Begins to learn strategies to communicate in difficult situations. - Demonstrates accurate and concise written communication skills.	- Manages the expectations of those who receive care in the ED and uses communication methods that minimize the potential for stress, conflict, and misunderstanding - 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 - Maintains effective professional and patient-centered communication in a complex environment. - Expands skills repertoire to adapt their communication in most circumstances.	- Establishes optimal rapport and communicates effectively with speed and accuracy under all circumstances - Teaches patient-centered communication - Participates in review and counsel of colleagues with communication deficiencies
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.

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

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

R1	R2	R3	R4
• Adheres to standards for maintenance of a safe working environment • Describes medical errors and adverse events	• Routinely uses basic patient safety practices such as time-outs and “calls for help”	• Describes patient safety concepts • Employs processes (e.g., checklists), personnel, and technologies that optimize patient safety • Uses system resources appropriately to improve both patient care and medical	• Leads team reflection such as code debriefings, root cause analysis, or M & M to improve ED performance • Identifies situations in which a breakdown in teamwork or communication may contribute to medical error • Uses analytical tools to assess healthcare quality and safety and

• Participates in an institutional process improvement plan to optimize ED practice and patient safety	• Participates in an institutional process improvement plan to optimize ED practice and patient safety • Develops and evaluates measures of professional performance and process improvement and implements them to improve departmental practice
Suggested evaluation methods: SDOT, simulation, global ratings, multisource feedback, and portfolio work products including a QI project	

22. Systems-based Management

The resident participates in strategies to improve healthcare delivery and flow and demonstrates awareness of and responsiveness to the larger healthcare context and system.

R1	R2	R3	R4
• Describes members of the ED team (e.g., nurses, technicians, or security staff)	• Mobilizes the institution's resources to assist in patient care • Participates in patient satisfaction initiatives	• Practices cost-effective care • Demonstrates the ability to call on other resources in the system to provide optimal healthcare • 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)	• Recommends strategies by which patients' access to care can be improved • Coordinates system resources to optimize patient care in complicated medical situations • Creates a departmental flow metric from benchmarks, best practices, and dashboards • Develops internal and external departmental solutions to process and operational problems • Addresses the differing customer needs of patients, hospital medical staff, EMS, and the community
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.

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

	Procedures/skills	Junior	Senior
Airway	Performs basic airway maneuvers or adjuncts (jaw thrust/chin lift/oral airway/nasopharyngeal airway)	*	*
	Ventilates/oxygenates patient using BVM	*	*
	Intubation: <i>direct laryngoscopy, insertion of oral endotracheal tubes, and use of the rapid sequence induction technique</i>	*	*
	Insertion of laryngeal mask airway	*	*
	Use of an additional difficult airway device (e.g., stylet, bougie, or intubating laryngeal mask airway).		*
	Video laryngoscopy and associated devices (e.g., optical stylet or flexible fiber optic laryngoscope)		*
	Securing and caring for endotracheal tubes, including during transport	*	*
	Surgical/needle cricothyrotomy ^Δ		*
	Percutaneous transtracheal ventilation ^Δ		*
	Percutaneous tracheostomy ^Δ		*
	Replacing tracheostomy tube ^Δ		*
	Selection of appropriate mode and parameters for mechanical ventilation	*	*
	Noninvasive ventilatory management	*	*
	Ventilatory monitoring	*	*
Breathing			
	Decompression thoracostomy	*	*
	Pleurocentesis		*
	Pneumothorax / hemothorax detection	*	*
	Thoracocentesis-microcatheter aspiration/drainage of pneumothorax		*
	Thoracocentesis-needle aspiration pneumothorax		*
	Tube thoracostomy and post tube care	*	*
	Spirometry and peak flow measurement	*	*
Circulating			
	Vascular access		
	Pediatric:		
	Scalp vein		*
	Peripheral vein	*	*
	Intraosseous	*	*
	External jugular	*	*
	Ultrasound-guided Femoral	*	*
	Femoral central venous catheter without ultrasound guides		*
	Umbilical vein ^Δ		*
	Venous cutdown ^{\$}		*
	Adult:		
	Peripheral vein	*	*
	External jugular	*	*
	Ultrasound-guided central line	*	*
	Internal jugular	*	*
	Subclavian	*	*

Anesthesia and Acute Pain Management	<i>Femoral</i>	*	*
	<i>Central venous catheter without ultrasound guides</i>		*
	<i>Arterial catheterization</i>	*	*
	<i>External chest compressions</i>	*	*
	<i>Basic ECG interpretation</i>	*	*
	<i>Advanced ECG interpretation</i>		*
	<i>Carotid sinus massage</i>	*	*
	<i>External cardiac pacing</i>	*	*
	<i>Pericardiocentesis</i>		*
	<i>DC cardioversion</i>	*	*
	<i>Defibrillation</i>	*	*
	<i>Focused sonographic assessment of circulatory status (FAST, RUSH, eFAST)</i>		*
	<i>Resuscitative thoracotomy ^Δ</i>		*
	<i>Topical anesthesia</i>	*	*
	<i>Local anesthesia</i>	*	*
	<i>Hematoma blocks</i>	*	*
	<i>Intra-articular blocks</i>		*
	<i>Procedural sedation and analgesia</i>		*
	<i>Nerve block anesthesia:</i>		
	<i>Digital</i>	*	*
	<i>Supraorbital</i>	*	*
Diagnostic and Therapeutic Procedures	<i>Infraorbital</i>	*	*
	<i>Mental</i>		*
	<i>Mandibular</i>		*
	<i>Lingual</i>		*
	<i>Median</i>		*
	<i>Radial</i>		*
	<i>Ulnar</i>		*
	<i>Intercostal</i>		*
	<i>Femoral</i>		*
	<i>Sural</i>		*
	<i>Posterior tibial</i>		*
	<i>Penile</i>	*	*
	<i>Nasogastric/orogastric tube insertion</i>	*	*
	<i>Abdominal paracentesis</i>	*	*
	<i>Gastrostomy tube replacement</i>		*
	<i>Abdominal hernia reduction</i>		*
	<i>Diagnostic Peritoneal Lavage [§]</i>		*
	<i>Balloon tamponade of gastroesophageal varices</i>		*
	<i>Anoscopy/proctoscopy</i>	*	*
	<i>Incision thrombosed external hemorrhoids</i>		*
Abdominal and Gastrointestinal	<i>Fecal disimpaction</i>	*	*
	<i>Application of bandages/dressings</i>	*	*
	<i>Suturing: single- and multiple-layer closure</i>	*	*
Cutaneous			

Head, Ear, Eye, Nose, and Throat	Closure with staples	*	*
	Closure with tissue adhesive glue	*	*
	Wound hematoma evacuation		*
	Incision and drainage of abscess	*	*
	Basic wound debridement	*	*
	Wound closure techniques		*
	Trephination, nails	*	*
	Nailbed laceration repair		*
	Extensor tendon repair §		*
	Debridement of burn blisters/frostbite §		*
	Escharotomy Δ		*
	Control of epistaxis:		
	Anterior intranasal packing	*	*
	Posterior intranasal packing		*
	Nasal cautery		*
	Pupil dilatation	*	*
	Ocular irrigation	*	*
	Ocular patching	*	*
	Tonometry	*	*
	Slit-lamp examination	*	*
	Lateral canthotomy Δ		*
	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			
	Arthrocentesis of the knee	*	*
	Arthrocentesis of the shoulder, elbow, ankle, wrist, or digits§		*
	Aspiration/injection of bursae		*
	Prepatellar		*
	Infrapatellar		*
	Olecranon		*
	Subacromial		*
	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	*	*

Nervous System	fractures		
	Temporary reduction and immobilization of displaced fracture for the relief of pain and/or neurovascular compromise	*	*
	Definitive reduction and immobilization of the following displaced fractures when appropriate		
	<i>Distal radius</i>	*	*
	<i>Fifth metacarpal neck</i>	*	*
	<i>Phalanx</i>	*	*
	Reduction of subluxations and dislocations including:		
	<i>Glenohumeral</i>	*	*
	<i>Radial head subluxation</i>	*	*
	<i>Metacarpal-phalangeal</i>	*	*
	<i>Interphalangeal</i>	*	*
	<i>Temporomandibular</i>		*
	<i>Sternoclavicular</i>		*
	<i>Elbow</i>	*	*
	<i>Hip</i>	*	*
	<i>Knee</i>	*	*
	<i>Patella</i>	*	*
	<i>Ankle</i>	*	*
	Splinting of tendon and ligament injuries of the hand, including		
	<i>Volar plate injury</i>	*	*
	<i>Mallet finger injury</i>	*	*
	<i>Swan neck deformity</i>	*	*
	<i>Boutonnière deformity</i>	*	*
	Removal of motorcycle helmet in traumatized patient	*	*
	Management of fingertip amputation	*	*
	Compartment pressure measurement	*	*
	Lumbar puncture and measurement of CSF pressure	*	*
Obstetrics and Gynecology			
	Manage normal and complicated delivery, including (but not limited to)		
	<i>Normal vaginal delivery</i>	*	*
	<i>Newborn and premature resuscitation</i>		*
	<i>Postpartum hemorrhage</i>		*
	<i>Episiotomy</i>	*	*
	<i>Shoulder dystocia</i>		*
	<i>Breech presentation</i>		*
	<i>Cord prolapse</i>		*
	Perimortem C-section ^Δ		*
	Sexual assault examination ^{\$}		*
Psychobehavioral			
	Violent patient management/restraint	*	*
Renal and Urogenital			
	Urethral bladder catheterization	*	*
	Suprapubic bladder catheterization		*

Toxicological	Bladder irrigation	*	*
	Testicular detorsion		*
	Reduction of paraphimosis		*
	Management of acute priapism		*
	Emergency cystourethrogram		*
	Gastric lavage		*
	Decontamination	*	*
Other Diagnostic and Therapeutic Procedures	Foreign body removal		
	<i>Laryngoscopy and removal of upper airway foreign body</i>	*	*
	<i>Removal of foreign body in the skin/subcutaneous tissues</i>	*	*
	<i>Removal of corneal or conjunctival foreign body</i>		*
	<i>Removal of corneal rust ring</i>		*
	<i>Removal of foreign body from the ear</i>	*	*
	<i>Removal of cerumen</i>	*	*
	<i>Removal of nasal foreign body</i>	*	*
	<i>Removal of rectal foreign body</i>	*	*
	<i>Removal of vaginal foreign body</i>	*	*
	<i>Removal of esophageal foreign body</i>		*
	<i>Forensic examination</i>		*
	Ultrasound §		
	<i>Describes the indications for emergency ultrasound</i>	*	*
	<i>Explains how to optimize ultrasound images and identifies the proper probe for each of the focused ultrasound applications</i>	*	*
	<i>Performs an eFAST scan</i>	*	*
	<i>Performs goal-directed focused ultrasound exams</i>		*
	<i>Correctly interprets acquired images</i>		*
	<i>Facilitation of vascular access</i>	*	*
	<i>Presence of intraperitoneal free fluid</i>	*	*
	<i>Measurement of abdominal aorta diameter</i>		*
	<i>Presence of pericardial fluid</i>	*	*
	<i>Presence of cardiac motion</i>		*
	<i>Confirmation of intrauterine gestation</i>	*	*
	Focused biliary ultrasound		*
	Detection of deep venous thrombosis		*
	Focused ultrasound of soft tissue and musculoskeletal structures		*
	<i>Ocular Ultrasound</i>		*
	Focused emergency echocardiography		*

Δ Rare but must demonstrate the ability & knowledge required

§ Preferred if able to perform.

§ 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.
 - a. **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.
 - b. **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:**
 - a. **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.
 - b. **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

General concepts in trauma

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

System injuries

- Head injury
- Facial injury
- Spinal injury
- Neck injury
- Thoracic trauma
- Abdominal trauma
- Genitourinary Trauma

- 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

Soft tissue injury

- Wound management
- Foreign bodies
- Mammalian bites
- Venomous animal injuries
- Thermal and chemical

Violence and abuse

- 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

- Hydrocarbons
- Inhaled toxins
- Antipsychotics
- Opioids
- Pesticides
- Sedative hypnotics
- Alcohol abuse and alcohol-related diseases

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

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

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.

*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 assignment(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:

- Saudi Emergency Medicine Resident Manual, 2010
- 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
- Australasian College for Emergency Medicine (ACEM) Curriculum Framework, 2012
- MOH, Health Statistical Year Book, 2011
- Frank JR, Snell L, Sherbino J, editors. CanMEDS 2015 Physician Competency Framework. Ottawa: Royal College of Physicians and Surgeons of Canada; 2015.).

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.
 - Vessel identification
 - 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
Complications

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)

Loss of hearing
 Loss of vision
 Rhinorrhea
 Sore throat
 Stridor
 Tinnitus
 Vertigo

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

Stricture and stenosis
 Tracheoesophageal fistula
 Varices

Tumors

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

2.7 Stomach

Infectious disorders

Inflammatory disorders

Gastritis

Peptic ulcer disease

Hemorrhage

Perforation

Structural disorders

Congenital hypertrophic pyloric
 stenosis

Foreign body

Tumors

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	Tumors	Coronary syndromes
Appendicitis	2.11 Spleen	Ischemic heart disease
Necrotizing enterocolitis (NEC)		Myocardial infarction
Radiation colitis		Myocarditis
Ulcerative colitis		Ventricular aneurysm
Motor abnormalities	<u>3.0 CARDIOVASCULAR DISORDERS</u>	3.6 Diseases of the Pericardium
Hirschsprung's disease	3.1 Cardiopulmonary Arrest	Pericardial tamponade (see 18.1)
Irritable bowel	SIDS (see 1.1)	Pericarditis
Obstruction	3.2 Congenital Abnormalities of the	3.7 Endocarditis
Structural disorders	Cardiovascular System	3.8 Hypertension
Congenital anomalies	3.3 Disorders of Circulation	3.9 Tumors
Diverticula	Arterial	3.10 Valvular disorders
Intussusception	Aneurysm	
Volvulus	Aortic dissection	
Tumors	Thromboembolism	
2.10 Rectum and Anus	Venous	<u>4.0 CUTANEOUS DISORDERS</u>
Infectious disorders	Thromboembolism (see 16.6)	4.1 Cancers of the Skin
Perianal/anal abscess	3.4 Disturbances of Cardiac Rhythm	Basal cell
Perirectal abscess	Cardiac dysrhythmias	Kaposi's sarcoma
Pilonidal cyst and abscess	Ventricular	Melanoma
Inflammatory disorders	Supraventricular	Squamous cell
Proctitis	Conduction disorders	4.2 Decubitus Ulcer
Structural disorders	3.5 Diseases of the Myocardium, Acquired	4.3 Dermatitis
Anal fissure	Cardiac failure	Atopic
Anal fistula	Cor pulmonale	Contact
Congenital anomalies	High output	Eczema
Foreign body	Low output	Psoriasis
Hemorrhoids	Cardiomyopathy	Sebaceous cyst
Rectal prolapse	Hypertrophic	Seborrhea
	Congestive heart failure	4.4 Infections
		Bacterial

- Abscess
- Cellulitis
- Erysipelas
- Impetigo
- Necrotizing infection
- Fungal
 - Candida (see 2.2, 7.5)
 - Tinea
- Parasitic
 - Pediculosis infestation
 - Scabies
- Viral
 - Aphthous ulcers
 - Erythema infectiosum
 - Herpes simplex (see 10.6 and 13.1)
 - Herpes zoster (see 10.6)
 - Human papillomavirus (HPV; see 13.1)
 - Molluscum contagiosum
 - Warts
- 4.5 Maculopapular Lesions
 - Erythema multiforme
 - Erythema nodosum
 - Henoch-Schönlein purpura (HSP)
 - Pityriasis rosea
 - Purpura
 - Urticaria
- 4.6 Papular/Nodular Lesions
 - Hemangioma/Lymphangioma

- Lipoma
- Sebaceous cyst
- 4.7 Vesicular/Bullous Lesions
 - Pemphigus
 - Staphylococcal scalded skin syndrome
 - Stevens-Johnson syndrome
 - Toxic epidermal necrolysis
 - Bullous pemphigoid

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

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

- Tracheitis
- Oral candidiasis (see 2.2 and 4.4)
- Periapical abscess
- Peritonsillar abscess
- Pharyngitis/tonsillitis
- Retropharyngeal abscess
- Temporomandibular joint disorders
- 7.6 Tumors

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

- Lyme disease
- Rocky Mountain spotted fever
- 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

- Dysfunctional bleeding
- Endometriosis
- Prolapse
- Tumors
- Gestational trophoblastic disease
 - Leiomyoma
- Vagina and vulva
 - Bartholin's abscess
 - Foreign body
 - Vaginitis/vulvovaginitis
- 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

- Fetal distress
- Premature labor (see 18.2)
- Premature rupture of membranes
- Rupture of uterus (see 18.2)
- 13.7 Complications of Delivery
 - Malposition of fetus
 - Nuchal cord
 - Prolapse of cord
- 13.8 Postpartum Complications
 - Endometritis
 - Hemorrhage
 - Mastitis

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)
 - Intoxication and/or withdrawal (see 17.1)
 - Alcohol
 - Hallucinogens
 - Opioids
 - Phencyclidine
 - Sedatives/hypnotics/anxiolytics
 - Sympathomimetics and cocaine
- 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
- Structural
 - Paraphimosis/phimosis
 - Priapism
 - Prostatic hypertrophy (BPH)
 - Torsion of testis
- Testicular masses
- Tumors
 - Prostate

- Testis
- 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

- 17.1 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

17.0 TOXICOLOGIC DISORDERS

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)

Retrobulbar Hematoma

Otologic trauma

Hematoma

Perforated 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

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)

18.2 Trauma in Pregnancy

Abruptio placentae (See 13.3)

Perimortem C-section

Premature labor (see 13.6)

Rupture of uterus (see 13.6)

18.3 Multisystem trauma

Blast injury

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

- 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)

Saudi Emergency medicine Program (Riyadh)								
Academic Calander for the Year 2013/2014								
Date	time	R1	R2	R3	R4	Staff	Theme	
1/10/2013	08:00- 09:00						Intro	
	0900-12:00	Introduction / Orientation to the Program						
	12:30--14:00	Grand Round						
	14:00-16:00	Journal club						
8/10/2013	08:00- 09:00	Peri-Intubation Management		Peri-Intubation Management (LR)				
	0900-12:00	Airway Case Series		Airway Management (CS + LR)				
	12:30--14:00	Grand Round						
	14:00-16:00	Procedures: Airway Devices	Simulation		R4 Activity: Introduction to Feedback and Evaluation			
15/10/2013	Hajj Holiday							
22/10/2013	08:00- 09:00	Shock			Mechanical Ventilation (CS)			Resus
	0900-12:00	Shock Case Series			Fluids & Blood Products (LR)			
	12:30--14:00	Grand Round						
	14:00-16:00	Procedures: Surgical Airway	Simulation		R4 Activity: Introduction to Oral Exam			
29/10/2013 (KFMC)	08:00- 09:00	Mechanical Ventilation						
	0900-12:00	Cardiac Arrest (CS + CR) Post Arrest Care (LR)						
	12:30--14:00	Grand Round: KFMC						
	14:00-16:00	Procedures: Central Venous Line Insertion	Simulation		R4 Activity: Mock Oral Exam			
5/11/2013	08:00- 09:00	Blood Products			Peds & Neonatal Resuscitation (CS & CR)			
	0900-12:00	Anaesthesia Guest Speaker			Brain Resuscitation (CR)			
	12:30--14:00	Grand Round						
	14:00-16:00	Journal club						
12/11/2013	08:30- 09:30	EM US Workshop	Ethical Issues					
	09:30- 10:30		Medicolegal Issues					
	11:00-12:00		Dealing With the Difficult Patient					
	12:30--14:00		Grand Round					
	14:00-16:00		Simulation		R4 Activity: Writing CV and Recommendations			
19/11/2013 (KFSH&RC)	08:30- 09:30	Research Day						Misc
	09:30- 10:30							
	11:00-12:00							
	12:30--16:00							
26/11/2013 (KFMC)	08:30- 09:30	Patient Safety						
	09:30- 10:30	Advanced Applications in US						
	11:00-12:00	Stress Management And Burnout						
	12:30--14:00	Grand Round						
	14:00-16:00		Simulation		R4 Activity: Mock Oral Exam			

3/12/2013	08:00- 09:00	Approach to Chest Pain		Aortic Emergencies (CS + LR)		Cardio	
	0900-12:00	Cardiac Case Series (Non-ACS 1)		Acute Valvular Emergencies (CS + LR)			
	12:30--14:00	Grand Round					
	14:00-16:00	Journal club					
10/12/2013	08:00- 09:00	Acute Coronary Syndrome		STEMI Update (LR)			
	0900-12:00	Cardiac Case Series (ACS)		NSTEMI Update (LR)			
	12:30--14:00	Grand Round					
	14:00-16:00	Slideshow: ECG in ACS	Simulation		R4 Activity: Mock Oral Exam		
17/12/2013	08:00- 09:00	Heart Failure		Cardiogenic Pulmonary Edema (LR)			
	0900-12:00	Junior Activity: Cardiac Case Series (Non-ACS 2)		Best Antiarrhythmic for Every Dysrhythmia (CS+LR)			
	12:30--14:00	Grand Round					
	14:00-16:00	Slide Show: Radiography in Cardiology	Simulation		R4 Activity: Communication Skills		
24/12/2013	08:00- 09:00	Dysrhythmias		PE & DVT Diagnostics (LR)			
	0900-12:00	Cardiac Case Series (Dysrhythmias)		PE & DVT Management (LR)			
	12:30--14:00	Grand Round					
	14:00-16:00	Slideshow: ECG (Non-ACS)	Simulation		R4 Activity: OSCE Excercise (Ortho)		
31/12/2013 (KFMC)	08:00- 09:00	Syncope And Sudden Death					
	0900-12:00	Sudden Cardiac Arrest (CS & LR)					
		ECG Workshop (CR)					
	12:30--14:00	Grand Round					
	14:00-16:00		Simulation		R4 Activity: Mock Oral Exam		
7/1/2014	08:00- 09:00	Asthma / COPD		Bronchial Asthma (CS + LR)			
	0900-12:00	Obstructive Lung Disease Case Series		COPD (CS + LR)			
	12:30--14:00	Grand Round					
	14:00-16:00	Journal club					
14/1/2014	08:00- 09:00	Pneumonia		Pneumonia (CS & LR)			
	0900-12:00	Pneumonia Case Series		Infections of Upper Airways & Adjacent Spaces (CS)			
	12:30--14:00	Grand Round					
	14:00-16:00	CXR slideshow 1	Simulation		R4 Activity Mock Oral Exam		
21/1/2014	08:00- 09:00	DVT / PE		Unusual Causes of Pneumonia (CS)			
	0900-12:00	Pulmonary Case Series (PE/Effusions)		Emergency Pleural Diseases (CS & LR)			
	12:30--14:00	Grand Round					
	14:00-16:00	CXR slideshow 2	Simulation		R4 Activity: Written Exam 1		
28/1/2014 (KFMC)	08:00- 12:00	Forensic Medicine in EM					
	12:30--14:00	Grand Round					
	14:00-16:00		Simulation		R4 Activity: Mock Oral Exam		
4/2/2014	08:00- 12:00	Dermatology in EM					
	12:30--14:00	Grand Round					
	14:00-16:00	Journal club					

11/2/2014	08:00- 09:00	Anemia		Sickle cell Crises (CS & LR)			Hemato - Onco	
	0900-12:00	Heamatology Case Series		Platelet Disorders & Coagulopathy (CS)				
	12:30--14:00	Grand Round						
	14:00-16:00		Simulation		R4 Activity: Mock Oral Exam			
18/2/2014	08:00- 09:00	Sickle cell Disease		Febrile Neuropenia (CS & LR)				
	0900-12:00	Oncology Case Series		Oncology Emergencies (CS)				
	12:30--14:00	Grand Round						
	14:00-16:00		Simulation		R4 Activity: Mock Oral Exam			
25/2/2014 (KFMC)	08:00- 09:00	Systemic Lupus Erythematosus						Rheuma
	0900-12:00	Polyarthritits (CS & CR)						
		Vasculitis & Dermatomyositis (CS & CR)						
	12:30--14:00	Grand Round: KFMC						
14:00-16:00		Simulation		R4 Activity: Mock Oral Exam				
4/3/2014	08:00- 09:00	Pain in the ED		Procedural Sedation (LR)			Anesthesia	
	0900-12:00	Procedural Sedation - Regional Anaesthesia Case Series		Regional Aneasthesia (LR)				
	12:30--14:00	Grand Round						
	14:00-16:00	Journal club						
11/3/2014	08:00- 09:00	Approach to Acid/Base Disorders		Thyroid Disorders (CS & LR)			Acid/Base	
	0900-12:00	Acid / Base Case Series		Adrenal Disorders (CS & LR)				
	12:30--14:00	Grand Round						
	14:00-16:00		Simulation		R4 Activity: Mock Oral Exam			
18/3/2014	08:00- 09:00	Diabetes in the ED		Diabetic Keto-Acidosis (LR)			Endocrine	
	0900-12:00	Endocrine Case Series		Bicarbonate in Acidosis (LR)				
	12:30--14:00	Grand Round						
	14:00-16:00		Simulation		R4 Activity: Written Exam 2			
25/3/2014 (KFMC)	08:00- 09:00	Electrolyte Physiology						Electrolytes
	0900-12:00	Potassium and Calcium Disturbances (CS & LR)						
		Sodium and Magnesium Disturbances (CS & LR)						
	12:30--14:00	Grand Round: KFMC						
14:00-16:00		Simulation		R4 Activity: Mock Oral Exam				

1/4/2014	08:00- 09:00	Approach to Multiple Trauma		Resuscitation Challenges in Trauma (CS & LR)				
	0900-12:00	Multiple Trauma Case Series		Burns & Wound Management (LR)				
	12:30--14:00	Grand Round						
	14:00-16:00	Journal club						
8/4/2014	08:00- 09:00	Head Trauma		Traumatic Brain Injury (LR)				
	0900-12:00	Head Trauma Case Series		Neck and Vascular Injuries (CR)				
	12:30--14:00	Grand Round						
	14:00-16:00	Trauma Radiology 1	Simulation		R4 Activity: Mock Oral Exam			
15/4/2014	08:00- 09:00	Spine Trauma		Spinal Column Injuries (CR)				
	0900-12:00	Spinal Trauma Case Series		Spinal Cord Injuries (LR)				
	12:30--14:00	Grand Round						
	14:00-16:00	Trauma Radiology 2	Simulation		R4 Activity: Written Exam 3			
22/4/2014	08:00- 09:00	Thoracic Trauma		Thoracic Injuries (CS+LR)				
	0900-12:00	Thoracic & Vascular Case Series		Vascular Injuries (CS+LR)				
	12:30--14:00	Grand Round						
	14:00-16:00		Simulation		R4 Activity: End-of-Year Literature Review			
29/4/2014 (KFMC)	08:00- 09:00	Abdominal Trauma						
	0900-12:00	Abdominal Trauma (LR) Pelvic Trauma (CS & LR)						
	12:30--14:00	Grand Round						
	14:00-16:00		Simulation		R4 Activity: Mock Oral Exam			
6/5/2014	08:00- 09:00	Depression and Suicide Assessment		Mood & Panic Disorders (CS & LR)				
	0900-12:00	Psyche Case Series		Psychosis & Behavioural Disorders (CS & LR)				
	12:30--14:00	Grand Round						
	14:00-16:00	Journal club						
13/5/2014	08:00- 09:00	Immunocompromised Patients in the ED		The Geriatric Patient (CS)				
	0900-12:00	Special Populations Case Series		The Immunocompromised Patient (CS & LR)				
	12:30--14:00	Grand Round						
	14:00-16:00		Simulation		R4 Activity: Mock Oral Exam			
20/5/2014	08:00- 12:00	Dysrhythmia for junior. Diagnosis of PE & Peri-intubation Mx for seniors						Postponed earlier activity
	12:30--14:00	Grand Round						
	14:00-16:00		Simulation		R4 Activity: Mock Oral Exam			
27/5/2014	08:00- 09:00	OSCE						Oral Exam
	0900-12:00		Final Oral Exams					
	12:30--14:00	Grand Round						
	14:00-16:00							

APPENDIX E

Example of the Topics and Case Series Schedule

Title of Case series	The objectives / topics covered in the cases	Prepared By
Airway	Modes of Intubation (Crash/RSI)	
	Evaluation of the Difficult Airway (Difficult Intubation/BVM/Supraglottic)	
	Failed Airway (Management)	
	Pharmacological Agents (Pretreatment/Sedation/Paralysis)	
	Non-invasive and Mechanical Ventilation	
Shock	Monitoring in the ED	
	Hypovolemic Shock (Hemorrhagic / Dehydration / Burns)	
	Distributive Shock (Anaphylactic / Neurogenic)	
	Obstructive Shock (Tamponade / PE / Tension Pneumothorax)	
	Cardiogenic Shock	
Cardiac Non ACS 1	Vasopressors and Inotropes (Choice of Vasopressor / Side Effects)	
	Pericarditis (Pathophysiology / Etiology / Diagnostic Strategy / Management)	
	Myocarditis (Pathophysiology / Etiology / Diagnostic Strategy / Management)	
	Pericardial Effusion/Tamponade	
	Infective Endocarditis And Rheumatic Heart Disease	
Cardiac ACS	Valvular Heart Disease (Aortic, Mitral)	
	Prosthetic Valves	
	Clinical Features and Risk Stratification	
	Diagnostic Strategies (ECGs, Serum Markers, CP units and Stress testing, CT)	
	Unstable Angina/NSTEMI	
Cardiac Non ACS 2	STEMI (Pharmacological options, Inferior/RV considerations)	
	STEMI (Considerations for Reperfusion, Transport and STEMI Systems)	
	ACS Complications (Microcases: Cardiogenic Shock / Arrhythmias / Pericarditis / Aneurysm)	
	Chronic Heart Failure	
	Pulmonary Edema	
Cardiac Dysrhythmia	Cardiomyopathies	
	Aortic Dissection	
	AAA (Pathophysiology / Diagnostic Strategy / Management / Complications of Repair)	
	Uncontrolled HTN / HTN Emergency (Pathophysiology / Diagnostic Strategy / Management)	
	Narrow Complex Tachycardia (Microcases: Sinus Tachycardia / SVT / MAT)	
Obstructive Lung disease	Atrial Fibrillation (Etiology / Diagnostic Strategy / Risk Stratification / Management)	
	Bradycardia (AV Blocks, Pacing)	
	Wide Complex Tachycardia (Microcases: Vtach / SVT w Aberrancy / Torsade)	
	Unstable Dysrhythmias (Definition / Management)	
	Implantable Devices (Pacemakers and ICDs)	
Pneumonia	Asthma (Risk Stratification, Early Management)	
	The Critical Asthmatic (Management / Special Considerations)	
	COPD Exacerbations	
	Pneumothorax	
	Complicated URTIs (Soft tissue infections and Abscesses)	
PE/Effusion	Community Acquired Pneumonia (Causative Agents / Management / Special Considerations)	
	Health-Care Associated Pneumonia (Causative Agents / Management / Special Considerations)	
	Tuberculosis (Pathophysiology / Diagnosis / Contact Precautions / Management)	
	Pneumonia in the Immunocompromised Patient	
	Pleural Effusions	
Hematology	Viral Pneumonias (Epidemics, Pandemics, Public Health and Infection control)	
	DVT (Risk Stratification / Diagnostic Strategy / Treatment)	
	PE (Risk Stratification and Clinical Decision Rules)	
	PE (Diagnostic strategies and Management)	
	Peripheral Arterial Diseases (Acute/Chronic Ischemia)	
Oncology	Chronic Central Lines and AV Fistulae	
	Polycythemia (Etiology / Diagnostic Strategy / Management)	
	ITP (Etiology / Diagnostic Strategy / Management)	
	TTP/HUS (Etiology / Diagnostic Strategy / Management)	
	Platelet Disorders (Microcases: Thrombocytopenia / HIT / Thrombocytosis)	
	Coagulopathies (Microcases: Hemophilia / Von Will brand's Disease)	
	DIC (Etiology / Diagnostic Strategy / Management)	
	Approach to the Oncology Patient (History and Examination, Special Considerations)	
	Febrile Neutropenia (Etiology / Diagnostic Strategy / Management)	
	Tumor Lysis Syndrome / Hyperuricemia (Diagnostic Strategy / Management)	
	Superior Vena Cava Syndrome / Tamponade (Etiology / Diagnostic Strategy / Management)	
	Hyperviscosity Syndrome (Etiology / Diagnostic Strategy / Management)	
	Malignancy CNS Effects (Microcases: Herniation / Seizures / Spinal Compression / CNS Infections)	

Title of Case series	The objectives / topics covered in the cases	Prepared By
Procedural sedation and regional blocks	Procedural Sedation (Pre-Sedation Evaluation / Choice of Agents / Monitoring / Complications)	
	Regional Anesthesia (Selected Areas)	
Acid Base	High Anion Gap Metabolic Acidosis (Approach / Etiology)	
	Normal Anion Gap Metabolic Acidosis (Approach / Etiology)	
	Metabolic Alkalosis (Approach / Etiology)	
	Respiratory Acidosis / Alkalosis (Approach / Etiology)	
	Mixed acid/Base Disorder (Approach / Etiology)	
	Rhabdomyolysis (Pathophysiology / Diagnostic Strategy / Management / Complications)	
Endocrine	DKA (Presentation / Etiology / Diagnostic Strategy / Management / Complications)	
	HHNC (Presentation / Etiology / Diagnostic Strategy / Management / Complications)	
	Thyroid Storm (Presentation / Etiology / Diagnostic Strategy / Management / Complications)	
	Myxedema Coma (Presentation / Etiology / Diagnostic Strategy / Management / Complications)	
	Renal Insufficiency (Presentation / Etiology / Diagnostic Strategy / Management / Complications)	
Multiple Trauma	Pediatric Trauma (Approach / Special Considerations)	
	Geriatric Trauma (Approach / Special Considerations)	
	Trauma in Pregnancy (Approach / Special Considerations / Monitoring)	
	Wound Management// Burns (Pathophysiology / Classification / Management)	
	Wound Management (Wound Evaluation / Primary vs. Secondary Closure / Material / Irrigation / Repair Techniques / Dressing and Antibiotics / Instructions)	
Head trauma	Head Injury	
	Facial Trauma	
	Facial Trauma // Maxillary Trauma (Classification / Diagnostic Classification / Management)	
	Facial Trauma// (Microcases: Mandibular Fracture / Dislocation)	
	Facial Lacerations (Microcases: Ear Laceration / Nasal Fracture / Nasal Septum Hematoma)	
Spine trauma	Spinal Cord Injury (C-spine)	
	Spinal Cord Injury// Spinal Syndromes (Microcases: Complete / Central / Anterior / Brown-Sequard)	
	Vertebral Fractures// Spinal Trauma: Complications (Neurogenic / Spinal Shock)	
	Neck Trauma// Renal /Ureteral Trauma (Classifications / Diagnostic Strategy / Management)	
	Neck Trauma	
Thoracic trauma	Chest Wall Injuries	
	Lung Injury	
	Cardiovascular Trauma	
	Mediastinal Trauma	
	Peripheral Vascular Injury	
Psychiatry	Thought Disorders	
	Mood Disorders - Bipolar	
	The Agitated Patient	
	Anxiety Disorders	
	Somatoform/Factitious Disorders	
Special Populations	Psychotropic Medications	
	The Elderly Patient	
	Polypharmacy in the ED	
	The Renal Transplant Patient	
	The End-Stage Renal Disease Patient	
	The End-Stage Liver Disease Patient	
	The Mentally Challenged Patient	

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 be 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



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