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المجلس العلمي للتخدير والعناية المركزة

Scientific Council of Anesthesia and Intensive Care

دليل اختصاص العناية المركزة عند البالغين

Guidebook of Pain Medicine

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	التحديث	

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1. CURRICULUM SCIENTIFIC GROUP AND ACKNOWLEDGEMENTS

This curriculum was prepared in August 2018 by the fellowship curriculum group nominated by the Arab Board of Anesthesia and Intensive Care Scientific Council. The Arab board of Intensive Care Scientific Council, composed of Prof. Omar Dardiri, president of Anesthesia scientific council, Prof. Yehia Khater, president of Intensive care scientific council, Dr. Milga Khalil, Vice president, Dr. Abdel Hak Mansouri, member, Dr. Fayez Zaatary, member, Dr. Wael Sadaka member. The Arab Board Intensive care council revised and updated the curriculum in February 2020. We would also like to acknowledge that the CanMEDS framework is copyrighted by the Royal College of Physicians and Surgeons of Canada, and many of the descriptions of competencies described in this booklet have been acquired from their resources. We extend our appreciation to all **Curriculum Scientific Group** who contributed their invaluable time and expertise for the development, valuable feedback and initiation of this curriculum: Prof. Omar AL DARDIRI, Dr. Mohamed ABDULLATIF, Dr. Hadab AHMED, Dr. Haifa ALGETHAMY and Dr. Alaa Al Taei. Special appreciation and gratitude are extended to **Ms. Rana Baghdad i**, the secretary of anaesthesia, for her marvelous preparation and organization that made it easy in all steps of curriculum development.

2. PROGRAMME TITLE

Arab Board Fellowship of Adult Critical Care Medicine

3. INTRODUCTION

3.1 Background:

Intensive Care is a medical subspecialty that focuses in continuous patient monitoring and organ support. Monitoring enables early recognition of vital parameters deviation. This facilitates immediate intervention to restore homeostasis. Organ support is provided by different methods based on which organ is involved. The tools used for organ support require special skills and continuous monitoring. These two objectives will help to maintain survival till the diagnosis and treatment of the primary problem are well established.

This curriculum defines educational goals, objectives and the body of knowledge, practical and professional skills required by physicians specializing in Intensive care in hospitals accredited by the Arab Board for Fellowship training in Adult Intensive Care. Educational standards will be applied in accordance with several internationally adopted frameworks. A portfolio, including ascertained log-book and work-based assessment, will be part of the evaluation process to track the progress of the trainee in both skills and knowledge acquisition. The Scientific Committee and all program directors must abide with the content of the fellowship training program approved by the Arab Board. Upon successful completion of the program, fellows are expected to have acquired the knowledge and skills essential for the safe practice as intensivists. They will also be in a position to provide vision, education and leadership in the field.

This curriculum will be reviewed every four years or at any time as necessary.

3.2 Vision.

To reduce the gap in Quantity and quality of physicians capable of satisfying safe and updated management of intensive care patients.

3.3 Mission statement:

To set a standard for Adult Intensive Care in the Arab World through recruitment, accreditation, and evaluation of candidates, in collaboration with local training centers to graduate competent critical care physicians.

3.4 Justification:

Health care in the Arab World is growing and is acquiring new and complex interventions. This necessitates meticulous patient care and observation in well-equipped and staffed intensive care units. Outcomes of many

illnesses can be dramatically improved by providing intensive organ support by well-trained health care provider. With the rapid development of health care worldwide, there is an equal increasing demand for qualified critical care physicians. In going abreast with international standards, setting structured training program in critical care medicine will bridge the gaps in service and improve the standards of care providers. In long term, the availability of well-trained Intensivists will encourage other specialist to do more sophisticated interventions, minimizing drainage of national hard currency spend abroad.

3.5 Admission requirement:

To be enrolled in this program, candidate should:

1. have the final qualification in anesthesia, medicine, chest medicine, emergency medicine or surgery.
2. be registered or meeting the registration requirement of the basic specialty at his/her local Medical Council.
3. have a certificate denoting completion of two years formal training program from an accredited institute by the Training Committee of the Fellowship of Adult Intensive Care Board.
4. pass a Mid-Term evaluation conducted by the Local Committee of the Arab Board.
5. obtain portfolio of training together with evidence of participation in a research/ quality improvement project.
6. Be free from physical, mental and psychological problems limiting his/her capability to work as Intensivist.
7. have completed the admission application and fulfilled all admission criteria in order to be enrolled.

3.6 Duration of the Program:

- The specialty training programme span over two years and is divided into:
 - Basic training (1-Year duration)
 - Complimentary training (1-year duration)
- This two-year training programme is intended to prepare candidates to practice independently as experts in the field.
- The Candidate will be entitled for 4 weeks' vacation during the whole programme.
- Candidates will be exempted from some rotations according to their background specialty and the designated period will be used for further training as per the training schedule shown below (e.g.; pulmonary background will be exempted from pulmonary rotation).
- The fellow must do at least one research/Quality Improvement project during his/her training in the adult intensive care program.

Training schedule for the first year:

Specialty Programme	General Medicine	Anaesthesia	Emergency Medicine	Chest Medicine	Surgery
Anaesthesia	3 M	-	1.5M	2 M	1 M
Medicine	-	3 M	1.5 M	1 M	2 m
General ICU	6 M	6 M	6 M	6 M	6 M
Surgical ICU	2 M	2 M	2 M	2 M	2 M
Radiology	1 M	1 M	1 M	1 M	1 M

M=Month, CCU=Coronary Care Unit, CSICU=Cardiac Surgery Intensive Care unit, CICU= Cardiac Intensive Care unit.

Training schedule for the second year:

Specialty Programme	General Medicine	Anaesthesia	Emergency Medicine	Chest	Surgery
CCU	3 M	3 M	3 M	2 M	3 M
CSICU	2 M	2 M	2 M	2 M	2 M
Pulmonary ICU	3 M	3 M	3 M	2 M	3 M
Neurology ICU	2 M	2 M	2 M	2 M	2 M
Emergency room	1 M	1 M	1 M	1 M	1 M
Elective choice*	1 M	1 M	1 M	1 M	1 M

*Recommended elective rotations are infectious diseases, trauma, transplant, burn, nephrology and emergency department.

4. OBJECTIVES

By the end of the training trainee have to acquire the following competencies and should be able to function successfully and professionally in the field of intensive care.

1. **General:**

1. To participate in the training of doctors from other related Medical and Surgical Specialties.
2. To participate in the training of doctors from neighboring countries.

2. **Specific:**

1. **Educational:**

- i. To train interested specialists in ICU, especially in the following aspects:
 - a. Recognition of critically ill patients.
 - b. Resuscitation of deteriorating patients.
 - c. Support of different failing organs, including, but not limited to, mechanical ventilation, haemodynamic support and renal replacement therapy.
 - d. Sedation and analgesia.
 - e. Management of poly trauma patients, especially Traumatic Brain Injury (TBI).
 - f. High risk surgical patients.
 - g. Major burn management.
 - h. Fundamental skills, such as central lines, intubation, chest drains, Lumbar Puncture (LP) etc.
- ii. To participate in the undergraduate training by upgrading the training programme to contain ICU management of critically ill patients so as to increase the undergraduate motivation to ICU specialty selection.

2. **Services:**

- To improve the ICU service and general medical care.

2. **Research:**

- I. To take initiative in clinical research in related issues.
- II. To participate in the regional and international multicenter studies.

5. CURRICULUM CONTENTS

At the completion of training, the fellow must acquire the following competencies:

A. **Cognitive:**

Acquisition of the following cognitive skills by trainees could be assured by the local training director through the use of any of a number of techniques, including didactic sessions, journal clubs, or illustrative case reports. These are the major systems included in the training

1. Cardiovascular System:
2. Respiratory System:
3. Renal System:
4. Central Nervous System (CNS):
5. Metabolic and Endocrine Effects of Critical Illness:
6. Infectious Diseases.
7. Hematologic and Oncologic Disorders:
8. Gastrointestinal Tract (GIT) and liver:
9. Obstetrics-Gynecology (Ob-Gyn)
10. Environmental Hazards.
11. Intoxication:
12. Temperature-Related Injuries:
13. Immunology and Transplantation:
14. Trauma, Burns:
15. Monitoring, Bioengineering, Biostatistics.
16. Administrative and Management Principles and Techniques:
17. Pharmacokinetics and Dynamics:
18. Ethical and Legal Aspects of Critical Care Medicine:
19. Principles of Research in Critical Illness:

The break down of the curriculum as intended Learning Objectives **IL Os** are divided in each of the units or (rounds) as follows:

First Year:

Knowledge Candidates are requested to follow International standards and guideline, the evidence based recommendations unless specified else in the local units protocols.

1. Anesthesia Department

- K.1.1 Describe principles of pain management.
- K.1.2 Describe amniotic fluid embolism.
- K.1.3 Describe anatomical implication of vascular access.
- K.1.4 Describe HELLP syndrome (hemolysis, elevated liver enzymes and low platelet count).
- K.1.5 Describe obstetric hemorrhage.
- K.1.6 Describe perioperative management of patients undergoing gastrointestinal surgeries.
- K.1.7 Describe pharmacokinetics and dynamics of Analgesics
- K.1.8 Describe pharmacokinetics and dynamics of Neuromuscular blockers
- K.1.9 Describe pharmacokinetics and dynamics of Sedatives
- K.1.10 Describe the anatomy of the spinal cord and dura in relation to lumbar puncture.
- K.1.11 Describe uptake metabolism and excretion of common drugs.
- K.1.12 Discuss electrical safety.
- K.1.13 Discuss hyperthermia and hypothermia.
- K.1.14 Discuss indications for hypothermia.
- K.1.15 Discuss postoperative cognitive dysfunction.
- K.1.16 Discuss principle and of thrombo-elastography.

- K.1.17 Discuss thermoregulation.
- K.1.18 Understand principles of strain gauge transducers.
- K.1.19 Understand Signal conditioners, calibration, gain, adjustment and display techniques.
- K.1.20 Evaluate Invasive hemodynamic monitoring(arterial, central venous, and pulmonary artery pressure catheterization and monitoring).
- K.1.21 Evaluate measured shell and core temperature.
- K.1.22 Evaluate Noninvasive hemodynamic monitoring.
- K.1.23 Evaluate selection of Analgesics for different conditions.
- K.1.24 Evaluate selection of Neuromuscular blockers for different conditions.
- K.1.25 Evaluate selection of Sedatives for different conditions.
- K.1.26 Interpret thromboelastographic waves.

2. Internal Medicine Department

- K.2.1 Appraise the diagnostic value of oliguria.
- K.2.2 Compare immunosuppressive drugs and regimens.
- K.2.3 Describe stress ulcer prophylaxis.
- K.2.4 Describe acute hemolytic disorders.
- K.2.5 Describe derangements secondary to alterations in osmolality and electrolytes.
- K.2.6 Describe Disorders of thyroid function(thyroid storm, myxedema coma, sick euthyroid syndrome).
- K.2.7 Describe etiology, diagnosis and management of disseminated intravascular clotting.
- K.2.8 Describe glomerular and renal tubules functions.
- K.2.9 Describe Insulinoma.
- K.2.10 Describe pathology and pathophysiology of different hepatic diseases.
- K.2.11 Describe pharmacokinetics and dynamics of Chemotherapeutic agents
- K.2.12 Describe portal and hepatic circulation.
- K.2.13 Describe prophylaxis against thromboembolic disease.
- K.2.14 Describe renal physiology including regulation of fluid, acid-base, electrolyte, drugs and metabolite excretion and endocrine function
- K.2.15 Describe sickle cell anemia
- K.2.16 Describe toxemia of pregnancy,
- K.2.17 Differentiate prerenal, renal and postrenal failure.
- K.2.18 Discuss acute and fulminant hepatic failure.
- K.2.19 Discuss acute inflammatory diseases of the intestine.
- K.2.20 Discuss acute pancreatitis.
- K.2.21 Discuss acute perforations of the gastrointestinal tract.
- K.2.22 Discuss acute syndromes associated with neoplastic disease and antineoplastic therapy.
- K.2.23 Discuss acute vascular disorders of the intestine, including mesenteric infarction.
- K.2.24 Discuss adrenal disorders(Pheochromocytoma and adrenal crisis).
- K.2.25 Discuss anaerobic infections.
- K.2.26 Discuss antibiotics, antifungal agents, anti-tuberculous agents, antiviral agents, agents for parasitic infections.
- K.2.27 Discuss development of antibiotic resistance.

- K.2.28 Discuss diabetes mellitus.
- K.2.29 Discuss disorders of antidiuretic hormone metabolism.
- K.2.30 Discuss drug dosing in hepatic failure.
- K.2.31 Discuss gastrointestinal bleeding.
- K.2.32 Discuss normal hemostasis and acute hemostatic disorders.
- K.2.33 Discuss obstructive uropathy and acute urinary retention.
- K.2.34 Discuss osmolar and non-osmolar diuretics.
- K.2.35 Discuss pathophysiology and treatment of septic shock, including appropriate use of antibiotics, source control, and other therapies.
- K.2.36 Discuss rhabdomyolysis.
- K.2.37 Discuss thrombocytopenia/thrombocytopathy.
- K.2.38 Discuss tumor lysis syndrome.
- K.2.39 Discuss urinary tract bleeding.
- K.2.40 Interpret renal function tests and monitoring.
- K.2.41 Interpret urine electrolytes.
- K.2.42 Principles of renal replacement therapy: hemodialysis, peritoneal dialysis, ultrafiltration, continuous arteriovenous hemofiltration (CAVH), and continuous veno-venous hemofiltration (CVVH).

3. General Intensive Care Gen IC

- K.3.1 Appraise the value of different recruitment maneuvers.
- K.3.2 Compare Long-term intubation vs. tracheostomy.
- K.3.3 Compare Manual vs. mechanical (computer) record generation.
- K.3.4 Compare modes of mechanical ventilation: Assist control (volume and pressure), intermittent mandatory, high-frequency, pressure support, noninvasive and differential lung ventilation.
- K.3.5 Compare pressure and volume control ventilation mode.
- K.3.6 Compare sedative and analgesic drugs used in ICU.
- K.3.7 Define aspiration pneumonia and prophylaxis.
- K.3.8 Describe adverse reactions to antimicrobial agents.
- K.3.9 Describe clinical practice guidelines.
- K.3.10 Describe design of special care units.
- K.3.11 Describe drug overdose and withdrawal symptoms of Barbiturates, Narcotics, Salicylates, Alcohols, Cocaine, Tricyclic Antidepressants, Acetaminophen, Others.
- K.3.12 Describe intensive care unit (ICU) support of the immunosuppressed patient: Acquired Immunodeficiency Syndrome (AIDS), Transplant, Oncologic.
- K.3.13 Describe Isolation and reverse isolation.
- K.3.14 Describe necessary management for organ donation.
- K.3.15 Describe organization and staffing of critical care units.
- K.3.16 Describe pharmacokinetics and dynamics of antibiotics.
- K.3.17 Describe physiology and pathophysiology of mechanical ventilation.
- K.3.18 Describe Specific drugs antidotes.
- K.3.19 Describe the diagnosis of Myasthenia gravis.
- K.3.20 Differentiate types of shock and its complications.
- K.3.21 Discuss criteria for weaning and weaning techniques.

- K.3.22 Discuss drug dosing in renal failure.
- K.3.23 Discuss Guillain-Barre syndrome.
- K.3.24 Discuss hospital acquired and opportunistic infections in the critically ill.
- K.3.25 Discuss Indication and complication of enteral and parenteral nutrition.
- K.3.26 Discuss indication of PEEP, CPAP and inverse ratio ventilation.
- K.3.27 Discuss indications and limitations of permissive hypercapnia GenICU and NeuroICU.
- K.3.28 Discuss indications for and hazards of mechanical ventilation.
- K.3.29 Discuss pathophysiology, supportive care and treatment of different toxin and poisons.
- K.3.30 Discuss pharmacology of common intoxicants and poisons.
- K.3.31 Discuss principle of basic and advanced cardiac life support
- K.3.32 Discuss principles of blood component therapy.
- K.3.33 Discuss ruptured esophagus.
- K.3.34 Discuss the role of prone positioning in ARDS patients.
- K.3.35 Evaluate brain death.
- K.3.36 Evaluate Hypoxemic and Hypercapnic respiratory failure.
- K.3.37 Evaluate Infection control for special care units and universal precautions.
- K.3.38 Explain etiology, pathophysiology and presentations of multiorgan failure.
- K.3.39 Identify the management of every type of shock and its complications.
- K.3.40 Interpret acid-base and electrolytes disorders
- K.3.41 Interpret respiratory mechanical wave forms.
- K.3.42 Pathogenesis and diagnostic criteria of sepsis, septic shock, systemic inflammatory response syndrome and multiple organ dysfunction syndrome
- K.3.43 Understand budget development and management.
- K.3.44 Discuss indications for plasmapheresis.
- K.3.45 Describe etiology, diagnosis and management of disseminated intravascular clotting
- K.3.46 Discuss Prevention and management of upper gastrointestinal bleeding
- K.3.47 Describe evidence based weaning protocol for ventilated patients
- K.3.48 Evaluate and interpret Respiratory monitoring (airway pressure, intrathoracic pressure, tidal volume, pulse oximetry, dead space-tidal volume ratio, compliance, resistance, capnography).
- K.3.49 Evaluate Metabolic monitoring (oxygen consumption, carbon dioxide production, respiratory quotient).
- K.3.50 Evaluate selection of antibiotics for different conditions.
- K.3.51 Discuss prophylactic measures against thromboembolic disease (Both direct and indirect).
- K.3.52 Discuss sickle cell crisis.

4. Surgical Intensive Care SICU

- K.4.1 Discuss Immunosuppression.
- K.4.2 Discuss indication of organ transplantation.
- K.4.3 Discuss pathophysiology of solid organ transplantation.
- 4.4 Discuss principles of transplantation (organ donation, procurement, maintenance of organ donors, preservation, transportation, allocation, implantation, national organization of transplantation activities).

5. Radiology Department

- K.5.1 Interpret diagnostic imaging of the cardiovascular system
- K.5.2 Interpret diagnostic imaging of respiratory system.

- K.5.4 Interpret CNS diagnostic imaging
 - K.5.5 Interpret diagnostic imaging of gastrointestinal and hepatobiliary system
 - K.5.6 Interpret diagnostic imaging of injured patient including FAST Focused Assessment with sonography in trauma.
 - K.5.7 Discuss basic principles of ultrasonography (US).
- Interpret various radiographs of different organs and bones.

SECOND YEAR

Knowledge Candidates are requested to follow International standards and guideline, the evidence based recommendations unless specified else in the local units protocols.

1. Coronary Care Unit

- K.6.1 Describe anatomy of the coronary arteries.
- K.6.2 Describe pharmacokinetics and dynamics of Antiarrhythmics
- K.6.3 Describe physiology of CVS
- K.6.4 Differentiate between cardiogenic and non-cardiogenic pulmonary edema.
- K.6.5 Differentiate between pace makers types
- K.6.6 Differentiate between type of cardiac dysrhythmias and type of cardiac conduction disturbance.
- K.6.7 Discuss anticoagulants, fibrinolytic and antifibrinolytic therapy.
- K.6.8 Discuss complications of angioplasty.
 - K.6.9 Discuss diagnosis of pulmonary embolism
- K.6.10 Discuss management of pulmonary embolism
- K.6.11 Discuss pharmacology and common side effects of antiarrhythmic drugs
- K.6.12 Discuss the use of Thrombolytic, antifibrinolytic, anticoagulants and thrombo-prophylaxis.
- K.6.13 Explain pathology and pathophysiology of ischemic, myocardial and valvular diseases of the heart.
- K.6.14 Identify hypertensive emergencies and urgencies
- K.6.15 Evaluate selection of Antiarrhythmics for different conditions.
- K.6.16 Discuss Transvenous pacemaker insertion.

2. Cardiac Surgery Intensive Care Unit CSICU

- K.7.1 Describe anatomy of the heart and great vessels
- K.7.2 Describe diagnosis of cardiac tamponade.
- K.7.3 Discuss aortic and peripheral vascular disorders, including aortic aneurysm, A-V fistulas.
- K.7.4 Discuss extracorporeal membrane oxygenation in CSICU
- K.7.5 Discuss management of cardiac tamponade
- K.7.6 Discuss pharmacology and common side effects of inotropic and vasoactive drugs.
- K.7.7 Interpret Invasive and noninvasive hemodynamic monitoring parameters

3. Pulmonary intensive care PICU

- K.8.1 Discuss hemodynamic effects caused by ventilatory assist devices.

- K.8.2 Discuss Pulmonary hypertension and cor pulmonal.
- K.8.3 Classify chest trauma (Flail chest, pulmonary contusion).
- K.8.4 Describe Anatomy of the lungs, upper and lower airways
- K.8.5 Describe pharmacology of bronchodilator drugs.
- K.8.6 Describe physiology of the respiratory system.
- K.8.7 Differentiate acute severe asthma and COPD in
- K.8.8 Discuss diagnosis of pleural diseases: empyema, massive effusion, pneumothorax, hemothorax.
- K.8.9 Discuss Nitric oxide (indications, monitoring of related complications).
- K.8.10 Discuss pulmonary hemorrhage and massive hemoptysis.
- K.8.11 Discuss smoke inhalation and airway burns.
- K.8.12 Evaluate acute severe and near fatal asthma in Pulmonary ICU
- K.8.13 Evaluate chronic respiratory failure in Pulmonary ICU.
- K.8.14 Explain pathology and pathophysiology of the respiratory system.
- K.8.15 Formulate treatment of choice for patients with bronchopulmonary infections in the pulmonary ICU .
- K.8.16 Understand Chest physiotherapy, incentive spirometry.
- K.8.17 Interpretation of sputum Gram stain.
- K.8.18 Interpret bedside pulmonary function tests.
- K.8.19 Describe pneumothorax

4. Neurology Intensive Care NICU

- K.9.1 Describe antiepileptic drugs.
- K.9.2 Describe cerebrovascular accidents and bleeding (Subarachnoid, Intracerebral, Others).
- K.9.3 Describe CSF formation and excretion.
- K.9.4 Describe pathophysiology of hydrocephalus.
- K.9.5 Discuss antipsychotic drugs
- K.9.6 Discuss brain injury (traumatic and non-traumatic)
- K.9.7 Discuss causes of Coma (Metabolic, Traumatic, Infectious, Mass lesions, Vascular-anoxic or ischemic, Drug-induced).
- K.9.8 Discuss diagnosis of persistent vegetative states.
- K.9.9 Discuss neuromuscular diseases: spinal cord syndrome, motor disease, myopathy and polyneuropathy of critical illness.
- K.9.10 Interpret Invasive and noninvasive neurological monitoring
- K.9.11 Discuss Psychiatric emergencies.
- K.9.12 Evaluate CNS brain monitoring (intracranial pressure, cerebral blood flow, cerebral metabolic rate, electroencephalogram, jugular venous bulb oxygenation, transcranial Doppler).

5. Emergency Room ER

- K.10.1 Discuss temporary immobilization of fractures.
- K.10.2 Apply Principles of triage and resource allocation.
- K.10.3 Discuss Crush injury.
- K.10.4 Discuss principles of burn and electrical injuries management.

- K.10.5 Discuss principles of Skeletal trauma including the spine and pelvis.
- K.10.6 Evaluate near drowning situation in ER.
- K.10.7 Evaluate Chest trauma—blunt and penetrating
- K.10.8 Evaluate CNS trauma (brain and spinal cord).

6. **General:** are i.L.O.s requested through all the rounds in various units.

- K.11.1 Discuss the use of computers in critical care units.
- K.11.2 Describe standards for special care units and requirements of International Accreditation of Healthcare Organizations.
- K.11.3 Evaluate Medical record keeping in special care units.
- K.11.4 Evaluate prognostic indices, severity, and therapeutic intervention scores.
- K.11.5 Discuss fever in the ICU patient.
- K.11.6 Evaluate nutritional requirements, caloric, protein, vitamin and micronutrient requirement in critically ill patient.
- K.11.7 Discuss Delirium and cognitive dysfunction in the ICU patients.

B. General, Transferrable and Intellectual Skills:

The definition of competency to perform the listed procedures must include knowledge of the indications, contraindications, and complications of these interventions: these competencies are performed in all Intensive care Units.

1. Perform a complete and appropriate assessment, diagnosis and management of Intensive care patient: these competencies are performed in all Intensive care Units.

- IS.1.1 Adopt a structured and timely approach to the recognition, assessment and stabilization of critically ill patient with disordered physiology.
- IS.1.2 Take relevant history for the purpose of diagnosis, management, and disease prevention
- IS.1.3 Perform physical examination that is relevant and accurate for the purpose of diagnosis, management, and disease prevention
- IS.1.4 Proper ordering and interpretation of coagulation studies.
- IS.1.5 Utilize the appropriate investigation and diagnostic methods e.g Blood results, ECG, images
- IS.1.6 Perform Appropriate triage and prioritization of patients, including timely admission to ICU.
- IS.1.7 Demonstrate effective clinical problem solving and judgment patient problems, including Interpreting available data/trend in physiological variables, and integrating information to generate differential diagnosis and management plan
- IS.1.8 Recognize, resuscitate, and stabilize patients, who are at risk of cardiopulmonary arrest or other life-threatening condition
- IS.1.9 Apply primary and advanced trauma life support surveys.
- IS.1.10 Manage agitation and delirium in ICU
- IS.1.11 Appraise for going life-sustaining treatment and orders not to resuscitate.
- IS.1.12 Manage patients with persistent vegetative state.
- IS.1.13 Apply ICU sterility techniques and precautions.
- IS.1.14 Institute monitoring transducers including zeroing and calibration.
- IS.1.15 Use amplifiers and recorders.
- IS.1.16 Recognize trouble-shooting equipment.

- IS.1.17 Correct basic electrical safety hazards.
- IS.1.18 Assess, prevent and manage postoperative pain
- IS.1.19 Manage sedation and neuromuscular blockade in the ICU.
- IS.1.20 Manage safe and timely discharge from ICU.
- IS.1.21 Manage palliative care of critically ill patients.
- IS.1.22 Perform brain stem death tests.

2. Airway Management and ventilation:

- IS.2.1 Identify different devices used to treat upper airway obstruction.
- IS.2.2 Assess and Maintain open airway in non-intubated, unconscious, paralyzed patients
- IS.2.3 Manage elective and emergency airway obstructive problems in Anesthesia department.
- IS.2.4 Manage the difficult airway
- IS.2.5 Operate mechanical ventilators.
- IS.2.6 Apply appropriate oxygen therapy.
- IS.2.7 Manage Hypoxemic and Hypercapnic respiratory failure
- IS.2.8 Monitor airway pressures.
- IS.2.9 Utilize end tidal CO₂ detectors, pulse oximetry, oximetric pulmonary artery catheters.
- IS.2.10 Measure endotracheal tube or tracheostomy cuff pressures.

3. Circulation:

- IS.3.1 Evaluate and institute electrocardiographic monitoring
- IS.3.2 Manage Life threatening ischemic, myocardial and valvular diseases
- IS.3.3 Manage congestive heart failure.
- IS.3.4 Assess and institute cardiac function and derived haemodynamic parameters monitoring.
- IS.3.5 Manage patient undergoing cardiovascular surgery in perioperative period
- IS.3.6 Monitor and follow up intra-aortic assist devices.
- IS.3.7 Manage non cardiogenic pulmonary edema.
- IS.3.8 Manage hypertensive emergencies.
- IS.3.9 Manage arterial and venous air embolism.
- IS.3.10 Perform Cardiac output determinations by different techniques.
- IS.3.11 Apply noninvasive cardiovascular monitoring.

4. Central Nervous System:

- IS.4.1 Manage status epilepticus
- IS.4.2 Examine unconscious patient
- IS.4.3 Manage myasthenia Gravis.
- IS.4.4 Manage Guillian-Barré
- IS.4.5 Manage pre and postoperative care of high risk neurosurgery patients
- IS.4.6 Manage increased intracranial pressure (ICP), including ICP monitors.

5. Renal:

- IS.5.1 Manage acute urinary retention.

- IS.5.2 Support patients on renal replacement therapy
- IS.5.3 Manage patients on peritoneal dialysis.
- IS.5.4 Manage CAVH, CVVH.

6. Gastrointestinal Tract:

- IS.6.1 Manage acute pancreatitis with shock
- IS.6.2 Manage acute inflammatory diseases of the intestine.
- IS.6.3 Manage lower gastrointestinal bleeding.
- IS.6.4 Manage upper gastrointestinal bleeding including variceal bleeding
- IS.6.5 Manage acute vascular disorders of the intestine, including mesenteric infarction.

7. Trauma and drowning:

- IS.7.1 Assess multiple trauma patients
- IS.7.2 Evaluate and manage Abdominal trauma, blunt and penetrating.
- IS.7.3 Manage Chest trauma—blunt and penetrating.
- IS.7.4 Manage CNS trauma (brain and spinal cord).
- IS.7.5 Manage drowning and near drowning

8. Blood:

- IS.8.1 Apply pneumatic anti-shock garment.
- IS.8.2 Manage patients with disseminated intravascular coagulation
- IS.8.3 Manage patients with thrombocytopenia/thrombocytopathy.
- IS.8.4 Manage prophylactic measures against thromboembolic disease (Both direct and indirect).
- IS.8.5 Perform autotransfusion.
- IS.8.6 Manage sickle cell crisis.
- IS.8.7. Administer anticoagulants, fibrinolytic and antifibrinolytic therapy.
- IS.8.8 Administration of blood component therapy.
- IS.8.9 Operate infusion pumps for vasoactive drugs.
- IS.8.10 Collect arterial blood sampling
- IS.8.11 Manage transfusion of Platelet, Packed red blood cells, Fresh frozen plasma, Specific coagulation factor concentrates, Albumin, plasma protein fraction, Stroma-free haemoglobin, White blood cell transfusion, Cryoprecipitate.
- IS.8.12 Manage massive transfusions, including rapid infusers.

9. Metabolism, Nutrition:

- IS.9.1 Manage acid-base and electrolytes disorders
- IS.9.2 Manage disorders of calcium and magnesium balance.
- IS.9.3 Manage hyperglycemic emergencies: Ketotic and nonketotic hyperosmolar coma.
- IS.9.4 Manage Hypoglycemia.
- IS.9.5 Calculate and initiate nutritional support for ICU patients

10. Obstetric:

- IS.10.1 Manage patients with severe eclampsia
- IS.10.2 Manage amniotic fluid embolism.
- IS.10.3 Manage HELLP (hemolysis, elevated liver enzymes and low platelet count) syndrome.

IS.10.4 Manage obstetric hemorrhage.

C. **Procedure Skills:** These are the various procedure skills to be performed over the two years training. The number of both procedures and DOPS required details are in Appendix 3.

- S.1 Performs central venous catheterization
- S.2 Performs arterial catheterization
- S.3 Perform pulmonary artery catheterization
- S.4 Performs emergency airway management
- S.5 Performs difficult and failed airway management according to local protocols
- S.6 Direct Laryngoscopy and Intubation
- S.7 Pleural Tap
- S.8 Ascitic Tap
- S.9 Performs lumbar puncture
- S.10 Bronchoscopy (Intubated Patient)
- S.11 Chest Tube Insertion
- S.12 Percutaneous Tracheostomy
- S.13 ABG Sampling
- S.14 US Chest
- S.15 US Abdomen
- S.16 US Cardiac
- S.17 US Guided Vascular Access
- S.18 US for IVC assessment
- S.19 Performs transthoracic cardiac pacing, transvenous and percutaneous pacemakers
- S.20 Sengstaken tube placement
- S.21 Cardiac output monitors (e.g. FICO, LIDCO, NICO)

6. METHODS OF TEACHING AND TRAINING

To achieve the required competencies, the trainee should be exposed to wide range of topics forming the major subjects in the curriculum. Different educational activities will be used to help delivering the

required components of these topics. Complementary and additional recommended workshops and courses are required to provide holistic approach to the topics.

Teaching and training opportunities include:

1) Formal Teaching and Learning Activities:

- Core specialty topics (80%)
- Topics selected by fellows (20%)

2) Practice-Based Learning (PBL):

- Morning report bedside case presentations
- Morbidity and mortality reviews
- Journal clubs
- Case presentations
- Grand rounds/guest speakers on core specialty topics
- Joint specialty meetings

3) Work-Place Based Learning (WPBL):

- Daily-round-based learning
- Night duty (On-call) based learning
- Workshops and courses

4) Self-directed Learning

These learning opportunities are provided through four major methods:

- **Large group methods:**
 - a. Lectures.
 - b. Symposiums.
 - c. Discussion panel.
- **Small group method:**
 - a. Group discussion (Tutorials):
 - i. Control group discussion:
 1. Problem based learning.
 2. Video teaching.
 - ii. Free group discussion.
 - b. Seminars.
 - c. Demonstrations.
 - d. Role play.
 - e. Workshops.
 - f. Presentations.
 - g. Bedside teaching (Practical).
 - h. Brain storming.
- **Individual methods:**
 - a. Reading.
 - b. Assignment.
- **Miscellaneous:**
 - a. Computer associated learning.
 - b. Simulation patient management problems:
 - i. Model.
 - ii. Oral.
 - iii. Written.
 - iv. Computerized.

7. DUTIES AND RESPONSIBILITIES OF THE FELLOW

Fellows of Intensive Care Medicine should act as a consultant through developing the following basic professional competencies:

1) **Medical Expert**

- a) Function effectively as consultants, integrating all of the professional attributes to provide optimal, ethical and patient-centered medical care;
- b) Establish and maintain clinical knowledge, skills and attitudes appropriate to their practice;
- c) Perform a complete and appropriate assessment of a patient;
- d) Use preventive and therapeutic interventions effectively;
- e) Demonstrate proficient and appropriate use of procedural skills, both diagnostic and therapeutic;
- f) Seek appropriate consultation from other health professionals, recognizing the limits of their expertise
 - i) To see and supervise all consultations and admissions referred to the service promptly during the day and when he/she is on call.
 - ii) To make the initial patient's assessment with subsequent management plan and to discuss the case with the consultant on call in a timely fashion.
 - iii) During the on call he/she will be the first to be contacted, to see and deals with any problems referred to the service.

2) **Professional**

- a) Demonstrate a commitment to their patients, profession, and society through ethical practice;
- b) Demonstrate a commitment to their patients, profession, and society through participation in profession-led regulation;
- c) Demonstrate a commitment to physician health and sustainable practice.

1) **Communicator**

- a) Develop rapport, trust and ethical therapeutic relationships with patients and families;
- b) Accurately elicit and synthesize relevant information and perspectives of patients and families, colleagues and other professionals;
- c) Accurately convey relevant information and explanations to patients and families, colleagues and other professionals;
- d) Develop a common understanding on issues, problems and plans with patients and families, colleagues and other professionals to develop a shared plan of care;
- e) Convey effective oral and written information about a medical encounter.
 - i) to do the initial communication with the patients and their family. To give realistic expectation of the disease outcome.
 - ii) To discuss end of life issues and futility of care.
 - iii) To be able to communicate through different media like the phone, email and other appropriate settings.

2) **Scholar**

- a) Maintain and enhance professional activities through ongoing learning;
- b) Critically evaluate information and its sources, and apply this appropriately to practice decisions;
- c) Facilitate the learning of patients, families, students, residents, other health professionals, the public, and others, as appropriate;
- d) Contribute to the creation, dissemination, application, and translation of new medical knowledge and practices.
- e) All the fellows are expected to conduct a clinical audit encountered during his /her training .Fellows are expected to participate in publications of critical care department.
- f) It is expected from the Critical Care fellow to participate actively in ICU clinical and multidisciplinary activities which include the following:
 - i) Attend daily morning meeting and share his/her knowledge with members of the department and residents
 - ii) Combined ICU/other disciplines clinical meeting is assigned to discuss interesting and problematic cases. This should be coupled with appropriate literature review.

3) **Health advocate**

- a) Respond to individual patient health needs and issues as part of patient care;
 - b) Respond to the health needs of the communities that they serve;
 - c) Identify the determinants of health of the populations that they serve;
 - d) Promote the health of individual patients, communities and populations
- 4) **Manager**
- a) Participate in activities that contribute to the effectiveness of their healthcare organizations and systems;
 - b) Manage their practice and career effectively,
 - i) The fellow is expected to manage his learning objectives. Regardless of level of training or competency, postgraduate trainees are not independent practitioners, nor are they specialists. They are pursuing their individual objectives towards independence, in a graded fashion, providing health care services under the appropriate supervision of their assigned clinical teachers in a particular training programme.
 - c) Allocate finite healthcare resources appropriately,
 - i) To manage the patient load and crisis.
 - d) Serve in administration and leadership roles, as appropriate.
- 5) **Collaborator**
- a) Participate effectively and appropriately in an interprofessional healthcare team;
 - i) To manage work load with appropriate delegation and consultation
 - ii) To transfer intensive care management philosophy to the other departments in the hospital.
 - iii) At crisis time the fellow is expected to lead the teams.
 - b) Effectively work with other health professionals to prevent, negotiate, and resolve inter-professional conflict.

8. RESOURCES

The resources are divided into two groups:

1. Human resources.
2. Physical resources.

1. Human Resources:

- 1.1. Board Tutors are responsible for the overall training and assessment arrangements in their hospitals, working in conjunction with the individual educational supervisors.
- 1.2. Educational Supervisors are responsible for ensuring an individual trainee has an agreed educational plan, that this is delivered, that the appropriate assessments are carried out and that the trainee receives regular educational and workplace appraisals.
- 1.3. Clinical Supervisors are local trainers who are selected by the Intensive Care Fellowship Board to be responsible for overseeing the specified trainee's clinical work and providing constructive feedback during a training placement.
- 1.4. Doctors responsible for training have to comply with the Intensive Care Fellowship Board generic standards and regulations for training and they should:
 - Attend training courses in medical education (Training the trainers).
 - Regularly update themselves in the critical care field.
 - Be assessed regularly.

2. Physical resources:

- 2.1. Hospitals accredited by the Intensive Care Fellowship Board
 - Must have appropriate support for training and education, e.g. Emergency Department, Anaesthesia Department, ICU or other relevant units.
 - Be assessed in 4 years basis.
- 2.2. Classic and electronic libraries: At hospitals and training centers.
- 2.3. Skill labs
- 2.4. Other learning resources:

Textbooks:

RECOMMENDED:

- Textbook of critical care. Mitchel P Fink, Edward Abraham, Jean-Louis Vincent, Patric M. Kockanek (ELSEVIER SAUNDERS)
- INTENSIVE CARE MEDICINE. Richard S Irwin, Craig M Lilly, James M Rippe (Wolters Kluwer)
- Manual of critical care. Andrea Gabrielli, A. Joseph Layon, Mihae YU. (Williams & Wilkins)
- Procedures, Techniques and Minimally Invasive Monitoring in Intensive Care Medicine. Richard S Irwin, James M Rippe, Alan Lisbon, Stephen O Heard. (Williams & Wilkins)

OTHERS

- The ICU Book, Paul L. Marino (Williams & Wilkins)
- Fundamental critical care support by Society of Critical Care Medicine
- Self-Assessment in Adult Multiprofessional Critical Care
- Evidence-Based Practice of Critical Care, 2e. Jan 1, 2016 by Clifford S. Deutschman MS MD FCCM and Patrick J. Neligan MA MB FRCAFRCSI
- Essentials of Mechanical Ventilation, Third Edition. May 6, 2014, by Dean Hess and Robert Kacmarek
- Oxford Textbook of Critical Care (Oxford Medical Publications). Jul 25, 2016 by Andrew Webb and Derek Angus

Journals:

- Critical Care medicine
- Critical Care
- Intensive Care Medicine
- High impact factor relevant anaesthesia indexed journals
- New England Journal of Medicine
- Resuscitation
- Journal of Trauma

9. METHODS OF STUDENT'S ASSESSMENT

1. Annual review of competence Progression (ARCP):

- Evidence for the ARCP
 1. Evidence of success in the term exam..
 2. The result of work place-based assessment (WPBA):
By choosing four (4) appropriate assessment instrument:
 - Direct Observation of Procedural Skills (DOPS)
 - Learner logbook and portfolio of learning
 - Mini Clinical Evaluation Exercise (Mini-CEX)
 - Case-Based Discussion (CBD)
 - Research/Quality project presentation and/or publication.
 3. A comprehensive Final In-Training Evaluation Report (FITER) by the local clinical supervisor.
 4. Evidence of participation and Attendance of academic activities.

All forms for used for the assessment are attached in the appendices

2. Final Examinations:

- A. Written:
 - 2 papers (Problem based single best answer questions, minimum of 60 questions each)
- B. Clinical:
 - OSCE/OSPE (12 to 18 stations).
 - Structured clinical vivas:
 1. Long case.
 2. Short case.
 3. Instrument/simulation

3. Exams Blue Print: Attached in Appendix 10

10. METHODS OF PROGRAMME EVALUATION

- A. Both internal and external evaluations (EXTERNAL EXAMINER REPORT).
- B. Report of trainers (TRAINERS FEEDBACK FORM).
- C. Report of the trainees (TRAINING EVALUATION FORM).

11. DEGREE AWARDED

Arab Board Fellowship of Adult Intensive Care Medicine.

12. REFERENCES

- 1) Textbook of critical care. Mitchel P Fink, Edward Abraham, Jean-Louis Vincent, Patric M. Kockanek 2016. (ELSEVIER SAUNDERS)
- 2) INTENSIVE CARE MEDICINE. Richard S Irwin, Craig M Lilly, James M Rippe 2016. (Wolters Kluwer)
- 3) Jason R. Frank, The CanMEDS 2015 Physician Competency Framework.
- 4) The Faculty of Intensive Care Medicine. AC. UK

13. APPENDICES

Appendix 1: Final In-Training Evaluation Report (FITER)

- 1) This is a summative evaluation prepared at the end of the fellowship programme, which grants the Fellow with the full range of competencies (knowledge, skills and attitudes) required for intensivist, and a readiness to sit the Arab Board final fellowship examination.
- 2) The FITER is requested by the Arab Board at the end of fellowship training.
- 3) The FITER is completed by the local fellowship training programme Director.
- 4) The FITER is not a composite of the regular in-training evaluations; rather it is a testimony of the evaluation of competencies at the end of a fellowship education programme.
- 5) It will be completed as late as possible in the Fellow's training but no later than two months before the final exam.
- 6) The FITER of individual candidates is available only to the Chair of the Examination Committee, who must maintain confidentiality regarding the name of the candidate, the training center and the programme director at all times. The FITER provides information that will be considered by the Examination Board during the deliberation of a candidate whose performance at the final examination falls into the borderline category.

Arab Board Fellowship of Adult Critical Care Medicine Final In-Training Evaluation Report (FITER) Comprehensive Competency Report (CCR)

Trainee Name:

Evaluation covering the last year as a Fellow:

In the view of the Fellowship Programme Committee, the trainee mentioned above has acquired the competencies of the critical care as prescribed in the objectives of training, and is competent to practice as a specialist.

Yes No

The following sources of information were used for this evaluation:

	Yes	No
• Written exams		
• Oral exams		
• Clinical observations (e.g., CBD, Mini-CEX) by local faculty		
• OSCEs		
• Feedback from healthcare professionals		
• Completion of a scholarly project		
• Other evaluations		

COMMENTS:

Name of Programme Director:

Date:

Signature:

This is to attest that I have read this document.

Name of Trainee

Date:

Signature:

TRAINEE'S COMMENTS:

Note: If, during the period from the date of signature of this document to the completion of training, the Programme Committee judges that the candidate's demonstration of competence is inconsistent with the present evaluation, it may declare the document null and void and replace it with an updated FITER. Eligibility for the examination would be dependent on the updated FITER.

FITER: (Medical Expert Competency)

Trainee Name:

	EXPECTATIONS					
	* Rarely meets	* Inconsistently meets	* Generally, meets	* Sometimes exceeds	* Consistently exceeds	Not Applicable
Medical Expert						
a. Functions effectively as a consultant, integrating all of the Arab Board roles to provide optimal, ethical, and patient-centered medical care						
b. Demonstrates an understanding of the basic scientific and clinical knowledge relevant to Critical Care Medicine						
c. Elicits histories and physical examinations that are complete, accurate, and well organized						
d. Uses all of the pertinent information to arrive at complete and accurate clinical decisions						
e. Recognizes and manages emergency conditions resulting in prompt and appropriate treatment						
f. Demonstrates safe application of equipment, careful monitoring, judicious use of drugs and the coordinated provision of multidisciplinary care for effective organ system support						
g. Demonstrates safe preparation and execution of patient transportation						
Please comment on the strengths and weaknesses of the candidate and provide a rationale for your ratings. Make direct reference to the objectives and give specific examples wherever possible.						

* Rarely meets ≤30%

* Inconsistently meets >30-60%

* Generally, meets >60-80%

* Sometimes exceeds >80-90%

* Consistently exceeds >90%

FITER: (Procedures and Clinical Skills Competencies)

Trainee Name:

	EXPECTATIONS					
	*Rarely meets	*Inconsistently meets	*Generally, meets	*Sometimes exceeds	*Consistently exceeds	Not Applicable
PROCEDURES AND CLINICAL SKILLS						
Demonstrates the ability to perform diagnostic and therapeutic procedures/skills described in the Critical care medicine Fellowship Training Curriculum						
a. Assessment and maintenance of the airway						
b. Management of the patient requiring endotracheal intubation						
c. Care of the patient requiring prolonged ventilation, including tracheostomy and weaning techniques						
d. Central venous cannulation for resuscitation and hemodialysis with ultrasound guidance						
e. Resuscitation of the patient with dysrhythmia including medication, cardioversion, defibrillation, and pacing						
f. Insertion of arterial lines						
g. Thoracentesis and thoracostomy tube insertion						
h. Lumbar puncture						
i. j. Paracentesis						
Obtains appropriate informed consent for procedures and therapies						
Minimizes risks and discomforts to the patient						
Identifies and manages complications						
Overall is proficient in clinical and procedural skills relevant to Adult critical care medicine						
Please comment on the strengths and weaknesses of the candidate and provide a rationale for your ratings. Make direct reference to the specific objectives and give specific examples wherever possible.						

* Rarely meets ≤30%

* Inconsistently meets >30-60%

* Generally, meets >60-80%

* Sometimes exceeds >80-90%

* Consistently exceeds >90%

FITER: (Communicator Competency)

Trainee Name:

	EXPECTATIONS					
	* Rarely meets	* Inconsistently meets	* Generally, meets	* Sometimes exceeds	* Consistently exceeds	Not Applicable
COMMUNICATOR						
a. Establishes a therapeutic relationship with patients and communicates well with the family. Provides clear and thorough explanations of diagnosis, investigation, and management in a professional manner. Demonstrates empathy and sensitivity to racial, gender, and cultural issues						
b. Prepares documentation that is accurate and timely						
c. Develops diagnostic and therapeutic plans that are understandable to patients and clear and concise for other healthcare personnel, including other consultants						
d. Demonstrates an awareness of the unique and stressful environment of the critical care facility for patients and their families						
e. Communicates effectively with patients and their families including but not limited to those who may present as dysfunctional, angry, confused, or litigious						
f. Develops a common understanding on issues, problems, and plans of care including but not limited to end of life						
g. Presents clinical summaries and scientific information in a clear and concise manner to a healthcare audience						
Please comment on the strengths and weaknesses of the candidate and provide a rationale for your ratings. Make direct reference to the objectives and give specific examples wherever possible.						

* Rarely meets ≤30%

* Inconsistently meets >30-60%

* Generally, meets >60-80%

* Sometimes exceeds >80-90%

* Consistently exceeds >90%

FITER: (Collaborator Competency)

Trainee Name:

EXPECTATIONS						
	* Rarely meets	* Inconsistently meets	* Generally, meets	* Sometimes exceeds	* Consistently exceeds	Not Applicable
COLLABORATOR						
a. Interacts effectively with health professionals by recognizing and acknowledging their roles and expertise						
b. Consults and delegates effectively						
c. Establishes good relationships with peers and other health professionals						
d. Effectively provides and receives information from other health professionals						
e. Manages conflict situations well						
Please comment on the strengths and weaknesses of the candidate and provide a rationale for your ratings. Make direct reference to the objectives and give specific examples wherever possible.						

- * Rarely meets ≤30%
- * Inconsistently meets >30-60%
- * Generally, meets >60-80%
- * Sometimes exceeds >80-90%
- * Consistently exceeds >90%

FITER: (Manager Competency)

Trainee Name:

	EXPECTATIONS					
	* Rarely meets	* Inconsistently meets	* Generally, meets	* Sometimes exceeds	* Consistently exceeds	Not Applicable
MANAGER						
a. Understands and makes effective use of information technology, such as methods for searching medical databases						
b. Makes cost-effective use of healthcare resources based on sound judgment						
c. Prioritizes and uses personal and professional time effectively in order to achieve a balanced personal and professional life						
d. Demonstrates an understanding of the principles of practice management						
e. Demonstrates the ability to effectively utilize healthcare resources to maximize benefits to all patients, including managing waiting list for patients outside critical care unit						
Please comment on the strengths and weaknesses of the candidate and provide a rationale for your ratings. Make direct reference to the objectives and give specific examples wherever possible						

* Rarely meets ≤30%

* Inconsistently meets >30-60%

* Generally, meets >60-80%

* Sometimes exceeds >80-90%

* Consistently exceeds >90%

FITER: (Health Advocate Competency)

Trainee Name:

EXPECTATIONS						
	* Rarely meets	* Inconsistently meets	* Generally, meets	* Sometimes exceeds	* Consistently exceeds	Not Applicable
HEALTH ADVOCATE						
a. Understands the specialist's role to intervene on behalf of patients with respect to the social, economic, and biological factors that may impact their health						
b. Understands the specialist's role to intervene on behalf of the community with respect to the social, economic, and biological factors that may impact community health						
c. Recognizes and responds appropriately in advocacy situations						
Please comment on the strengths and weaknesses of the candidate and provide a rationale for your ratings. Make direct reference to the objectives and give specific examples wherever possible.						

- * Rarely meets ≤30%
- * Inconsistently meets >30-60%
- * Generally, meets >60-80%
- * Sometimes exceeds >80-90%
- * Consistently exceeds >90%

FITER: (Scholar Competency)

Trainee Name:

	EXPECTATIONS					
	* Rarely meets	* Inconsistently meets	* Generally, meets	* Sometimes exceeds	* Consistently exceeds	Not Applicable
SCHOLAR						
a. Demonstrates an understanding of, and a commitment to, the need for continuous learning. Develops and implements an ongoing and effective personal learning strategy						
b. Critically appraises medical information by asking relevant questions and determining which information is reliable. Successfully integrates information from a variety of sources.						
c. Understands the principles of adult learning and helps others learn by providing guidance, teaching, and giving constructive feedback						
d. Facilitates the learning of patients, other house staff/students, and other health professionals						
e. Completes the electronic logbook in a timely fashion.						
Please comment on the strengths and weaknesses of the candidate and provide a rationale for your ratings. Make direct reference to the specific objectives and give specific examples wherever possible.						

* Rarely meets ≤30%

* Inconsistently meets >30-60%

* Generally, meets >60-80%

* Sometimes exceeds >80-90%

* Consistently exceeds >90%

FITER: (Professional Competency)

Trainee Name:

EXPECTATIONS						
	* Rarely meets	* Inconsistently meets	* Generally, meets	* Sometimes exceeds	* Consistently exceeds	Not Applicable
PROFESSIONAL						
a. Demonstrates integrity, honesty, compassion, and respect for diversity						
b. Fulfills medical, legal, and professional obligations of the specialty						
c. Meets deadlines and demonstrates punctuality						
d. Monitors patients and provides follow-up						
e. Understands the principles of ethics and applies these in clinical situations						
f. Demonstrates an awareness of limitations, and seeks advice when necessary. Accepts advice graciously						
g. Demonstrates respect towards other physicians and healthcare workers						
h. Participates in professional organizations—local, provincial, and national						
Please comment on the strengths and weaknesses of the candidate and provide a rationale for your ratings. Make direct reference to the objectives and give specific examples wherever possible.						

* Rarely meets ≤30%

* Inconsistently meets >30-60%

* Generally, meets >60-80%

* Sometimes exceeds >80-90%

* Consistently exceeds >90%

**Appendix 2: Direct Observation of Procedural Skills (DOPS)
Arab Board Fellowship of Adult Critical Care Medicine
Direct Observation Procedure (DOP) Evaluation Form**

Fellow Name: Level: F1 F2
 Assessor name: Date: Location:
 Critical care unit A&E
 Procedure :

Theme	Unsatisfactory			Satisfactory			Outstanding			Not Observed
	1	2	3	4	5	6	7	8	9	
1. Understanding indications, relevant anatomy & technique	1	2	3	4	5	6	7	8	9	n/o
2. Obtain informed consent	1	2	3	4	5	6	7	8	9	n/o
3. Pre-procedure preparation	1	2	3	4	5	6	7	8	9	n/o
4. Safe sedation	1	2	3	4	5	6	7	8	9	n/o
5. Antiseptic technique	1	2	3	4	5	6	7	8	9	n/o
6. Technical ability	1	2	3	4	5	6	7	8	9	n/o
7. Seek help where appropriate	1	2	3	4	5	6	7	8	9	n/o
8. Post procedure management	1	2	3	4	5	6	7	8	9	n/o
9. Communication skills	1	2	3	4	5	6	7	8	9	n/o
10. Professionalism	1	2	3	4	5	6	7	8	9	n/o
Overall clinical judgment	1	2	3	4	5	6	7	8	9	

Overall Ability to perform Procedure	Competent to perform unsupervised <input type="checkbox"/>	May need supervision if complications arise <input type="checkbox"/>	Needs more practice <input type="checkbox"/>
Comments:			

Assessor's position:

Consultant Associate Consultant Senior Registrar Registrar Fellow Senior Resident Nurse
 Other s (specify): _____

Time taken for Feedback and Observation (in minutes): _____

Assessors Surname:	
Assessors Signature:	

If you have rated the performance unsatisfactory, you **MUST** indicate which elements were unsatisfactory:

Performance	Ye s	No	Comments
Understands indications and contraindications for the procedure			
Explained procedure to patient			
Understands relevant anatomy			
Satisfactory preparation for procedure			
Communicated appropriately with patient and staff			
Full aseptic technique			
Satisfactory technical performance of procedure			
Adapted to unexpected problems during procedure			
Demonstrated adequate skill and practical fluency			
Maintained Safe practice			
Completed procedure			
Satisfactory documentation of procedure			
Issued clear post-procedure instructions to patient and staff			
Maintained professional demeanor throughout procedure			

Table 1: DOPS – Competencies Assessed

Below are the procedures that can be assessed by DOPS, as defined by the critical care curriculum Assessment Blueprint.

Practical Procedures
Administers oxygen using a variety of administration devices
Performs emergency airway management
Performs difficult and failed airway management according to local protocols
Performs endotracheal suction
Performs fiberoptic bronchoscopy and BAL in the intubated patient
Performs percutaneous tracheostomy
Performs chest drain insertion
Performs arterial catheterisation
Performs ultrasound techniques for vascular localisation
Performs central venous catheterisation
Performs defibrillation and cardioversion
Performs transthoracic cardiac pacing, describes transvenous and percutaneous pacemakers
Describes how to perform pericardiocentesis
Demonstrates a method for measuring cardiac output and derived haemodynamic variables
Performs lumbar puncture
Manages the administration of analgesia via an epidural catheter
Performs abdominal paracentesis
Describes Sengstaken tube (or equivalent) placement
Performs nasogastric tube placement
Performs urinary catheterisation

Appendix 3: Procedures Logbook

Required Procedure in logbook & DOPS

The following illustrate the procedures, category, number of required procedures, sites and number of DOPS over 2 years of training:

Procedure	Required Number	Sites and Type	Required DOPS
Performs central venous catheterization	40	IJV , SCV , Femoral	1 for each site
Performs arterial catheterization	30	Radial, Femoral	1 for Each
Perform pulmonary artery catheterization	1	IJV , SCV	1 (If possible)
Performs emergency airway management	2	Cricothyroidectomy	1 (If possible)
Performs difficult and failed airway management according to local protocols	4	Not Applicable	2
Direct Laryngoscopy and Intubation	50	Not Applicable	4
Pleural Tap	10	Not Applicable	2
Ascitic Tap	10	Not Applicable	2
Performs lumbar puncture	5	Not Applicable	1
Bronchoscopy (Intubated Patient)	10	Not Applicable	2
Chest Tube Insertion	10	Not Applicable	2
Percutaneous Tracheostomy	20	Not Applicable	4
ABG Sampling	10	Radial And Femoral	1
US Chest	50	Lung and pleural cavity	4
US Abdomen	50	Ascites and EFAST	4
US Cardiac	50	Assess contractility, Effusion and Chambers	4
US Guided Vascular Access	40	IJV , SCV , Femoral V	4
US for IVC assessment	50	For Fluid status assessment	1 (If possible)
Performs transthoracic cardiac pacing, transvenous and percutaneous pacemakers	2	Not Applicable	1 (If possible)
Sengstaken tube placement	1	---	1 (If possible)
Cardiac output monitors (e.g PICO, LIDCO, NICO)	20	---	1 (If possible)

Appendix 4: Mini-Clinical Evaluation Exercise (Mini-CEX)

Definition: Mini-CEX is a 10-20 minutes direct observation assessment or “snapshot” of a trainee-patient interaction. To be most useful, the evaluator should provide timely and specific feedback to the trainee after each assessment of a trainee-patient encounter. Its primary purpose is to observe the trainee during a clinical encounter. Then, a discussion takes place between the observer and the trainee with regards to the management of a critically ill patient and feedback is given. It is intended to assess the overall clinical conduct of the trainee in the seven domains (described below) when managing a single case.

Purpose:

A mini-CEX is designed to:

- Guide the trainee’s learning through structured feedback
- Help improve communication, history taking, physical examination and professional practice
- Provide the trainee with an opportunity to be observed during interactions with patients and identify strategies to improve their practice
- Be a teaching opportunity enabling the evaluator to share their professional knowledge and experience

The evaluation should be according to the trainee’s level of training. A satisfactory assessment will indicate that the trainee’s performance is what is expected from a trainee at their level of training. The trainee should ask the assessor to observe the clinical encounter with the patient. The assessor should observe the trainee’s performance only interfering if it is necessary (e.g. patient safety is compromised, help to manage the patient is required...etc.). It is best to mark sheet and write notes while the trainee is being observed.

Trainee responsibilities:

- Arrange a mini-CEX encounter with an evaluator
- Provide the evaluator with a copy of the mini-CEX rating format

Evaluator responsibilities:

- Choose an appropriate consultation for the encounter
- Use the mini-CEX rating form to rate the trainee
- Provide constructive feedback and discuss improvement strategies. If a trainee received a rating which is unsatisfactory, the assessor must complete the “suggestion for Development” section.

**Appendix 4: Mini-Clinical Evaluation Exercise (Mini-CEX)
Arab Board Fellowship of Adult Critical Care Medicine**

Mini Clinical Evaluation Exercise (Mini- CEX) Form

Fellow Name: Level: F1 F2
 Assessor name: Date: Location:
 Critical care unit A&E New Follow up
 Reason for clinical encounter:
 Focus of clinical encounter:
 Clinical assessment Management Record keeping Professionalism
 Complexity of case: Low Average High

Theme	Unsatisfactory			Satisfactory			Superior			Not Observed
11. Medical interviewing skills	1	2	3	4	5	6	7	8	9	n/o
12. Physical examination skills	1	2	3	4	5	6	7	8	9	n/o
13. Communication skills	1	2	3	4	5	6	7	8	9	n/o
14. Use of resources	1	2	3	4	5	6	7	8	9	n/o
15. Clinical judgment	1	2	3	4	5	6	7	8	9	n/o
16. Management	1	2	3	4	5	6	7	8	9	n/o
17. Follow up	1	2	3	4	5	6	7	8	9	n/o
18. Professionalism	1	2	3	4	5	6	7	8	9	n/o
Overall clinical judgment	1	2	3	4	5	6	7	8	9	

Which aspects of the encounter were done well?
Suggested areas for improvement / development?
Agreed Actions / learning plan:
Trainee's reflections on patient and areas of learning:

Assessor's position:
 Consultant Associate Consultant Senior Registrar Registrar Fellow
 Time taken for Observation & Feedback (in minutes): _____

Assessor's signature: Trainee's signature:

Mini - CEX – Competencies Assessed

The below are the full Domains and competencies of the critical care curriculum that **are suitable** for assessment by Mini- CEX, as defined by our curriculum Assessment Blueprint. It is possible for one assessment to cover multiple competencies – please tick those competencies covered by this assessment and note Level of achievement.

1	Resuscitation and management of the acutely ill patient	<i>Level</i>
1.1	Adopts a structured and timely approach to the recognition, assessment and stabilization of the acutely ill patient with disordered physiology	
1.2	Manages cardiopulmonary resuscitation – ALS recommended	
1.3	Manages the patient post resuscitation	
1.4	Assesses and provides initial management of the trauma patient	
1.5	Assesses and provides initial management of the patient with burns	
2	Diagnosis, Assessment, Investigation, Monitoring and Data Interpretation	<i>Level</i>
2.1	Obtains a history and performs an accurate clinical examination	
2.2	Undertakes timely and appropriate investigations	
2.3	Performs electrocardiography (ECG / EKG) and interprets the results	
2.4	Interprets imaging studies	
2.5	Monitors and responds to trends in physiological variables	
2.6	Integrates clinical findings with laboratory investigations to form a differential diagnosis	
2.7	Demonstrates a method for measuring cardiac output and derived hemodynamic variables	
3	Disease Management	<i>Level</i>
3.1	Manages the care of the critically ill patient with specific acute medical conditions	
3.2	Recognises and manages the patient with circulatory failure	
3.3	Recognises and manages the patient with, or at risk of, acute renal failure	
3.4	Recognises and manages the patient with, or at risk of, acute liver failure	
3.5	Recognises and manages the patient with neurological impairment	
3.6	Recognises and manages the patient with acute gastrointestinal failure	
3.7	Recognises and manages the patient with severe acute respiratory failure /	
3.8	acute lung injury syndromes (ALI / ARDS)	
3.9	Recognises and manages the septic patient	
3.10	Recognises and manages the patient following intoxication with drugs or environmental toxins	
3.11	Recognises life-threatening maternal peripartum complications and manages care	
4	Therapeutic interventions / Organ support in single or multiple organ failure	<i>Level</i>
4.1	Manages antimicrobial drug therapy	
4.2	Uses fluids and vasoactive / inotropic drugs to support the circulation	
4.3	Initiates, manages and weans patients from renal replacement therapy	
4.4	Recognises and manages electrolyte, glucose and acid-base disturbances	
4.5	Co-ordinates and provides nutritional assessment and support	
5	Comfort and Recovery	<i>Level</i>
5.1	Manages the assessment, prevention and treatment of pain	
5.2	and delirium	
5.3	Manages sedation and neuromuscular blockade	
6	End of life care	<i>Level</i>
6.1	Manages the physiological support of the organ donor	
7	Transport	<i>Level</i>
7.1	Undertakes transport of the mechanically ventilated critically ill patient outside the ICU	

Please grade the following areas: (Descriptors included with each domain)	Satisfactory	Unsatisfactory
1. History taking and information gathering		
Did the trainee take an adequate history and gather enough information from relatives, staff, notes or other colleagues to help decision making?		
2. Assessment and differential diagnosis		
The focus here is on a targeted clinical examination that, combined with domain 1, allows full assessment and the assimilation of a differential diagnosis. It is important that more than one diagnosis is considered, but the most likely diagnosis should also be highlighted.		
3. Immediate management and stabilization		
Having made a full assessment, was the immediate management appropriate? Did the patient require urgent action? Was that action taken? Was it effective? Was appropriate help sought?		
4. Further management and clinical judgement		
Once patient was stable, were further management decisions appropriate? Were appropriate drugs given? Were relevant tests ordered? Was the patient managed/admitted to the appropriate clinical area?		
5. Identification of potential problems and difficulties		
Did the trainee identify potential problems?		
6. Communication with patient, staff and colleagues		
How was communication dealt with by the trainee? Were intervention options discussed with the patient? Was there good communication with patient's relatives, staff and other colleagues?		
7. Record keeping		
The records should be legible, signed, dated and timed. All necessary records should be completed in full.		
8. Overall clinical care		
The case records and the trainee's discussion should demonstrate that this episode of clinical care was conducted in accordance with good practice and to a good overall standard.		
9. Understanding of the issues surrounding the clinical focus chosen by the assessor		
The clinical focus must be one of the topics identified in the assessment schedule. The trainee should show an understanding <i>appropriate to their experience</i> .		

Appendix 5: Case-Based Discussion (CBD) Rating Form
Arab Board Fellowship of Adult Critical Care Medicine
Case Based Discussion (CBD)

Fellow Name: Level: F1 F2
 Assessor name: Date: Location:
 Critical care unit A&E New Follow up
 Reason for clinical encounter:
 Focus of clinical encounter:
 Clinical assessment Management Record keeping Professionalism

Complexity of case: Low Average High

Brief description of case including curricula areas covered:

Theme	Unsatisfactory			Satisfactory			Superior			Not Observed
	1	2	3	4	5	6	7	8	9	
19. Medical interviewing skills	1	2	3	4	5	6	7	8	9	n/o
20. Physical examination skills	1	2	3	4	5	6	7	8	9	n/o
21. Communication skills	1	2	3	4	5	6	7	8	9	n/o
22. Use of resources	1	2	3	4	5	6	7	8	9	n/o
23. Clinical judgment	1	2	3	4	5	6	7	8	9	n/o
24. Management	1	2	3	4	5	6	7	8	9	n/o
25. Follow up	1	2	3	4	5	6	7	8	9	n/o
26. Professionalism	1	2	3	4	5	6	7	8	9	n/o
Overall clinical judgment	1	2	3	4	5	6	7	8	9	

Which aspects of the encounter were done well?

Suggested areas for improvement / development?

Agreed Actions / learning plan:

Trainee's reflections on patient and areas of learning:

Assessor's position:
 Consultant Associate Consultant Senior Registrar Registrar Fellow
 Time taken for Observation & Feedback (in minutes): _____

Assessor's signature: Trainee's signature:

Case-Based Discussion (CBD)

Purpose: To evaluate the level of professional judgment exercised in clinical cases by the trainee.

CBD is designed to:

- Guide the trainee's learning through structured feedback
- Help improve clinical decision making, clinical knowledge and patient management
- Provide the trainee with an opportunity to discuss their approach to the case and identify strategies to improve their practice
 - Be a teaching opportunity enabling the evaluator to share their professional knowledge and experience.

Overview CBD encounter involves a comprehensive review of clinical cases between a trainee and an evaluator. The trainee is given feedback from an evaluator across a range of areas relating to clinical knowledge, clinical decision making and patient management. CBD encounter takes approximately 20-30 minutes. The evaluation should be according to the trainee's level of training. A satisfactory assessment will indicate that the trainee's performance is what is expected from a trainee at their level of training. The trainee should bring to their assessment a copy of the notes of critically ill patients they have dealt with independently. The assessor will select one case. The trainee should be asked how they proceeded with management. In particular questions should be directed towards asking them to explain and justify the decisions they made. It is important to ask questions that bear directly upon the thought processes of the trainee during the case being discussed and not to digress into a long exploration of their knowledge of theory.

The assessor should also identify one particular issue that should have influenced the trainee's decision making in this case. They should explore the trainee's thinking in relation to the impact of this issue. This exercise is to explore in greater depth the way that the trainee reacts to events. If this specific focus is relevant to the case then the trainee should have taken its impact into account in their management and decision-making. If they believed their knowledge of the issue to be inadequate they should have sought advice before proceeding. Therefore, the trainee does not need to have prior notice of the focus the assessor will discuss. If their knowledge and understanding of the clinical problem is inadequate this will be reflected by the marking. Such discussions will also incorporate an assessment of the adequacy of a trainee's record keeping, although this is not the primary purpose of CBD. The assessor then scores the trainee in each of the nine domains described above, using the standard form. It may be appropriate only to score three or four domains at a single event, and it should be emphasised that the purpose of the tool is to understand the decision-making processes and thinking of the trainee. CBD is the trainee's chance to have somebody pay close attention to an aspect of their clinical thinking and to provide feedback. Feedback and discussion are mandatory.

Trainee responsibilities:

- Arrange a CBD encounter with an evaluator.

Evaluator responsibilities:

- Choose the case(s) for discussion.
- Use the CBD form to rate the trainee.
- Provide constructive feedback and discuss improvement strategies.
- Provide an overall judgment on the trainee's clinical decision-making skills.

Case-based Discussion – Competencies Assessed

The below are the full Domains and competencies of the critical care medicine curriculum which are suitable for assessment by CBD, as defined by the critical care medicine curriculum Assessment Blueprint. It is possible for one assessment to cover multiple competencies – please tick those competencies covered by this assessment and note Level of achievement.

1	Resuscitation and management of the acutely ill patient	<i>Level</i>
1.1	Adopts a structured and timely approach to the recognition, assessment and stabilization of the acutely ill patient with disordered physiology	
1.2	Manages the patient post resuscitation	
1.3	Assesses and provides initial management of the trauma patient	
1.4	Assesses and provides initial management of the patient with burns	
2	Diagnosis, Assessment, Investigation, Monitoring and Data Interpretation	<i>Level</i>
2.1	Undertakes timely and appropriate investigations	
2.2	Performs electrocardiography (ECG / EKG) and interprets the results	
2.3	Interprets imaging studies	
2.5	Monitors and responds to trends in physiological variables	
2.6	Integrates clinical findings with laboratory investigations to form a differential diagnosis	
3	Disease Management	<i>Level</i>
3.1	Manages the care of the critically ill patient with specific acute medical conditions	
3.2	Recognises and manages the patient with circulatory failure	
3.3	Recognises and manages the patient with, or at risk of, acute renal failure	
3.4	Recognises and manages the patient with, or at risk of, acute liver failure	
3.5	Recognises and manages the patient with neurological impairment	
3.6	Recognises and manages the patient with acute gastrointestinal failure	
3.7	Recognises and manages the patient with severe acute respiratory failure /	
3.8	acute lung injury syndromes (ALI / ARDS)	
3.9	Recognises and manages the septic patient	
3.10	Recognises and manages the patient following intoxication with drugs or environmental toxins	
3.11	Recognises life-threatening maternal peripartum complications and manages care	
4	Therapeutic interventions / Organ support in single or multiple organ failure	<i>Level</i>
4.1	Manages antimicrobial drug therapy	
4.2	Uses fluids and vasoactive / inotropic drugs to support the circulation	
4.3	Initiates, manages and weans patients from renal replacement therapy	
4.4	Recognises and manages electrolyte, glucose and acid-base disturbances	
4.5	Co-ordinates and provides nutritional assessment and support	
5	Comfort and Recovery	<i>Level</i>
5.1	Manages the assessment, prevention and treatment of pain	
5.2	and delirium	
5.3	Manages sedation and neuromuscular blockade	
6	End of life care	<i>Level</i>
6.1	Manages the physiological support of the organ donor	
7	Transport	<i>Level</i>
7.1	Undertakes transport of the mechanically ventilated critically ill patient outside the ICU	
8	Patient safety and health systems management	<i>Level</i>
8.1	Complies with local infection control measures	
8.2	Describes commonly used scoring systems for assessment of severity of illness, case mix and workload	
8.3	Critically appraises and applies guidelines, protocols and care bundles	
9	Professionalism	<i>Level</i>
9.1	Demonstrates respect of cultural and religious beliefs and an awareness of their impact on decision making	
9.2	Respects privacy, dignity, confidentiality and legal constraints on the use of patient data	
9.3	Formulates clinical decisions with respect for ethical and legal principles	

Curriculum Competency Level Descriptors

The following Competency Level Descriptors are presented here for ease of reference when completing the 'Competencies Assessed' section.

Level	Task orientated competence	Knowledge orientated competence	Patient management competence	
<p>Please grade the following areas: (Descriptors included with each domain)</p>			Satisfactor y	Unsatisfacto ry
<p>1. History taking and information gathering</p> <p>Did the trainee take an adequate history and gather enough information from relatives, staff, notes or other colleagues to help decision making?</p>				
<p>2. Assessment and differential diagnosis</p> <p>The focus here is on a targeted clinical examination that, combined with domain 1, allows full assessment and the assimilation of a differential diagnosis. It is important that more than one diagnosis is considered, but the most likely diagnosis should also be highlighted.</p>				
<p>3. Immediate management and stabilisation</p> <p>Having made a full assessment, was the immediate management appropriate? Did the patient require urgent action? Was that action taken? Was it effective? Was appropriate help sought?</p>				
<p>4. Further management and clinical judgement</p> <p>Once patient was stable, were further management decisions appropriate? Were appropriate drugs given? Were relevant tests ordered? Was the patient managed/admitted to the appropriate clinical area?</p>				
<p>5. Identification of potential problems and difficulties</p> <p>Did the trainee identify potential problems?</p>				
<p>6. Communication with patient, staff and colleagues</p> <p>How was communication dealt with by the trainee? Were intervention options discussed with the patient? Was there good communication with patient's relatives, staff and other colleagues?</p>				
<p>7. Record keeping</p> <p>The records should be legible, signed, dated and timed. All necessary records should be completed in full.</p>				
<p>8. Overall clinical care</p> <p>The case records and the trainee's discussion should demonstrate that this episode of clinical care was conducted in accordance with good practice and to a good overall standard.</p>				
<p>9. Understanding of the issues surrounding the clinical focus chosen by the assessor</p> <p>The clinical focus must be one of the topics identified in the assessment schedule. The trainee should show an understanding <i>appropriate to their experience</i>.</p>				
1	Performs task under direct	Very limited knowledge;	Can take history, examine and arrange	

	supervision.	requires considerable guidance to solve a problem within the area.	investigations for straight forward case (limited differential diagnosis). Can initiate emergency management and continue a management plan, recognising acute divergences from the plan. Will need help to deal with these.
2	Performs task in straightforward circumstances, requires help for more difficult situations. Understands indications and complications of task.	Sound basic knowledge; requires some guidance to solve a problem within the area. Will have knowledge of appropriate guidelines and protocols.	Can take history, examine and arrange investigations in a more complicated case. Can initiate emergency management. In a straightforward case, can plan management and manage any divergences in short term. Will need help with more complicated cases.
3	Performs task in most circumstances, will need some guidance in complex situations. Can manage most complications, has a good understanding of contraindications and alternatives.	Advanced knowledge and understanding; only requires occasional advice and assistance to solve a problem. Will be able to assess evidence critically.	Can take history, examine and arrange investigations in a more complex case in a focused manner. Can initiate emergency management. In a most cases, can plan management and manage any divergences. May need specialist help for some cases.
4	Independent (consultant) practice.	Expert level of knowledge.	Specialist.

Appendix 6: Research Manual

Definition of research:

Research is the systematic, rigorous investigation of a situation or problem in order to generate new knowledge or validate existing knowledge. Research in health care takes place in a variety of areas and has many potential benefits; the areas include professional practice, environmental issues affecting health, vitality, treatments, theory development, health care economics, and many others. Most of researches which are conducted in health field are called clinical researches. Clinical research is a branch of healthcare science that determines the safety and effectiveness (efficacy) of medications, devices, diagnostic products and treatment regimens intended for human use. These may be used for prevention, treatment, diagnosis or for relieving symptoms of a disease.

Type of researches:

- Basic medical research: Areas tackled in the most fundamental parts of medical research include cellular and molecular biology, medical genetics, immunology, neuroscience, and psychology.
- Preclinical research: Pre-clinical research covers research that prepares the ground for clinical research with patients. Typically, the work requires no ethical approval (though some work with animals does), is supervised by people with PhDs rather than medical doctors, and is carried out in a university or company rather than a hospital or surgery.
- Clinical research: Clinical research is carried out with patients. It is generally supervised by doctors in a medical setting such as a hospital and requires ethical approval. The clinical phase of drug testing is called Clinical trial.

Types of clinical study Designs:

- Meta-Analysis: A way of combining data from many different research studies. A meta-analysis is a statistical process that combines the findings from individual studies
 - Systematic Review: A summary of the clinical literature. A systematic review is a critical assessment and evaluation of all research studies that address a particular clinical issue. The researchers use an organized method of locating, assembling, and evaluating a body of literature on a particular topic using a set of specific criteria. A systematic review typically includes a description of the findings of the collection of research studies.
 - Randomized Controlled Trial: A controlled clinical trial that randomly (by chance) assigns participants to two or more groups. There are various methods to randomize study participants to their groups.
 - Cohort Study (Prospective Observational Study): A clinical research study in which people who presently have a certain condition or receive a particular treatment are followed over time and compared with another group of people who are not affected by the condition.
 - Case-control Study: Case-control studies begin with the outcomes and do not follow people over time. Researchers choose people with a particular result (the cases) and interview the groups or check their records to ascertain what different experiences they had. They compare the odds of having an experience with the outcome to the odds of having an experience without the outcome
 - Cross-sectional study: The observation of a defined population at a single point in time or time interval. Exposure and outcome are determined simultaneously
 - Case Reports and Series: A report on a series of patients with an outcome of interest. No control group is involved.
 - Ideas, Editorials, Opinions: Put forth by experts in the field
- Bioethical training and certification.
Each fellow should take online ethical course which usually requires testing of acquired knowledge and certification. Most of universities are providing these courses either for free or with subscription.

Research Presentation:

The fellow is encouraged to write the research manuscript and to publish it or at least to have an evidence of accepting the research manuscript for publication. He/she should present the detailed data with the abstract, method of study, results, discussion and references in research day.

Evaluation of research and scoring:

At least a single research should be assessed and scored by the local programme director during the two years of training. The whole research work should be scored from 0% to 100% as per mark distribution.

Journal club/research Day:

The fellow should be ready to present the required component of his/her research in a journal club or a research day. Either a local or international indexed journal is accepted. Fellowes should be encouraged to publish in international journals.

Appendix 6: Research Evaluation Sheet
Arab Board Fellowship of Adult Critical Care Medicine
Research Evaluation Sheet

Name of the candidate:

Research title:

	COMPONENT	Mark	CANDIDATE SCORE	COMMENTS
Part-1- Written Text Evaluation	1. Originality of topic	3		
	2. Abstract/summary	3		
	3. Aims and objectives	5		
	4. Literature review	6		
	5. Methodology	12		
	6. Results (Data analysis, presentation)	12		
	7. Discussion, conclusions and recommendations	3		
	8. Ethical considerations	2		
	9. Style, structure of the text, tables, diagrams	3		
	10. References	5		
	Total Written Evaluation	60		
Part-2 Presentation	1. Presentation	10		
	2. Discussion	30		
	Total Evaluation	40		
	Total Cumulative Mark	100		

Evaluator name:

Signature:

Appendix 7: Presentation Evaluation form
Arab Board Fellowship of Adult Critical Care Medicine
Presentation Evaluation form

Fellow name:-----Level:-----
 Supervisor:----- Date of Presentation:-----
 Topic:-----

Please use the following scale to evaluate the presentation:

Very weak	Weak	Acceptable	Good	Very good
1	2	3	4	5

	1	2	3	4	5
Medical Expert					
- Demonstrate thorough knowledge of the topic					
- Presents at appropriate level and with adequate details					
- Comments (Optional)					
Communicator					
- Provided objectives and an outline					
- Presentation was clear and organized					
- Used clear, concise and legible materials					
- Used an effective methods /style of presentation					
- Established good rapport with the audience					
Collaborator					
- Invite comments from learners and led discussion					
- Worked effectively with staff supervisor in preparing the session					
- Comments (Optional)					
Health advocate					
- Manage time effectively					
- Addresses preventive aspects of care if relevant					
- Comments (Optional)					
Scholar					
- Posed an appropriate learning question					
- Accessed and interpreted the relevant literature					
- Comments (Optional)					
Professional					
- Maintains patient's confidentiality if clinical material is used					
- Identified and managed relevant conflict of interest					
- Comments (Optional)					
Total					
Overall Performance: <input type="checkbox"/> Good <input type="checkbox"/> Fair <input type="checkbox"/> Needs improvement					
Additional Comments:					

Evaluation completed by:

Date:

** This feedback was discussed with resident: Yes No

Appendix 8: Portfolio Assessment
Arab Board Fellowship of Adult Critical Care Medicine
Portfolio Assessment

This form to be completed at least every rotation during the mentoring / supervision meeting with the fellow
 Fellow Name: Level:

Mentor Name: Date: Time:
 Clinical Rotation: Site of Rotation: Duration:

Domain		Achievement Required	Scoring: 0 = Poor ↔ 4 = outstanding				Remarks
Mini CEX / CBD (2 /month)	Minimum number achieved	Did the fellow do minimum of 2 Mini-CEX/ CBD last month?	0	1	2		
	Competency assessment score	What was the average results of the assessment?	0	1	2	3	4
DOPs (2 /month)	Minimum number achieved	Did the fellow do minimum of 2 DOPs last month?	0	1	2		
	Competency assessment score	What was the average results of the assessment?	0	1	2	3	4
Learning contract / Objectives (2-3 objectives / week)		Did the fellow completed at least one sheet for the learning objectives, for an average of 2-3 objectives every week with feedback and signed by trainer?	0	1	2	3	4
Evidence of Self directed learning		Did the fellow show any document of self-directed learning (CME /Topic Review /Journal club/course /workshop etc.)?	0	1	2	3	4
Overall assessment of portfolio			/ 20				

Comments:

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Original for programme secretary / Fellow file

Copy for the fellow

Appendix 9: IN-TRAINING EVALUATION REPORT (ITER)

IN-TRAINING EVALUATION REPORT- CRITICAL CARE FELLOWSHIP TRAINING PROGRAMME

Center: _____	Level of Training: _____	IT IS MANDATORY THAT THIS EVALUATION BE DISCUSSED WITH THE TRAINEE PRIOR TO
Name: _____	Period: _____	

Roles /Competencies	Clear Fail (1)	Borderline (2)	Clear Pass (3)	Exceeds Expectation (4)	N/A
A. MEDICAL EXPERT					
History & Physical Examination:					
1. Comprehensive, accurate and concise with all relevant details					
Diagnostic Tests:					
2. Used in cost-effective manner and understands limitations & predictive value					
Clinical Decision:					
3. Able to formulate appropriate differential diagnosis.					
4. Able to analyze, integrate, and formulate effective management strategies.					
Medical Knowledge:					
5. Broad Clinical and Basic knowledge of a wide variety of medical problems and develops a plan of secondary prevention.					
Emergency Management:					
6. Able to identify and respond appropriately to urgent cases.					
Evidence-based Practice/Critical Appraisal Skills:					
7. Aware of the role of evidence in clinical decision-making.					
8. Able to apply relevant information to problem-solving.					
9. Demonstrates knowledge of medications used, mechanisms of action, clinically relevant pharmacokinetics, indications, contraindications, and adverse effects.					
Procedural Skills:					
10. Perform diagnostic and therapeutic procedures, understands indications, limitations & complications					
B. COMMUNICATOR					
11. Communicates effectively with patients, their families, and HCPs.					
12. Able to maintain clear, accurate & appropriate records.					
13. Written orders and progress notes are well organized and legible.					
14. Discharge Summaries are concise and completed promptly.					
C. COLLABORATOR					
15. Works effectively in a team environment with attending, juniors and nursing staff.					
D. LEADER					
16. Serves in administration and leadership roles as appropriate.					
17. Appropriate & efficient use of health care resources.					
E. SCHOLAR					
18. Attends and contributes to rounds, seminars and other learning events.					
19. Accepts and acts on constructive feedback.					
20. Contributes to the education of patients, junior residents, house staff, and students					
21. Contributes in scientific research.					
F. HEALTH ADVOCATE					
22. Able to identify the psychosocial, economic, environmental & biological factors which influence the health of patients and society.					
23. Offers advocacy on behalf of patients at practice and general population levels.					
G. PROFESSIONAL					
24. Delivers the highest quality care with integrity, honesty and compassion. Recognizes limitations and seeks advice and consultation when necessary.					
25. Reflects the highest standards of excellence in clinical care and ethical conduct.					
Total Score					

Total Score: _____ X 25 = 100%
 Number of evaluated items

Comment _____

Fellow Name: _____ **Signature:** _____ **Date:** _____

Programme Director: _____ **Signature:** _____ **Date:** _____

Appendix 10: Exams Blue Print

Arab Board Intensivel care Fellowship Blue Print				M C Q	S E Q	O S P E	O S C E	L o n g	S h o r t	I S t i m	W P B A
Attribute	Code	Attribute									
	K.1.22	Evaluate Noninvasive hemodynamic monitoring.		X							
	K.1.23	Evaluate selection of Analgesics for different conditions.		X							
	K.1.24	Evaluate selection of Neuromuscular blockers for different conditions.		X							X
	K.1.25	Evaluate selection of Sedatives for different conditions.		X							
	K.1.26	Interpret thromboelastographic waves.		X		X					X
2. Medicine Department	K.2.1	Appraise the diagnostic value of oliguria.		X							
	K.2.2	Compare immunosuppressive drugs and regimens.		X							
	K.2.3	Describe stress ulcer prophylaxis.		X	X						
	K.2.4	Describe acute hemolytic disorders.		X							
	K.2.5	Describe derangements secondary to alterations in osmolarity and electrolytes.		X							
	K.2.6	Describe Disorders of thyroid function (thyroid storm, myxedema coma, sick euthyroid syndrome).		X							
	K.2.7	Describe etiology, diagnosis and management of disseminated intravascular clotting.		X							
	K.2.8	Describe glomerular and renal tubules functions.		X							
	K.2.9	Describe Insulinoma.		X							
	K.2.10	Describe pathology and pathophysiology of different hepatic diseases.		X							
	K.2.11	Describe pharmacokinetics and dynamics of Chemotherapeutic agents		X							
	K.2.12	Describe portal and hepatic circulation.		X							
	K.2.13	Describe prophylaxis against thromboembolic disease.		X							
	K.2.14	Describe renal physiology including regulation of fluid, acid-base, electrolyte, drugs and metabolite excretion and endocrine function		X							
	K.2.15	Describe sickle cell anemia.		X							
	K.2.16	Describe toxemia of pregnancy,		X							
	K.2.17	Differentiate prerenal, renal and postrenal failure.		X							
K.2.18	Discuss acute and fulminant hepatic failure.		X								

Arab Board Intensivel care Fellowship Blue Print				M C Q	S E Q	O S P E	O S C E	L o n g	S h o r t	I S t i m	W P B A
Attribute	Code	Attribute									
	K.2.19	Discuss acute inflammatory diseases of the intestine.		X							
	K.2.20	Discuss acute pancreatitis.		X							
	K.2.21	Discuss acute perforations of the gastrointestinal tract.		X							
	K.2.22	Discuss acute syndromes associated with neoplastic disease and antineoplastic therapy.		X							
	K.2.23	Discuss acute vascular disorders of the intestine, including mesenteric infarction.		X							
	K.2.24	Discuss adrenal disorders (Pheochromocytoma and adrenal crisis).		X							
	K.2.25	Discuss anaerobic infections.		X							
	K.2.26	Discuss antibiotics, antifungal agents, anti-tuberculous agents, antiviral agents, agents for parasitic infections.		X							
	K.2.27	Discuss development of antibiotic resistance.		X							
	K.2.28	Discuss diabetes mellitus.		X							
	K.2.29	Discuss disorders of antidiuretic hormone metabolism.		X							
	K.2.30	Discuss drug dosing in hepatic failure.		X							
	K.2.31	Discuss gastrointestinal bleeding.		X							
	K.2.32	Discuss normal hemostasis and acute haemostatic disorders.		X							
	K.2.33	Discuss obstructive uropathy and acute urinary retention.		X							
	K.2.34	Discuss osmolar and non-osmolar diuretics.		X							
	K.2.35	Discuss pathophysiology and treatment of septic shock, including appropriate use of antibiotics, source control, and other therapies'		X				X	X		
	K.2.36	Discuss rhabdomyolysis.		X							
	K.2.37	Discuss thrombocytopenia/thrombocytopeny.		X							
	K.2.38	Discuss tumor lysis syndrome.		X							
	K.2.39	Discuss urinary tract bleeding.		X							
	K.2.40	Interpret renal function tests and monitoring		X							X
	K.2.41	Interpret urine electrolytes.		X		X					

Arab Board Intensivel care Fellowship Blue Print				M C Q	S E Q	O S P E	O S C E	L o n g	S h o r t	I S t i m	W P B A
Attribute	Code	Attribute									
	K.2.42	Describes Principles of renal replacement therapy: hemodialysis, peritoneal dialysis, ultrafiltration, continuous arteriovenous hemofiltration (CAVH), and continuous veno-venous hemofiltration (CVVH).		X							
3.General Intensive Care	K.3.1	Appraise the value of different recruitment maneuvers.		X							X
	K.3.2	Compare Long-term intubation vs. tracheostomy.		X							
	K.3.3	Compare Manual vs. mechanical (computer) record generation.		X							X
	K.3.4	Compare modes of mechanical ventilation: Assist control (volume and pressure), intermittent mandatory, high-frequency, pressure support, noninvasive and differential lung ventilation.		X							X
	K.3.5	Compare pressure and volume control ventilation mode.		X							X
	K.3.6	Compare sedative and analgesic drugs used in ICU		X							
	K.3.7	Define aspiration pneumonia and prophylaxis.		X							
	K.3.8	Describe adverse reactions to antimicrobial agents.		X							
	K.3.9	Describe clinical practice guidelines.		X	X						
	K.3.10	Describe design of special care units.		X							
	K.3.11	Describe drug overdose and withdrawal symptoms of Barbiturates, Narcotics, Salicylates, Alcohols, Cocaine, Tricyclic Antidepressants, Acetaminophen, Others		X							
	K.3.12	Describe intensive care unit (ICU) support of the immunosuppressed patient: Acquired Immunodeficiency Syndrome (AIDS). Transplant. Oncologic.		X							
	K.3.13	Describe Isolation and reverse isolation.		X							
	K.3.14	Describe necessary management for organ donation.		X	X						
	K.3.15	Describe organization and staffing of critical care units.		X							
	K.3.16	Describe pharmacokinetics and dynamics of antibiotics.		X							
K.3.17	Describe physiology and pathophysiology of mechanical ventilation.		X	X							
K.3.18	Describe Specific drugs antidotes		X								

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	Attribute	Code	Attribute								
K N O W L E D G		K.3.19	Describe the diagnosis of Myasthenia gravis.	X							
		K.3.20	Differentiate types of shock and its complications	X							
		K.3.21	Discuss criteria for weaning and weaning techniques.	X							X
		K.3.22	Discuss drug dosing in renal failure.	X							
		K.3.23	Discuss Guillian-Barre syndrome.	X							
		K.3.24	Discuss hospital acquired and opportunistic infections in the critically ill.	X							
		K.3.25	Discuss Indication and complication of enteral and parenteral nutrition.	X							X
		K.3.26	Discuss indication of PEEP, CPAP and inverse ratio ventilation.	X							X
		K.3.27	Discuss indications and limitations of permissive hypercapnia in Gen ICU and Neuro ICU.	X							
		K.3.28	Discuss indications for and hazards of mechanical ventilation.	X							X
		K.3.29	Discuss pathophysiology, supportive care and treatment of different toxin and poisons.	X							
		K.3.30	Discuss pharmacology of common intoxicants and poisons.	X							
		K.3.31	Discuss principle of basic and advanced cardiac life support	X							X
		K.3.32	Discuss principles of blood component therapy.	X							
		K.3.33	Discuss ruptured oesophagus.	X							
		K.3.34	Discuss the role of prone positioning in ARDS patients.	X	X						
		K.3.35	Evaluate brain death.	X	X						X
		K.3.36	Evaluate Hypoxemic and Hypercapnic respiratory failure.	X							
		K.3.37	Evaluate Infection control for special care units and universal precautions.	X					X		
		K.3.38	Explain etiology, pathophysiology and presentations of multiorgan failure.	X							
		K.3.39	Identify the management of every type of shock and its complications.	X							
	K.3.40	Interpret acid-base and electrolytes disorders	X		X						
	K.3.41	Interpret respiratory mechanical wave forms.	X		X	X					

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	Attribute	Code	Attribute								
E		K.3.42	Pathogenesis and diagnostic criteria of sepsis, septic shock, systemic inflammatory response syndrome and multiple organ dysfunction syndrome	X					X		
		K.3.43	Understand budget development and management.	X							
		K.3.44	Discuss indications for plasmapheresis.	X							
		K.3.45	Describe etiology, diagnosis and management of disseminated intravascular clotting.	X							
		K.3.46	Discuss Prevention and management of upper gastrointestinal bleeding.	X							
		K.3.47	Describe evidence based weaning protocol for ventilated patients	X			X				X
		K.3.48	Evaluate and interpret Respiratory monitoring (airway pressure, intrathoracic pressure, tidal volume, pulse oximetry, dead space-tidal volume ratio, compliance, resistance, capnography).	X			X				X
		K.3.49	Evaluate Metabolic monitoring (oxygen consumption, carbon dioxide production, respiratory quotient).	X							
		K.3.50	Evaluate selection of antibiotics for different conditions.	X							X
		K.3.51	Discuss prophylactic measures against thromboembolic disease (Both direct and indirect).	X							X
		K.3.52	Discuss sickle cell crisis.	X							
		4. Surgical Intensive Care SICU	K.4.1	Discuss Immunosuppression.	X						
			K.4.2	Discuss indication of organ transplantation.	X						
			K.4.3	Discuss pathophysiology of solid organ transplantation.	X						
			K.4.4	Discuss principles of transplantation (organ donation, procurement, maintenance of organ donors, preservation, transportation, allocation, implantation, national organization of transplantation activities).	X						X
	5. Radiology	K.5.1	Interpret diagnostic imaging of the cardiovascular system	X		X					X
		K.5.2	Interpret diagnostic imaging of respiratory system.	X		X					X
		K.5.3	Interpret diagnostic imaging of genitourinary system	X		X					X

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Attribute	Code	Attribute									
	K.5.4	Interpret CNS diagnostic imaging		X		X					X
	K.5.5	Interpret diagnostic imaging of gastrointestinal and hepatobiliary system		X		X					X
	K.5.6	Interpret diagnostic imaging of injured patient including FAST Focused Assessment with sonography in trauma.		X		X					X
	K.5.7	Discuss basic principles of ultrasonography (US).		X							X
	K.5.8	Interpret various radiographs of different organs and bones.		X		X					X
6. Coronary Care Unit	K.6.1	Describe anatomy of the coronary arteries.		X							
	K.6.2	Describe pharmacokinetics and dynamics of Antiarrhythmics		X							
	K.6.3	Describe physiology of CVS		X							
	K.6.4	Differentiate between cardiogenic and non-cardiogenic pulmonary edema.		X	X						
	K.6.5	Differentiate between pace makers types		X						X	
	K.6.6	Differentiate between type of cardiac dysrhythmias and type of cardiac conduction disturbance.		X							
	K.6.7	Discuss anticoagulants, fibrinolytic and antifibrinolytic therapy.		X	X						
	K.6.8	Discuss complications of angioplasty.		X	X						
	K.6.9	Discuss diagnosis of pulmonary embolism		X							
	K.6.10	Discuss management of pulm onary embolism		X							
	K.6.11	Discuss pharmacology and common side effects of antiarrhythmic drugs		X							
	K.6.12	Discuss the use of Throm bolytic, antifibrinolytic, anticoagulants and thrombo prophylaxis.		X							
	K.6.13	Explain pathology and pathophysiology of ischemic, myocardial and valvular diseases of the heart.		X							
	K.6.14	Identify hypertensive emergencies and urgencies		X	X						
	K.6.15	Evaluate selection of Antiarrhythmics for different conditions.		X							
	K.6.16	Discuss Transvenous pacemaker insertion.		X							
7. Cardiac	K.7.1	Describe anatomy of the heart and great vessels		X							

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Attribute	Code	Attribute									
	K.8.18	Interpret bedside pulmonary function tests.		X							X
	K.8.19	Describe pneumothorax		X							
9. Neuro Intensive Care	K.9.1	Describe antiepileptic drugs.		X							
	K.9.2	Describe cerebrovascular accidents and bleeding (Subarachnoid, Intracerebral, Others).		X							
	K.9.3	Describe CSF formation and excretion.		X							
	K.9.4	Describe pathophysiology of hydrocephalus.		X							
	K.9.5	Discuss antipsychotic drugs		X							
	K.9.6	Discuss brain injury (traumatic and non-traumatic)		X							
	K.9.7	Discuss causes of Coma (Metabolic, Traumatic, Infectious, Mass lesions, Vascular-anoxic or ischemic, Drug-induced).		X							
	K.9.8	Discuss diagnosis of persistent vegetative states.		X							
	K.9.9	Discuss neuromuscular diseases: spinal cord syndrome, motor disease, myopathy and polyneuropathy of critical illness.		X							X
	K.9.10	Interpret Invasive and noninvasive neurological monitoring.		X			X				
	K.9.11	Discuss Psychiatric emergencies.		X							
	K.9.12	Evaluate CNS brain monitoring (intracranial pressure, cerebral blood flow, cerebral metabolic rate, electroencephalogram, jugular venous bulb oxygenation, transcranial Doppler).		X		X					
10. Emergency Room	K.10.1	Discuss temporary immobilization of fractures.		X							X
	K.10.2	Apply Principles of triage and resource allocation.		X							X
	K.10.3	Discuss Crush injury.		X							
	K.10.4	Discuss principles of burn and electrical injuries management.		X							
	K.10.5	Discuss principles of Skeletal trauma including the spine and pelvis.		X				X	X		
	K.10.6	Evaluate near drowning situation in ER.		X							
	K.10.7	Evaluate Chest trauma—blunt and penetrating.		X				X	X		
	K.10.8	Evaluate CNS trauma (brain and spinal cord).		X							

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	Attribute	Code	Attribute									
E C T U A L		IS.3.5	Manage patient undergoing cardiovascular surgery in perioperative period								X	o r M i n i - C e x
		IS.3.6	Monitor and follow up intra-aortic assist devices.		X					X	X	
		IS.3.7	Manage non cardiogenic pulmonary edema.								X	
		IS.3.8	Manage hypertensive emergencies.								X	
		IS.3.9	Manage arterial and venous air embolism.								X	
		IS.3.10	Perform Cardiac output determinations by different techniques.								X	
		IS.3.11	Apply noninvasive cardiovascular monitoring.								X	
S K I L L S	4. Central Nervous System:	IS.4.1	Manage status epilepticus								X	s o r M i n i - r
		IS.4.2	Ex amine unconscious patient								X	
		IS.4.3	Manage myasthenia Gravis.						X		X	
		IS.4.4	Mange Guillian-Barré								X	
		IS.4.5	Manage pre and postoperative care of high risk neurosurgery patients					X			X	
		IS.4.6	Manage increased intracranial pressure (ICP), including ICP monitors.			X			X		X	
5. Renal:	IS.5.1	Mange acute urinary retention.									X	r M
	IS.5.2	Support patients on renal replacement therapy									X	
	IS.5.3	Manage patients on peritoneal dialysis.							X		X	

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Attribute	Code	Attribute										
L S		Inserts transvenous and percutaneous pacemakers									X	
		S.13	Performs pericardiocentesis								X	
		S.14	Measures cardiac output and derived haemodynamic variables								X	
		S.15	Performs lumbar puncture								X	
		S.16	Inserts analgesia via an epidural catheter							X	X	
		S.17	Performs abdominal paracentesis								X	
		S.18	Inserts Sengstaken tube (or equivalent).								X	
		S.19	Performs nasogastric tube placement								X	
	S.20	Performs urinary catheterisation							X	X		

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M C Q s	S E Q s	O S P E	O S C E	L o n g	S h o r t	I n s t i m e n t r u	W P B A
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