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INTRODUCTION

What is Anesthesiology?

'Anesthesiology' is a medical specialty which includes patient assessment and provision of life support, and analgesia for both surgical procedures and childbirth; assessment and management of critically ill patients, and patients with acute and chronic pain.

A 'Board Certified Anesthesiologist' is a physician who provides medical management and consultation during the perioperative period, in pain medicine and in critical care medicine.

Anesthesiology Residency Program

A specialty committee was established under Oman Medical Specialty Board on 6th of February 2007 to devise a plan to promote education and training through an accredited residency program in Anesthesia and Critical Care.

Mission & Vision

- To enhance the recruitment of Omani graduates into the specialty of anesthesia and critical care.
- To train the graduates in the areas of knowledge, skills and attitude specific to anesthesiology, critical care medicine and pain management to current international standards.
- Upon completion of training, a resident is expected to be a competent specialist anesthesiologist, capable of functioning independently.
General Objectives

Upon successful completion of the training program (Board Certified), a resident is expected to have the following capabilities and skills:

- Possess a sound knowledge of the basic sciences applicable to anesthesia, critical care and pain management including anatomy, physiology, pharmacology, biochemistry, clinical measurements and physics.
- Demonstrate knowledge of age-related variables in medicine as they apply to neonatal, pediatric, adult and geriatric patient care.
- Establish a professional relationship with patients and families; discuss appropriate information with them, and other members of the health care team.
- Able to undertake pre-operative assessment, obtain consent for anesthetic procedure and prescribe proper premedication.
- Adequate knowledge to use anesthetic equipment in a safe manner, and understand the interpretation and limitations of monitoring equipment.
- Able to undertake routine induction, maintenance and recovery from general anesthesia and safe discharge of the patient from the recovery room.
- Recognize ASA III, IV, V patients, the potential for difficult intubation and the timing and need for assistance and consultation.
- Able to assess, resuscitate and manage trauma/burn patients, and stabilize them and prepare for transfer if indicated.
- Sound knowledge of resuscitation of patients following respiratory or cardiac arrests.
- Possess theoretical knowledge and clinical skills to establish and manage different regional anesthetic techniques.
- Assessment and provision of appropriate care of the mother and neonate in obstetrics.
- Able to diagnose and manage critically ill patients and perform practical invasive procedures.
- Possess the necessary knowledge, skills and attitudes relevant to acute and chronic pain management.
- Able to understand the statistical fundamentals upon which most clinical research is based.
- Possess high ethical and moral standards.
Specific Objectives

The ACGME-I Roles have been integrated into the OMSB accreditation standards, objectives of training, final in-training evaluations and maintenance of certification program.

The six ACGME Core Competencies are identified in the curriculum to be used in evaluating our residents in training.

ACGME Core Competencies are: Patient Care; Medical Knowledge; Practice-based Learning and Improvement; Interpersonal and Communication Skills; Professionalism; and Systems-based Practice.

At the completion of training, the resident will have acquired the following competencies.

A. Medical Knowledge

General Requirements:

- Demonstrate diagnostic and therapeutic skills for ethical and effective patient care.
- Access and apply relevant information to clinical practice.
- Demonstrate effective consultation services with respect to patient care, education and legal opinions.

Specific Requirements:

- Demonstrate knowledge of the basic sciences as applicable to anesthesiology including anatomy, physiology, pharmacology, biochemistry and physics.
- Demonstrate knowledge of general internal medicine with particular reference to the cardiovascular, respiratory, renal, hepatic, endocrine, hematologic and neurologic systems.
- Demonstrate knowledge of age related variables in medicine as they apply to neonatal, pediatric, adult and geriatric patient care.
- Demonstrate knowledge of the principles and practice of anesthesiology as they apply to patient support during surgery or obstetrics.
- Demonstrate clinical skills necessary for basic resuscitation and life support as practiced in critical care facilities.
- Demonstrate knowledge of the principles of management of patients with acute and chronic pain.
- Demonstrate knowledge of the role of the consultant anesthesiologist in the provision of safe anesthetic services within both community and teaching facilities.
- Demonstrate clinical skills necessary for the independent practice of anesthesiology, including preoperative assessment, intraoperative support and postoperative management of patients of any physical status, all ages and for all commonly performed surgical and obstetrical procedures.
- Demonstrate clinical skills necessary to general internal medicine and intensive care including the ability to investigate, diagnose, and manage appropriately factors that influence a patient’s medical and surgical care.
- Recognize that prior to provision of anesthetic care specific medical intervention and modification of risk factors may be required.
- Demonstrate competence in all technical procedures commonly employed in anesthetic practice, including airway management, cardiovascular resuscitation, patient monitoring and life support, general and regional anesthetic and analgesic techniques and postoperative care.
- Demonstrate knowledge of basic legal and bioethical issues encountered in anesthetic practice including informed consent.

B. Interpersonal and Communications Skills

*General Requirements:*

- Establish a professional relationship with patients and families.
- Obtain and collate relevant history from patients and families.
- Listen effectively.
- Discuss appropriate information with patients and families and other members of the health care team.
- Consult effectively with other physicians and health care providers.
- Contribute effectively to other interdisciplinary team activities.
Specific Requirements:

- Demonstrate consideration and compassion in communicating with patients and families.
- Communicate effectively with medical colleagues, nurses, and paramedical personnel in perioperative environments.
- Demonstrate appropriate oral and written communication skills.
- Ensure adequate information has been provided to the patient prior to invasive procedures.
- Demonstrate ability to function in the clinical environment along with other team members.

C. System Based Practice

General Requirements

- Utilize personal resources effectively in order to balance patient care, continuing education, and personal activities.
- Allocate finite health care resources wisely.
- Work effectively and efficiently in a health care organization.
- Utilize information technology to optimize patient care, and lifelong learning.

Specific Requirements

- Demonstrate knowledge of the management of operating rooms.
- Demonstrate knowledge of the contributors to anesthetic expenditure.
- Demonstrate knowledge of the guidelines concerning anesthetic practice and equipment in Oman.
- Demonstrate principles of quality assurance, and be able to conduct morbidity and mortality reviews.

D. Practice-Based Learning and Improvement

General Requirements

- Identify the important determinants of health affecting patients.
- Contribute effectively to improved health of patients and community.
- Recognize and respond to those issues where advocacy is appropriate.
• Develop, implement, and monitor a personal continuing education strategy.
• Critically appraise sources of medical information.
• Facilitate learning of patients, students, and other health professionals.
• Contribute to the development of new knowledge.

**Specific Requirements**

• Provide direction to hospital administrators regarding compliance with national guidelines and anesthetic equipment standards.
• Recognize the opportunities for anesthesiologists to advocate for chronic pain management.
• Develop criteria for evaluating the anesthetic literature.
• Critically assess the literature using these criteria.
• Describe the principles of good research.
• Using these principles, judge whether a research project is properly designed and appropriate tools are available to execute it successfully.
• Be able to identify potential Trial Registration Sites and select appropriate journal for its publication having maximum reader impact.

**E. Professionalism**

**General Requirements:**

• Deliver highest quality care with integrity, honesty and compassion.
• Exhibit appropriate personal and interpersonal professional behaviors.
• Practice medicine ethically consistent with the obligations of a physician.

**Specific Requirements:**

• Periodically review his/ her own personal and professional performance against national standards.
• Include the patient in discussions concerning appropriate diagnostic and management procedures.
• Respect the opinions of fellow consultants and referring physicians in the management of patient problems and be willing to provide means whereby differences of opinion can be discussed and resolved.
• Show recognition of limits of personal skill and knowledge by appropriately consulting other physicians and paramedical personnel when caring for the patient.
• Establish a pattern of continuing development of personal clinical skills and knowledge through medical education.

F. Patient Care

Residents must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of health problems and the promotion of health. Residents must demonstrate competence in:

• independent clinical decision-making and patient care that exhibits sound clinical judgment in a wide variety of clinical situations;
• functioning as a leader of perioperative care teams;
• the key aspects of anesthesia, preoperative evaluation and immediate postoperative care of surgical patients, and assessment and treatment of critically ill patients and those with acute and chronic pain;
• managing acute postoperative pain, including familiarity with patient-controlled intravenous techniques, neuraxial blockade, and other pain-control modalities;
• managing the specific needs of patients undergoing diagnostic or therapeutic procedures outside of the surgical suites;
• managing problems of the geriatric population; and,
• maintaining a comprehensive anesthesia record for each patient as an ongoing reflection of the drugs administered, the monitoring employed, the techniques used, the physiologic variations observed, the therapy provided as required, and the fluids administered.
SPECIALTY ADMISSION REQUIREMENTS

- A medical degree (MD/MBBS) or equivalent.
- Successful completion of rotating internship for 12 months.
- Resident must be of a good conduct and medically fit for the specialty chosen.
- Provision of names of three consultant physicians as referees.
- Provision of a letter from a sponsoring organization giving approval of the candidate to join full time training, for the whole period of the program (5 years).
- Passing the OMSB admission examination / interview.
- Signature of an obligation to abide by the rules and regulations of the training program of OMSB.

RESIDENCY TRAINING REQUIREMENTS

- Training is a full time commitment. Residents shall be enrolled in full time, continuous training for the whole period of the program.
- Training is to be conducted in institutions accredited for training by the OMSB of Anesthesiology.
- Trainees shall be actively involved in patient care with gradual progression of responsibility.
- Trainees shall abide by the training regulations and obligations set by the OMSB of Anesthesiology.
- OMSB strictly prohibits moonlighting; residents are not allowed to obtain employment that is not a part of their training program.
STRUCTURE OF THE TRAINING PROGRAM

DURATION OF THE PROGRAM

The program extends over a period of five years.

The duration of the training period is divided into blocks. Each block consists of 28 days; each year will have 13 Blocks. Thus, the whole duration of training period (5 years) is divided into 65 Blocks.

The residents rotate through the following hospitals during the residency period.

1. Al Nahda Hospital (ANH)
2. Armed Forces Hospital (AFH)
3. Khoula Hospital (KH)
4. Royal Hospital (RH)
5. Sultan Qaboos University Hospital (SQUH)

Though each participating center will have their own working and training pattern, they all will be following the OMSB residency training guidelines.

The length of training is divided into two parts:

1. First 24 months will be known as the Basic Level Training (Junior Residency)
2. Final 36 months will be the Advanced Training (Senior Residency)
BASIC LEVEL TRAINING - JUNIOR RESIDENCY (R1 to R2)

(24 blocks +2 blocks annual leave)

<table>
<thead>
<tr>
<th>YEAR 1</th>
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<tbody>
<tr>
<td>General Anesthesia</td>
<td>6 blocks</td>
</tr>
<tr>
<td>ENT/OPHTHA/oral &amp; maxillofacial</td>
<td>3 blocks (1 block each)</td>
</tr>
<tr>
<td>Obstetrics Analgesia and Anesthesia</td>
<td>2 blocks</td>
</tr>
<tr>
<td>Orthopedics</td>
<td>1 block</td>
</tr>
<tr>
<td>Annual Leave</td>
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</tr>
<tr>
<td>Urology (1 block)</td>
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</tr>
<tr>
<td>Orthopedics</td>
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<tr>
<td>Obstetric Analgesia and Anesthesia</td>
<td>1 block</td>
</tr>
<tr>
<td>Plastic and Burns</td>
<td>2 blocks</td>
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<tr>
<td>ICU</td>
<td></td>
</tr>
<tr>
<td>Pain (Acute)</td>
<td>1 block</td>
</tr>
<tr>
<td>Pre-Anesthesia Clinic (PAC)</td>
<td>1 block</td>
</tr>
<tr>
<td>Research</td>
<td>1 block</td>
</tr>
<tr>
<td>Annual Leave</td>
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ADVANCED LEVEL TRAINING-SENIOR RESIDENCY (R3, R4, R5)

(36 blocks + 3 blocks annual leave)

<table>
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<tr>
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<tr>
<td>ICU</td>
<td>2 blocks</td>
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<tr>
<td>Neuroanesthesia</td>
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<tr>
<td>General Anesthesia (2 weeks)</td>
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<tr>
<td>Postanesthesia Care Unit (2 weeks)</td>
<td>1 block</td>
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<tr>
<td>Cardiovascular and Thoracic Anesthesia (CTVS)</td>
<td>2 blocks</td>
</tr>
<tr>
<td>A&amp;E</td>
<td>1 block</td>
</tr>
<tr>
<td>Coronary Care Unit</td>
<td>1 block</td>
</tr>
<tr>
<td>Research</td>
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<table>
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<th>YEAR 4</th>
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<tbody>
<tr>
<td>Pain (chronic)</td>
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<tr>
<td>Respiratory Medicine (RM)</td>
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<tr>
<td>Obstetric Analgesia and Anesthesia</td>
<td>2 blocks</td>
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<tr>
<td>Regional Anesthesia</td>
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<tr>
<td>Cardiovascular and Thoracic Anesthesia (CTVS)</td>
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<tr>
<td>Pediatric Anesthesia</td>
<td>2 blocks</td>
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<tr>
<td>Anesthesia for Radiodiagnosis (remote)</td>
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<tr>
<td>Research</td>
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<td>Radiology</td>
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<td>YEAR 5</td>
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<tr>
<td>ICU</td>
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<tr>
<td>ENT, oral &amp; maxillofacial, OPHTHA</td>
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<tr>
<td>*Elective</td>
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<td>General Anesthesia</td>
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<tr>
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*Elective

One elective rotation as per the resident’s choice in any anesthetic subspecialties will be offered during the 5th year.
## PROGRAM STRUCTURE

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<th>R2</th>
<th>R3</th>
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<tr>
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<tr>
<td>Research</td>
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<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Elective</td>
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<td>Annual Leave</td>
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<td><strong>Blocks per academic year</strong></td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>13</td>
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RESIDENTS GRADED RESPONSIBILITIES

As residents progress through their training, it is expected that they should gradually have a greater degree of independence. The graded responsibility is a balance between ensuring patient safety and allowing the resident to gain confidence with independent practice. Residents that are R3 or higher are expected to supervise and educate more junior trainees, including medical students. In the final year of training (R5), it is expected that resident should be able to function independently, with faculty back-up. This is a dynamic process and often negotiated to different endpoints in every trainer and resident assignment.

Residents are provided with increasing responsibility based on preceptor observation of resident ability and the formal structure that is described below

R1

- Focus on history and physical examination skills pertaining to pre-anesthetic assessment
- Focus on initiating management plan for ASA 1 and ASA 2 patients
- Exposure to the breadth of general and regional anesthesia
- Get an introduction to obstetric anesthesia
- Review all cases with staff
- Staff determine management plan in concert with resident

R2 – all of the above plus:

- Focus on refining history and physical examination skills and formulating an anesthetic plan
- Develop a detailed management and investigation plan and liaison with referral services on patient care issues
- Develop laboratory and radiology interpretation skills
- Review all cases with staff the choice of anesthetic technique for each patient
- Introduction to adult critical care, recognizing and assessment of critically ill
- Staff determine management plan in concert with resident
- Introduction to research
- Develop skills for assessment and management of acute pain
- Acquiring professional behavior and working as part of a team
- Proceed to OMSB Part 1 examination
R3 – all of the above plus:

- Focus on higher specialty training - neuro, pediatrics, and cardiothoracic anesthesia
- Each resident should gain a working knowledge of applied clinical physiology, be able to recognize derangement of physiology and pathophysiology, and be able to treat single or multiple organ failure.
- Trainee will demonstrate an effective approach (appropriate assessment, differential diagnosis, and management) of the patient presenting to A&E.
- Resident shall be able to do emergency list with intermediate supervision.
- Develop knowledge and skills to cover post-anesthesia care unit (PACU).
- Satisfactory progress in research project.
- Become proficient in writing medical reports and other communications

R4 – all of the above plus:

- Residents are assigned the more difficult anesthetic procedures and care for the most seriously ill patients.
- Focus on theoretical and practical knowledge of chronic pain management.
- Consolidate the skills of regional anesthesia techniques along with proficiency in ultrasound use.
- Completion of research project for annual research day presentation.
- Teach junior residents with minimal supervision.
- Participate in ancillary activities with minimal staff intervention.
- Address administrative details in the emergency room with supervision.
- Resident determines management plan in concert with the consultant.

R5 – all of the above plus:

- The year focuses on achieving the role of an independent anesthetist making decision on all day-to-day patient management, how to run an OT list.
- Focus on total patient management.
- Handle administrative issues in the department.
- Teach junior residents.
- Additional training in areas of interest.
- Proceed to OMSB Part 2 examination.

Daily Support

All residents at initial orientation are made aware that staff will take a resident request for clinical help or clarification, at any time.
**On Call Options**

Prior to call, residents participate in the [ACLS / neonatal resuscitation, other mandatory courses].

Residents may take a partnered call for their first year with a senior resident/registrar.

Residents then take in-house call with a senior resident or faculty being available in house.

Residents take independent call with faculty being available as needed.

**Definition of Levels of Supervision**

The following are just guidelines for level of supervision. Assessment of the level of resident independence / procedural skills should be assessed by his/her immediate supervisor case-by-case.

**Direct (Close) Supervision:**

- Supervisor attends induction, emergence and any significant intraoperative event
- Supervisor is immediately available

**Indirect (Intermediate) Supervision:**

- Supervisor in close proximity, but not necessarily in room
- Plans for induction, maintenance and emergence need to be discussed

**Oversight (Independent) Supervision:**

- Supervisor in hospital and aware case or cases are progressing
- Supervisor is available to consult with trainee and attend operation theatre if urgently needed
- In all independent cases, supervisor should be made aware if there are significant anesthesia related concerns prior to induction
- Independent epidural insertion only allowable after site coordinator satisfied that resident has achieved appropriate level of skill.
<table>
<thead>
<tr>
<th>TRAINING YEAR</th>
<th>ADULT CASES</th>
<th>OBSTETRIC CASES</th>
<th>PEDIATRIC CASES</th>
<th>ASA 5 &amp; NEW BORN</th>
</tr>
</thead>
</table>
| R1            | Direct      | C-section = Direct  
               | Epidural = Indirect | Direct          | Direct          |
| R2            | ASA 1 or 2 = Indirect  
               | ASA 3 or greater = Close | C-section = Close  
               | Epidural = Oversight | Direct          | Direct          |
| R3            | ASA 1 or 2 = Oversight  
               | ASA 3 or greater = Indirect | C-section = Indirect  
               | Epidural = Oversight | ASA 1 or 2 = Indirect  
               | ASA 3 or greater = Direct | Direct          |
| R4            | ASA 1, 2 or 3 = Oversight  
               | ASA 4 = Indirect | ASA 1 or 2 = Oversight  
               | ASA 3 or 4 = Indirect | ASA 1 or 2 = Oversight  
               | ASA 3 or 4 = Indirect | Direct          |
| R5            | ASA 1, 2 or 3 = Oversight  
               | ASA 4 = Indirect | ASA 1, 2, or 3 = Oversight  
               | ASA 4 = Indirect | ASA 1, 2, or 3 = Oversight  
               | ASA 4 = Indirect | Direct          |
Expectations of Residents

The resident who is **PREPARED** to accept responsibility will

1. be acquainted with the medical, anesthetic and surgical implications of scheduled cases;
2. describe an anesthetic plan that addresses these implications;
3. order necessary preoperative testing and interventions;
4. discuss the above with the preceptor along with plans for intra-operative complications;
5. demonstrate active engagement and responsibility for the patient’s anesthetic care;
6. arrive in sufficient time to prepare the anesthetic machine and equipment for the case.

The resident who is **UNPREPARED** to accept responsibility will

1. arrive without any preparatory reading or knowledge of scheduled cases;
2. be unable to identify key preoperative investigations or measures;
3. proceed without minimizing patient risk;
4. have an anesthetic plan which is incomplete, inappropriate, or inadequate for the case;
5. be unable to identify key intraoperative risks or goals;
6. rely on passive learning and demonstrate no ownership for patient care;
7. show enthusiasm that is limited to new anesthetic procedures without justification of risk/benefit to the patient;
8. not allow sufficient time for anesthetic equipment preparation.
**Junior Residency (R1 to R2)**

**The First 6 Blocks**

During their first 6 blocks period in the training, trainees will learn the basic principles of safe and effective anesthesia, resuscitation, and both treatment and prevention of pain. Emphasis will be placed on the role of the Anesthesiologist in the peri-operative care of the surgical patient.

After the completion of this period, residents must pass an initial assessment of competency comprising of:

- Preoperative assessment
- General anesthesia for ASA I or II patients (including equipment and anesthetic machine checks)
- Clinical judgment, attitude and behavior
- Post-operative care
- CPR skills

**Method of Assessment:**

Case Scenario Discussion, VIVA on CPR skills

**Next (18) Blocks**

The following areas of basic training will be covered during this period:

- Obstetric analgesia and anesthesia
- The upper airway and its problems
- Peri-operative care of the patient for major surgery
- Anesthesia for day case surgery
- Management of patients with specific medical problems requiring anesthesia
- Pediatric anesthesia (age 2 years and above)
- Anesthesia in the elderly
- Critical care medicine (2 blocks in general ICU)
During this period, trainees will widen their experience to become eligible to sit for the Primary Specialty Examination (Part 1 OMSB) and proceed to Advanced Training (Senior Residency).

By the end of this stage, trainees should be able to:

- Undertake the anesthetic care of most routine cases.
- Assist in the anesthetic care for routine obstetric practice.
- Identify potential problems and seek appropriate help when performing emergency procedures.
- Understand the principles underlying the care of patients in critical care and high dependency units.
- Understand the principles of acute pain management.
- Identify medically challenging case for consideration of presentation and publication.
- Participate in audit.
- Pass the Primary Specialty Examination (Part 1 OMSB).

**Senior Residency (R3 to R5)**

The aim of advanced level training during years 3, 4 and 5 is to prepare trainees for independent professional practice. These final 3 years will seek to develop:

- The transition from basic competency to become skilled in specific aspects of anesthesia.
- Subspecialty training occurs during this period mainly (Pediatric anesthesia, Neuro anesthesia, Cardiothoracic and vascular anesthesia)
- The ability to manage patients with significant co-morbidities.
- Organizational skills to manage patients in the peri-operative period, intensive care unit and acute and chronic pain management.
GENERAL SURGERY ANESTHESIA OBJECTIVES

Residents will be rotated through the following training hospitals (RH, SQUH, AFH, KH, ANH) through each year of the residency according to the stipulated number of blocks.

Ambulatory anesthesia is part of general surgery anesthesia objectives. Ambulatory anesthesia objectives are attached as an extension of general anesthesia objectives.

Duration:
R1   6 blocks
R2   2 blocks
R3   0.5 block
R5   2 blocks

On-Call Duties: As per OMSB regulations

The goal of the general surgery anesthesia rotation is to train anesthesia residents to be competent when caring for patients undergoing anesthesia for general surgery both elective and emergency in all the sub specialties. This rotation is intended to develop the appropriate knowledge, understanding and application of anesthesia principles, plan specific anesthetic management, anticipate complications with risk benefit analysis for informed consent and develop necessary skills in order to provide safe efficient patient management in all the sub specialties of general anesthesia and in patients with associated comorbidities.

During this rotation the resident will learn to follow up patients posted for general anesthesia from preop assessment, optimization, intraoperative management and post operative care.
Patient Care

Residents must demonstrate competence in:

1. Preoperative evaluation, optimization, prepare and plan a specific anesthetic management and immediate postoperative care of surgical patients, independent clinical decision-making or after discussion with supervisor according to the level of residency.
2. Functioning in the role of perioperative physicians or leader of perioperative care teams as to managing acute postoperative pain, including familiarity with patient-controlled techniques and advice for post operative fluid requirements, chest physiotherapy, and thrombo prophylaxis.
3. Familiarity in different techniques of neuraxial blockade, regional blocks.
4. Managing problems specific to the geriatric population.
5. Maintaining a comprehensive anesthesia record for each patient as an ongoing reflection of the drugs administered, the monitoring employed, the techniques used, the physiologic variations observed, the therapy provided as required, and the fluids administered.
6. Assessment and management of critically ill patients who present for elective as well as emergency surgery and plan for appropriate post operative care.
7. Exhibit sound clinical judgment in a wide variety of clinical situations, in different specialties like vascular, bariatric, upper & lower GI, endocrine and trauma surgery and patients with different comorbidities.

Medical Knowledge

Residents should

1. Demonstrate advanced knowledge of all the objectives related to airway evaluation and management, physiology and pathophysiology of ventilation and respiration, etiology and management of airway obstruction, difficult airway algorithms, knowledge of airway equipment, checklist for intubation, oxygen delivery systems, management of extubation.
2. Have an understanding of the various settings and administrative structures required for ambulatory anesthesia including appropriate selection of patients, preoperative preparation of patients, choice of anesthetic techniques, drugs, and post operative care and disposition of patients.
3. Demonstrate an understanding of the anatomy and physiology relevant to the management of patients presenting for vascular surgery including the anatomy and physiology of spinal blood supply.
5. The principles of anesthesia for peripheral vascular surgery and carotid endarterectomy, knowledge of monitoring brain functions during carotid
Endarterectomy, management of patients posted for amputation and associated comorbidities.

6. Be familiar with risk stratification of cardiac patients undergoing noncardiac surgery.
7. Have knowledge of complications of different positioning, fluid management, preventing inadvertent intraoperative hypothermia, risk of neuraxial anesthesia with antiplatelet agents, and intraoperative heparinisation.
8. Be familiar with preoperative scoring systems and anticipation of complications and getting informed consent.
9. Have knowledge about the anatomy, physiology, pharmacology, anesthetic considerations in geriatric patient.
10. Have understanding of the management of massive transfusions and its inherent complications, preoperative autologous donation (PAD), acute normovolemic hemodilution, perioperative RBC salvage and autotransfusion (including indications, contraindications, complications and technique), the use of different blood products, methods used to reduce blood loss, crystalloid and colloid controversy.
11. Be familiar with the institutional protocols and principles of antibiotic prophylaxis.
12. Have knowledge of the principles of hepatobiliary surgery, preoperative preparation, monitoring and intraoperative management of:
   a. Cholecystectomy: open and laparoscopic
   b. Endoscopic biliary tract procedures
   c. Pancreatic resection
   d. Biliary duct reconstruction
   e. Whipples’ procedure
   f. Liver resections
   g. Liver donation and transplant
   h. T.I.P.S. procedure
13. Be familiar with the anesthetic management of endocrinological surgery, preparation, optimization, and anesthetic considerations of thyroid surgery, difficult intubations, postoperative complications, thyrotoxicosis, pheochromocytoma, parathyroid surgery.
14. Should have working knowledge of the principles of resuscitation and anesthetic management of trauma patients.
15. Be familiar with the guidelines and principles of perioperative monitoring and working understanding of the monitoring equipment.
16. Should have an understanding and care of anesthesia equipment, gas delivery systems and anesthesia machines.
17. Demonstrate understanding and use of monitored anesthesia care.
Practice Based Learning and Improvement

*Residents are expected to*

1. Meet the required number of procedures and techniques at the end of each block. Identify one’s own strength, deficiency, and gaps in one’s knowledge and expertise.
2. Perform appropriate learning activities like self-directed learning and daily discussions with supervising anesthetist regarding management of each case with review of literature and use of information technology.
3. Participate in the simulation-based learning activities.
4. Acquire graded responsibility in managing patients with complex situations, show confidence and professional maturity in supervising junior residents.

Interpersonal and Communications Skills

*Residents are expected to:*

1. Communicate effectively with patients, families, and the public of different sexes, socioeconomic and cultural backgrounds, appropriately demonstrating empathy and counseling skills as to plan of anesthetic management, anticipated complications, shared decision making and informed consent.
2. Acquire effective communication and skills both written and oral with physicians of other specialties, surgeons, staff of the ward, operating room, recovery room and paramedical staff regarding patient management, timing, appropriateness of surgery, and risk benefit analysis.
3. Be proficient in the skills of presentation and clinical discussions with active participation in mortality and morbidity meetings, journal clubs
4. Maintain comprehensive, timely, and legible anesthetic records of preoperative visits, intraoperative management and postoperative care.

Professionalism

*Residents are expected to demonstrate:*

1. Compassion, integrity, and respect for patients and relatives privacy - preoperatively, intraoperatively and postoperatively.
2. Responsiveness to patient needs and concerns for their anxiety.
3. Accountability to patients and adherence to ethical principles while planning management of each case that supersedes self-interest and willingness for put in extra hours of work.
4. Sensitivity and respect for members of the perioperative team.
Systems Based Practice

Residents are expected to

1. Work effectively during preoperative assessment, optimization, planning anesthetic management and post operative care of patient of different specialties according to the special situation.
2. Be able to consider cost awareness and risk-benefit analysis in patients appropriately;
4. Acquire teaching skills and involve in teaching of junior residents, medical students and nurses.

AMBULATORY ANESTHESIA OBJECTIVES

Medical Knowledge

1. The resident will be familiar with and able to demonstrate the appropriate preoperative assessment, preparation and premedication in an ambulatory setting to include consideration of:
   - NPO status
   - Drugs that reduce the risk of aspiration
   - Postoperative nausea prophylaxis and treatment
   - Anxiolytics, sedatives, and opioids
   - Chronic medications
2. The resident will be able to appropriately select patients suitable for ambulatory anesthesia including the following considerations:
   - Length of surgery
   - Need for transfusion
   - Concomitant disease
   - Extremities of age
3. The resident will be familiar with the salient features of the design and management of a facility catering to efficient ambulatory anesthesia.
4. The resident will be able to describe appropriate anesthetic techniques for ambulatory anesthesia including:
   - Appropriate selection of general, regional, sedation, or local anesthesia
   - Intraoperative consideration of potential postoperative problems
   - Postoperative pain management
   - Time in PACU
   - Prophylaxis and treatment of postoperative nausea and vomiting
- Appropriate selection of muscle relaxants, narcotics, local anesthetics
- Airway intervention
- Considerations for regional anesthetic techniques
- Postoperative arrangements following central neuraxial blocks and plexus blocks
- Monitored anesthesia care techniques

5. The resident will be able to describe:
   - Discharge criteria and patient instructions
   - Criteria for hospital admission

6. The resident will have a plan for postoperative complications.

Interpersonal and Communication Skills

1. Develop communication skills in ambulatory anesthesia to benefit the patient, the surgeon, and other members of the health care team.
2. Demonstrate the ability to discuss the risks and benefits of the various anesthetic techniques relevant to the patient and procedure.
3. Obtain the relevant medical history thoroughly and efficiently.
4. Collaborates with the surgeons and other members of the health care team to ensure optimal patient assessment and preparation.
5. Asks for help appropriately, recognizing their limitations in knowledge and skills.

Systems Based Practice

1. Considers health care resources when determining patient’s perioperative management plan
2. Demonstrates knowledge of the departmental guidelines for management of patients in the ambulatory setting.

Practice Based Learning and Improvement

1. Provides appropriate education to ensure patients are well informed and well prepared for their procedure.
2. Demonstrates ongoing review of procedures / policies with goal of detecting areas of potential improvement
3. Critically evaluates the medical literature pertaining to ambulatory anesthesia
Professionalism

1. Demonstrates integrity and honesty when interacting with patients, families, and other health care professionals

Method of Assessment:

- Daily evaluation sheets
- Direct observation of procedure skills
- Presentation evaluation
- Case-based discussion

VASCULAR ANESTHESIA OBJECTIVES

Even though separate block has not been allotted for vascular anesthesia training, residents get ample job opportunities to get exposed to vascular procedures during their general surgery and cardiothoracic postings.

The objectives should be followed during managing such cases.

General Objectives

Anesthesia residents should get exposure and acquire reasonable skills in pre-operative evaluation, intra operative management including special monitoring and post-operative care including post-operative pain management of patients undergoing carotid surgery, major abdominal and peripheral vascular surgery.

Medical Knowledge

Anesthesia Residents during vascular anesthesia rotation should demonstrate medical knowledge regarding:

General Description:

1. The preoperative evaluation of primary pathology and coexisting morbidities and thus risk stratification.
2. Common vascular pathologies and specific operative procedures.
3. Appropriate investigations to tailor the anaesthetic management and formulate the most appropriate anesthetic plan including the post-operative care and pain management.
4. Special monitoring techniques for evaluating relevant organ function in the perioperative period including heart, brain, spinal cord and kidney.
Specific Description:

a. Anatomy and physiology of cerebral circulation including determinants of blood flow, cerebral metabolism and autoregulation of cerebral blood flow.
b. Anesthetic techniques for Carotid endarterectomy (CEA).
c. Perioperative operative cerebral protection during CEA.
d. Cerebral monitoring during CEA
e. Post-operative care and hemodynamic management after CEA.
f. Anatomy of aorta and spinal cord blood supply
g. Physiology of aortic cross clamping.
h. Spinal cord protection during aortic surgery.
i. Spinal cord function monitoring and CSF pressure monitoring during aortic surgery.
j. Endovascular procedures and anesthetic considerations.
k. Renal function monitoring and perioperative renal protection during aortic surgery.
l. Pharmacology of intraoperative and anticoagulation and its monitoring
m. Intraoperative hemodynamic monitoring.
n. Perioperative fluid management.
o. Perioperative Acid-base management.
p. Recent developments, controversies and literature review of relevant topics in vascular anesthesia.

Interpersonal and Communications Skills

Anesthesia residents should:

1. Gain confidence in effectively and persuasively communicating the relevant details regarding the patient evaluation, risk stratification and obtaining informed consent for invasive procedures and anaesthetic plan with the patient and his relatives.
2. Residents should have developed skills for effective communication with physician and nursing colleagues regarding the perioperative management concerns and treatment plans.
3. Should be able to document, store and retrieve relevant treatment related information.

Professionalism:

Anesthesia residents should be able to:

1. Conduct himself in a respectable manner while dealing with the patient and his relatives.
2. Should be able to address the issues of concern from the patient and his relatives in a sympathetic and effective manner without allowing personal interests and ego conflicts.
3. Should be able to deliver the required treatment without compromising patient and environmental safety.
4. Should be open-minded to realize his limitations and to get assistance from skilled superiors at times of difficulty without compromising patient safety.

Practice Based Learning and Improvement

Anesthesia residents should:
1. Introspect and evaluate their patient care practices in an unbiased manner.
2. Incorporate the recommendation of the evaluation by the trainers in their clinical practice.
3. Be a self-initiated learner, constantly appraising and assimilating scientific evidence and recent advances to improve their patient care practices.

Systems Based Practice

Anesthesia residents should be able to:
1. Effectively use the available resources.
2. Gel with the system of working environment and be efficient and productive.
3. Demonstrate selection of techniques or treatment plans weighing the risk benefit ratio.
4. Show reasonable awareness of cost effectiveness, without compromising on the quality and safety of patient care.
5. Contribute sincerely and unhesitatingly for identifying patient safety concerns, treatment improvement plans and critical incident reporting.

Patient Care

Anesthesia residents after the rotation in vascular anesthesia must be able to provide patient care that is appropriate and effective for the following conditions which are commonly encountered in the present community setting:
2. Repair of Abdominal Aortic Aneurysms
3. Repair of Descending Thoracic Aneurysms
4. Aorto-Femoral Bypass Grafting
5. Femoral Artery to Popliteal Artery Bypass and other peripheral vascular surgical procedures.
6. Carotid Artery Endarterectomy
7. Extra anatomic bypass surgery
8. Endovascular stent procedures
9. Limb amputation procedures
10. Varicose Vein Surgery

They should show competence in:

1. Clinical decision-making and patient care that exhibits sound clinical judgment
2. Major aspects of anesthesia including preoperative evaluation, perioperative monitoring, intraoperative management and immediate postoperative care of vascular surgical patients, and assessment and treatment of those with acute pain including patient-controlled analgesia techniques, neuraxial blockade, and other multimodal pain-control modalities.
3. Managing the specific needs of patients with comorbidities and in critical conditions.
4. Maintaining a comprehensive anesthesia record for each patient.

**Method of Assessment:**

- ✔ Daily evaluation sheets
- ✔ Direct observation of procedure skills
- ✔ Presentation evaluation
- ✔ Case-based discussion
ORTHOPEDIC OBJECTIVES

Resident will have orthopedic rotation at Khoula Hospital.

Resident will be posted under supervision in one of the five theaters of Orthopedic in Khoula Hospital during the rotation.

Duration: 3 blocks (One block during R1 plus two blocks during R2).

General Objectives:

1. R1 must gain experience in Anesthesia for all types of elective as well as emergency orthopedic procedures, which includes complete management of polytrauma patients in operating rooms.
2. They should gain experience in General and Regional Anesthesia as well as in multimodal management of post-operative analgesia.
3. At R2 level, resident must gain full competency (to build further on what they have learnt in R1) in managing complex, high-risk polytrauma patients with coexisting medical problems.
4. They should be competent to manage the post-operative analgesia.
5. Resident should be involved in managing following cases:
   - Limb fractures
   - Joint replacements
   - Spine
   - Scoliosis
   - Pelvic surgeries
   - Ambulatory orthopedic
   - Pediatric orthopedic
Medical Knowledge

Resident must demonstrate knowledge of basic sciences like respiratory and cardiovascular physiology, pharmacology and anatomy with application to sono-anatomy for managing general as well as regional anesthesia for orthopedic surgery

1. Demonstrate preoperative assessment and preparation of the patient for orthopedic surgery through knowledge of the pharmacology of all anesthetic medicines, antibiotics, anticoagulants, and drugs used in multimodal analgesia.
2. Knowledge of indications and contraindications of regional anesthesia.
3. Resident should have knowledge about specific issues related to:
   o Comorbid medical conditions
   o Tourniquet
   o Positioning: Prone / Beach Chair / Lateral
   o Cement
   o Fat embolism and VAE
   o Severe hemorrhage
   o DVT and thromboembolism prophylaxis
   o Compartment syndrome
   o Monitoring of spinal cord integrity: SSEP / MEP
   o Airway management in case of unstable cervical spine
   o Shared airway in case of cervical spine
   o One lung ventilation in case of thoracic spine surgery
   o Extremes of age: Pediatric and Geriatrics
   o Prolonged surgery

Patient Based Learning and Improvement

Resident must be able to do pre-anesthetic preparation of comorbid orthopedic patients, including taking informed consent, after explaining the benefits and drawbacks of both general and regional in context to the comorbidity of the patient.

1. Identify strength and limits in one’s skills and expertise.
2. Get knowledge and should be ready with the specific need based on the case.
3. Take help of the supervisor for the complex decision and try to ask questions and learn based on the specific case.
4. Should learn most of the techniques of regional anesthesia for limb surgeries.
5. Should learn the use of ultrasound for regional anesthesia.
Patient Care

*Resident must be competent in managing the high-risk patients under supervision as R1 and independently as R2.*

1. Take clinical decisions on the perioperative care of polytrauma patients.
2. Competent in spinal, epidural, brachial plexus block, femoral block, sciatic block.
3. Post-anesthetic care in the PACU:
4. Pain management
5. Postoperative nausea and vomiting
6. Be familiar with the multimodal analgesia techniques including continuous catheter blocks and patient controlled analgesia.

Interpersonal and Communication Skills

1. Communicate with the patient and the relatives in a sympathetic and scientific way to get informed consent in context to the specific needs of the polytrauma patients.
2. Explain in an understanding way to the patient and the relatives regarding the patient controlled analgesia for postoperative pain management.
3. Communicate in scientific way with the orthopedic surgical colleagues especially issues related to regional anesthesia and post-operative multimodal analgesia.

Professionalism

1. Understand the need of the patient from anesthesia resident.
2. Display professional behavior throughout the perioperative management of patient and the relatives of polytrauma patients.
3. Follow the ethical issues like patient’s autonomy especially for decision of regional anesthesia.
4. Respect patients sentiments and social and cultural habits.
5. Gentle handling and taking care of fractures while positioning or inducing regional anesthesia.
6. Make use of available recourses like use of induction room for regional anesthesia to save time.
7. Asks for help as and when required.
Method of Assessment:

- Case-based discussion
- Presentation evaluation
- Direct observation of procedure skills
OBSTETRICS AND GYNECOLOGY ANESTHESIA OBJECTIVES

Obstetrical and Gynecology Anesthesia is a combined rotation of 6 blocks spanning R1, R2, R4 and R5 residency years. It may also be selected as an additional one month elective rotation during R5. Resident will have OB-GYN anesthesia rotation at Royal Hospital, Khoula Hospital, and SQUH.

OBSTETRICS ANESTHESIA OBJECTIVES

Primary Area of Knowledge and Goals:

The obstetric anesthesia rotation is designed to provide a full educational experience for each anesthesiology resident. The goal is to afford an opportunity for anesthesiology residents to become sufficiently competent to manage the greatest majority of cases that they will encounter in either a community or academic practice.

Education will consist of both didactic and clinical training. Each resident will be expected to become competent in all techniques used in obstetric anesthesia including, but not limited to epidural analgesia for labor, combined spinal/epidural analgesia for labor, epidural, spinal, combined spinal/epidural and general anesthesia for cesarean section, and anesthesia techniques utilized for obstetric and non-obstetric procedures during pregnancy where delivery is not expected.

Medical Knowledge

1. Describe the physiologic changes of normal pregnancy.
2. Describe the pathophysiology of common clinical conditions producing high risk pregnancy (some are listed below).
3. Recognize and list advantages and disadvantages of analgesic methods for labor including epidural and pudendal nerve blocks, inhalational, and IV sedation.
4. Discuss analgesia and anesthesia for elective and emergency cesarean sections including epidural, spinal, combined epidural spinal, and general anesthesia.

5. Predict the pharmacodynamics of common non-anesthetic medications used in obstetrics and their interactions with anesthetics including syntocinon, ergot preparations, magnesium, terbutaline, indomethacin, prostaglandins and steroids.

6. Distinguish the pharmacokinetics and pharmacodynamics of different local anesthetics including toxicity issues and appropriate selection for the spectrum of clinical indications.

7. List options for post-operative or post-delivery analgesia in the parturient and differentiate rational selection among the various modalities.

8. Describe basic principles and rationale of fetal assessment including stress and non-stress tests, biophysical profile and fetal monitoring.

9. Describe basic principles and sequencing of neonatal evaluation and resuscitation.

10. Diagnose and describe the management of abnormal bleeding in the perinatal period.

11. Recognize, and describe the pathophysiology and management of pregnancy induced hypertension.

12. Describe diabetes in pregnancy, its effects on the parturient and the fetus, and appropriate management.

13. Discuss the implications of obesity in pregnancy, including its pathophysiology, and the management of the parturient and the neonate.

14. Identify and describe the management of the difficult airway in the parturient.

15. Identify and describe the management of amniotic fluid embolus.

16. Identify and describe the management of post dural puncture headache.

17. Discuss the implications and describe the management of non-obstetric surgery in pregnancy.

Patient Care

1. Manage all common forms of anesthesia and analgesia in the broad spectrum of parturients.

2. Select and apply appropriate monitoring to the given clinical situation in the parturient.

3. Interact with allied health personnel as the leader of the anesthetic and resuscitative care team in the pre-anesthetic evaluation, intra-anesthetic care, and post-anesthetic management of the broad spectrum of parturients, and neonates when indicated and available, encountered in the community hospital setting.
4. Function as a consultant to patients, families, colleagues in other specialties, and allied health personnel on issues pertaining to obstetric anesthesia.

**Practice Based Learning and Improvement**

1. Meet ASA standards for monitoring and patient care.
2. Residents must be able to evaluate and critique their patient care practice, appraise and assimilate scientific evidence to make informed decisions and to improve their patient care. Instruments include, but are not limited to, didactic lectures, textbooks, journal articles (including articles presented at monthly journal club), and faculty mentoring of clinical judgment.
3. Use information technology to manage information, access on-line information, and support their own education.
4. Participate in departmental quality assessment conferences.

**Interpersonal and Communication Skills**

1. Communicate effectively with patients regarding special needs of the parturient.
2. Communicate effectively with surgeons, nurses, and other healthcare professionals to provide patient-focused care.
3. Present concise, organized case presentation, including management concerns, to faculty.
4. Formulate and discuss anesthetic management for all ASA class patients for routine and complex deliveries.

**Professionalism**

1. Residents will demonstrate commitment to undertaking and performing professional responsibilities.
2. Maintain and demonstrate respect, compassion, and integrity.
3. Demonstrate responsiveness to the needs of patients and society.
4. Accountability to patients, society and the profession.
5. Commitment to ethical principles regarding provision or withholding of clinical care.
6. Confidentiality of patient information, informed consent.
7. Demonstrate sensitivity and responsiveness to patient’s culture, age, sex, and disabilities.
Systems Based Practice

1. Learn and understand how types of medical practice and delivery systems differ from one another, including resource allocation and cost control.
2. Apply systems-based data in resource allocation for patient assessment and management.
3. Practice cost-effective healthcare and resource allocation without compromise of patient care.
4. Participate in department quality assessment conferences.
5. Understand how their patient care and other practices affect other healthcare professionals, the healthcare delivery system, and society at large, and how they in return affect their own practice.

Method of Assessment:

- Case based discussion
- Daily evaluation
- Procedure skill assessment through a structured evaluation
- Presentation evaluation

GYNECOLOGY ANESTHESIA OBJECTIVES

This block of clinical material parallels the OB block objectives very closely.

Medical Knowledge

1. Residents will be able to perform a detailed preoperative evaluation taking into consideration the patient’s concomitant disease with the goal of optimizing the patient for their surgery.
2. The resident will be able to outline the necessary patient, anesthetic and surgical considerations and demonstrate competency in planning and delivering an anesthetic for the following procedures:
   a. D&C
   b. Endometrial ablation
   c. Myomectomy
   d. Hysterectomy
   e. Surgery for pelvic malignancy
   f. Pelvic exenteration
   g. Tubal ligation/reversal
3. Laparoscopic/laparoscopic-assisted surgery
4. The resident will be able to provide a suitable postoperative management plan including postoperative analgesia by a variety of techniques including IV PCA, epidural and peripheral nerve block.
5. The resident will be able to describe risk factors for postoperative nausea and vomiting and strategies to prevent it.

Interpersonal and Communications Skills

1. The resident will be able to effectively communicate with the surgical team regarding:
   - The preoperative status of the patient and further investigations/optimization required.
   - The extent of the planned procedure and implications on the anesthetic
   - Any problems encountered intraoperatively, either anesthetic or surgical
   - The postoperative care including DVT prophylaxis, pain management and appropriate monitoring location and the implications of the anesthetic on such care.
2. The resident will be able to communicate effectively with patients to elicit all necessary information
   - Communicate and empathize with patients in order to relieve their anxiety, answer all questions and agree upon a course of action that is acceptable to all involved
   - Chart appropriately, legibly and clearly
3. The resident will demonstrate compassion and respect when communicating with patients and families.
4. The resident will be able to recognize when further involvement of the family is necessary either for consent purposes or for help in decision-making.
5. The resident will collaborate with other health care disciplines outside the OR when necessary.
6. Collaborate with other services, particularly ICU and PACU regarding pre and post operative care of patients.

Systems Based Practice

1. Residents will manage their operating room ie: ensure necessary equipment and medications are available and have their room set up in the fashion so that they will be ready to deal with the unexpected
2. Residents will start to become proactive in ensuring optimal perioperative care of their patients including appropriate postoperative placement (ie. ICU, ECU, remote oximetry, ward bed, ambulatory)
3. The resident must be able to function as a member of the daily operating room managing team.
4. The resident must be able to coordinate surgeons, anesthesiologists and nurses to run an efficient operating room.

Practice Based Learning and Improvement

1. Residents will acknowledge the difficulties and decision-making involved in utilization and allocation of finite health care resources
2. The resident will act as the patient’s health advocate in ensuring all guidelines and standards of care are met.
3. The resident will be able to critically evaluate the literature and alter his/her anesthetic practice accordingly.
4. Residents will be able to effectively self-evaluate in order to practice ongoing self-directed learning.

Professionalism

1. The resident should be able to critically evaluate his/her own practice.
2. The resident should be able to manage anesthetics in a professional manner, including discussing options with patients, families and other consulting services.
3. The resident should be able to work with the surgical services, recognizing differences in person opinion, methods of practice, and communication styles, all the while maintaining the highest standards of care.
4. Residents will be punctual, efficient, respectful and professional at all times.

Method of Assessment:

✓ Daily evaluation sheets
✓ Case based discussion.
ENT ANESTHESIA OBJECTIVES

The resident will rotate in Al Nahda Hospital for a total of 2 blocks during R1 and R5 where he/she will be exposed to various types of airway management and anesthetic techniques in ENT and Head and Neck surgery.

The goal of this rotation is to enable the resident to acquire the necessary knowledge and skills needed for confident management of airway in adults and children undergoing surgery in ENT and head and neck. The resident will be responsible for perioperative anesthesia management of these patients and will be given appropriate supervision.

Medical Knowledge

1. The resident will be able to describe the basic anatomy of the nose, mouth, larynx and neck.
2. The resident will understand the hazards, scientific principles, and anesthetic approaches to laser surgery on the larynx.
3. The resident will list the anesthetic problems anticipated in a patient presenting for tracheostomy.
4. The resident will discuss the determinants of pressure in the middle ear and will be able to list the effects of, and contraindications to, the use of N20.
5. The resident will discuss the physiological effects of chronic upper airway obstruction.
6. The resident will manage patients with a variety of upper airway pathology. This must include knowledge (and practical experience if possible) of the following conditions:
   - congenital anomalies affecting the upper airway (for example, Treacher Collins and Pierre Robin syndrome)
   - epiglottitis
   - croup
   - cancer affecting the upper airway
   - post-tonsillectomy bleeding
   - tonsillar abscess
   - trismus
7. The resident will be able to describe the anesthetic considerations for the following surgery:
   - nasal surgery
   - tonsillectomy/adenoidectomy
   - myringotomy/mastoid and middle ear surgery including cochlea implant
   - laryngoscopy/laryngeal surgery
   - foreign body inhalation
   - bronchoscopy (rigid, flexible, jet ventilation, apnea technique)
   - ENT tumors
   - ENT infections
   - maxillo-facial trauma
   - temperomandibular joint surgery
   - tracheostomy
   - induced hypotension

8. The resident will have a plan for the postoperative pain management for patients having ENT surgery.

Interpersonal and Communication skills

1. Develop communication skills with other members of the health care team to benefit the patient.
2. Demonstrate the ability to discuss the risks and benefits of the various anesthetic techniques relevant to the patient and procedure.
3. Learn to communicate with the surgeon to discuss the need for further investigations, postponement of surgery, or special perioperative needs.
4. Collaborates with the other members of the health care team to ensure optimal patient assessment and preparation.

Systems Based Practice

1. Considers health care resources when determining perioperative needs.
2. Demonstrates knowledge of the departmental guidelines for management of patients in the perioperative period.
Practice Based Learning and Improvement

1. Provides appropriate education to ensure patients are well informed and well prepared for their procedure.
2. Encourages patients to optimize their health status peri-operatively
3. Demonstrates ongoing review of procedures / policies with goal of detecting areas of potential improvement
4. Critically evaluates the medical literature pertaining to otolaryngology

Professionalism

1. Demonstrates integrity and honesty when interacting with patients, families, and other health care professionals.

Method of Assessment:

☑ Case based discussion
☑ Presentation evaluation
☑ Direct observation of procedure skills
SPECIFIC ROTATION OBJECTIVES

OPHTHALMOLOGY ANESTHESIA OBJECTIVES

The resident will do his/her ophthalmic anesthesia rotation in Al Nahdha Hospital for 2 blocks during R1 and R5. The resident will be exposed to various types of surgeries requiring different types of anesthesia.

Medical Knowledge

1. The resident will be familiar with the preoperative assessment and preparation necessary for these patients. In particular the resident will be familiar with:
   - concomitant diseases
   - considerations regarding intraocular pressure
   - effects of ophthalmologic medications
   - effects of anesthetic agents on the eye
   - anticoagulation and eye surgery
2. The resident will develop the communication skills necessary to engage and secure the cooperation of the elderly ambulatory care patient. The resident will correctly identify patients for whom a general anesthetic is necessary.
3. The resident will be familiar with the anatomy, technique of and complications of retrobulbar and peribulbar blocks.
4. The resident will know the implications and cardiovascular management of the oculocardiac reflex.
5. The resident will be able to list the anesthetic considerations in:
   - Open eye injuries
   - Cataract Surgery
   - Retinal Surgery
   - Strabismus Surgery
   - IOP measurements in childhood glaucoma
6. The resident will be able to outline the anesthetic implication of the instillation of SF6 into the eye.
7. The resident will demonstrate a technique for achieving smooth emergence from GA without bucking and coughing.
8. Post-operative ocular complications
Interpersonal and Communication skills

1. Develop communication skills with other members of the health care team to benefit the patient.
2. Demonstrate the ability to discuss the risks and benefits of the various anesthetic techniques relevant to the patient and procedure.
3. Learn to communicate with the surgeon to discuss the need for further investigations, postponement of surgery, or special perioperative needs.
4. Collaborates with the other members of the health care team to ensure optimal patient assessment and preparation

Systems Based Practice

1. Considers health care resources when determining perioperative needs.
2. Demonstrates knowledge of the departmental guidelines for management of patients in the perioperative period

Practice Based Learning and Improvement

1. Provides appropriate education to ensure patients are well informed and well prepared for their procedure.
2. Encourages patients to optimize their health status perioperatively.
3. Demonstrates ongoing review of procedures / policies with goal of detecting areas of potential improvement.
4. Critically evaluates the medical literature pertaining to ophthalmology.

Professionalism

1. Demonstrates integrity and honesty when interacting with patients, families, and other health care professionals

Method of Assessment:

✓ Case based discussion
✓ Presentation evaluation
✓ Direct observation of procedures
DENTAL AND ORO-MAXILLOFACIAL SURGERY ANESTHESIA OBJECTIVES

The resident will rotate in Al Nahda Hospital for 2 blocks during R1 and R5 where he/she will be exposed to airway and anesthetic management of various types of maxillo facial procedures including various types of fractures, reconstructive surgeries and dental extraction and restoration.

The goal of this rotation is to enable the resident to acquire sufficient know how to deal with various types of emergencies and planned cases in this specialty especially management of intermaxillary fixation (IMF), pediatric procedures and extensive reconstructive surgeries.

To develop confidence in the pre-anesthesia assessment and anesthetic management of adults and children undergoing dental and maxillo-facial surgery, including compromised airway.

The resident will be able to list the anesthetic considerations in:

- Maxillary / Mandibular surgery
- Anesthesia in a dental office
- Dental surgery in an uncooperative patient
- Dental surgery in special-needs patient

Medical Knowledge

 Residents must demonstrate knowledge of:

1. Preoperative assessment particularly prediction of a difficult intubation.
2. Management of patients of all ages to include patients with: intubation difficulties; sleep apnea; concomitant diseases.
3. Local techniques and surface analgesia.
4. Acute maxillofacial emergencies (e.g. oro-maxillo-facial abscess, trismus)
5. Knowledge of special tubes, gags and fiberoptic intubation devices.
6. Major surgery (including osteotomies).
7. Emergency airway management including tracheostomy.
8. Management of the specific needs of the ambulatory surgical patient.
10. Managing acute postoperative pain, including familiarity with patient-controlled intravenous techniques, and other pain-control modalities;

**Practice Based Learning and Improvement**

*Residents must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life-long learning. Residents are expected to develop skills and habits to be able to meet the following goals:*

1. Identify strengths, deficiencies, and limits in one’s knowledge and expertise
2. Set learning and improvement goals
3. Identify and perform appropriate learning activities
4. Systematically analyze practice using quality improvement methods, and implement changes with the goal of practice improvement
5. Incorporate formative evaluation feedback into daily practice
6. Locate, appraise, and assimilate evidence from scientific studies related to their patients’ health problems
7. Use information technology to optimize learning; and,
8. Participate in the education of patients, families, students, residents and other health professionals.

**Interpersonal and Communication Skills**

*Residents must demonstrate interpersonal and communication skills that result in the effective exchange of information and collaboration with patients, their families, and health professionals. Residents are expected to:*

1. Communicate effectively with patients, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds
2. Communicate effectively with physicians, other health professionals, and health related agencies
3. Work effectively as a member or leader of a health care team or other professional group
4. Maintain comprehensive, timely, and legible medical records, if applicable.
Professionalism

Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. Residents are expected to demonstrate:

1. Compassion, integrity, and respect for others;
2. Responsiveness to patient needs that supersedes self-interest;
3. Respect for patient privacy and autonomy;
4. Accountability to patients, society and the profession; and,
5. Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.

Systems Based Practice

Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Residents are expected to:

1. Work effectively in various health care delivery settings and systems relevant to their clinical specialty
2. Coordinate patient care within the health care system relevant to their clinical specialty
3. Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate
4. Advocate for quality patient care and optimal patient care systems
5. Work in interprofessional teams to enhance patient safety and improve patient care quality; and,
6. Participate in identifying system errors and implementing potential systems solutions.

Method of Assessment:

✓ Case based discussion
✓ Direct observation of procedure skills
✓ Presentation evaluation
PLASTIC & RECONSTRUCTIVE SURGERY ANESTHESIA OBJECTIVES

Anesthetic practice for patients undergoing plastic and reconstructive surgery is a rotation that will occur at Khoula Hospital at R2 level. The main objective during this rotation would be to train the residents to provide safe anesthesia that is compassionate, appropriate, up-to-date and effective for patients needing plastic and reconstructive surgical intervention.

Duration: 2 blocks

On-Call Duties: As per OMSB regulations

The goal of this rotation is to increase the resident's fundamental knowledge about various anesthetic techniques recommended for plastic and reconstructive procedures. Residents will be expected to complete an appropriate history and physical on each patient, learn to optimize them if needed in collaboration with physicians, and subsequently plan and execute a safe peri-anesthetic management of the patients.

Medical Knowledge

The resident must demonstrate:

1. Knowledge and skills in dealing with patients who have sustained thermal burns and cold injuries; their initial resuscitation and thereafter planned reconstructive stage including routine and advanced airway management.
2. Competencies in the management of pediatric craniofacial abnormalities such as cleft lip/palate surgery and ear reconstruction.
3. An understanding of the concerns related to limb re-implantation with respect to techniques employed to increase blood flow to the affected limb using regional and general anesthetic techniques, temperature maintenance, and fluid/blood loss management.
4. Knowledge and clinical skills related to regional and general anesthesia for free flap and pedicle flap surgery as well as early detection of flap necrosis/infection and use of hyperbaric oxygenation for flap preservation.
5. An understanding of the anesthetic implications of cosmetic surgery such as liposuction, breast augmentation, reduction mammoplasty, abdominoplasty as well as rhinoplasty, facelift, neck lift, brow lift, and blepharoplasty procedures.
6. An understanding of the anesthetic concerns for adult patients undergoing craniofacial surgery including facial reconstructive surgery and maxillo-facial trauma.
7. The resident will appreciate the alterations in anesthetic management required for a patient with a chronic spinal cord injury (quadriplegia) with a particular focus on the prevention of autonomic hyperreflexia in this patient population.

Interpersonal and Communications Skills

The resident must be able to display effective communication with:

1. Patients and their family members in situations like preoperative assessment/preparation and postoperative care and pain management. They should be able to provide options and risks and benefits of possible anesthetic techniques including available options for postoperative pain control.
2. Anesthesiologist colleagues, surgeons, nursing staff members and other technical staff.
3. The resident must display ability to get along well as team members in the operation theatre and outside its domain.

Professionalism

The resident must be able to:

1. Identify his/her own limitations and know when to call for backup help (by knowing one's weaknesses and strengths).
2. Display ethical conduct that is commensurate with physician at all times with respect to:
   o patients and their family members
   o allied health staff
   o attending staff, residents and medical students
3. Be a role model to fellow physicians, other residents, nursing and technical staff members, and medical students.
4. Understand and compassionately respond to issues of culture, age, sex, and disability for all patients and their families.

Practice Based Learning and Improvement

Residents should demonstrate skills and habits to be able to meet the following goals:

1. Identify strengths and deficiencies in their knowledge and expertise.
2. Set learning and improvement goals.
3. Identify and perform appropriate learning activities.
4. Incorporate formative evaluation feedback into daily practice.
5. Collect and assimilate evidence from scientific studies related to their patients’ health problems.
6. Participate in the education of patients, families, students, residents and other health professionals.

Systems Based Practice

Residents must develop the ability to:

1. Call effectively on other resources in the system to provide optimal health care.
2. Work effectively in plastic health care settings. They should be able to coordinate patient care within the health care system.
4. Work in inter-professional teams to enhance patient safety and improve patient care quality.
5. Participate in identifying system errors and implementing potential systems solutions.

Patient Care

1. Residents must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of their health problems and the promotion of health.
2. Residents must be able to competently perform all anesthetic techniques, monitoring (invasive & non invasive) including radiological (ultrasonographic guidance) and postoperative care considered essential for patients coming for plastic surgery.
Assessment and Evaluation:

✓ Case based discussion
✓ Presentation evaluation
UROLOGY ANESTHESIA OBJECTIVES

One block during R2 has been assigned in Royal Hospital for anesthetic training for managing urology cases. Residents also get ample opportunities to manage urology patients during General Surgery / General anesthesia postings in Sultan Qaboos University Hospital and Armed Forces Hospital.

Medical Knowledge

A. Anatomy:

*The resident will be able to:*

1. Describe the anatomy and innervation of the genitourinary system
2. Indicate appropriate levels of neural blockade needed for surgical procedures on each component of the genitourinary system

B. Physiology:

*The resident will be able to:*

1. Understand renal physiology including the functioning of the nephron, renal blood flow, glomerular filtration, renal tubular function, regulation of blood volume, extracellular fluid volume, osmolarity of body fluids and plasma concentration of various ions and regulation of body pH.
2. Outline criteria for the diagnosis of:
   - Renal insufficiency
   - Acute renal failure (AFR)
   - Chronic renal failure (CRF)
     - Describe uremic syndrome
     - Describe the influence of anesthesia and surgery on renal function

C. Pharmacology:

*The resident will be able to:*

1. Discuss the impact of CRF on the pharmacokinetics of drugs used in anesthetic practice
2. Indicate which of the drugs used commonly perioperatively depend heavily on renal excretion
3. Identify which common anesthetic agents can be used safely in patients who are dialysis dependent and which agents should be avoided.

D. Clinical Scenarios:

The resident will be able to outline the particular surgical factors that influence anesthetic technique and management for:

- Circumcision/orchiectomy/orchidopexy
- TUR-P and TUR-BT
- Placement/removal of ureteric stents/calculi
- Percutaneous nephroscopy and nephrolithotripsy
- Laparoscopic procedures
- Extracorporeal shock wave lithotripsy
- Perineal prostatectomy
- Radical retropubic prostatectomy
- Radical cystectomy and ileal conduit
- Radical nephrectomy for tumour
- Donor nephrectomy
- Renal transplantation
- Management of anephric patient for non-urologic surgery

In each case the resident will be able to discuss:

- Pros and cons of alternative anesthetic techniques
- Appropriate monitoring
- Perioperative pain management

The resident will be able to:

1. Identify intra operative and post operative complications associated with many of the above procedures such as: Transurethral resection syndrome, bladder perforation, acute bacteremia following TURP, complications of extra peritoneal insufflation and laser safety.
2. Outline procedures for identification and management of such complications
Specific Skills:

1. The resident will be able to place a subarachnoid block using either midline or paramedian approach, having selected an appropriate drug dose and analgesic level, and will achieve successful surgical anesthesia 90% of the time.
2. The resident will be able to place paravertebral blocks for initial management of post-nephrectomy or retropubic prostatectomy pain.
3. The resident will demonstrate the ability to place an epidural catheter preoperatively and use it for preemptive analgesia and combined regional/GA for major urologic procedures.

Interpersonal and Communications Skills

The resident will demonstrate:

1. The ability to obtain a targeted relevant medical history thoroughly and efficiently.
2. Sensitivity to and awareness of the concerns of the patient and the family.
3. The ability to prepare the patient well for procedures and maintain communication throughout the procedure.
4. The ability to discuss risks and benefits of alternative approaches honestly without inducing undue alarm.

The resident will:

1. Demonstrate the ability to communicate and organize with our nephrology consultants the appropriate pre op and post op care of dialysis dependent patients.
2. Demonstrate the ability to collaborate with the urologist the appropriate care for often very elderly and medically complex patients requiring TURP and TURBT and procedures.
3. Communicate changes in patient status openly and appropriately to other members of the health care team when needed.
4. Ask for help appropriately, recognizing his/her limitations in knowledge and/or skills.
Systems Based Practice

*The resident will:*

1. Demonstrate the ability to organize anesthetic tasks efficiently without sacrificing quality.
2. Work cooperatively as part of a team.
3. Use resources wisely without sacrificing standards of care.

Practice Based Learning and Improvement

*The resident will:*

1. Arrange post-hospital follow-up by the family physician of health issues identified peri operatively.
2. Initiate appropriate education of patients/families regarding health related issues.
3. Demonstrate ongoing review of procedures/policies with the goal of detecting areas of potential improvements.
4. Actively participate in the discussion of problems with other physicians and health care professionals and initiate and/or cooperate in structured investigation in these areas.

Professionalism

*The resident will:*

a. Demonstrate appropriate personal and interpersonal behaviors with patients, families and other health care workers.

Method of Assessment:

✓ Case based discussion
PRE ANESTHESIA CLINIC (PAC) OBJECTIVES

Pre-anesthesia clinic is a rotation that will occur at any of the following training hospitals (RH, SQUH, and KH).

The resident will spend majority of his/her time in the preoperative clinic of one of these hospitals.

Duration: One block during R2 level.

On-Call Duties: As per OMSB regulations.

The goal of this rotation is to increase the resident's fundamental knowledge base in anesthesiology. Residents will be expected to complete an appropriate history and physical on each patient seen in the clinic. The resident will then present a plan for further investigation, optimization and perioperative management of the patients seen.

ROTATION OBJECTIVES

At the completion of training, the resident will have acquired the following competencies:

Medical Knowledge

A. General Objectives:

The resident will learn to:

1. Reduce perioperative morbidity by screening patient data and initiating further patient encounters /investigations as appropriate.
2. Perform preoperative anesthetic assessments with accurate assessments of the airway and cardiac, respiratory, and neurologic systems.
3. Know the common anesthetic classification systems (e.g. ASA status. NYHA, Mallampati, etc).
4. Address patient inquiries as to pertinent complications and risks of anesthesia.
5. Appreciate the processes that involved preoperative evaluation and testing and be able to describe the key factors in the organization of an anesthesia consult clinic.
6. Maintain a professional attitude and behavior while interacting with patients and other members of the health care team.

B. Specific Objectives:

The resident will:

1. Become proficient in airway evaluation.
2. Improve skills at directed history and physical examination.
3. Identify patients who require further necessary preoperative preparation, consultation or investigation.
4. Be knowledgeable about the most current guidelines for cardiac evaluation and care before non-cardiac surgery.
5. Understand the basic principles of cardiac investigations, their interpretation, limitations, and their costs / benefits.
6. Learn effective outpatient preparation strategies for surgical patients presenting with common medical problems such as asthma, diabetes mellitus, ischemic heart disease, and sleep apnea.
7. Recognize the difficulties and limitations of preoperative evaluation with short time intervals before anticipated surgery.
8. Develop anesthetic management plans with the consultant anesthesiologist.
9. Be able to present the various anesthetic techniques available for the surgical procedure and inform the patient about the specific risks and benefits of each technique.
10. Be able to discuss the strategies for blood conservation techniques and the potential risks of blood transfusion.
11. Inform patients which pain management services may be offered to them and the potential advantages and disadvantages of each.
12. Be able to prepare and educate the patient regarding the need for specialized postoperative care (e.g. monitoring, ICU admission, potential for postoperative ventilation).
13. Address the role and indications for common preoperative therapies (anxiolytics, bronchodilators, antisialagogues, steroids, perioperative β-blockers, antacids etc).
14. Learn to communicate with the referring physician and operating room staffs to ensure all necessary equipment, precautions, and preparations are complete by the time of surgery. (e.g. difficult airway equipment, latex allergy precautions, need for postoperative monitoring.)

Practice Based Learning and Improvement

1. Exhibit self-directed learning
2. Identify gaps in knowledge with regards to anesthesia/analgesia, and correct them through self-directed learning, and through interaction with expert sources (consultant anesthesiologist)
3. Encourages patients to optimize their health status preoperatively (e.g., smoking cessation, blood pressure control, use of CPAP etc)

Interpersonal and Communication Skills

1. Communicate well with patient and families with a good bedside manner to gain their trust.
2. Clearly and effectively communicating with patient regarding their anesthetic care, expectations and risks
3. Answer the patient’s questions regarding their anesthetic care
4. Provide options and risks and benefits of possible postoperative pain control options.
5. Provide a concise documentation regarding patient assessment consultations and plan.

Professionalism

The resident will be able to:

1. Understand the anesthesiologist’s role in optimization of the patient preoperatively.
2. Takes steps to improve perioperative safety of patients (aspiration prophylaxis, Critical Care admission post-operatively, etc.).
3. Understand the anesthesiologist’s role in patient education preoperatively, including smoking cessation.
4. Understand principles related to the psychological concerns of the patient preoperatively
5. Display professional behavior and attitude while dealing with patients, families and staff.
6. Understand and compassionately respond to issues of culture, age, sex, sexual orientation, and disability for all patients and their families.

**Systems Based Practice**

1. Demonstrate ability to synthesize a reasonable optimization, investigation anesthetic management plan based on nature and urgency of surgery, history, physical and available investigations.
2. Interact well with multi-disciplinary team in the Pre-anesthesia Clinic. Work well with other physicians in the Pre-anesthesia Clinic, including internal medicine and surgery.
3. If appropriate, demonstrates willingness to communicate with surgeon the anesthesia team’s concerns regarding timing, scope and appropriateness of proposed surgery.

**Method of Assessment:**

- ✔ Case based discussion
- ✔ 360°evaluation
POSTANESTHESIA CARE UNIT (PACU) ROTATION

PACU rotation will occur at any of the following training hospitals (RH, SQUH, KH). The resident will spend majority of his/her time in the PACU in one of these hospitals.

**Duration:** Two weeks (as part of core anesthesia block) during R2 year.

**On-Call Duties:** As per OMSB regulations

The goal of the PACU Rotation is to train anesthesia residents to be competent when caring for patients in PACU. This rotation is intended to develop the appropriate knowledge, understanding and application of anesthesia principle in order to provide safe patient management.

**Basic PACU Resident Duties**

1. During the PACU rotation the resident will learn to evaluate the post-anesthetic patients. This will include but not be limited to complications associated with emergence, pain control, airway, peripheral nerve blocks and co-existing disease states that may affect the patients overall post-anesthetic course.
2. The resident will be involved in direct patient care. When indicated, immediate patient care needs will be discussed with the attending physician in charge of the overall anesthetic management for the individual patient.
3. Residents are expected to discuss issues associated with patient care.
Patient Care

1. Cognitive and Technical Skills
   a. Delivery and receipt of a PACU admission report
   b. Evaluation and management of the following common PACU problems:
      - Pain
      - Hypoxemia
      - Inadequate ventilation
      - Airway obstruction
      - Nausea/vomiting
      - Agitation
      - Failure to awaken
      - Hypertension
      - Hypotension
      - Tachy/brady arrhythmias
      - Myocardial ischemia/infarction
      - Inadequate reversal of neuromuscular blockade
      - Renal/bladder dysfunction: oliguria, polyuria, hematuria, urinary retention
      - Extubation outside the operating room
      - Intubation outside the operating room
      - Basic ventilator management
      - Epidural catheter management
      - Bleeding and coagulopathy
      - Fluid, electrolyte, and transfusion management
      - ACLS skills

Systems Based Practice

1. Understand and utilize ASA standards for Post-Anesthesia Care
2. Apply systems-based data in the allocation of resources for PACU care
3. Understand and utilize admission criteria
4. Understand discharge criteria (e.g.- Aldrete Scale)
   a. discharge to a hospital room
   b. discharge from phase I to phase II recovery (including fast-tracking)
   c. discharge home
Medical Knowledge

After completing this rotation, residents will have gained knowledge and practical experience in the care of peri-operative patients by:

1. Defining the disease entities leading to the need for anesthetic interventions
2. Understanding the following post-op complications: airway obstruction, stridor, laryngeal spasm, hypoxia, hypoventilation, respiratory distress, pneumothorax, pulmonary embolism, hypovolemia, cardiac arrhythmias, cardiac arrest, incomplete reversal of muscle relaxants, overdose of narcotics, post operative nausea and vomiting, hyper and hypothermia, hypo and hyperglycemia, post operative pain, complications of blood transfusion, malignant hyperthermia, anaphylaxis, emergence delirium and prolonged recovery
3. Developing the following skills: management of airway obstruction, laryngeal spasm and stridor, emergency intubation or reintubation, interpretation of postoperative chest radiographs and ECGs.
4. Gain experience in epidural catheters to provide postoperative pain relief, set up and troubleshoot epidural and PCA pumps
5. Understanding the role of an acute pain consultant and be able to act appropriately to care for the needs of patients experiencing acute severe pain after surgery
6. Learning the importance of professional, collaborative interactions with all members of the post anesthesia care team including nursing staff, surgeons and fellow anesthesiologists
7. Demonstrate the ability to perform a thorough examination of the patient to determine the cause of immediate post anesthesia or post surgical complications; the resident will demonstrate appropriate care and compassion for patients in the PACU.
8. Understand the importance of behaviors that facilitate patient care in the PACU and demonstrate these behaviors effectively; the resident will demonstrate good judgment in the care of the post anesthesia patient by understanding when, how and who to call for help in dealing with post anesthesia complications
9. Understand the PACU discharge criteria

Interpersonal and Communication Skills

After completing this rotation, residents will have gained experience and competence in:
1. Obtaining an accurate patient history appropriate in order to provide care to the post-operative patient
2. Communicating skillfully with patients and family members
3. Communicating information about anesthetic procedures with other colleagues including referring physician
4. Effective counseling of patients and families as indicated regarding patients progression through the PACU

**Professionalism**

*After completing this rotation, residents will have gained experience and competence in:*

1. Acting in a professional manner while providing patient care
2. Demonstrating reliability and dependability
3. Acquiring teaching skills essential for creating a positive learning environment, including involvement in the education of medical students/nurses
4. Showing respect for patients
5. Providing for the emotional needs of patients
6. Demonstrate accountability to patients and their families during the recovery period

**Practice Based Learning and Improvement**

1. Meet ASA standards for monitoring and patient care in the PACU
2. Residents must be able to evaluate and critique their patient care practice, appraise and assimilate scientific evidence to make informed decisions and to improve their patient care. Instruments include, but are not limited to, didactic lectures, textbooks, journal articles (including articles presented at monthly journal club), and faculty mentoring of clinical judgment
3. Use information technology to manage information, access on-line information, and support their own education
4. Participate in departmental quality assessment conferences

**Method of Assessment:**

- Daily evaluation
PEDIATRIC ANESTHESIA OBJECTIVES

Location: Pediatric Anesthesia rotation will take place either at Royal Hospital or SQUH.

Duration: Total of 4 blocks (two blocks during R3 and two blocks during R4)

On-Call Duties: As per OMSB regulations

General Objectives:
At the end of this block, the resident should be able to manage anesthesia for routine pediatric cases independently and manage complex cases with assistance. In advanced rotations, residents are expected to have competency to work with greater independence in the care of more complex patients undergoing major procedures.

The objectives serve as a continuum to establish the foundation for progressively more advanced performance.

Medical Knowledge
1. Understand the basic principles of pediatric anesthesiology.
2. Understand developmental anatomy and physiology of the pediatric patient. Particularly as it relates to the premature and full-term neonate.
3. Distinguish the differences between pediatric and adult physiology and the impact of those differences upon the administration of pediatric anesthesia, understand thermoregulation, the relevance of surface area of children of various ages, metabolic demand and glucose control in pediatric patients.
5. Appreciating the indications and contraindications and appropriate administration of preoperative sedation and the pharmacology of sedatives commonly administered to pediatric patients.
6. Appreciate proper guidelines for pediatric fluid therapy: preoperative, intra-operative and postoperative
7. Understand airway management for simple and complex pediatric airways and specialized equipment for children of different sizes
8. Understand developmental pharmacology of commonly used anesthetic agents and medications.
9. Understand the pharmacology of routine medications used for the pediatric anesthesia patient. Dosage and administration of emergency drugs
10. Relevant knowledge of important childhood conditions, particularly:
   - Respiratory infections
   - Asthma
   - Epiglottitis
   - Prematurity and its complications / care of former premature infants
   - Facial anomalies affecting the airway
   - Neonatal emergencies; especially respiratory distress, tracheoesophageal fistula, congenital diaphragmatic hernia, necrotizing enterocolitis, abdominal wall defects (Gastrochisis and Omphalocele), meningomyelocele
   - Other childhood emergencies; especially inhaled/ingested foreign bodies, fractures, head injuries and burns
   - Congenital cardiac disease; especially ASD, VSD, Tetralogy of Fallot
   - Intestinal obstruction and pyloric stenosis.
   - Cerebral palsy / developmental delay
   - Chronic diseases of childhood; especially cystic fibrosis, muscular dystrophy
   - Congenital syndromes; especially Down's, Pierre-Robins
   - Childhood malignancies and general principle of management
   - Renal failure
11. Understand the pathophysiology and treatment of malignant hyperthermia in the pediatric population
12. Appreciate the basic concepts of pediatric and neonatal resuscitation
13. Manage perioperative pain

**Patient Care**

1. Demonstrate competence in the preoperative evaluation and assessment of the pediatric patient.
2. Recognizing and managing the sick child
3. Managing fluid therapy in pediatric patients
4. Formulate and present a safe anesthetic plan
5. Understand the basics of anesthesia care for neonates, infants, children, and adolescents.
6. Understand and manage the postoperative pediatric patient including managing issues regarding the airway, hemodynamics, pain, and vomiting.
7. The resident should be able to set up an operating room for delivery of pediatric anesthesia including selection of appropriate equipment, temperature control, and correct doses of anesthetic agents, muscle relaxants, anticholinergics, and other pharmaceutical agents.
8. Develop skills in placement of routine monitors.
9. Develop skills in achieving vascular access in the pediatric patient of all sizes.
10. Recognize signs of a difficult pediatric airway
11. The resident should be able to induce general anesthesia in an uncooperative child.
12. Develop skills in airway management for all types of pediatric patients including those with difficult airways.
13. Demonstrate competence with routine equipment such as the facemask, LMA and laryngoscope (Mac, Miller)
14. Manage emergencies like:
   - Bronchospasm
   - Laryngospasm
   - Apnea
   - Anaphylactic reaction
   - Bradycardia (and other arrhythmias)
   - Cardiac arrest
   - Hypovolemia
   - Epiglottitis and croup
   - Inhaled foreign body
   - Infantile airway obstruction
   - Postoperative stridor
15. Understand the indications and contraindications of regional anesthesia including caudal and epidurals
16. Develop skill of performing single shot caudal block, with appropriate knowledge of local anesthesia doses and toxicity, complication related to the procedure.
17. Understand the concerns regarding anesthetizing the pediatric patient in remote locations.
18. Appreciate and develop skill in managing the psychosocial dynamics of families and children having surgery.
19. Applying principles of pediatric anesthesia for various surgical sub-specialties & diagnostic procedures

Interpersonal and Communications Skills

1. Demonstrate effective communication with patients, families, surgeon and other health care providers.
2. Resident must demonstrate effective communication skills in acquisition of informed consent, description, and management of the patient care plan.
3. The resident must communicate concisely and clearly with post-anesthesia care unit personnel.
4. The resident must provide all pertinent information about each patient’s care at times of transfer.
5. Residents must demonstrate the ability to effectively teach other junior residents, medical students, and other health care professionals the principles of pediatric anesthesiology.
6. Residents must demonstrate competence in providing psychological support to patients and their families.

Professionalism

1. Demonstrate respect for pediatric patients and their families.
2. Demonstrate respect for other health care providers and all hospital employees.
3. Maintain patient and family confidentiality
4. Accountability to patients, society, and the profession
5. Sensitivity and responsiveness to a diverse patient population, including diversity in gender, age, culture, race, religion, disabilities, and sexual orientation
6. Compliance with the departmental, and program policies.

Practice Based Learning and Improvement

1. Read the required reading materials
2. Demonstrate the ability to identify gaps in anesthesiology knowledge and seek additional information.
3. Develop a protocol for a clinical research project.
4. Participate in any on-going research project that involves pediatric anesthesia
Systems Based Practice

1. The resident must demonstrate the effective use of information technology to obtain information about the patient’s history, physical, laboratory findings, and imaging studies.
2. Learn to utilize information technology and system resources to optimize the perioperative care of the pediatric patient and to expand knowledge.
3. Learn to optimize patient care by consulting and communicating with physicians and consultants (pediatrics, hematology, etc.)
4. Learn and understand the operating room system and how to interface with the staff and environment.
5. Understand the role of the anesthesiologist and their interaction with other care sites such as the PACU, PICU, NICU, and radiology.
6. Transport critically ill patients within the hospital
7. Complete PACU orders for pediatric patients
8. Be involved in systems-based analysis, i.e. root cause analysis of complications that develop during or after an anesthetic for a pediatric patient

Method of Assessment:

- Daily verbal feedback and written evaluation will be given
- A summative written evaluation will be given at the end of each block
- Oral mock and MCQ at the end of each block
ACUTE PAIN MANAGEMENT OBJECTIVES

Time and Duration of Rotation: 1 block during R2 level

Training Center: Royal Hospital

General Objectives:
The primary goal of the rotation is to provide the resident an environment to acquire the knowledge, skills, experience, judgment and attitude for the care of acute pain patients. The acute pain will include both post-operative/trauma related pain and pain from other medical conditions.

Residents are expected to actively participate and get involved in the decision-making and management of those patients.

Education will be acquired through the daily rounds with the acute pain team. The resident will be responsible to choose one interesting case or topic every week and present it to the team with a review of the literature. The Acute Pain physician is expected to spend a minimum of 1 hour daily in resident education about various pain conditions either during rounds or afterward discussions with focus on evidence-based practice and literature review.

Medical Knowledge
The resident will demonstrate mastery of the following by the end of the rotation:

- Anatomy and pathophysiology of acute pain
- List and describe different tools for pain assessment
- Describe different routes for providing analgesia

Anatomy

- Surface landmarks of most common acute regional blocks
• Brachial, Lumbar and sacral plexuses: roots, division, cords and major branches
• Neuro-axial regional block
• Lumbar and thoracic spine anatomy. Sympathetic nervous system (thoracic and lumbar) including celiac plexus

Pharmacology

• Opioid analgesics: mechanism of action, duration, potency, adverse effects and equi-analgesic conversion tools
• Local Anesthetics: mechanism of action, duration, potency and adverse effects
• Acetaminophen and NSAIDS IV and PO
• Alfa adrenergetic agonists, gabapentinoid drugs
• Antidepressant and other less commonly used drugs
• NMDA antagonists (ketamine)

Clinical Conditions Knowledge

• Acute pain focused history, physical and plan formulation
• Use of PCA for acute pain, including patient evaluation, initiation, side effects
• Use of epidural analgesia for acute pain
• Acute cancer pain evaluation and management, including but not limited to pancreatic cancer, pelvic cancer pain, neuropathic pain
• Acute on top of chronic pain and pain in opioid tolerant patients

Interpersonal and Communication Skills

At the conclusion of the rotation, the resident is expected to:

• Use effective communication techniques to provide and elicit information from patients.
• Give efficient and effective presentations during daily rounds.
• Effectively disseminate information to primary teams and allied health care providers.
• Communicate effectively and demonstrate empathy and respectful behavior when interacting with patients and their families.
• Ensure relevant and accurate information about their patients.
• Ensure management plans are communicated to the primary team and implemented.

Professionalism

*At the conclusion of the rotation, the resident is expected to demonstrate:*

• Respect, compassion and integrity to patients and families.
• Responsiveness to the needs of patients and society that supersedes self-interest i.e. completion of the task at hand without regard to time or effort involved.
• Accountability to patients, society and the profession.
• Commitment to excellence through on-going professional development i.e. reading
• Commitment of ethical principles:
  o Provision/withholding of care.
  o Patient confidentiality.
  o Informed consent.

Practice Based Learning and Improvement

• Locate, appraise and assimilate evidence from scientific studies that are relevant to patients’ health problems
• Use information technology to manage information, access on-line medical information and support their education
• Formulate diagnostic and therapeutic plans for their patients based on history, physical examination and laboratory data tempered with evidence-based medicine, clinical judgment and patient preference
• Improve their skills to provide optimal methodology to work up and deliver care to acute pain patients

Systems Based Practice

• Understand how their patient care and other professional practices affect other health care, the health care organization and the larger society and how these elements of the system affect their own practice.
• Practice cost-effective health care and resource allocation that does not compromise quality of care.
• Advocate for quality patient care and safety.
• Know how to partner with health care managers and providers to assess, coordinate and improve health care and know how these activities can affect system performance.

Patient Care

• Recognize and initiate management of major complications related to acute pain management procedures.
• Demonstrate the skills and knowledge of daily management of epidural and perineural catheters including dosing of medications, evaluation of proper dose and rate of infusion of medications, and timing of catheter removal.
• Demonstrate full knowledge of the indication and contraindications to regional catheter placement for acute pain including the ASRA anticoagulation guidelines for neuraxial analgesia.

Method of Assessment:

Final evaluation will be based upon clinical performance, a written exam and quality of academic presentations.

CHRONIC PAIN MANAGEMENT OBJECTIVES

Time and Duration of Rotation: 2 blocks in R4 level

Training Center: Royal Hospital

General Objectives

The primary goal is to provide education, training and experience in the subspecialty of chronic pain medicine in an atmosphere of mutual respect between instructors and resident that stimulates and prepares the resident to apply acquired knowledge and skills independently.

Residents will evaluate new patients, interacting with the referring physician, take histories, perform physical examinations, laboratory and radiograph review and interpretation, diagnosis, treatment plan formulation, invasive procedures, and
referral to other specialists as appropriate. They will be expected to follow-up with patients they treat to gain an appreciation and understanding of the outcomes and consequences of treatment plans.

They will participate in all phases of managing a hospital and clinic based pain practice to gain insight and experiences.

Residents are expected to attain competency in basic pain procedures such as epidural steroid injections from a trans-foraminal approach, facet joint blocks, trigger point injections and intrarticular joint injections.

Residents are expected to read, present and discuss about different pain related topics.

Senior residents are expected to understand the rationale for placing intrathecal drug delivery devices and spinal cord stimulators.

**Medical Knowledge**

*The goal is to provide a broad understanding of chronic pain problems. Knowledge to be gained includes the basics of evaluation and management of chronic pain patients.*

1. Describe mechanisms of chronic pain (anatomy and pathophysiology).
2. Demonstrate sound knowledge about analgesics pharmacology.
3. Explain etiologies and treatment of mechanical low back pain.
4. Discuss the principles and indications of diagnostic testing.
5. Compare and contrast diagnostic and therapeutic neural blockade.
6. Discuss chronic regional pain syndromes (CRPS).
8. Describe post-herpetic neuralgia and its management.
9. Demonstrate how specific physical and psychological states affect the management of chronic pain patients.
10. Understand recent developments in pain medicine.

**Interpersonal and Communication Skills**

*Residents must demonstrate interpersonal and communication skills that result in effective information exchange and team building with patients, their families, and other health care professionals.*

1. Discuss with patients and family members the advantages as well as potential disadvantages of the different treatment options.
2. Create and sustain a therapeutic and ethically sound relationship with patients.
3. Use effective listening skills to elicit appropriate clinical information.
4. Work effectively with others in the interdisciplinary health care team.

**Professionalism**

*Residents must demonstrate a commitment to their professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.*

1. Demonstrate respect, compassion, and responsiveness to the needs of patients and society that supersedes self-interest.
2. Demonstrate accountability to patients, society, profession and a commitment to excellence and on-going professional development.
3. Demonstrate a commitment to ethical principles pertaining to provision or withholding of clinical care, confidentiality of patient information and informed consent.
4. Demonstrate sensitivity to patient’s culture, gender and disabilities.
5. Demonstrate accountability to patients, colleagues and institution.
6. Demonstrate a commitment to excellence and ongoing professional development.

**Practice Based Learning and Improvement**

1. Locate, appraise, and assimilate evidence from scientific studies related to patients health problems.
2. Assist in the teaching of other staff rotating through the pain team.
3. Apply knowledge of study designs and statistical methods to the appraisal of clinical studies of diagnostic and therapeutic effectiveness.
4. Apply information technology to patient information, access on-line medical information, and support their education.

**Systems Based Practice**

1. Understand how patient care and other professional practices affect other health care professionals, the health care organization, and society as a whole.
2. Practice pain management within the context of this health care institution and in cooperation with other health care professionals.
3. Practice cost-effective health care.
4. Advocate for quality patient care and assist patients in dealing with system complexities.
5. Partner with health care managers and health care providers to assess, coordinate, and improve health care while learning how these activities affect system performance.

Patient Care

1. Perform an appropriate evaluation; including history, physical exam and diagnostic studies as needed.
2. Interact effectively with patients and their families, demonstrating respect and care for individuals.
3. Formulate a plan based on the individual patient’s medical history, expectations and expected clinical course.
4. Work together with other members of the interdisciplinary health care team to optimize patient care and enhance quality of life.
5. Perform transforaminal epidural steroid injections using fluoroscopy.
6. Perform diagnostic and therapeutic lumbar facet procedures.

REQUIRED READING

✓ Essentials of Pain Medicine, Benzon & Raja, 3rd Ed, 2011.

METHOD OF ASSESSMENT:

✓ Final evaluation will be based upon clinical performance, a written exam and quality of academic presentations.
EMERGENCY MEDICINE (A&E) OBJECTIVES

Time and Duration: 1 block in R3 level

Training Center: Royal Hospital, Khoula Hospital, Armed Forces Hospital

Medical Knowledge

A. General Objectives

At the completion of rotation, R3 resident will demonstrate the:

1. Ability to triage the critically ill patient and set priorities in management.
2. Ability to manage the initial stabilization of the patient with multi-system failure/trauma.

B. Specific Objectives

At the end of rotation, R3 resident will demonstrate an effective approach (including appropriate assessment, differential diagnosis, and management) of the patient presenting with the following:

- trauma
- poisoning
- chest pain
- headache
- impaired consciousness (coma)
- seizure
- new onset neurologic deficit (stroke)
- shock
- acute respiratory distress febrile illness and infections
- abdominal pain
- nausea/vomiting/dehydration.
• emotional or psychiatric crisis
• syncope/dizziness
• acute joint pain, back pain, leg pain
• jaundice

Procedures

The resident will demonstrate skills in:

1. Basic and Advanced Cardiac Life Support
2. Suturing: skin, face, hands, etc.
3. Diagnostic tap: lumbar, chest
4. Local and regional anesthesia
5. Sedation for procedures

Interpersonal and Communications Skills

1. The resident will consult effectively and appropriately with other health care personnel to achieve suitable care for the patient
2. The resident will arrange appropriate investigations and tests that are indicated
3. The resident will convey information to the necessary professionals to achieve optimal care for their patient

Systems Based Practice

1. The resident will triage appropriately
2. The resident will ensure that orders are done in a timely manner so that they can be carried out expeditiously
3. The resident will supervise junior members of the health care team appropriately
4. The resident will demonstrate effective use of personnel, facilities, equipment and backup resources

Practice Based Learning and Improvement

1. The resident will always be an advocate for the patient
2. The resident will ensure that the patient’s safety is placed above all else
3. The resident will ensure that all standards of care are met
4. The resident will use limited health care resources in an appropriate manner
5. The resident will embark on self-directed learning and will continue to read around cases, consult the literature and improve his/her knowledge base
6. The resident will attend all rounds and teaching sessions
7. The resident will come to the hospital prepared and organized in order to care for the patients
8. The resident will teach junior members (medical students) of the health care team

**Professionalism**

1. The resident will always be respectful to patients and families as well as other health care professionals
2. The resident will conduct his/herself in an honest, responsible manner at all times
3. The resident will be a productive member of the health care team
4. The resident will act in an ethically and morally sound manner

**Method of Assessment:**

- ✓ Case based discussion
- ✓ Direct observation of procedure skills
NEUROANESTHESIA OBJECTIVES

**Time and Duration:** 3 blocks (2 blocks in R3 level, 1 block in R5 level)

**Training Center:** Khoula Hospital

The aim is to learn anesthetic practice for patients undergoing neurosurgery during the rotation.

Main objective would be to train the residents to provide safe anesthesia that is compassionate, appropriate, up-to-date and effective for patients needing neurosurgical procedures. Residents will be expected to complete an appropriate history and physical examination on each patient, learn to optimize them if needed in collaboration with physicians, and subsequently plan and execute a safe peri-anesthetic management of the patients.

a. Basic neurophysiology, including an understanding of the synapse, the neuromuscular junction and the action of anesthetics.

b. Determinants of cerebral blood flow including the effect of anesthetic agents, both intravenous and inhalational, on normal cerebral metabolism and cerebral blood flow.

c. Arterial and venous anatomy of the brain and the spinal cord; and the production and absorption of CSF.

d. The responses of the brain to injury and strategies for cerebral protection.

**Medical Knowledge**

The general anesthetic considerations for neurosurgical patients are no different than any other group of patients coming for anesthesia. However, understanding how neurological disease may impact on our anesthetic practice will make neuroanesthesia more interesting and fulfilling.
The resident will be able to:

1. appropriately assess the neurosurgical patient preoperatively
2. choose the appropriate monitoring for neurosurgery including special monitors for venous air embolism, EEG analysis, evoked potentials
3. discuss the principles of fluid balance in neurosurgery
4. discuss the methods of monitoring ICP
5. be able to describe the factors that are important in the maintenance of cerebral perfusion/pressure.
6. describe the effects of patient positioning in neuroanesthesia.
7. describe the importance of temperature regulation, in particular the effects of hypothermia
8. demonstrate how to make the transition from the OR to the PAR setting

Specific Topics in Neurosurgery/Neuroanesthesia:

Residents will be able to discuss in detail the following topics:

1. Head injury--how can we limit or exacerbate the extent of neurological damage?
2. Space occupying lesions in the brain.
3. Anesthesia for posterior fossa surgery.
4. Anesthesia for vascular malformations or arterial aneurysms including techniques for induced hypotension.
   a. the concept of cerebral vasospasm and its therapy
5. Carotid endarterectomy.
   a. general vs. local anesthesia techniques
   b. techniques for maintaining cerebral perfusion pressure
7. Pediatric neuroanesthesia
9. Control of seizures and effects of anticonvulsant medications on anesthesia.
   a. Spinal cord injury: Anesthetic considerations for:
   b. acute injury
   c. chronic injury
   d. mass reflexes
   e. airway management in cervical spine injury
10. Anesthesia techniques for awake craniotomy
11. Pituitary surgery
   a. Problems with the transphenoidal approach
12. Neurosurgery for pain ablation
13. Cerebrovascular lesions and tumors in the pregnant patient
   a. Monitoring
   b. Implications of pregnancy on the anesthesia considerations
   c. cardiovascular
   d. pulmonary
   e. position
   f. gastrointestinal
   g. fetal considerations
14. Topics in neurosurgical intensive care
   a. maintenance of ICP control
15. Monitoring ICP
   a. Respiratory care
   b. Cardiovascular issues
16. Fluid management

Interpersonal and Communication Skills

Residents will be able to:

1. Communicate effectively with patients to elicit all necessary information
2. Communicate and empathize with patients in order to relieve their anxiety, answer all questions and agree upon a course of action that is acceptable to all involved
3. Chart appropriately, legibly and clearly
4. Effectively communicate with other professionals in order to manage patients
5. Offer advice and management plans when asked to consult on a patient from another service

Residents will effectively and respectfully:

1. Collaborate with other services, particularly ICU and NCCU regarding pre- and postoperative care of patients
2. Review management plans and courses of action with the surgeons at all times
3. Consider advice from allied health professionals
4. Work with the operating room team in a positive manner
Systems Based Practice

1. Residents will manage their operating room i.e.: ensure necessary equipment and medications are available and have their room set up in the fashion so that they will be ready to deal with the unexpected
2. Residents will start to become proactive in ensuring appropriate post-operative placement for their patients, i.e. ICU bed, step down bed, etc

Practice Based Learning and Improvement

Residents will acknowledge the difficulties and decision-making involved in utilization and allocation of finite health care resources.

The resident will:

1. demonstrate ongoing self-directed learning
2. understand the notion of evidence based practice
3. develop a working understanding of research methodology
4. come to the operating room each morning having read up on the cases for the day, and having reviewed the charts (or seen the patients)
5. follow up their patients the following day to ensure that unforeseen complications are addressed

Professionalism

The resident will:

1. demonstrate a sense of responsibility toward their patients
2. develop a respectful doctor-patient relationship in the limited time available
3. demonstrate ongoing self-assessment and insight
4. perform appropriately under stressful situations
5. be aware of his/her own limitations at all times and ask for help/supervision appropriately

Method of Assessment:

✓ Case based discussion
✓ Presentation evaluation
SPECIFIC ROTATION OBJECTIVES

CORONARY CARE UNIT (CCU) OBJECTIVES

The residents will rotate at either Royal or Sultan Qaboos University Hospitals.

**Residency Level:** R3  
**Duration:** 1 block  
**On-Call Duties:** As per OMSB regulation

The main objective of this rotation is to expose the residents to both stable and unstable adult patients with cardiac disease and thereafter to develop the knowledge along with technical and therapeutic skills to manage such patients. This rotation aims to strengthen the anesthesia resident’s ability to deal with critically ill adult patients with cardiac dysfunction either congenital or acquired in the perioperative period.

**Medical Knowledge**

1. Demonstrate knowledge of the basic sciences as applicable to cardiology, including anatomy, physiology, pharmacology, biochemistry and physics.
2. Demonstrate knowledge of general internal medicine with particular reference to the cardiovascular system. Demonstrate knowledge of systemic medical conditions on the cardiac system:
   a. Pregnancy.
   b. Ageing
   c. Obesity
   d. Chronic renal failure
   e. Sepsis
   f. Electrolyte disturbances
3. Demonstrate knowledge of the pathophysiology, assessment and treatment of common cardiac problems:
   a. Coronary heart disease
• STEMI
• NSTEMI
• Unstable angina
b. Congestive heart failure
   • Left and right ventricular dysfunction
   • Acute pulmonary edema
c. Valvular heart disease
d. Bacterial endocarditis
e. Congenital heart disease in adults
f. Cardiomyopathies
g. Pericardial disease
h. Acute tamponade
i. Hypertension
j. Hypertensive crisis
k. Arrhythmias
l. Syncope
m. Pacemakers
n. Cardioversion

4. Development of clinical expertise with acutely ill cardiac patients
   b. Development and execution of treatment plans under supervision.

5. Demonstrate knowledge of specialized means of assessment and monitoring of the CVS:
   a. Invasive
      • Angiography, PAC.
      • Non-invasive
      • ECG, Echocardiography, nuclear medicine investigations.

6. Demonstrate clinical skills necessary for basic resuscitation and life support as practiced in coronary care facilities:
   a. BLS / ACLS.
   b. Pharmacological support
   c. Pressors / inotropes.
      • Mechanical support
d. Intra-aortic balloon pump.

7. Demonstrate competence in all technical procedures commonly employed in CCU, including intravenous, central venous, arterial cannulations, pulmonary catheterization and endotracheal intubation.

8. Demonstrate knowledge of age related variables in medicine as they apply to adult and geriatric patient care.

9. Develop expertise in the triaging of critically ill patients
   a. Develop expertise in identifying patients requiring critical coronary care and admission to an intensive care setting.
b. Develop expertise in identifying patients mandating resuscitation/intubation prior to transport to the CCU setting.
c. Acquire triage skills when assessing multiple critically ill patients.
d. Recognize when transfer to a general acute critical care setting is more appropriate than continuing care in a CCU.
e. Recognize when a patient no longer requires a critical care setting.

10. Recognize that prior to provision of anesthetic care specific medical/cardiac intervention and modification of risk factors may be required.

Interpersonal and Communication Skills

1. Establish a professional and empathetic relationship with patients and families.
2. Obtain and collate relevant history from patients and families.
3. Listen effectively.
4. Discuss appropriate information with patients and families and other members of the health care team about daily patient progress.
5. Communicate effectively with the attending cardiologist relevant clinical information on which decisions will be based.
6. Keep clear, concise and legible documentation of daily patient progress in the patients' hospital chart.
7. Communicate effectively (both in written and verbal form) a concise yet complete medical summary to the next medical team assuming patient care.
8. Consult effectively with other physicians and health care professionals.
9. Function as active member of the health care team in the CCU including appropriate use of consultation.

Professionalism

1. Deliver highest quality care with integrity, honesty and compassion.
2. Exhibit appropriate personal and interpersonal professional behaviors.
3. Practice medicine ethically consistent with the obligations of a physician.
4. Include the patient/family in discussions concerning appropriate diagnostic and management procedures.
5. Respect the opinions of fellow consultants and referring physicians in the management of patient problems and be willing to provide means whereby differences of opinion can be discussed and resolved.
6. Show recognition of limits of personal skill and knowledge by appropriately consulting other physicians and paramedical personnel when caring for the patient.
Practice Based Learning and Improvement

1. Develop, implement and monitor a personal continuing education strategy.
2. Critically appraise sources of medical information.
3. Facilitate learning of patients, students and other health professionals
4. Identify the important determinants of health affecting patients.
5. Contribute effectively to improved health of patients and communities.
6. Recognize and respond to those issues where advocacy is appropriate.
7. Develop an approach to dealing with medical errors.

Systems Based Practice

1. Understand the limited physical capacity of coronary care unit and manage admissions and discharges in such a way to not compromise patient’s care; allocate finite health care resources wisely.
2. Work effectively and efficiently in a health care organization.
3. Utilize information technology to optimize patient care and lifelong learning.
4. Demonstrate principles of quality assurance and be able to conduct morbidity and mortality reviews.

Patient Care

1. Provide patient care that is compassionate, appropriate and effective for the treatment of health problems and the promotion of health.
2. Demonstrate appropriate clinical judgment and proper patient care plan when discussing patient’s clinical situation with the attending cardiologist.
3. Show recognition of limits of personal skills and knowledge by appropriately consulting other physicians and paramedical personnel when caring for the patient.

Method of Assessment:

✓ Case Based Discussion
✓ Direct observation of procedure
SPECIFIC ROTATION OBJECTIVES

RESPIRATORY MEDICINE (RM) OBJECTIVES

The residents will rotate at either Royal or Sultan Qaboos University Hospitals.

Duration: One block during R4 residency

On-Call Duties: As per OMSB regulation

The resident will be able to assess patients with pulmonary disease preoperatively. Using clinical and laboratory techniques, the resident will be able to diagnose pulmonary disease, assess its severity, and also be able to outline a plan of management to optimize the patient’s condition preoperatively.

In achieving these objectives the resident will know the indications for, and methods of interpretation of: Chest x-ray, chest CT, electrocardiogram, pulmonary function tests, and arterial blood gas analysis. It is also anticipated that the resident will demonstrate skill with the use of the fiberoptic bronchoscope.

Medical Knowledge

The resident will:

1. Be familiar with the anatomy and physiology of the pulmonary system.
2. Diagnose, investigate and treat a patient with obstruction to air flow at any point in the pulmonary tree.
3. Diagnose, investigate and treat the patient with restrictive pulmonary disease.
4. Investigate and treat the patient with pulmonary vascular disease.
5. Differentiate the various causes of pulmonary hypertension.
6. Discuss the common abnormalities of control of breathing and the current treatment.
7. Be able to discuss, diagnose and treat diseases of the pleural space.
8. The resident will outline a plan of management for patients with asthma and status asthmaticus.
9. Diagnose and treat common respiratory infections.
10. The resident will be familiar with the pharmacology of the commonly used antibiotic drugs.
11. Develop skill in handling the fiberoptic bronchoscope.
12. Assess and quantitate the risk associated with a variety of respiratory disorders in patients who are going to have a surgical procedure.

Interpersonal and Communication Skills

1. The resident must be able to effectively communicate with the patient and their family regarding all aspects of their care.
2. This includes being able to put the patient at ease as well as eliciting all necessary information from the patient.
3. The resident will be able to communicate effectively with other specialty services regarding pulmonology patients.
4. The resident will be able to perform complete consultations and communicate their concerns and issues in writing as well as verbally.
5. The resident will know when consultation with other services is required and in the best interest of the patient.
6. The resident will document clearly, concisely and legibly all aspects of their involvement with the patient.
7. The resident will strive to involve other medical subspecialties when necessary, as well as other allied health professionals in order to better care for their patients.
8. The resident will interact with other physicians and health professionals in a mature, respectful and professional manner.

Systems Based Practice

1. The resident will manage their time appropriately in order that all patients requiring attention can be seen.
2. The resident will triage and prioritize those patients requiring the most urgent care.
3. The resident will seek supervision from the attending staff when needed.

Practice Based Learning and Improvement

1. The resident must always be an advocate for the patient, especially when the patient is unable to do so for his/herself.
2. The resident must always ensure that the highest standards of care are practiced, and that all guidelines and policies are adhered to.
3. The resident must demonstrate continued self-directed learning in order to improve their patient care.
4. The resident must be able to critically appraise the literature in order to determine the optimal management plans for their patients, while ensuring that their practice is evidence based.
5. The resident will appropriately teach more junior members of the team, while ensuring a high standard of patient care.

**Professionalism**

1. The resident will demonstrate a mature sense of responsibility for his/her patients and ensure proper hand over of patients to colleagues when he/she is not available.
2. The resident will foster the physician/patient relationship and keep all information in confidence.
3. The resident will demonstrate appropriate ethical insight.
4. The resident will remain calm, confident and efficient when performing under stress.

**Method of Assessment:**

- ✔ Case based discussion
- ✔ Direct observation of procedure skills.
CARDIAC ANESTHESIOLOGY OBJECTIVES

Residents completing four-month rotations (R3-2, R4-1, R5-1) in Cardiothoracic Anesthesia either at Royal and Sultan Qaboos University Hospitals achieve competence in the perioperative management of adult patients undergoing coronary bypass grafting, valve replacement and/or repair, and ascending aortic surgery. The resident will also gain exposure to – and an understanding of the role of perioperative echocardiography in the management of cardiac surgical patients in the operating room. They also get exposed to fundamentals of pediatric cardiac anesthetic management of patients undergoing repair of congenital heart diseases like ASD, VSD, Coarctation of Aorta, PDA ligation, B-T shunt and Tetrology of Fallot. They may also get chances to get involved in anesthetizing other complex congenital heart diseases of children. Thoracic anesthesia objectives are attached separately.

Medical Knowledge

The trainee will strive to develop knowledge of the basic sciences as applied to the perioperative period for coronary artery bypass grafting (on- and off-pump), valve replacement and/or repair, and ascending aortic surgery.

A. Physiology and Anatomy

*The resident is expected to be able to describe:*

1. Anatomy of major cardiovascular structures (cardiac valves, left/right ventricles, aorta, and pulmonary artery)
2. 4 phases of the cardiac cycle
3. Determinants of systolic and diastolic function
4. Determinants of cardiac output
5. Physiologic differences between the normally functioning left and right ventricular systems
6. Natural history and pathophysiology of the following valvular heart disease:
   - Aortic stenosis
   - Aortic insufficiency
   - Mitral stenosis
cardiac anesthesiology objectives

- Mitral regurgitation
- Mitral valve prolapse
- Tricuspid regurgitation

7. Normal coronary anatomy and be aware of common variants
8. Physiologic determinants of myocardial oxygen supply and demand
9. Pathophysiology of atherosclerotic heart disease
10. Electrophysiologic basis of myocardial contraction
11. Normal conduction pathways and regulation of cardiac rate and rhythm
12. Common abnormalities in cardiac conduction pathways and their clinical significance
13. Pathophysiology of ascending aortic aneurysms and aortic dissections

**B. Pharmacology**

The resident should know the pharmacology (mechanism of action, indications, dose and administration, elimination, and complications/contraindications) of agents commonly used around the time of cardiac surgery, and their relevance to the perioperative period:

- Heparin
- Protamine
- Antiplatelet agents
- Antifibrinolytic agents
- Procoagulant agents
- Blood products (pRBC, FFP, platelets, cryoprecipitate) and blood alternatives (albumin, starches), including transfusion reactions and complications
- Intravenous anesthetics
- Benzodiazepines
- Opioids
- Neuromuscular blockers and reversal agents
- Sympathomimetic agents
- Parasympathomimetic agents
- Other common systemic inotropes, vasopressors, and vasodilators
- Pulmonary vasodilators (as used for pulmonary hypertension)
- Anti-arrhythmic agents, for both prophylaxis and treatment of perioperative dysrhythmias
- Commonly used medications in patients presenting for cardiac surgery (Beta-Blockers, ACE inhibitors, Calcium Channel Blockers, Hypolipidemic agents, Hypoglycemic agents (oral and insulin))
C. Monitoring

The resident will be able to interpret an EKG for:

- ischemia
- acute infarction
- dysrhythmias
- paced rhythms
- Explain the principals of non-invasive BP monitoring
- Manage (including indications, contraindications, placement and ongoing care):
  - arterial cannulae
  - central venous cannulae
  - PA catheters
  - Understand the role of transesophageal echocardiography in cardiac surgery
  - Assess the adequacy of mechanical ventilation using both clinical and laboratory parameters
  - Assess the adequacy of circulatory function using clinical and laboratory parameters
  - Interpret laboratory monitoring of the coagulation system – including use of the ACT
  - Assess perioperative blood loss
  - Perform temperature monitoring

D. Clinical Assessment & Management

*By the end of the rotation, the resident will have achieved the following clinical competencies:*

- Ability to perform a complete preoperative evaluation, including obtaining a detailed history, performing an appropriate physical examination, ordering relevant laboratory and ancillary investigations, and reviewing cardiac investigations (e.g. angiogram, echocardiogram)
- Ability to provide an appropriate management plan based on the preoperative evaluation
- Knowledge of pathophysiology – and anesthetic considerations for – the following:
  - Coronary artery disease, acute myocardial ischemia and infarction
  - Complications of myocardial infarction, thrombolytic therapy, PCI
  - Coronary artery bypass grafting with cardiopulmonary bypass
  - Coronary artery bypass grafting without cardiopulmonary bypass (off-pump)
- Valvular heart disease and valve replacement or repair
- Cardiac tamponade, pericardial window surgery, reopening post cardiac surgery
- Constrictive pericarditis
- Dilated, restrictive, and obstructive cardiomyopathy
- CHF – systolic and diastolic dysfunction
- Aberrant conduction (e.g. heart block), pacemakers, ICDs
- Dysrhythmias, EP procedures
- Ascending aortic dissection, ascending aortic aneurysm, ascending aortic surgery, Cardiac tumours
- Urgent and non-urgent cardiac reoperation
- Heart transplant recipient coming for non-cardiac surgery
  - Heparin induced thrombocytopenia and heparin resistance
  - Knowledge of early complications of cardiac surgery:
    - Cardiogenic shock
    - Vasoplegic shock
    - Graft occlusion
    - Dysrhythmias
    - Bleeding
  - Knowledge of special issues related to cardiac surgery and anesthesia
  - Cardiopulmonary bypass
  - Cardioplegia
  - Deep hypothermic circulatory arrest
  - Intra-aortic balloon pump
  - Blood conservation
  - Novel anticoagulants
  - Fast-track cardiac anesthesia
  - Postoperative neurocognitive dysfunction
  - Congenital Heart Diseases
    - Preoperative evaluation
    - Anesthetic strategies for CHD
    - Management of CPB for CHD
    - Procedures to relieve cyanosis
    - Procedures to alleviate CHF
    - Considerations of the patient with CHD undergoing non-cardiac Surgery

**E. Perioperative Echocardiography**

Daily exposure to perioperative transesophageal echocardiography (TEE) will be provided in the cardiac surgery operating theaters. The aim is to demonstrate the
utility of this modality in guiding anesthetic and surgical care of cardiac surgery patients.

Interpersonal and Communication Skills

1. The senior level resident will be encouraged to develop their unique style as a communicator.
2. Effective communication skills will be taught and encouraged at several levels:
   - Between Resident and Patient and his/her family:
     o Obtain accurate and relevant history and perform detailed physical examination using effective listening skills
     o Explain anesthetic procedures (arterial line, central line, intubation, TEE, etc.) in a clear and a compassionate manner
     o Outline risks and obtain informed consent
   - Between Resident and Cardiac Anesthesiology Trainer
     o Communicate patient information and outline anesthetic management plan to the attending in a professional and efficient manner
   - Between Resident and Operating Room Personnel
     o Discuss special needs (monitoring, etc.) with nurses, perfusionists and OR personnel in a professional and respectful manner
     o Ensure clear and audible communication with perfusionist, surgeon, and nurses to ensure safety and prevent errors (drugs, positioning, etc.)
   - Between Resident and Surgeon
     o Outline anesthetic concerns to the surgeon, especially if it involves a high risk patient, cancellation or postponement of the surgery pending further investigation
   - The resident will be encouraged to recognize the need to utilize their attending physician, other specialists, and ancillary operating room personnel for the perioperative care and management of patients:
   - Recognize their limitations, and seek appropriate preoperative consultation from medical experts in other disciplines.
   - Learn how to effectively collaborate with the cardiac surgeon in providing the best care possible.
   - Foster healthy team relationships, including with allied health professionals such as nursing, respiratory therapy, and clinical perfusion.
Systems Based Practice

Residents are taught:

1. Collaborative care plans and ‘fast-track’ cardiac anesthesiology and surgery as they relate to resource optimization.
2. The utility of point-of-care testing and transfusion protocols to reduce unnecessary transfusion.
3. The impact of limited resources (e.g. cancellations and delays) on the patient, the family, wait lists, and human resource allocations.
4. To anticipate post-operative disposition of the patient and arranging for appropriate resources (e.g. ICU bed).
5. To work effectively and efficiently within a health care organization.

Practice Based Learning and Improvement

Health advocacy requires clinical experience at an advanced level. Senior residents will learn from staff in action in this area. Resident will learn:

1. To respond to the individual patient health needs and issues as part of patient care (e.g. the importance of blood conservation strategies, arrhythmia prevention, patient safety measures, and perioperative monitoring in improving patient outcomes)
2. To identify the determinants of health in a cardiac surgery patient population
3. To promote the health of individual patients coming for cardiac surgery
4. Residents will be encouraged to develop scholarship in several areas:
   - Identify important determinants in the perioperative period that impact the health and success of the cardiac surgery patient
   - Identify areas of controversy in the perioperative management of cardiac surgery patients using clinical observations
   - Teaching sessions and literature reviews
   - Seek to practice evidence based medicine
   - Contribute to the medical education of other health professionals (medical clerks, nurses in training, respiratory therapists in training, etc.)
   - Develop an educational pattern of self-study and critical appraisal of their own performance and knowledge.
Professionalism

Residents must always:

1. Demonstrate respectful, compassionate behavior toward patients, their families and other health care providers
2. Demonstrate an appropriate sense of responsibility and commitment for their patients
3. Strive to maintain insight and perspective regarding their own behaviour
4. Remain calm and organized in stressful, emergency situations
5. Utilize personal resources effectively in order to maintain personal health and sustainable practice.

Method of Assessment:

Final evaluation will be based upon clinical performance, a written exam and quality of academic presentations.

THORACIC ANESTHESIOLOGY OBJECTIVES

Medical Knowledge

1. Gain experience in pre-op assessment and optimization of thoracic patients, including evaluation of operability
2. Describe anesthetic considerations for specific respiratory diseases (obstructive and restrictive lung disease, pulmonary hypertension, pneumothorax, mediastinal mass, bullous lung disease, bronchopleural fistula, pulmonary hemorrhage, lung abscess, superior vena cava syndrome, pulmonary hypertension)
3. Describe anesthetic considerations for routine thoracic procedures (flexible and rigid bronchoscopy, mediastinoscopy, thoracoscopy, lobectomy, pneumonectomy, esophagectomy, esophagoscopy +/-dilatation)
4. Develop an approach to more complex problems in thoracic anesthesia (tracheal resection, retrieval of foreign body in airway, massive pulmonary hemorrhage)
5. Demonstrate thoracic anesthesia knowledge and skill in the following areas:
- indications and techniques for lung isolation including double lumen endotracheal tubes and bronchial blockers, lung isolation in the patient with a difficult airway, physiology of lateral position and open thorax, approach to hypoxia on one lung ventilation, fiberoptic bronchoscopy

6. Demonstrate knowledge and skill required for appropriate intra-op monitoring (arterial line, central line, blood gas analysis).

7. Demonstrate knowledge and skill in provision, risks and benefits of post-op analgesia (thoracic epidural, paravertebral and intercostals blocks, and possible role of IV-PCA and adjuncts)

8. Develop an approach to post-op management of thoracic patients and their unique complications (i.e. post-pneumonectomy pulmonary edema, bronchopleural fistula, cardiac herniation, pulmonary hemorrhage, respiratory failure, post thoracotomy chronic pain)

Interpersonal and Communication Skills

1. Demonstrate effective communication with patient (description of procedures, informed consent)
2. Demonstrate effective communication with OR team (thoracic surgeons and nurses) and post-op team (ICU, PACU)
3. Provide clear and concise written consultations and anesthetic records
4. Seek peri-op consultation with colleagues when required in the preoperative clinic, perioperative theatre and postoperatively.

Systems Based Practice

1. Manage OR time by efficiently conducting the anesthetic
2. Proper utilization of post-operative critical care bed resources appropriate to the patient and procedure

Practice Based Learning and Improvement

1. Provide patient advocacy for various peri-operative issues (i.e. patient safety, analgesia, post-op monitoring)
2. Demonstrate commitment to continuing personal education
3. Be able to critically review thoracic anesthesia literature
4. Assist in education of other members of OR team
Professionalism

1. Demonstrate a sense of responsibility, integrity, honesty and compassion when caring for patients
2. Demonstrate respect for patients and colleagues

Topics that will be covered during Residents rotation in Cardiac Anesthesia

Cardiac

1. Preoperative assessment and perioperative care of patients with cardiac disease
2. Induction and maintenance of anesthesia for high risk cardiac procedures
3. Antibiotic prophylaxis against subacute bacterial endocarditis
4. Problems of cardio pulmonary bypass, myocardial protection and weaning of patients from CPB
5. Management of cardiac tamponade
6. Interpretation of ECG and chest X-ray
7. Interpretation of non-invasive and invasive cardiovascular monitoring
8. Cardiac pacing models/different pacemakers
9. Intra-aortic balloon counter pulsation
10. Postoperative cardiac critical care

Thoracic Anesthesia

1. Preoperative pulmonary function tests
2. Local and general anesthesia for bronchoscopy including techniques of ventilation
3. Understanding of fibreoptic bronchoscopic techniques for airway management
4. Principles of one lung anesthesia
5. Anesthetic management of tracheo-esophageal fistula
6. Principles of underwater seals and chest drains
7. Postoperative care and analgesia after thoracic surgery
**SPECIFIC ROTATION OBJECTIVES**

**ANESTHESIA FOR REMOTE LOCATIONS/RADIODIAGNOSIS**

The objectives of the rotation will be covered during the rotation of “Anesthesia for Radio-diagnosis” as a core one block at the Royal hospital at R4 level, as well as part of any anesthesia rotation during which anesthesia care is needed to be provided for patients outside the operating room-suite in any of the training centers (Royal hospital, Sultan Qaboos University Hospital, Al Nadha Hospital, Armed Forces Hospital, Khoula Hospital) at any level of the residency training.

**On-Call Duties:** As per OMSB regulation.

Upon completion of this rotation, residents must demonstrate an understanding of the considerations related to providing anesthetic care in non-traditional locations such as MRI suites, Cardiac Catheterization Laboratories, Image Guided therapy suites and endoscopy suites.

**Medical Knowledge**

1. Demonstrate an understanding of the definition of remote locations.
2. Demonstrate an understanding of the physical/equipment requirements for provision of anesthesia in remote locations:
   - Medical gas pipelines must meet the same standards as a regular operating room.
   - The anesthetizing location must conform to electrical code and excess anesthetic gas scavenging.
   - Adequate lighting and power outlets.
   - Reserve oxygen sources.
   - Suction Source.
   - The anesthetic machine must conform to ASA standards.
   - Standard ASA monitors are required.
   - Standard emergency drugs and equipment must be readily available.
3. Demonstrate an understanding of the personnel required to provide safe anesthesia
   - Appropriate ancillary help must be available to the anesthesiologist.
4. Demonstrate an understanding of the unique considerations for each location, including the fact that these are frequently distant from the main operating room:
   - Interventional Radiology
     - Radiation exposure safety: Patients and staff.
     - Anesthetic considerations
       - Limited access to patient.
       - Movement of radiological equipment.
       - Temperature management.
     - Contract media complications
       - Anaphylaxis.
       - Interaction with Metformin.
       - Renal failure.
     - Temperature regulation and risk of hypothermia.
   - Variety of procedures and their implications e.g.
     - Biopsies
     - Angiography
     - AAA stent graft
     - Carotid artery stent
     - TIPS (transjugular intrahepatic portosystemic shunt)
     - Cerebral Aneurysm / AV malformation coiling
     - Radiofrequency ablation
   - MRI
     - Implications of magnetic field
     - Patient selection and contraindication
     - MRI compatible anesthesia equipment and monitors
     - Management of resuscitation
     - Noise
     - Management of patient claustrophobia
   - Cardiac Catheterization Laboratory
     - Considerations as per Interventional Radiology
     - Specific considerations for cardiac patients
       - Pediatric congenital heart disease
       - Adult valvular heart disease
       - Coronary artery disease
       - Cardiomyopathies
       - Dysrhythmias – pacemakers and ICD’s
     - Type of procedure: diagnostic vs. therapeutic.
   - Electrophysiologic Studies
• Endoscopy Suites
  o Implications of bowel preparation on hydration and electrolytes
  o Shared airway e.g. upper endoscopy
• Electroconvulsive Therapy
  o Indications
  o Contraindications
  o Complications and management
    • Bradycardia
    • Tachycardia
    • Hypertension
    • Failure of seizure

5. Demonstrate knowledge with respect to postanesthetic care of these patients

• Location
  o Local vs. Operation Room PACU
• Discharge planning
• Anticipation of complications
• Lack of Anesthesiology personnel available to deal with emergencies

Interpersonal and Communication Skills

1. Build the appropriate Doctor/Patient/Family relationship
   • Exhibit the appropriate behaviors to correctly open dialog with the patient/family.
   • Utilize the correct methodology for gathering information from the patient/family.
   • Share information with the patient and family.
   • Close the interview with appropriate summations and discussion providing preparation of patient and family for subsequent anesthetic, diagnostic or therapeutic procedures and postoperative care.
   • Answering patient and family questions completely and professionally.
2. Demonstrate concise, accurate and effective writing skills in written reports and records.
3. Proper documentation of safety precautions taken during the procedure in the anesthesia and medical record.
4. Communicate properly (using verbal, nonverbal and listening skills) effectively with patients and patient’s families.
5. Demonstrate effective communication skills during procedures on awake patients.
6. Take the lead role in communicating effectively with the procedural physicians, nurses and technicians.
Professionalism

1. Demonstrate appropriate interaction with staff caring for patients in a manner that promotes team cohesiveness and improves patient care.
2. Demonstrate proper interaction with the patient and family in a professional, respectful manner (including attire) that establishes confidence and allays anxiety and fear.
3. Show an awareness, respect and understanding of the cultural and religious issues of patients.
4. Demonstrate constant vigilance to protect patient confidentiality.
5. Demonstrate being dependable and punctual in all aspects of one's practice.
6. Demonstrate practicing high quality conflict resolution skills.
7. Understand the importance of life-long learning as critical to continued safe care of patients.

Practice Based Learning and Improvement

1. Demonstrate adequate knowledge by reading the material assigned for the remote location anesthesia rotation.
2. Perform literature search and analysis of pertinent journal articles related to the medical care of patients or the anesthetic management during procedures in remote locations and implementing appropriate changes to improve patient care and safety.
3. Participate in the evaluation of new diagnostic and therapeutic technologies with a focus on implications on anesthetic management.
4. Participate in the design of new operating rooms and procedural areas.
5. Participate in the daily operative schedule review and case discussion of patients undergoing procedures in remote locations.
6. Take the lead role in educating patients and families about anesthesia risk and anesthesia techniques for procedures performed in remote locations.
7. Take the lead role in educating anesthesiology junior residents and medical students about the challenges and anesthetic management of patients undergoing procedures in remote locations.

Systems Based Practice

1. Work effectively with procedural physicians, nurses, technicians, patients and family to provide optimal care of the patient.
2. Utilize all system resources that are available to optimize the care and comfort of the patient while being cost-conscious and without compromising quality of care.
3. Assist the patient and family in dealing with system complexities, especially at a time of great uncertainty, vulnerability, fear and anxiety.
4. Identify institutional strengths and weaknesses as they pertain to the care of patients undergoing procedures in remote locations and working within system resources to improve upon areas of weakness.

Patient Care

1. Perform a thorough and efficient pre-anesthetic evaluation, including history and physical exam, appropriate review of laboratory/radiologic data, appropriate review of medical records, appropriate use and selection of preoperative testing and consultation, and assessment of risk.
2. Communicate effectively with both patient and family.
3. Address anxiety issues and provide reassurance for both the patient and the family.
4. Demonstrate ability to determine when a patient is optimally prepared for anesthesia and the procedure.
5. Obtain informed consent from patient or guardians.
7. Demonstrate critical clinical thinking and problem solving ability.
8. Demonstrate appropriate selection and interpretation of data from monitors, including differentiation of artifacts from actual problems and intervene appropriately.
10. Demonstrate proper assessment in diagnosing and managing post procedural complication.
11. Demonstrate proper assessment in transferring/discharging patients.
12. Demonstrate proper post operative/procedure management.
13. Show being effective member of healthcare team to provide optimal patient care, including appropriate transfer of care.

Method of Assessment:

- Case based discussion
- 360°Evaluation
REGIONAL ANESTHESIA ROTATION

Regional anesthesia will occur in AFH and SQUH and any other training hospital that fulfills the requirements for such rotation in the future.

The residents will spend most of their time in the operating theatre learning and performing blocks and in the wards during post-operative acute pain rounds.

**Duration:** One block during R4 and one block during R5.

**On-Call Duties:** As per OMSB regulations.

At the completion of the rotations, the residents will be expected to have acquired the following competencies:

**Medical Knowledge**

1. Demonstrate an understanding of the spectrum of regional anesthetic techniques and the ability to perform these.
2. Demonstrate knowledge of basic surface anatomy and palpable landmarks and the dermatomal and peripheral nerve distribution as applicable to each specific block.
3. Describe site-specific equipment; indications; contraindications & drug selection for each block.
4. Demonstrate good sterile technique when performing regional anesthesia
5. Perform various regional anesthetic blocks safely, demonstrating good in plane visualization of the block needle when doing U/S guided blocks
6. Demonstrate safe technique with the utilization of nerve stimulation, appreciating acceptable endpoints and ways to minimize risk of inadvertent intraneural injection of local anesthesia
7. Choose appropriate ultrasound probe and settings to properly identify the desired nerves
8. Identify the ultrasonographic anatomy relevant to nerve localization
9. Use ultrasound to safely and effectively perform regional blocks
10. Demonstrate proficiency with In-plane vs. Out-of-plane techniques
11. Provide appropriate neurolept/sedation during block installation and intra-operatively
12. Have a sound knowledge of the pharmacology of local anesthetics including mechanism of action, factors that both facilitate and hinder their effect.
13. Have a complete knowledge of local anesthetic toxicity and its management including:
   - Know the different forms of LA toxicity – cardiac toxicity, direct neurotoxicity; methaemoglobinaemia; allergy
   - Identify and provide appropriate management of local anesthetic toxicity
   - Describe the mechanisms of LA neurologic and cardiac toxicity
   - Know factors influencing the development CNS & CVS toxicity (eg. speed of injection; site of injection; maximal doses; LA potency; hypercarbia; use of vasoconstrictors; cardiac/liver disease)
14. Understand the physiology of nerve conduction
15. Describe the structural classification of nerve types and the relevance to local anesthetic action
16. Explain the generation of nerve action potential, refractory period and recovery
17. Describe the structure of nerves
18. Knowledge of the limitations of regional anesthesia including contraindications and complications
19. Contraindications to Regional Anesthesia
20. Identify and, where appropriate, manage relative and absolute contraindications to regional anesthetics
21. Anticoagulation and Regional Anesthesia
22. Have an approach to regional anesthesia in the patient with abnormal coagulation parameters
23. Plan regional anesthesia with reference to the current published guidelines from anesthetic associations and regulatory bodies pertaining to the conduct of regional anesthesia in the context of anticoagulation
24. Assess the appropriate timing of regional anesthetic procedures relative to anticoagulation therapy
25. Appropriately modify the anticoagulation, anesthetic plan or both in order to minimize overall risk and improve outcome
26. Describe the complications of regional anesthesia and the risk factor, presentation, diagnosis and treatment of:
- Failed block
- Intravascular injection of local anesthetic
- Overdose
- Post-operative neuropathy

27. Have a thorough knowledge of clinical anatomy as it relates to specific blocks and surgical procedures.
28. Describe the relative advantages, disadvantages and limitations of ultrasound as a method of locating nerves.
29. Describe the basic physics principles of ultrasound and their clinical relevance in identifying different anatomic structures.
30. Neuraxial Blocks
   - Spinal – single shot midline and paramedian
   - Epidural – midline and paramedian approach
   - Thoracic
   - Lumbar
31. Upper Extremity Blocks
   - Interscalene
   - Supraclavicular
   - Infraclavicular
   - Axillary
   - Intercostal Brachial Nerve Block
   - At the wrist and hand
32. Ulnar nerve
33. Median nerve
34. Radial Nerve
35. Lower Extremity Blocks
   - Femoral nerve block/3 – in – 1 block
   - Fascia Iliaca Compartment Block
   - Sciatic block
   - Popliteal fossa block
   - Saphenous nerve block mid-thigh
   - Ankle block
36. IVRA (Bier block)
37. Trunk Blocks
   - Parvertebral block
   - TAP Block
Interpersonal and Communication Skills

Obtain informed consent from patients for regional anesthesia by:

1. Discussing the relative about advantage, disadvantage and physiologic implications of regional vs. general anesthesia, including specific risks and outcome.
2. Create an appropriate anesthetic plan that meets the patient's level of comfort by discussing regional PLUS GA vs. GA vs. regional.
3. Demonstrate an ability to put patients at ease during the regional anesthesia placement.
4. Present anesthetic concerns and pre-operative assessment in an organized fashion.
5. Produce complete, legible and concise anesthesia charting and consultation reports including thorough documentation of the block and appropriate end points.
6. Communicate anesthesia concerns and issues to patients and families clearly and in understandable terms.
7. Demonstrate the ability to work together with all members of the OR team including surgeons, nurses and Anesthesia Assistants.
8. Communicate clearly with nursing staff to ensure patients have undergone surgical site safety checks/confirmation prior to initiating sedation for a block.
9. Provide clear, concise communication with Anesthesia Assistants during the performance of a block to obtain optimal U/S image, nerve stimulation, hydro-dissection and injection of local anesthetic.
10. Exhibit professional interpersonal behaviour with patients and staff.
11. Communicate consultation issues to colleagues in a clear and concise fashion.

Systems Based Practice

1. Demonstrate the ability to organize and optimize the flow of patients from OP/ward to Block Room to OR to ensure the room stays on time and is not delayed due to regional anesthesia.
2. Display knowledge of the identification, and prioritization of various regional procedures to allow for optimal utilization of the block room and its limited resources. Giving appropriate priority to cases requiring adequate soak time.
3. Consider quality assurance issues in day to day and emergent anesthesia practice.
4. Gain an appreciation how utilizing regional anesthesia when on call can provide an additional level of safety during situations of limited human resources.
Practice Based Learning and Improvement

1. Identify health issues which will improve the anesthesia care of patients by selecting and presenting the appropriate regional anesthetic technique to the patient.
2. Know and understand the standards for anesthesia management with respect to the CAS guidelines.
3. Appreciate the requirement to continuing personal education.
4. Understand the components of critical appraisal as they pertain to current regional anesthesia practice.
5. Take part in the education of junior learners with regard to knowledge of the anatomy, pain physiology and local anesthesia pharmacology.

Professionalism

1. Arrive on time daily to prepare OR for day's cases.
2. Demonstrate the ability to organize/prioritize blocks to maximize exposure to various regional procedures throughout the day in multiple operating rooms.
3. Obtain appropriate assistance from faculty as required.
4. See all in-patient pre-operative assessment patients the day before surgery.
5. Honor on-call responsibilities and respond to calls in a timely fashion.
6. Consider the ethical management of patient issues

Method of Assessment:

✓ Direct observation of procedure skills
✓ Presentation evaluation
CRITICAL CARE MEDICAL OBJECTIVES

Critical Care Medical rotation is a rotation that will occur at any of the following training hospitals (Royal Hospital, SQUH or AFH).

Duration:

R2 - 2 blocks
R3 - 2 blocks
R5 - 2 blocks

On-Call Duties: As per OMSB regulations

General Objectives:

1. The main goal of this rotation is to gain an understanding of the integrative nature of disease in the critically ill patient and the interdisciplinary approach to the management of such patients.
2. During the rotation, each resident should gain a working knowledge of applied clinical physiology and homeostasis, be able to recognize derangement of physiology and pathophysiology, and be able to treat single or multiple organ failure.
3. The resident should become familiar with strategies to prevent such failures in the high-risk patient.
4. The resident should also gain an appreciation for the indications for Intensive Care Unit admissions and therapy.
5. The resident should develop a sound understanding of the basic and applied physiology, pathophysiology, and pharmacology relevant to management of the critically ill.
6. The resident is also expected to have mastered the fundamental aspects of technical procedures commonly used in the treatment of critically ill patients.
7. The essential objective is to foster amongst residents the practice of working efficiently and amicably in a multidisciplinary team, learning to coordinate the patient care across different medical specialties. It also aims at training the residents about prioritization of tasks and time management when encountered with a busy ICU.

At the end of the rotation, residents should be able to do the following:

1. Elicit, present, and document a history that is relevant, concise, accurate and appropriate to the patient's problem(s).
2. Perform, interpret the findings of, present, and document a physical examination that is relevant and appropriate.
3. Select medically appropriate investigative tools, interpret the results of common diagnostic tests and demonstrate an understanding of their cost effectiveness, limitations and complications.
4. Formulate a comprehensive patient problem list, synthesize an effective diagnostic and therapeutic plan and establish appropriate follow up.

At the completion of training, the resident will have acquired the following competencies:

Medical Knowledge

The residents will learn the principles of management of critically ill medical patients with special emphasis on the following:

1. General Principles of ICU Care
   - Understanding the potential benefits of critical care
   - Common causes/indications of admission to HDU/ICU
   - Methods of examination of the unconscious patient
   - Common causes of cardiac and respiratory arrest and Cardiopulmonary resuscitation
   - Arterial Blood Gases interpretation and Acid Base Balance
   - Nutrition- Enteral and Parenteral
   - Thromboprophylaxis and stress ulcer prophylaxis
   - Infection control measures
   - Management of delirium in ICU
   - Management of acute poisoning
   - Indications and interpretations of lab tests and radiological investigations
- Transport of the critically ill
- Understanding the basic concepts of therapeutic decision making and medication safety
- Considering the ethical issues and help the patient/family in making end of life and quality of life issues
- ICU record, scoring systems
- Patient Safety measures in ICU

2. Airway Management, Respiratory System and Mechanical Ventilation
- Airway management in all medical and surgical emergent situations in ICU and be well versed with difficult airway algorithms and use of different airway equipments.
- Diagnosis of acute and chronic respiratory failure, management of severe asthma, COPD.
- Indications and contraindications of invasive and non-invasive ventilation.
- Different modes of ventilation like CMV, SIMV, APRV, Duo-Pap, High Frequency Ventilation, ECMO in patients with ARDS and other respiratory conditions.
- Principles of sedation and analgesia for ventilated patients.
- Ventilator induced injury and its prevention, management of ARDS.
- Weaning from mechanical ventilation.
- Prevention of nosocomial pneumonias.
- Management of tracheostomy and decannulation.

3. Cardiovascular System
- Residents should be able to diagnose and manage patients with acute coronary syndrome, cardiac failure, pulmonary embolism, cardiogenic shock, various arrhythmias and hypertension including hypertensive emergencies.
- Resident should be well versed with pharmacology of cardiovascular drugs and be proficient in use of inotropes and vasopressors including antiarrhythmic drugs, interpretation of data obtained from CVP, arterial lines, cardiac output monitors and Echocardiography.

4. Shock
- Understanding the pathophysiology, diagnosis and management of types of shock including hypovolemic, cardiogenic, septic, anaphylactic and obstructive shock.

5. Neurology
- Pharmacology of sedatives, muscle relaxants – indications and scoring systems.
6. Nephrology
- Diagnosis, prevention and management of acute renal failure.
- Fluids and electrolyte balance
- Renal supportive measures including Intermittent and Continuous Renal Replacement Therapy.

7. Major GI emergencies: Surgical and Non surgical
- Diagnosis and Management of Gastrointestinal disorders: acute liver failure, acute pancreatitis, gut bleeding including Upper GI and Lower GI bleeding.
- Management of patients with surgical emergencies including postoperative cases.

8. Sepsis
- Understanding sepsis, septic shock and multi-organ failure (MOF). Microbiology, infection and antibiotics usage including antibiotic stewardship.
- Management of immunocompromised and HIV patients
- Diagnosis, prevention and management of Nosocomial infections including Ventilator Associated Pneumonia and Catheter Related Blood stream infections and Urinary Tract infections.

9. Hematological disorders:
- Management of patients with Severe Anaemia including Sickle cell disease and its acute manifestations, Coagulopathies, hemolysis, blood transfusion, diagnosis and management of Blood disorders and malignancies and Immunosuppression.

10. Rheumatology, Metabolic and Endocrine disorders:
- Management of critically ill patients with autoimmune disorders including SLE, Diabetic emergencies and Thyroid disorders.
11. Obstetrics and Gynaecological Emergencies:
   - Management of critically ill patients following Septic abortion, Eclampsia, Pre-eclampsia, Amniotic fluid embolism and Obstetric hemorrhage

12. Basics of Critical Care Ultrasound and Echocardiography
   - To diagnose pleural effusion, pneumothorax, IVC collapsibility and its interpretation, cardiac function with emphasis on Ejection fraction, contractility, chamber size, valves, and regional wall motion abnormality.

13. Basics of Critical Care Radiology
   - To interpret basics of X-rays, CT chest, CT abdomen, CT spine and CT Brain including MRI Brain.

14. Skills
   - At the end of rotation the residents should be proficient in certain procedural skills like insertion of arterial, CVP lines, dialysis catheters, percutaneous tracheostomies, bronchoscopy, basic knowledge of critical care ultrasonography and echocardiography.

Interpersonal and Communication Skills
1. To develop effective communication skills with the patients, their family members or surrogate decision makers including acquisition of informed consent, communication about the prognosis and likelihood of recovery, disclosure of conflicts, errors and their management.
2. Communication, co-ordination and collaboration with other medical care providers including other specialty physicians, nurses, respiratory therapists etc.
3. The art of disclosing imminent death/extremely poor outcome to the relatives/surrogates.
5. To conduct a proper hand over at the end of call duties to the duty doctors of the next shift.

Professionalism
1. Treat all patients, health care providers and hospital employees with respect, integrity and compassion.
2. Prompt responsiveness to patient’s needs.
3. Respect for patients privacy and autonomy and maintain patient confidentiality at all times.
4. Accountability to patients, society and profession.
5. Sensitivity and responsiveness to a diverse environment including diversity in gender, culture, region, background and economical status.

Practice Based Learning and Improvement

1. Residents must systematically analyze practice using quality improvement methods, and implement changes with the goal of practice improvement.
2. Demonstrate acquisition of the skills and habits of self-assessment and reflection.
3. Exhibit self-directed learning by locating, appraising, and assimilating evidence from scientific studies related to these patients.
4. Identify the gaps in the knowledge and diligently work on their weakness through self-directed learning as well as interaction with senior colleagues and experts in the specialty.

Systems Based Practice

1. During this rotation the resident must demonstrate the ability to work as a member of a larger health care team.
2. The resident must learn to work effectively in inter-professional teams to enhance patient safety and quality of care.
3. Identify system errors, potential errors (near misses), and assist in implementation of potential system solutions.
4. Awareness about the health care costs and how to do prioritize resource allocation without compromising the quality of care.

Patient Care

1. The residents will learn the art of gathering information essential to the care of patients including thorough physical examination, interpretation of monitoring data and the use modern information technology.
2. They will engage and involve themselves in the diagnostic and therapeutic plan based on current standards of care with the participation of primary medical team.
3. They will consult other services as and when needed and provide them with the needed support to ensure the integration of their recommendations in the patient care.
Method of Assessment:

✓ Final evaluation will be based upon clinical performance, a written exam and quality of academic presentations.
RADIOLOGY OBJECTIVES

The residents, during their one block rotation in Radiology (R4) either at Royal or SQU Hospitals, will learn to interpret various imaging methods and correlate the results with clinical presentation.

Resident will be able to demonstrate knowledge and competence in interpretation of the following:

- Chest radiographs
- Plain abdominal radiographs
- Radiographs of the axial and appendicular skeleton
- Gastrointestinal contrast imaging
- Biliary imaging, including: ERCP, PTC
- CT, including: Head, Chest, Abdomen/pelvis, CT angiograms, Spine
- MRI, including: Head, Abdomen, MRCP, Pelvis
- Diagnostic ultrasound

Patient Care

1. Residents are able to learn various imaging techniques used for medical diagnosis
2. Residents are able to interpret the results of radiological investigations
3. Residents are able to correlate the results of imaging with the clinical presentation

Medical Knowledge

1. Residents gain understanding of various imaging techniques used in medical diagnosis
2. Residents understand the interpretation of the results of radiological investigations
3. Residents gain knowledge and experience to be able to correlate results of imaging with clinical presentation
Practice Based Learning and Improvement

1. Residents are able to determine which imaging technique to use based on patient’s clinical presentation
2. Residents will use major textbooks, review articles, and current literature to facilitate patient care

Interpersonal and Communication Skills

1. The residents communicate with the patient and/or family about the test results and clinical interpretation
2. Resident is able to communicate with supervising physician
3. Resident is able to communicate with residents and/or the attending physician who have ordered the imaging test

Professionalism

1. The resident develops compassion, integrity and respect for other on the team
2. The resident develops understanding of respect for patient privacy and autonomy

Systems Based Practice

1. The resident understands the current standard of care applicable to the ordering of various imaging.
2. The resident understands the consideration of cost awareness while ordering imaging tests.
3. The resident understands the risk versus benefit of these tests.

Method of Assessment:

✓ Case-based discussion
QUALITY IMPROVEMENT AND PATIENT SAFETY

OBJECTIVES

Quality assurance and patient safety should be integrated into residency curriculum as all patients expect doctors to provide safe, effective and high value care. Moreover the regulatory agencies including Accreditation and Residency Review committees demand that residency programs should integrate safety and quality training into the curriculum. Moreover residents themselves are interested in learning and acquiring tools to provide high quality, cost effective care that will be necessary for their future practice.

Goals and Objectives

- Prepare residents to be stewards of safe, high quality, high value, patient centered care
- Teach key principles of quality improvement, patient safety, and systems innovation to all residents in their training programs
- Develop a culture of safety and quality that trainees will carry with them throughout their career
- Cultivate future leaders in healthcare quality and systems innovation
- Core Concepts and Tools Necessary to the Practice of Safe, High Quality, Patient Centered Medicine:
  - Medical errors and Adverse events analysis
  - Effective Handovers
  - Patient Satisfaction Surveys
  - Quality Improvements tools – Audits
  - Leadership activities
  - High Value and Cost effective healthcare

Medical Knowledge

- Learn principles of quality improvement and patient safety concepts through didactic lectures and case based discussions.
Practice Based Learning and Improvement

- Learn and improve via audit of performance and morbidity and mortality meetings.

Systems Based Practice

- Work effectively with other care providers and in different settings. Improve health care delivery by recognizing system error and becoming advocate for system development. Learn to provide cost effective care for patients and populations. This can be achieved by identifying forces that impact cost of healthcare, advocate for and practice cost effective care.

Interpersonal and Communication Skills

- This can be achieved by having smooth transition of care. Incorporating effective handoffs between cases and proper discharge process which will ensure patient safety and improve patient satisfaction.

Professionalism

Residents will attain insight into professionalism through quality improvement projects and evidence based practices whereby they will learn to:

- Treat all patients, health care providers and hospital employees with respect, integrity, and compassion.
- Prompt responsiveness to patient’s needs
- Respect for patients privacy and autonomy and maintain patient confidentiality at all times
- Accountability to patients, society and profession by remaining up-to-date
- Sensitivity and responsiveness to a diverse environment including diversity in gender, culture, region, background and economical status.
PROGRAM SCHOLARLY ACTIVITIES

SIMULATION

One of the most challenging aspects of training for health professionals is providing robust and realistic learning opportunities to prepare for actual patient care situations. Clinical Simulation is rapidly transforming health care education, training, research and practice, leading to improved clinical outcomes.

To address this educational need OMSB has installed a state-of-the-science clinical simulation facility with multidisciplinary facilities, resources and curriculum, and interdisciplinary capabilities.

ACADEMIC AND CLINICAL ACTIVITIES

A variety of teaching avenues and methods are incorporated into the curriculum of the program. These avenues and methods are used in totality to achieve the cognitive knowledge, psychomotor skills, interpersonal skills, professional attitudes and practical experiences and competence required of physicians in the care of patients and families.

Candidates are expected to:

- attend didactic lectures provided by the program.
- participate actively in departmental presentations, symposia, conferences, workshops, training courses, etc.
- attend regularly and punctually to their clinical duties in operating theaters, intensive care, or any other assigned clinical rotation.

AUDIT AND RESEARCH ACTIVITY

Research is regarded by the Specialty Board as being integral to the development of anesthesia, critical care and pain management. Every trainee should be able to evaluate new developments in their specialty.
To achieve this, trainees require experience in research methods so they can:

- Learn to pose relevant questions, formulate hypotheses, design simple research projects, understand the statistical evaluation of such projects and know how to draw valid conclusions.
- Develop and maintain a system of continuous learning in order to keep abreast of major clinical and research developments.
- Learn to apply audit principles to clinical practice.

Research Goals

- Review the current anesthesia literature
- Become facile at doing library searches
- Understand the research process
- Development of an idea
- Writing up the proposal
- Submitting the proposal to the Hospital Patient Protection Committee
- Development of data collection sheets
- Recruitment of patients into the protocol
- The process of data entry and analysis
- Proper selection of statistical tests
- Abstract preparation and submission
- Journal submission
- Participate in the presentation of at least one abstract/paper at a major meeting
- Publish at least one abstract
- Publish at least one paper in a refereed major journal

We encourage all the residents to publish at least one research work in an indexed journal during their training period. Three blocks (one block each from R2 to R4) are assigned for research activities.

Annually there will be a dedicated research day for the residents, which is usually scheduled in the fourth quarter of the year. The residents will be assigned with supervisors to help them conduct and present a short summary of their own research work like a study, interesting case, or audit work.
EXAMINATION

A. End of Year Examination

Components of End of Year Exam: The exam comprises of 2 individual major components (written and Clinical VIVA exam).

1. The written MCQ, including re-sit exam, consists of at least one hundred (100) multiple choice questions (MCQs).
   a. It is mandatory that all residents pass the written (MCQs). The passing score for the external examinations would be as per the policy of that examination body.
   b. If failed to pass by the resident, a re-sit MCQ exam with the same quality and extent as the initial exam will be given within three (3) months.
   c. The passing score for the locally made re-sit written examination is: R1 – 50%, R2 – 55%, R3 – 60%, R4% - 65%.
   d. Failure to pass the re-sit MCQ exam will cause the resident to repeat the year.

2. The clinical VIVA, including re-sit exam, consists of equipment, short topic, and short case stations.
   a. It is mandatory that all residents pass the Clinical VIVA exam.
   b. In order to pass the clinical VIVA, a resident must clear these two (2) criteria:
   c. Have an average mark of at least 70% (the average of 12 marks from 12 examiners) AND
   d. Get less than 5 Failure marks out of the 12 marks
   e. If failed to pass by the resident, a re-sit clinical VIVA exam will be given within three (3) months.
   f. The same passing criteria will be applied for the re-sit clinical examination.
   g. Failure to pass the re-sit clinical exam will cause the resident to repeat the year.

B. OMSB PART I Examination

1. The examination is a qualifying examination. A resident must pass OMSB Part-I Examination before attempting the Final Examination to obtain the Specialty Certificate.
2. A Resident is allowed three (3) attempts to pass the OMSB Part I Exam. This exam can be attempted at R2; however, the Scientific Committee may selectively allow a resident who is competent to do OMSB Part I Exam at the end of R1.

3. No R3 Resident will be allowed to progress to R4 level without passing the OMSB Part I Exam.

4. OMSB Registration will be cancelled if a resident does not pass the OMSB Part I in three (3) attempts.

5. The passing score for this examination is 70%. However, if the percentage of the residents passing the examination are less than 70%, the passing score can be adjusted lower to achieve 70% passing rate and that the score can be lowered up to 65% (whichever comes first). Under no circumstances, the score can be reduced below 65%.

C. The Final Examination for the Specialty Certificate (OMSB Part II)

1. The Final OMSB Part 2 Examination will be conducted after a successful completion of the training program of the specialty for the period approved, and passing all End of Training Year Examinations as well as Part I Examination for the Specialty Certificate.

2. The examination consists of written part (MCQ) and clinical examination / case scenarios. The written part is designed to evaluate clinical knowledge, clinical judgment and basic sciences. Oral and Clinical parts are designed to test the trainee's skills and abilities to interpret various clinical conditions describing the proper and accurate anesthetic and/or critical care management. The candidates will also be tested on the use of different equipments/instruments and procedures in the operating room, critical care situations and pain management.

3. The Final Exam is conducted during the final year of the training period. The Resident who fails the exam may repeat it within a year after the approval of the Scientific Committee. The Residents will be terminated from the Residency training program if he/she does not succeed in the third attempt. However, in exceptional cases, the Resident may be granted a fourth attempt by OMSB.

4. The Final Examination may consist of written and oral parts, OSCE, and short clinical cases.

5. The passing score is 70%. However, if the percentage of the Residents passing the examination is less than 70%, the passing score can be lowered by one mark aiming at achieving 70% passing rate or reaching a percentage of 65%, whichever comes first. Under no circumstances, the score can be lowered below 65%.
**Article (27):** The Scientific Committee may change the format and the passing score of the examinations after the approval of the Executive Board.

**List of Examinations for Anesthesia Training Program:**

1. OMSB End of Year Examination
2. OMSB Part 1 Examination
3. OMSB Part 2 Written and Clinical Examinations
4. Arab Board Exam:
   a. Part 1 Written Examination
   b. Part 2 Written and Clinical Examinations
5. College of Anesthetists of Ireland MCAI Examination (optional)

Candidates are encouraged to take either Saudi Board or Arab Board Exams or both. They have opportunity to sit for Part I of College of Anaesthetists, Dublin examination as well.

**RESIDENTS EVALUATION PROGRESS (RESIDENT'S SIX MONTHLY AND ANNUAL EVALUATION)**

Throughout the anesthetic training program all trainees undergo summative assessments designed to assess knowledge and skills, quantify experience, and to estimate the individual trainee's eligibility to progress to further stages of training or to a career post. The program utilizes the following forms:

- Daily evaluation form
- Monthly in-training evaluation form (End of Block Evaluation)
- Six-monthly and Annual evaluations
- Mini-Clinical Exercise
- Multisource feedback (360 degree)
- Procedural skills form
- Presentation evaluation form
- Case-based discussion
- Research Block

(See Appendix V)
At the end of each Block, the supervising consultant team shall provide the Training Committee with a completed evaluation of the resident's performance during that period of rotation as per ACGME-I core competencies. The candidate must be made aware of the evaluation report.

For six-monthly and annual evaluations, all resident monthly evaluations are being collated in a single form. This form will be shown to the residents to view their overall assessment in the past 6 months or year regarding evidence of the quality, quantity and variety of work. Decision regarding further progress and training needs will be made along with proper counselling and discussion regarding the same.

**LOGBOOK**

There is no attempt to state the exact number of cases required during residency, but each resident is required to keep an individual record of cases and procedures done during their training, using the Resident Log Book.

All trainees are required to maintain a log book to record all activities of training.

Contents of the logbook include:

- Anesthetic procedures and technical skills acquired during the training period.
- Major invasive and non-invasive diagnostic monitoring procedures performed or learned, such as insertion of vascular lines, bronchoscopy, fiberoptic laryngoscopy, percutaneous tracheostomy, diagnostic and therapeutic pain management interventions, obstetric analgesia, various critical care unit procedures etc. Records of complications and other critical incidents are also equally important.

(See Appendix I-IV)
## SPECIFIC PROCEDURES

<table>
<thead>
<tr>
<th>ANESTHESIA ADMINISTRATION</th>
<th>MINIMUM NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intrathoracic with CPB</td>
<td>25</td>
</tr>
<tr>
<td>Intrathoracic without CPB</td>
<td>10</td>
</tr>
<tr>
<td>Major Vascular (e.g. carotid, aorta, iliac)</td>
<td>5</td>
</tr>
<tr>
<td>Intracranial vascular</td>
<td>5</td>
</tr>
<tr>
<td>Intracranial non-vascular</td>
<td>20</td>
</tr>
<tr>
<td>Labor analgesia</td>
<td>10</td>
</tr>
<tr>
<td>C-Section</td>
<td>50</td>
</tr>
<tr>
<td>Ambulatory, same day (Day cases)</td>
<td>30</td>
</tr>
<tr>
<td>Trauma (major polytrauma and burns)</td>
<td>10</td>
</tr>
<tr>
<td>General anesthesia/monitored anesthesia care</td>
<td>500</td>
</tr>
<tr>
<td>Spinal</td>
<td>50</td>
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<tr>
<td>Epidural</td>
<td>20</td>
</tr>
<tr>
<td>Caudal</td>
<td>30</td>
</tr>
<tr>
<td>Nerve block</td>
<td>30</td>
</tr>
</tbody>
</table>

### PROCEDURES/TECHNIQUES

| Insertion of peripheral arterial catheters          | 30             |
| Insertion of pulmonary artery catheter             | 5              |
| Insertion of central venous catheters              | 30             |
| Fiberoptic intubation of the trachea                | 2              |
| Transesophageal echocardiography                    | 5              |
| One-lung ventilation (Double lumen endotrach tube placement) | 4             |
| Laryngeal mask airway                              | 50             |
| EEG monitoring (observer)                          | 5              |
| Evoked potential monitoring (intraop for neuro)     |                |

### AGE GROUP

<p>| Under 45 weeks postconceptual age (PCA)            | 5              |
| 45 weeks PCA to one year                           | 10             |
| &gt;1 year-12 years                                   | 100            |
| Older than 65 years                                | 100            |</p>
<table>
<thead>
<tr>
<th>PAIN MANAGEMENT</th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Initial pain consultation</strong></td>
<td></td>
</tr>
<tr>
<td>Acute</td>
<td>30</td>
</tr>
<tr>
<td>Chronic</td>
<td>10</td>
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<tr>
<td>Cancer</td>
<td>5</td>
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<tr>
<td><strong>Pain Procedures:</strong></td>
<td></td>
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<tr>
<td>Spinal</td>
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<tr>
<td>Epidural</td>
<td></td>
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<tr>
<td>Nerve Block</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>
**PROGRESSION OUTLINE**

**BLS, ACLS**

R1

EOY Exam

R2

EOY Exam

+ OMSB Part 1 Exam

R3

EOY Exam

R4

EOY Exam

R5

OMSB Part 2 Exam

Certificate of Completion

**PALS, NRP**

**ATLS**

**CERTIFICATION**

Criteria for Receiving Completion of Training Certificate:

1. Passed all End-of-Year Exams
2. Achieved Satisfactory Evaluations

1. OMSB Workshop Attendance
2. Block Evaluation
3. Meeting the required number of procedural skills
3. Passed OMSB Part I or equivalent
5. Completed successfully the Resident Development Program (OMSB Workshop)
6. Provided evidence of a research project during residency

**Criteria for Receiving Oman Medical Board Specialty Certificate**

The OMSB shall issue the Oman Medical Board Specialty Certificate following the:

1. Completion of the training program
2. Passing the final examination (OMSB Part II)
PROGRAM AND OMSB POLICIES

VACATION, HOLIDAYS AND ON-CALL

- Residents are entitled for four (4) weeks’ vacation annually.
- Sick and maternity leaves will be compensated for, during or at the end of training.
- On call duty will be an average of one call every five nights (minimum of five calls per month) of 24 hours per call. The candidate is expected to perform the pre-operative clinical assessment of patients listed for operation the following day and report to the concerned consultant or consultant on call.

RESIDENT GRIEVANCE POLICY

1. A Resident may file a grievance if a reasonable basis exists to support allegations that he/she has been treated contrary to the existing policies governing the residency training program.

2. The Resident must file with the Chairman/Program Director any alleged grievance in writing within ten (10) days of the date on which the alleged grievance occurred. Any grievance not timely filed shall be waived and not processed. The written complaint should be as specific as possible regarding the action that precipitated the grievance: date, place, people involved, including witnesses, IF ANY. A summary of the incident, efforts made to settle the matter informally, and the remedy sought.

3. The Chairman/Program Director shall appoint an Ad Hoc Committee to review and investigate the grievance, negotiate, and try to resolve it. The Ad Hoc Committee shall respond to the grievance in writing within 15 days of receipt of the complaint. The response shall outline the actions that will or will not be taken to resolve the grievance.

4. The Resolution of the Ad Hoc Committee will be discussed in next Scientific Committee Meeting.

5. The Scientific Committee will make a consensus on the final decision to take in response to the Resident’s grievance in writing within one (1) month from
the date the Ad Hoc Committee sends their resolution report. The Scientific Committee response must be copied to the OMSB Executive President.

6. If a Resident is dissatisfied with the Scientific Committee’s resolution, he/she may request a second appeal in writing to the Vice President for Academic Affairs within ten (10) days of receiving the Scientific Committee’s resolution. The Resident shall submit copies of the original grievance and the Scientific Committee's response.

7. The Vice President for Academic Affairs will forward the grievance case to the Education Advisory Committee for review and investigation. The Education Advisory Committee will write a resolution to the grievance within fifteen (15) days from the date the Resident sends his/her second appeal.

8. The resolution report and decision made by the Education Advisory Committee is final.

SUBSTANCE ABUSE POLICY AND PHYSICIAN’S ASSISTANCE PROCEDURES IN ANESTHESIA RESIDENCY PROGRAM

I. Introduction

The department of Anesthesiology will fully comply with the OMSB policy for a drug-free workplace. The department recognizes its obligation to protect patients, other employees, as well as the affected resident or faculty member from the effects of substance abuse and psychiatric/physical impairment. Confidentiality is maintained at all times.

II. Recognition

The purpose of this policy is to provide a means to identify the impaired Anesthesiology resident and faculty member and facilitate treatment. This policy allows confidential reporting and self-reporting of substance abuse and/or mental health problems that may affect a physician's competence.

In addition, the policy provides: 1) for confidential investigation of allegations of substance abuse and/or mental illness, and 2) for interventions to direct impaired individuals to appropriate facilities for evaluation and treatment. The specific terms and conditions for return to work following successful treatment are enumerated in an advocacy agreement that provides for long term monitoring of outcome. This policy shall apply to issues of impairment due to substance abuse and/or mental
illness. The procedures for intervention, monitoring and treatment are to be utilized for all residents and faculty members with impairment due to substance abuse. When mental illness is of sufficient magnitude to impair a physician's competence, the Program Director/Head may elect to utilize these same steps for monitoring treatment in suspected mental illness or may tailor the advocacy agreement to better suit the needs of the impaired resident or faculty member. Any anesthesiology resident or faculty member may seek care for substance abuse and/or mental illness. Any co-worker of any resident or faculty member having information regarding a potentially impaired individual may report this information to the Program Director / Head or an Anesthesiology faculty member.

Sufficient cause for concern and subsequent reporting will include, but will not be limited to:

a. Evidence of misuse of prescribed or non-prescribed drugs
b. Evidence of use of alcoholic drugs while on duty
c. Evidence of impaired performance while on duty
d. Failure to meet duties and responsibilities that other physicians regularly fulfill
e. Repeated poorly explained or unexplained absences
f. Repeated tardiness for scheduled responsibilities
g. Bizarre or disruptive behavior
h. Behavior which is overtly negligent
i. Physical and/or verbal abuse toward any colleague, hospital staff member or patient
j. Any other circumstance suggesting the presence of substance abuse or mental illness.

Any resident, faculty, or staff member should report any potential impairment in a resident or faculty member to either the department head or Program Director (PD). In anesthesiology, there must be heightened concern about substance abuse because of the greater availability of mind-altering drugs and because our specialty is among those medical specialties with a higher incidence of substance abuse. All drug use is constantly monitored and any suspicious discrepancies are reported to the PD by the OT anesthesia nurse. When a suspicion is reported, the PD and the Department Head confer about the likelihood that the report is correct. There need not be proof, just reasonable likelihood. If it is decided that further action is needed, OMSB is consulted to identify a psychiatrist with expertise in substance abuse who can evaluate the resident or faculty member.
III. Action

The PD and Department Head together meet with the resident or faculty member and request him/her to report to the psychiatrist recommended for evaluation. At no time is confidentiality compromised. The matter will be referred to the Anesthesia Education Committee.

Only the OMSB, as per the advice of the Education Committee, may relieve the resident or faculty member from work assignments if impairment is suspected.

IV. Return to Work

The resident or faculty member does not return to work until the OMSB notifies the Anesthesia Education Committee through the Chairman/Program Director when and under what conditions the resident may rejoin the program.
SUGGESTED READING MATERIALS

CORE JOURNALS

- Anesthesiology
- British Journal of Anesthesia
- Anesthesia and Analgesia
- Canadian Journal of Anesthesia
- North America Clinics in Anesthesiology
- Bailliere's Clinical Anesthesiology
- Current Opinion in Anesthesiology
- Critical Care Medicine
- Anesthesia and Intensive Care
- Acta Anesthesiologica Scandanavia
- Middle East Journal of Anesthesiology

OTHER JOURNALS

- Current Opinion in Critical Care
- Critical Care Medicine
- New England Journal of Medicine
- Regional Anesthesia
- Journal of Clinical Anesthesia
- Pain
- Resuscitation
- Journal of Trauma
- Journal of Neurosurgical Anesthesia
- Journal of Clinical Monitoring
- Survey of Anesthesiology
- Chest
**TEXTBOOKS**

- Anesthesia, Ronal D. Miller (Churchill Livingstone)
- Anesthesia and Co-existing Disease, Robert K. Stoelting (Churchill Livingstone)
- Essentials of Anesthesiology, Chung and Lam (W.B. Saunders Company)
  "Recommended for first year"
- Synopsis of Critical Care, William J. Sibbald (Williams & Wilkins)
  "Recommended for ICU rotation"
- Scientific Foundation in Anesthesia (Scurr and Feldman)
- Anesthetic Equipment (C.S. Ward)
- Drugs and Anesthesia Pharmacology for Anesthesiologists, Margaret Wood (Williams & Wilkins)
  "Strongly recommended as a Pharmacology Reference"
- Physics for the Anesthetist (Muskin and Jones, Blackwell)
- Clinical Measurements (Vickers)
- Lecture notes on Medical Statistics. Aviva Petrie (Blackwell Scientific Publications)
- Difficulties in Tracheal Intubation (Latto and Rosen)
- Anatomy for Anesthetists (Ellis and Feldman)
- Handbook for Clinical Anesthesia (Paul Barash)
- Pharmacology for Anesthesia and Intensive Care (Tom E. Peck, Sue Hill)

**ADDITIONAL LISTS**

- Neural Blockade in Clinical Anesthesia & management of Pain, Michael J. Cousins (J.B. Lippincott Company)
  "Recommendation for pain management rotations"
- Obstetric Analgesia and Anesthesia, John J. Bonica
- Manual of Pediatric Anesthesia, David J. Steward (Churchill Livingstone)
- Current Therapy in Critical Care Medicine, Joseph E. Parillo (B.C. Decker Inc.)
  "Recommendation for ICU rotations"
- Atlas of Regional Anesthesia, Jordan Katz (Appleton-Century-Crofts)
  "Helpful as a guide for practical procedures in ICU and anesthesia"
- Anesthesia for Cardiac Surgery (J W W Gothard)
- Anesthesia and Neurosurgery (Cottel Turndoff)
- Anesthesia for Thoracic Surgery (Binumof)
- Acute Pain Management (Cousins Philips)
- Pediatric Anesthesia (Hatch and Sumner – 2008)
LIST OF USEFUL WEBSITES:

- www.omsb.org
- www.rhcml.com
- www.frca.co.uk.com – Highly recommended
- www.sccm.org
- www.emedicine.medscape.com
- www.uptodate.com
- www.capnography.com
- www.nysora.com – Excellent site for regional blocks
- www.nerveblocks.net
- www.anesthesiamcq.com – Multiple Choice Question (MCQ) Site
- www.anesth.uiowa.edu/rasci/movies (Recommended site for procedure movies)
- www.icuroom.net
- www.ccm.tutorials.com – excellent Critical Care Medicine site for residents
- www.answerpage.com

PARTICIPATING TRAINING CENTERS AND MEMBERS OF TEACHING FACULTY

1. Al-Nahdha Hospital
   - Dr. Abdulkader Mahfoudh
   - Dr. Prabhakar Reddy
   - Dr. Mohammad Suleman Sarfaraz Khan
   - Dr. Jayant Puroshottam Pajankar

2. Armed Forces Hospital
   - Dr. Saleh Al Abri
   - Dr. Moosa Awdadthani
   - Dr. Pius Kurian Manavalan
   - Dr. Sojan John
   - Dr. Ali Hamed Ali Al Suleimani
3. Khoula Hospital
   - Dr. Rashid Khan
   - Dr. Naresh Kaul
   - Dr. Gosalia Nikhilkumar Madhukant
   - Dr. Suri Neelam
   - Dr. Shalini Tandon Adhikari
   - Dr. Awad Othman Abdel-Razek
   - Dr. Akram Hanin Guirgis Henein
   - Dr. Aziz Haris
   - Dr. Basman Younis Saed

4. Royal Hospital
   - Dr. Maher Al Bahrani
   - Dr. Sadanandan Prakash
   - Dr. Madan Maddali
   - Dr. Ramlaa Al Qassab
   - Dr. Salama Al Harthy
   - Dr. Sandeep Kantor
   - Dr. Mohan Pallivathukkal Mathews
   - Dr. Raafat Faris
   - Dr. Ravindra Kumar Adhikari
   - Dr. Rajesh Guruprasad Kakkad
   - Dr. Sharef Abdu Ellatif Abdelhamid Mohammed
   - Dr. Elizabeth Kurian
   - Dr. Juhi Naresh Chandwani
   - Dr. Chinmoy Roy

5. Sultan Qaboos University Hospital
   - Dr. Rajini Kausalya
   - Dr. Nasser Al Kemyani
   - Dr. Intisar Al Macki
   - Dr. Sinna Kirouchenan
   - Dr. Karin Nollain
   - Dr. Pradeep Kumar Sharma
   - Dr. C Ram Narayan Rao
   - Dr. Suresh Chengode
### APPENDIX I

**LOGBOOK**

<table>
<thead>
<tr>
<th>Urgency</th>
<th>Supervision</th>
<th>Anesthetic Technique</th>
<th>Specialty</th>
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<tbody>
<tr>
<td>S = Scheduled</td>
<td>I = Immediate</td>
<td>GA, Caudal</td>
<td>G = General, P = Plastic</td>
</tr>
<tr>
<td>U = Urgent</td>
<td>L = Local</td>
<td>CSE, Epidural</td>
<td>N = Neuro, Pa = PaedS</td>
</tr>
<tr>
<td>E = Emergency</td>
<td>D = Distant</td>
<td>IVRA, Sedation</td>
<td>CT = CardThor, Or = Ortho</td>
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<tr>
<td></td>
<td></td>
<td>Spinal, Monitor</td>
<td>OBG = ObsGyn, V = Vase</td>
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<table>
<thead>
<tr>
<th>Year</th>
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<th>Module</th>
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<th>Date</th>
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<th>Sex</th>
<th>DoB</th>
<th>ASA</th>
<th>Urgency</th>
<th>Supervision</th>
<th>Operation</th>
<th>Technique</th>
<th>Specialty</th>
<th>Procedure</th>
<th>Start</th>
<th>End</th>
<th>Events</th>
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<th>Date</th>
<th>Pat. ID</th>
<th>Sex</th>
<th>DoB</th>
<th>ASA</th>
<th>Urgency</th>
<th>Supervision</th>
<th>Operation</th>
<th>Technique</th>
<th>Specialty</th>
<th>Procedure</th>
<th>Start</th>
<th>End</th>
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<th>Sex</th>
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<th>Supervision</th>
<th>Operation</th>
<th>Technique</th>
<th>Specialty</th>
<th>Procedure</th>
<th>Start</th>
<th>End</th>
<th>Events</th>
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APPENDIX II

Log Book Summary (To be made at the end of every 6 months)

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<tr>
<th>Period of Report</th>
<th>From</th>
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<td>Name</td>
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</tr>
<tr>
<td>Grade</td>
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<td>R2</td>
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<td>(Tick app. box)</td>
<td>Others (specify)</td>
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<tr>
<td>Reg. No.</td>
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<tr>
<td>Hospital</td>
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Log Book Data

Summary for Period

- Total No. of Anesthetics given
- Total sessions in ICU
- Total sessions in acute & chronic pain

Urgency & Level of Supervision

<table>
<thead>
<tr>
<th></th>
<th>Immediate</th>
<th>Local</th>
<th>Distant</th>
<th>Remote</th>
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<tr>
<td>Scheduled</td>
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</tr>
<tr>
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<tr>
<td>Emergency</td>
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ASA Grade

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<td>Total Cases</td>
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Time of Day

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<th>00:00 - 7:30</th>
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<td>6m to &lt;2 yr</td>
<td>2yr to &lt;7 yr</td>
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<td>--------------</td>
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<tr>
<td>Gen Surgery</td>
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<td>Paed Surgery</td>
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<td>CardioThoracic</td>
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<td>Burns</td>
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<td>Eye</td>
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<td>Ortho/Trauma</td>
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<tr>
<td>Other</td>
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<td>Total By Age</td>
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<tr>
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<th>Nurse</th>
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<th>R4</th>
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| No. of Cases |       |             |    |    |    |    |
## APPENDIX III

### Procedures

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<td>GA</td>
<td>Respiratory Management</td>
<td>Facemask</td>
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<td>Subclavian</td>
<td>Gaseous Induction</td>
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<td>Laryngeal mask</td>
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<td>Spinal</td>
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<td>Tracheal Intubations</td>
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<td>Arterial</td>
<td>Epidural</td>
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<td>Fibreoptic Intubations</td>
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<td>PA Catheter</td>
<td>CSE</td>
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<td>Blind Nasal Intubations</td>
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<td>Picco line</td>
<td>Caudal</td>
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<td>Cricothyrotomy</td>
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<td>Field Block</td>
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<td>Percutaneous Tracheostomy</td>
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<td><strong>Resuscitation</strong></td>
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<td>Double Lumen Tube</td>
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<td>Renal Replacement</td>
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<td>Nutritional</td>
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### APPENDIX IV

**Other Professional Development**

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<td>Examinations Passed</td>
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<td>Courses Attended</td>
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<td>Research</td>
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<td>Presentations</td>
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<td>Teaching</td>
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<td>Positions of Responsibility</td>
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<td>Management</td>
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<td>Administration</td>
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<td>Other Training Experience</td>
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<td>Out of Program Experience</td>
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**Signature of Resident:**

**Signature of Program Director:**
APPENDIX V

EVALUATION FORMS

ANESTHESIA RESIDENCY PROGRAM
DAILY RESIDENT EVALUATION FORM

<table>
<thead>
<tr>
<th>DATE:</th>
<th>NAME OF RESIDENT</th>
<th>LEVEL</th>
<th>NAME OF ANAESTHETIST/TRAINER</th>
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<tr>
<td>TIME IN:</td>
<td>TIME OUT:</td>
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</table>

U: unsatisfactory  BE: below expectations  ME: meets expectations  AE: above expectations  O: outstanding  NA: Not applicable or not assessed

<table>
<thead>
<tr>
<th>Evaluation Item</th>
<th>U</th>
<th>BE</th>
<th>ME</th>
<th>AE</th>
<th>O</th>
<th>N/A</th>
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<tbody>
<tr>
<td>1- Basic and clinical knowledge</td>
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<td>2- Decision making and anesthetic plan</td>
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<td>3- Organization of work and time management</td>
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<td>4- Ability to manage emergency conditions.</td>
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<td>5- Technical Skills (give example):</td>
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<td>6- Punctuality</td>
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<td>7- Attitude to patients and OR personnel</td>
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<td>8- Recognizes own limitations</td>
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<td>9- Verbal and written communication</td>
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<tr>
<td>10- Maintains code of ethics and patient confidentiality</td>
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<tr>
<td>11- Attends and contributes to rounds</td>
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<td>12- Accepts and acts on constructive feedback</td>
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Comments:
# OMAN MEDICAL SPECIALTY BOARD
## IN-TRAINING EVALUATION REPORT (PER BLOCK)

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<th>CRITERIA</th>
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<th>Below Expectations</th>
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<th>Exceeds Expectations</th>
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<td>1. Demonstrates basic science knowledge</td>
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<td>2. Applies medical knowledge in patient care</td>
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<td>II. PATIENT CARE (PC)</td>
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<td>3. Elicits pertinent history</td>
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<td>4. Performs pertinent physical exam</td>
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<td>5. Demonstrates appropriate clinical judgment</td>
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<td>6. Interprets data logically</td>
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<td>7. Executes management plans effectively</td>
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<tr>
<td>8. Manages emergencies promptly</td>
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<tr>
<td>9. Demonstrates appropriate procedural skills</td>
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<td>III. PROFESSIONALISM (P)</td>
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<td>10. Is punctual</td>
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<tr>
<td>11. Demonstrates sensitivity to cultural diversity</td>
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<tr>
<td>12. Demonstrates responsibility &amp; accountability</td>
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<tr>
<td>13. Responds to patient needs before his/her own needs</td>
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<tr>
<td>14. Respects patient's privacy and autonomy</td>
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<tr>
<td>15. Develops skills in conflict resolution</td>
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<td>16. Exhibits respect, compassion and integrity</td>
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<tr>
<td>IV. INTERPERSONAL &amp; COMMUNICATION SKILLS (ICS)</td>
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<tr>
<td>17. Communicates effectively with patients &amp; families</td>
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<tr>
<td>18. Communicates effectively with health care professionals</td>
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<td>19. Maintains comprehensive and timely medical records</td>
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<td>20. Works effectively as a team member</td>
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<td>21. Leads medical teams effectively</td>
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<td>V. SYSTEMS-BASED PRACTICE (SBP)</td>
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<td>22. Utilizes resources appropriately</td>
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<td>23. Participates in quality improvement activities</td>
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<td>24. Advocates for quality patient care</td>
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<td>25. Complies with patient safety measures</td>
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<tr>
<td>26. Coordinates patient care within the healthcare system</td>
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<tr>
<td>VI. PRACTICE-BASED LEARNING &amp; IMPROVEMENT (PBLI)</td>
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<td>27. Recognizes own strengths and limitations</td>
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<td>28. Incorporates feedback into practice</td>
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<td>29. Critically appraises medical literature</td>
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<td>30. Demonstrates appropriate teaching skills</td>
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<td>31. Uses technology for self and system improvement</td>
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<td>32. Develops lifelong learning skills</td>
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<td>33. Employs practice-based data to improve care</td>
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</table>

**OVERALL ASSESSMENT**

*please see overleaf*
Resident Leaves
During this rotation, the resident took the following leaves:

☐ Annual Leave, specify # of days __________
☐ Sick Leave, specify # of days __________
☐ Emergency Leave, Specify # of days __________
☐ Scientific Leave, specify # of days __________

COMMENTS: (Strengths and Areas for Improvement/Need for Special Attention)

AGREED ACTION:

This evaluation has been reviewed with the resident: ☐ Yes ☐ No

Name of Supervising Trainer: __________________________ Signature: __________________________ Date: __________

Name of Resident: __________________________ Signature: __________________________ Date: __________

SCALE

1. Unsatisfactory
   Poor competency judgment. Requires continuous supervision.

2. Below Expectations
   Inadequate competency judgment. Requires frequent supervision.

3. Meets Expectations
   Effective competency judgment. Supervision needed for complex/difficulty situations.

4. Exceeds Expectations
   EXEMPLARY competency judgment including in complex/difficult situations. Can practice independently.

Not Applicable
Not relevant in the setting, not observed or unable to evaluate

Modified 4 March 2015
## General Approach

<table>
<thead>
<tr>
<th>Domain</th>
<th>Unsatisfactory</th>
<th>Below expectations</th>
<th>Meets expectations</th>
<th>Exceeds expectations</th>
<th>Not Applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Case Approach</td>
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<tr>
<td>2. Thought Organization</td>
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<td>3. Data Documentation</td>
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<td>4. Data Interpretation</td>
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<td>5. Decision Justification</td>
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<td>6. Communication Skills</td>
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<td>7. Patient’s safety</td>
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<td>8. Managing Complexity</td>
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<td>9. Ethics Considerations</td>
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<td>10. Acceptance of feedback</td>
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<td>11. Lessons learned</td>
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<tr>
<td>12. Overall performance</td>
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</table>

## Specialty specific

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<th>Exceeds expectations</th>
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## Assessment

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<tr>
<td>Do More</td>
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<td>Do Less</td>
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<td>Avoid</td>
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</table>

This evaluation has been discussed with the resident

Yes [ ] No [ ]

Trainer’s Name: __________________________ Signature: __________________________ Date: __________

Resident Signature: __________________________ Date: __________

9 March 2013 AD/HE
# Oman Medical Specialty Board

**Multisource Feedback (360-Degree Evaluation)**

**Name of Resident:** 
**Program:** 
**OMSB #:** 
**Resident Level:** 
**Rotation:** 

Please check one of the following titles:

- Consultant
- Trainer
- House Officer
- Self-Assessment
- Patient
- Others: 

(please specify)

## Criteria

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Unsatisfactory</th>
<th>Below Expectations</th>
<th>Meets Expectations</th>
<th>Exceeds Expectations</th>
<th>Not Applicable</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Attitude to staff: Respects and values contributions of other members of the team.</td>
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<td>2. Attitude to patients: Respects the rights, choices, beliefs, and confidentiality of patients.</td>
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<td>3. Reliability and Punctuality.</td>
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<td>4. Communication skills: Communicates effectively with patients and families.</td>
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<tr>
<td>5. Communication skills: Communicates effectively with healthcare professionals.</td>
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<tr>
<td>6. Honesty and Integrity.</td>
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<td>7. Team player skills: Supportive and accepts appropriate responsibility; Approachable.</td>
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<td>8. Leadership skills: Takes responsibility for own actions and actions of the team.</td>
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<tr>
<td>9. Professional development: Commitment to improving quality of service; keeps up-to-date with knowledge &amp; skills.</td>
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</tbody>
</table>

## Overall Performance

Please circle one or more of the following words that you would use to describe the doctor:

- Helpful
- Aloof
- Professional
- Friendly
- Sensitive
- Over-familiar
- Unhelpful
- Uncommunicative
- Approachable
- Self-Interested
- Knowledgeable
- Arrogant
- Insensitive
- Disinterested
- Keen
- Punctual
- Often late
- Appropriately-dressed
- Scruffy
- Team Player
- Assertive
- Aggressive
- Unsafe
- Dependable
- Enthusiastic
- Cynical
- Responsible
- Critical
- Short-tempered
- Sincere
- Frustrated
- Cheerful
- Disrespectful

## Comments/Areas for Improvement:

## Agreed Action:

Assessor’s Name: 
Signature: 
Date: 
Designation of Assessor:
OMAN MEDICAL SPECIALTY BOARD
MINI-CLINICAL EVALUATION EXERCISE (MINI-CEX)

Name of Resident: .................................................. OMSB #: ..................................................

Program: .................................................. Resident Level: .................................................. Rotation: ..................................................

Setting: ☐ Ward ☐ ICU ☐ OPD ☐ ED ☐ Other, please specify _______________________

Types: ☐ New Case ☐ Follow-up

Focus: ☐ History ☐ Physical Exam ☐ Diagnosis ☐ Management ☐ Counseling

Complexity: ☐ Low ☐ Average ☐ High

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>Unsatisfactory</th>
<th>Below Expectations</th>
<th>Meets Expectations</th>
<th>Exceeds Expectations</th>
<th>Not Applicable N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Medical Interviewing Skills.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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</tr>
<tr>
<td>2 Physical Examination Skills.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>3 Clinical Judgement.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>4 Communication Skills.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>5 Consideration for patient/Professionalism.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>6 Organization/efficiency</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>7 Counselling skills.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>8 Overall Clinical Care.</td>
<td>☐</td>
<td>☐</td>
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</table>

SUGGESTIONS FOR DEVELOPMENT:

AGREED ACTION:

Assessor's Name: .................................................. Signature: .................................................. Date: ..................................................

Designation of Assessor: ..................................................

Time spent observing trainee: .................................................. Time spent giving feedback: ..................................................

Total Mini-CEX Evaluation Time: ..................................................

Trainee's satisfaction with Mini-CEX process: ☐ Very dissatisfied ☐ Dissatisfied ☐ Satisfied ☐ Very Satisfied

Trainee Signature: ..................................................
<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>Unsatisfactory 1</th>
<th>Below Expectations 2</th>
<th>Meets Expectations 3</th>
<th>Exceeds Expectations 4</th>
<th>Not Applicable N/A</th>
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<tbody>
<tr>
<td><strong>I. INTRODUCTION</strong></td>
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<tr>
<td>1. Self-introduction.</td>
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<td>2. Gained attention of group.</td>
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<td>3. Stated the objectives.</td>
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<tr>
<td><strong>II. PROCESS AND CONTENT</strong></td>
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<tr>
<td>1. Clear, concise delivery.</td>
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<td>2. Logical sequence.</td>
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<td>3. Well paced.</td>
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<td>4. Knowledge of subject and preparedness.</td>
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<td>5. Good use of voice/tone.</td>
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<td>6. Made appropriate eye contact and body language.</td>
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<td>7. Effective group participation (interactive).</td>
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<td>8. Appropriate teaching methods used.</td>
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<td>9. Slides were easy to read and see.</td>
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<td>10. Grammar, spelling, and punctuations are correct.</td>
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<td><strong>III. CONCLUSION</strong></td>
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<tr>
<td>1. Effective use of questioning.</td>
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<td>2. Summarized key points.</td>
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<td>3. Objectives are met.</td>
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<td>4. Kept to time limit.</td>
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COMMENTS AND SUGGESTIONS FOR IMPROVEMENT:


AGREED ACTION:


Assessor’s Name: ___________________________  Signature: ______________________  Date: ___________________________

Designation of Assessor: ___________________________
## EVALUATION OF PROCEDURAL SKILLS

**Criteria**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Unsatisfactory</th>
<th>Below Expectations</th>
<th>Meet Expectations</th>
<th>Exceed Expectations</th>
<th>Not Applicable N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Demonstrates understanding of indications, contraindications relevant</td>
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<td>anatomy, technique of procedure.</td>
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<td>2. Obtains informed consent.</td>
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<td>3. Demonstrates appropriate preparation for procedure.</td>
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<td>5. Technical ability.</td>
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<td>6. Aseptic technique (if appropriate).</td>
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<td>7. Seeks help where appropriate.</td>
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<td>8. Professionalism and communication with the patient during the</td>
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<tr>
<td>procedure.</td>
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<tr>
<td>9. Communication skills.</td>
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<td>11. Awareness and management of complications.</td>
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<td>12. Counseling and communication of results to patient/relatives.</td>
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<td>13. Overall ability to perform procedure.</td>
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</table>

**Comments:** (Please use this space to record areas of strengths or any suggestions for development.)

**Agreed Action:**

---

**Assessor’s Name:** ____________________________  **Signature:** ____________________________  **Date:** ____________________________

**Designation of Assessor:** ____________________________
# OMAN MEDICAL SPECIALTY BOARD
## EVALUATION FORM FOR JOURNAL CLUB PRESENTATION

**Name of Resident:** .......................................................... **OMSE #:** ..........................................................  
**Program:** .......................................................... **Resident Level:** .......................................................... **Rotation:** ..........................................................
**Date of Presentation:** ..........................................................

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>Unsatactory</th>
<th>Below Expectations</th>
<th>Meets Expectations</th>
<th>Exceeds Expectations</th>
<th>Not Applicable</th>
<th>N/A</th>
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<tbody>
<tr>
<td>1. PRESENTATION STYLE</td>
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<tr>
<td>1. Introduced self.</td>
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<td>2. Delivered presentation clearly and concisely.</td>
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<td>3. Made appropriate eye contact and body language.</td>
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<td>4. Encouraged interactive discussion.</td>
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<td>5. Used appropriate teaching method.</td>
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<td>6. Used audiovisuals effectively.</td>
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<td>7. Utilized correct grammar and spelling.</td>
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<tr>
<td>8. Kept to time limit.</td>
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<tr>
<td>2. PROCESS AND CONTENT</td>
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<td>9. Selected relevant article for presentation.</td>
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<td>10. Identified study objectives and goals.</td>
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<td>11. Summarized research abstract.</td>
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<td>12. Discussed suitability of study design.</td>
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<td>13. Identified methodology issues in the conduct of study</td>
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<td>14. Summarized study results.</td>
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<td>15. Assessed study statistical analysis.</td>
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<td>16. Assessed issues related to Internal Validity (PICO).</td>
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<td>17. Evaluated the clinical and statistical significance of the results.</td>
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<td>18. Summarized the issues related to generalizability of the results.</td>
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<td>19. Identified strengths and weaknesses of the research paper.</td>
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<td>20. Made valid conclusions on the paper.</td>
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<td>Global rating of critical appraisal skills.</td>
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**COMMENTS AND SUGGESTIONS FOR IMPROVEMENT:**

**Strengths:**

**Suggestions for Improvement:**

**AGREED ACTION:**

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**Assessor’s Name:** .......................................................... **Signature:** .......................................................... **Date:** ..........................................................  
**Designation of Assessor:** ..........................................................
# Rotation Evaluation Form

**Program:** __________________  **Academic Year:** __________________  **Rotation:** __________________

**Training Center:** __________________  **Block:** __________________

## Rotation

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<thead>
<tr>
<th>Item</th>
<th>Exemplary</th>
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<th>Good</th>
<th>Very Good</th>
<th>Outstanding</th>
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<td>1. Clinical Volume</td>
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<td>1. The number of in-patient cases seen</td>
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<td>3. Range of clinical cases/problems</td>
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<td>6. The opportunity to see acute emergency cases</td>
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<td>9. Formal didactic teaching</td>
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<td>10. Quality assurance activities</td>
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<td>11. Journal Club</td>
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<td>4. Supervision</td>
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<td>14. Support &amp; supervision</td>
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<td>15. Feedback from trainer on performance</td>
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<td>16. Assessment of Resident performance</td>
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<td>5. Educational environment</td>
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<td>17. Physical environment (e.g. on-call rooms, lounges, etc.)</td>
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<td>18. Learning environment (e.g. teamwork, support, professional, etc.)</td>
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<td>19. Learning resources (e.g. workstations, microscopes, e-learning, etc.)</td>
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## Overall Quality of Rotation

- Exemplary: __________  - Proficient: __________  - Good: __________  - Very Good: __________  - Outstanding: __________  - N/A: __________

**Comments: (Strengths and Areas for Improvement)**

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**Signature of Resident (optional):** __________________  **Date:** __________________

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*Updated July 6, 2015*
## TRAINER EVALUATION BY RESIDENTS

Name of Trainer: ________________________  Training Center: ________________________

Program: ________________________  Rotation: ________________________  Block: FROM ______ TO ______

A. How many weeks did you work with this consultant/trainer?

- [ ] 1
- [ ] 2
- [ ] 3
- [ ] 4

B. The frequency of your contacts with the teaching consultant/trainer was (per week)?

- [ ] 1 or less
- [ ] 2
- [ ] 3
- [ ] 4
- [ ] 5 or more

<table>
<thead>
<tr>
<th>TRAINER</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
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<td>I. Medical Knowledge (MK)</td>
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<td>1. Demonstrated breadth of knowledge</td>
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<td>II. Patient Care (PC)</td>
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<td>2. Made rounds regularly</td>
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<td>3. Promoted a comprehensive approach to patient care</td>
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<td>4. Provided opportunity for performing procedure &amp; techniques</td>
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<td>III. Professionalism (P)</td>
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<td>5. Was approachable</td>
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<td>6. Provided a good role model</td>
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<td>7. Was available with enough time for resident's support &amp; supervision</td>
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<td>IV. Interpersonal and Communication Skills (ICS)</td>
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<td>8. Established good rapport with resident</td>
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<td>9. Communicated well with colleagues</td>
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<td>10. Communicated well with other health care professionals</td>
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<td>11. Related well with patients and families, if applicable</td>
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<td>V. System-Based Practice (SBP)</td>
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<td>12. Was well organized</td>
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<td>13. Allowed resident protected teaching time</td>
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<td>14. Allowed residents to attend mandatory workshops, if applicable</td>
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<td>VI. Practice-Based Learning and Improvement (PBLI)</td>
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<td>15. Provided quality teaching</td>
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<td>16. Stimulated enthusiasm for knowledge</td>
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<td>17. Provided direction &amp; feedback</td>
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<td>18. Encouraged resident to take appropriate responsibility</td>
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<td>19. My total workload was appropriate for the time available</td>
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Comments: (Strengths and Areas for Improvement)

Signature of Resident (optional): ________________________  Date: ________________________

Version 1. Updated 8 July 2015
APPENDIX VI

RESIDENCY PROGRAM SYLLABUS

1. PREOPERATIVE ASSESSMENT

- The ASA classification and GCS
- The interpretation of relevant preoperative investigations
- Restriction of food and fluid by mouth, cessation of smoking, correction of dehydration
- Assessment of difficulties in airway management and the importance of 'shared airway'
- Implications for anesthesia of common medical conditions (ischemic heart disease, hypertension, bronchial asthma, diabetes, rheumatoid arthritis, etc.)
- Anesthetic implications of current drug therapy and whether it should be continued, stopped or modified peri-operatively
- Need for and methods of pre-operative DVT prophylaxis
- The importance of anesthetic and genetic disease history with respect to suxamethonium apnea, anaphylaxis, and malignant hyperthermia
- Post-operative analgesic needs
- Assessment of whether post-operative ICU or HDU care is required
- Importance of consent
- Dangers of repeat anesthesia

2. PREMEDICATION

- Rationale use for premedicant drugs
- Choice of drugs, advantages and disadvantages
- Rationale for antacid and prokinetic premedication
- Rationale for DVT prophylaxis
- Understanding of causes and implications of delayed gastric emptying

3. ANESTHESIA, HDU AND ICU EQUIPMENT; MONITORING AND SAFETY

- Physical principles underlying the function of the anesthetic machine, pressure regulators, flowmeters, vaporizers, breathing systems
- Chemistry of absorption of carbon dioxide
- Principles of end tidal capnography and pulse oximetry
• Principles of lung ventilators, disconnection monitors
• Manufacture and storage of oxygen, nitrous oxide, carbon dioxide, compressed air, gas cylinders
• Pipeline and suction systems
• Basis of pre-use check of anesthetic machines, breathing circuits and monitors
• Airways, tracheal tubes, tracheostomy tubes, emergency airways and trolley, laryngeal masks, oxygen therapy equipments, self-inflating bags
• The content of an anesthetic record
• Function and use of resuscitation equipment, transfusion devices
• Humidification devices
• Anesthetic gas scavenging systems, humidity
• Sterilization and cleaning of equipment
• Electrical safety
• Characteristics of intravenous cannulae, spinal and epidural needles

4. INDUCTION OF GENERAL ANESTHESIA

• Intravenous and inhalational induction – advantages and disadvantages
• Indications of tracheal intubation
• Selection of tube type (oral, nasal, armoured etc.), diameter and length
• Management of difficult intubation and failed intubation
• Methods of confirming endotracheal tube placement; esophageal and endobronchial intubation, complications
• Insertion and use of oral airways, face masks and laryngeal mask airway
• Causes of regurgitation and vomiting during induction, prevention and management of pulmonary aspiration
• Cricoid pressure
• Induction of anesthesia in special circumstances (head injury, full stomach, upper airway obstruction, shock)
• Drugs: pharmacology and dosages of induction agents, relaxants, analgesics and inhalation agents
• Side effects of drug used and their interactions
• Monitoring during induction
• Recognition and management of anaphylactic and anaphylactoid reactions including follow-up and patient information
• Management of intra-arterial injection of harmful substances (antibiotics, thiopentone etc.)
• Management of asthma, COPR, hypertension, IHD, rheumatoid arthritis
• Problems of the obese patient
5. INTRAOPERATIVE CARE INCLUDING SEDATION

- Techniques of maintenance of general anesthesia involving both spontaneous and controlled ventilation
- Definition and methods of sedation
- Management of the shared airway
- Effects and hazards of induced pneumoperitoneum for laparoscopy
- Pharmacology of drugs used for maintenance: analgesics, relaxants, inhalational agents
- Methods of producing muscle relaxation
- Choice of spontaneous and controlled ventilation and monitoring them
- Minimum monitoring standards
- Additional monitoring for sick patients (CVP, urine flow)
- Detection and prevention of awareness
- Management of important critical incidents during anesthesia
- Diagnosis and treatment of pneumothorax
- Principles of fluid balance
- Blood and blood products, synthetic colloids, crystalloids
- Management of massive hemorrhage
- Intraoperative positioning, nerve injuries, prevention
- Management of asthma, COPR, hypertension, IHD, jaundice, steroid therapy, diabetes, rheumatoid arthritis
- Modification of technique in repeat anesthesia
- Understanding basic surgical operations

6. POSTOPERATIVE AND RECOVERY CARE

- Causes and treatment of failure to breathe at end of operation
- Distinguishing between opiate excess, continued anesthetic effect and/or residual paralysis
- Care of the unconscious patient
- Monitoring the patient in the recovery
- Interpretation of nerve stimulator patterns
- Oxygen therapy, indications and techniques
- Management of cyanosis, hype and hypertension, shivering and stridor
- Postoperative fluid balance and prescribing fluid administration, if necessary.
- Assessment of pain and methods of pain management
- Methods of treating of post operative nausea and vomiting
- Causes and management of post operative confusion
• Management of the obese patient
• Management of asthma, IHD, COPD, steroid therapy
• Recovery room equipment
• Prevention, diagnosis and management of postoperative pulmonary atelectasis, deep vein thrombosis and pulmonary embolus
• Criteria for discharge of day-stay patients

7. REGIONAL ANESTHESIA

• Pharmacology of local anesthetics and spinal/epidural opioids
• Anatomy of spine, nerve roots, cauda equine, intercostals nerves, brachial plexus, femoral nerve, inguinal canal, nerves at wrist and ankle, nerve supply of larynx
• Dermatomes and levels for common operations (e.g. Inguinal hernia, hemorrhoids)
• Technique of spinal and epidural (including caudal) anesthesia: single shot and catheter techniques
• Management of the complications of spinal and epidural/caudal analgesia (associated hypotension, headache, shivering, nausea and anxiety)
• Management of accidental total spinal blockade
• Management of dural tap
• Techniques and complications of intravenous regional anesthesia (IVRA)
• Toxicity of local anesthetics and its management
• Management of failed/deteriorating regional block
• Methods of sedation
• Absolute and relative contraindications of regional blockade

8. MANAGEMENT OF TRAUMA

• Performance and interpretation of primary and secondary survey
• Emergency airway management
• Anatomy and technique of cricothrotomy/ tracheostomy /mini-tracheotomy
• Establishing IV access: interosseous cannulation
• Immediate specific treatment of life-threatening illness or injury, with special reference to abdominal and thoracic trauma
• Recognition and management of hypovolemic shock
• Effects of trauma on gastric emptying
• Central venous access: anatomy and techniques
• Central venous pressure monitoring
• Arterial pressure monitoring
• Pleural drain monitoring
• Peritoneal lavage
• Principles of the management of head injury
• Methods of preventing the 'second insult' to the brain
• Principles of anesthesia in the presence of a recent head injury
• Management of cervical spine injuries
• Principles of the safe transfer of patients
• Understanding portable monitoring systems
• Factors affecting intra ocular pressure

9. OBSTETRIC ANESTHESIA AND ANALGESIA

• Physiological changes associated with a normal pregnancy
• Functions of the placenta: placental transfer: feto-maternal circulation
• Pain pathways relevant to labour
• Effect on gastrointestinal physiology and acid aspiration prophylaxis
• Methods of analgesia during labour: indications and contraindications
• Effect of pregnancy on the technique of general and regional anesthesia
• Emergencies in obstetric anesthesia: pre-eclampsia, eclampsia, major hemorrhage, maternal resuscitation, amniotic fluid embolus, total spinal
• Management of difficult or failed intubation
• Maternal and neonatal resuscitation
• DVT prophylaxis
• Use of Magnesium sulphate
• Principles of anesthesia for incidental surgery during pregnancy
• Maternal morbidity and mortality

10. PEDIATRIC ANESTHESIA

• Anatomical differences in the airway, head and spinal cord.
• Physiological differences from the adult
• Starvation and hypoglycemia
• Preoperative assessment and psychological preparation
• Anesthetic equipment and the difference from adult practice
• Estimation of blood volume and replacement of fluid loss
• Modification of drug dosages
• Analgesia for children
• Premedication, including local anesthesia for venepuncture
• Calculation of tube sizes, selection of masks and airways
• Upper respiratory tract infections and when to cancel cases
• Anesthetic problems and management of important congenital anomalies including those requiring surgical correction in the neonatal period (tracheoesophageal fistula, diaphragmatic hernia, exomphalos, gastoschisis, intestinal obstruction, pyloric stenosis)
• Resuscitation of the newborn
• Management of acute airway obstruction including croup and epiglottis

11. CARDIAC/THORACIC ANESTHESIA

Cardiac
• Preoperative assessment and perioperative care of patients with cardiac disease
• Induction and maintenance of anesthesia for high risk cardiac procedures
• Antibiotic prophylaxis against subacute bacterial endocarditis
• Problems of cardio pulmonary bypass, myocardial protection and the weaning of patients from CPB
• Management of cardiac tamponade
• Interpretation of ECG and chest X-ray
• Interpretation of non-invasive and invasive cardiovascular monitoring
• Cardiac pacing models/different pacemakers
• Intra-aortic balloon counter pulsation
• Postoperative cardiac critical care

Thoracic Anesthesia
• Preoperative pulmonary function tests
• Local and general anesthesia for bronchoscopy including techniques of ventilation
• Understanding of fibreoptic bronchoscopic techniques for airway management
• Principles of one lung anesthesia
• Anesthetic management of tracheo-esophageal fistula
• Principles of underwater seals and chest drains
• Postoperative care and analgesia after thoracic surgery
12. GENERAL SURGERY, GYNECOLOGY, UROLOGY, TRANSPLANTATION

General Surgery
- Relevant anatomy and physiology of common surgical procedures
- Anesthesia for complex GI surgery including intrathoracic procedures
- Emergency anesthesia for general surgery
- Diseases relevant to hepatobiliary, pancreatic, splenic surgery
- Management of thyroid (and parathyroid) surgery
- Starvation / obesity

Gynecology
- Relevant anatomy and physiology
- Preoperative assessment
- Laparoscopic surgery
- Gynecological procedures during surgery

Urology
- Anatomy of the renal tract
- Blood flow, GFR, plasma clearance
- Tubular function, urine formation, and micturition
- Assessment of renal function
- Disturbances of fluid balance, oedema and dehydration
- Acid-base abnormalities
- Renal failure and its management
- Plasma electrolyte disturbances
- Anesthesia on spinal injury patients for urology procedures
- TURP syndrome

Transplantation
- Principles and complications of immunosuppression
- Specific anesthetic problems associated with renal transplantation
- Anesthetic management of patients with transplanted organs
13. NEUROANESTHESIA

- Preoperative assessment and management of patients with neurological diseases
- Anesthesia for imaging relevant to the CNS
- Anesthesia for MRI including problems of magnetic fields
- Anatomy, physiological control and effect of drugs on CBF, ICP and CMRO2
- Principles of anesthesia for craniotomy – vascular disease, cerebral tumors and posterior fossa lesions
- Anesthesia for patients undergoing surgery for hydrocephalus and/or meningocele/ meningo(myelo)cele/ meningo-encephalocele.
- Anesthetic implications of pituitary disease and trans-sphenoidal surgery
- Anesthesia for spinal column surgery and anesthetic implications of spinal cord trauma
- Principles of immediate post-operative management including pain relief and special considerations with narcotics
- Neurological monitoring
- Guillain-Barre Syndrome
- Myasthenia gravis, Thymectomy
- Dystrophia myotonica, Muscular dystrophy, Parkinsonism
- Paraplegia and long-term spinal cord damage
- Control of convulsions including status epilepticus
- Tetanus

14. VASCULAR ANESTHESIA

- Management of the patient for major vascular surgery
- Management of carotid artery surgery
- Management of pheochromocytoma
- Postoperative management and critical care of vascular patients including postoperative analgesia
- Anesthesia for non-cardiac surgery in patients with cardiac disease
- Massive blood transfusion
- Aortic cross-clamping and renal protection

15. AMBULATORY SURGERY

- Pre-anesthetic Assessment Clinic (PAC)
- Instructions to patients
- Regional anesthesia appropriate to day cases
• General anesthesia appropriate to day cases
• Drugs for day cases
• Recovery assessment
• Postoperative analgesia

16. EAR, NOSE AND THROAT (OTORHINOLARYNGOLOGY)
• Preoperative assessment – prediction of difficult intubation
• Management of patients of all ages
• Local techniques and surface analgesia
• Acute ENT emergencies (bleeding tonsils, croup, epiglottitis, foreign bodies)
• Laryngoscopy and bronchoscopy
• Knowledge of special tubes, gags and equipment for microlaryngeal surgery, laser surgery and bronchoscopy (venture devices, ventilating bronchoscope)
• Emergency airway management including tracheostomy, use of Helium
• Postoperative management

17. OPHTHALMIC ANESTHESIA
• Preoperative assessment with particular attention to patient with co-morbidities
• Choice of local or general anesthetic techniques in relation to the patient and surgery with particular reference to:
  o Strabismus surgery, cataract surgery, detached retina
  o Penetrating eye injury
  o Control of intra ocular pressure
  o Action of anesthetic drugs on the eye
  o Anatomy relevant to LA blocks
  o Local anesthetic techniques
  o Problems of glaucoma surgery
  o Postoperative care

18. MAXILLO-FACIAL AND DENTAL ANESTHESIA
• Preoperative assessment
• Day case/impatient requirements
• Resuscitation facilities
• Anesthesia for dental extractions (include sedation and analgesic techniques)
• Pediatric anesthesia
• Assessment and management of the difficult airway including the perioperative management of the fractured jaw and other major facial injuries
• Postoperative management

19. PLASTIC AND BURNS

• Preoperative assessment with particular reference to difficult airway
• Pediatric cases: cleft lip and palate, hypospadius
• Physiology of tissue blood flow
• Benefits and risks of hypotensive anesthesia
• Pathophysiology of the patient with burns
• Assessment and resuscitation of patient with burns: fluid management
• Heat and smoke inhalation injury: management

20. ORTHOPEDIC ANESTHESIA

• Preoperative assessment – pediatrics, elderly, congenital syndromes, rheumatoid arthritis of vertebral fractures
• Problems of cervical spine injury
• Emergency anesthesia for fractures
• Routine anesthesia for joint replacement surgery, arthroscopy, fractures bones, dislocations, tendon repair
• Problems of use of tourniquets, cement, prone position
• Anesthesia for spinal surgery including scoliosis
• Prevention, diagnosis and management of potential postoperative complications, including prophylaxis, recognition and management of deep venous thrombosis & pulmonary embolus, and fat embolus

21. CRITICAL CARE MEDICINE

• Understanding the potential benefits of critical care
• Common causes/indications of admission to HDU/ICU
• Methods of examination of the unconscious patient
• Monitoring in ICU: invasive and non-invasive
• Understanding sepsis, septic shock and multi-organ failure (MOF)
• Common causes of cardiac and respiratory arrest
• Pathophysiology of cardiogenic and hypovolemic shock
• Acute coronary syndrome, cardiac failure
- Pulmonary embolism
- Management of acute and chronic respiratory failure
- Mechanical ventilation: non-invasive and invasive
- Management of tracheostomy and decannulation
- Management of severe asthma, COPD
- Traumatic and non-traumatic coma, CNS infection, encephalopathies, status epilepticus, acute polyneuropathy, stroke
- Diagnosis, prevention and management of acute renal failure
- Renal supportive measures: HD, CVVH
- Fluids and electrolyte balance
- Acid base management
- Nutrition
- Microbiology, infection, antibiotics
- Hematological disorders: coagulopathies, hemolysis, blood transfusion
- Gastrointestinal disorders: acute liver failure, acute pancreatitis, gut bleeding
- Pharmacology of cardiovascular drugs, sedatives, muscle relaxants: indications
- Management of acute poisoning
- ICU record, scoring systems and Audit
- Ethics, end of life care
- Communication skills with patients, their relatives and staff
- Cardiopulmonary resuscitation
- Management of immunocompromised and HIV patients
- Brain death: brain stem function assessment
- Transport of the critically ill

22. PAIN MANAGEMENT, ACUTE & CHRONIC

- Anatomy, physiology, pharmacology relevant to pain management
- Mechanisms of pain: somatic, visceral and neuropathic pain
- Assessment and measurement of pain
- Techniques for control of acute pain in all age groups
- Non-pharmacological methods of pain relief
- Pharmacology of opioids, NSAID's
- The analgesic ladder
- Principles of neutral blockade for pain relief
- Local anesthetic agents: drugs and mechanisms
- Organization and objectives of an acute pain service
23. CRITICAL INCIDENTS

Principles of the causes, detection and management of:

- Cardiac and respiratory arrest
- Unexpected hypoxia with or without cyanosis
- Unexpected increase in peak airway pressure
- Progressive fall in minute volume during spontaneous respiration or IPPV
- Fall in end tidal CO2
- Rise in end tidal CO2
- Rise in inspired CO2
- Unexpected hypotension
- Unexpected hypertension
- Sinus tachycardia
- Arrhythmias
- Convulsions
- Regurgitation / aspiration
- Laryngospasm, Bronchospasms
- Tension pneumothorax
- Gas / Fat / Pulmonary embolus
- Adverse drug reactions
- Anaphylaxis
- Transfusion of mismatched blood or blood products

24. ANESTHESIA AND THE ELDERLY

- Physiological changes with age
- Altered pharmacological response
- Erosion of physiological response
- Frequent co-morbidities
- Positioning difficulties
- Communication difficulties (eye sight, hearing, CVA's)
- Causes of postoperative confusion

25. MANAGEMENT OF RESPIRATORY AND CARDIAC ARREST

- Patient assessment: diagnosis of causes of cardio-respiratory arrest
- Causes of cardio-respiratory arrest during induction, maintenance and recovery from anesthesia
- Importance of non-cardiac causes of cardio-respiratory arrest
• Methods of airway management (mouth to mouth/nose, bag mask, LMA and intubation)
• Recognition and management of life threatening of arrhythmias including defibrillation and drug therapy
• Knowledge of specific problems of pediatric resuscitation
• Ethical aspects of resuscitation

26. DIAGNOSTIC IMAGING, INTERVENTIONAL RADIOLOGY: ANESTHESIA / SEDATION

• Problems of remote area
• Pre-anesthetic preparation
• Sedation and GA techniques for pediatric and adults: angiography, interventional procedures, CT scanning
• Magnetic resonance imaging: problems of isolated patient, magnetic field, monitoring
• Hypothermia
• Postoperative care

27. MISCELLANEOUS

• Cardiac catheterization: Pediatrics and adults
• ERCO
• Lithotripsy
• Radiotherapy
• Electro convulsive therapy
• Stereotactic surgeries

28. ANATOMY

Respiratory System

• Mouth, nose, pharynx, larynx, tracheo bronchial tree, lungs; also blood supply and innervation of these structures
• Pleura, mediastinum and its contents
• Diaphragm, other muscles of respiration, innervation
• The thoracic inlet and 1st rib
• Interpretation of a normal chest X-ray
Cardiovascular System

- Heart, chambers, conducting system, blood and nerve supply
- Pericardium
- Great vessels, main peripheral arteries and veins
- Fetal and feto-maternal circulation

Nervous System

- Brain and its subdivisions
- Spinal cord, meninges, subarachnoid and epidural space, contents
- CSF and its circulation
- Spinal nerves, dermatomes
- Brachial plexus, nerves of arm
- Intercostal nerves
- Nerves of abdominal wall
- Nerves of leg and foot
- Autonomic nervous system
- Stellate ganglion
- Cranial nerves, base of skull, Trigeminal ganglion
- Innervation of the larynx
- Eye and orbit

Vertebral Column

- Cervical, thoracic, and lumbar vertebrae
- Sacrum and sacral hiatus
- Ligaments of vertebral column

Surface Anatomy

- Structures in antecubital fossa
- Structures in axilla; identifying the brachial plexus
- Large veins and anterior triangle of neck
- Large veins of leg and femoral triangle
- Arteries of arm and leg
- Landmarks of tracheostomy, cricothyrotomy
29. PHYSIOLOGY AND BIOCHEMISTRY

General

- Function of cells, genes and their expression
- Cell membrane characteristics, receptors

Biochemistry

- Acid base balance and buffers
- Electrolytes
- Cellular metabolism, Enzymes

Body Fluids and their Functions

- Capillary dynamics and interstitial fluid
- Osmolarity, osmolality, partition of fluids across membranes
- Lymphatic system
- Special fluids especially CSF, pleural fluid and peritoneal fluid

Hematology

- Red blood cells: hemoglobin and its variants
- Blood groups
- Haemostasis and coagulation
- WBC, Inflammatory response

Muscle

- Action potential generation and transmission
- Neuromuscular junction and transmission
- Muscle types
- Motor unit
- Skeletal muscle contraction
- Smooth muscle contraction
Heart and Circulation

- Cardiac muscle contraction
- The cardiac cycle
- Regulation of cardiac function
- Control of cardiac output (including the Starling relationship)
- Fluid challenge and Heart failure
- Electrocardiogram and Arrhythmias
- Control of systemic blood pressure (rest, exercise, hypovolemia, Valsalva maneuver)
- Peripheral circulation
- Special circulations: pulmonary, coronary, cerebral, renal, portal, fetal

Renal System

- Blood flow, GFR, and plasma clearance
- Tubular function and urine formation
- Assessment of renal function
- Regulation of fluid and electrolyte balance
- Regulation of acid-base balance
- Pathophysiology of acute renal failure

Respiration

- Gaseous exchange: O2 and CO2 transport, hypoxia, hyper and hypocapnia, hyper and hypobaric pressures
- Haemoglobin: O2 carriage and acid-base equilibrium
- Pulmonary ventilation: volumes, flows, dead space
- Effect of IPPV on lungs
- Ventilation perfusion abnormalities
- Control of breathing
- Non-respiratory functions of lungs

Nervous System

- Functions of neurons: actions potentials, conduction, synaptic transmission
- Intracranial pressure: CSF and blood flow
- Autonomic nervous system
- Neurological reflexes
- Motor function: spinal and peripheral
• Pain: receptors, pathways (periphery to central), visceral pain
• Spinal cord: functional anatomy, blood supply, transaction

Gastrointestinal
• Gastric function: secretions, nausea, vomiting
• Gut motility, sphincters and reflex control
• Digestion function

Metabolism
• Metabolic pathways, energy production
• Body temperature and its regulation

Endocrinology
• Hypothalamic and pituitary function
• Adrenocortical hormones
• Adrenal medulla
• Pancreas: insulin, glucagon
• Thyroid and Parathyroid hormones

Pregnancy
• Physiological changes associated with pregnancy

30. PHARMACOLOGY

Applied chemistry
• Laws of diffusion
• Solubility and partition coefficients
• Ionisation of drugs
• Drug isomerism
• Protein binding
• Oxidation, reduction, hydroxylation
Mode of Action of Drugs

- Dynamics of drug-receptor interaction
- Agonist, antagonist, partial agonists, inverse agonists
- Efficacy and potency, tolerance
- Receptor function and regulation
- Metabolic pathways
- Enzyme inducers and inhibitors
- Mechanisms of drug action
- Ion channels
- Action of gases and vapours
- Osmotic effects, pH effects.
- Mechanisms of drug interactions

Pharmacokinetics and Pharmacodynamics

- Drug uptake from: GIT, lungs, transdermal, subcutaneous, I/M, I/V, epidural
- Bioavailability
- Factors affecting the distribution of drugs: perfusion, molecular size, solubility, protein binding
- Distribution of drugs in body compartments
- Tissue binding and solubility
- Materno-fetal distribution
- Modes of drug elimination: direct excretion, phase I and II mechanisms, renal excretion and urinary pH, Hoffman's elimination
- Pharmacokinetics: pharmacokinetic compartments, apparent volume of distribution, clearance concepts, effect of organ blood flow, Fick principle
- Pharmacodynamics: concentration-effect relationships
- Pharmacogenetics
- Adverse reactions to drugs: hypersensitivity, allergy, anaphylaxis, anaphylactoid

Systematic Pharmacology

- Anesthetic gases and vapors
- Hypnotic, sedatives and intravenous anesthetic agents
- Simple analgesics
- Opioids and other analgesics; and opioid antagonists
- Non-steroidal anti-inflammatory drugs
- Neuromuscular blocking agents and anticholinesterases
- Drugs acting on the autonomic nervous system: cholinergic and adrenergic agonists and antagonists
- Cardiovascular drugs: inotropes, vasodilators, vasoconstrictors, antiarrhythmics
- Drugs acting on respiratory system: respiratory stimulants and bronchodilators
- Anti-hypertensives: Anti-diabetics; Anticonvulsants; Diuretics; Antibiotics; Antacids; Antiemetic agents; Steroids; Antihistamines; Antidepressants; Anticoagulants; Local Anesthetic agents; Plasma volume expanders, Vitamins

31. PHYSICS AND CLINICAL MEASUREMENT

- Concepts only of exponential functions: wash-in, wash-out
- Basic measurement concepts: linearity, drift, hysteresis, signal, noise ratio
- SI units; Other system of units if applicable (e.g. mmHg, Bar, Atmosphere)
- Mass, Force, Work, Power
- Heat: freezing point, melting point, latent heat
- Conduction, convection, radiation
- Mechanical equivalent of heat
- Measurement of temperature and humidity
- Physics of gases and vapours
- Absolute and relative pressure
- The gas laws; triple point; critical temperature and pressure
- Density and viscosity of gases
- Laminar and turbulent flow; Poiseuille’s equation, the Bernoulli principle
- Vapour pressure, Saturated vapour pressure
- Measurement of volume and flow in gases and liquids
- The pneumatacograph and other respirometers
- Principles of surface tension
- Basic concepts of electricity and magnetism
- Capacitance, inductance and impedance
- Amplifiers: bandwidth, filters
- Amplification of biologic potentials: ECG, EEG, EMG
- Processing, storing and display of physiological measurements
- Bridge circuits
- Basic principles and safety of lasers
- Ultrasound and Doppler effect
- Cardiac pacemakers and Defibrillators
- Electrocutation, Fire and Explosions
- Diathermy and its safe use
- Principles of pressure transducers
• Resonance and damping, frequency response
• Measurement and units of pressure

32. MEDICAL ETHICS

• Professionalism
• Consent
• Futility, withdrawing and withholding treatment
• End of life decisions and the criminal law
• Legal requirements for record keeping
• Ethical principles concerning research