Curriculum

FCPS
Anaesthesiology

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CONTENTS

1. INTRODUCTION

Bangladesh College of Physician and surgeon is the professional body responsible for Providing fellowship program for the all specialty of Medical science Including Anesthesiology.

Postgraduate medical education aims to produce specialists in various branches of medical science who will work in hospital, institute and referral hospitals of the country or any country of the world as a consultant to treat patients with complex medical problems individually knowing highest knowledge and skill. They will also teach in medical colleges and will organize the training of the future generation of doctors. Furthermore they will train the next generation of specialists of different medical speciality including Anesthesiology. They will lead medical research in the country. Their role, therefore, is important and multifaceted. Bangladesh College of Physicians and Surgeons was established in 1972 mostly to fulfill these needs.

Specialist training has been undergoing radical changes in the last three decades in the developed countries and these have been incorporated in the training system of most developing countries. These changes have been driven by several factors. Research in medical education has led to scientific methods of teaching and assessment. Technological innovations have necessitated that doctors learn newer technological skills in the diagnosis and treatment of diseases. Disease patterns are changing radically with time. Demographic changes in population have changed the organization of health care. Improved level of education of the population and better knowledge about diseases demands better communication skills from health care givers. The level of trust between profession and the population has eroded and this has changed the pattern of interaction between the heath care workers and the population All of these has changed the role of a specialist all over the world.

The changed pattern of specialist or postgraduate medical education and training has been reflected in the development of competency- based system of postgraduate training and education in developed countries. Competency has been defined as an observable ability of a health professional, integrating multiple components such as knowledge, skills, values and attitudes. Competency develops through stages. Tools have been developed to measure the acquisition of competence. Competency-based system consists of the following components: 1. identifying the outcomes, 2. defining performance level for each competency, 3. developing a framework for assessing competencies, 4. continuous evaluation of the education and training programme to ensure that it is producing the desired outcome. Bodies controlling postgraduate medical education in developed countries have decided upon the competencies that a specialist needs to acquire. These competencies include medical knowledge, clinical skills, Changes attitude professionalism, communication skills, system and need based practice and learning, among others.

The structure of postgraduate medical education and training of the BCPS lacked these modern aspects. Changes were initiated in 2012 by holding a workshop to discuss the way forward with participation of experts from the Royal College of Physicians and Surgeons of Glasgow, College of Physicians and Surgeons of Pakistan, experts from the USA together with leading members of the Faculties of BCPS. This resulted in the decision that individual Faculties need to develop a curriculum. Training should be centered on implementation of the curriculum through a structured, monitored and assessed system. Curricular aims were identified and a general outline of the training

structure was agreed upon. These decisions were approved by the Executive Committee and the Council of the College.

Workshops involving leading Faculty members on the development of the curriculum were held in the following months. A guideline for preparing the curriculum was drawn up. Each Faculty was instructed to initiate the process of curriculum development. A committee defined the competencies to be included in the curricular goals. Individual Faculties held meetings to prepare their own curriculum following the guidelines. These were then submitted to a Committee for evaluation whose task it was to bring uniformity between the curricula of different specialties. Further meetings and deliberations were then held to correct deficiencies and to minimize discrepancies.Provision for curriculum review has also been included in the programme based on inputs of trainers and trainees regarding problems in the implementation of the curriculum, keeping the changing environment of specialty training in the international arena in perspective.

1.1 Overview of specialty:

Anaesthesiology as a specialty has developed distinctly for more than a century. Now it covers a vast and continuously expanding area of medical service. Most significant driving force is patient care. Complexity of patient care is rising and there is an ever-increasing demand on the specialists to manage critical and high-risk patients. Application of expanding scientific and medical knowledge and technological advancements in the field of anesthesia has given the subject an advantage. Pain management, acute resuscitation or acute emergency management and critical care has been added to the responsibilities of this specialty. A competent fellow should remain conversant about these changes and challenges.

Curriculum for FCPS in Anaesthesiology of Bangladesh College of Physicians and Surgeons is designed to prepare Anaesthesiologists of global standard. This document provides candidates a comprehensive account of the breadth and depth of Competencies and Professional attributes expected of them at a level of consultants to deliver admirable service and to ensure the safety of the patient.

The curriculum consists of structured educational program intended to guide a candidate as regards the basic and applied knowledge, skills and attitude as leaders of profession. This includes basic core and advance higher specilazed level of training in various aspects of anesthesia, critical care and pain. It should be correspond with phases of subject apprenticeship and to be dealt with in practical set up. The curriculum also sets out the areas in which the candidates will be examined.

The document is elaborate but not exhaustive. Some of the topics remain explicit while others remain implicit. It should be noted that, medical research and scientific development in different arena are constantly changing medical environment in terms of theories and clinical practice. The contents and training pathways are subject to changes to keep pace with inclusions of new knowledge and technology directed by ever expanding growth of medical science. Fellows of the future are expected to keep abreast of all such developments.

1.2 Purpose of the Curriculum

Bangladesh College of Physicians and Surgeons has been the pioneer in developing post-graduate medical education in this country. The 'College' aims at preparing aspirant doctors in different specialties to attain competencies required to enable them to work independently as consultants of global standard. The curriculum offers guidelines for selecting versatile candidates for future specialist, training particulars and learning outcomes and set criteria expected of them at the exit. In general, this curriculum is the guideline for the trainees and trainer with definitive training facilities. This curriculum also includes the modern concept of assessment system to fulfill the conditions to facilitate creation of specialist in anesthesia, critical care, resuscitation and pain management or related disciplines.

This theme is about making sure that the curriculum is based on patient and population needs as well as strategic service needs and must be endorsed by the different countries of the world. The purpose of fellowship program is clearly addressing patient and service needs. It must set out specialty-specific capabilities, including scope of practice and the levels of performance expected of those completing training. These fellowship programs in anesthesiology identify generic and shared content and allow flexibility and transferability of outcomes. It also supports recognition of capabilities between and across specialties.

2. Goals

2.1 To prepare specialists Anesthesiologist who would be able to meet and respond to the changing healthcare needs and expectation of the community.

2.2 To develop specialists who posses knowledge, skills and attitudes that will ensure that they are competent to practice in the specialty anesthesia peri-operative medicine , critical care , acute or emergency resuscitation and pain safely and effectively.

2.3 To produce Anaesthesiologists who are well informed, independent and clinically competent perioperative consultant physicians.

2.3 To produce Anaesthesiologists who will be acknowledged as role model for others to follow

2.3 To ensure that fellows have appropriate foundation for continued professional learning and further training in their specialty. To provide structured training and comprehensive training programme in most of the specialties of Anesthesia, ICU, Palliative Care ,Pain management and emergency resuscitation. and thus act as standard protocol for all institutions in our country.

2.4 To help them develop the ability for critical thinking and solving problems according to the need of the community and respective specialty. They should be demonstrating clinical competence in handling majority of anaesthetic problems.

2.5 To guide them how to practice evidence-based medicine and personalized medicine in their day to day patient management

2.6 To provide them with a strong foundation for research capability. Approved research work for thesis has to be completed before appearing in FCPS Final examination

3. Competencies of a Fellow

Bangladesh College of Physicians and Surgeons intents to guide and prepare aspirant graduates of medical science to pursue fellowship in different specialties and sub-specialties. College thereby assures that every fellow of Anesthesiology accomplishes competencies required to be able to work independently as a consultant of global standard. With fascinating technological development and incremental expectation of people at large in anesthesia for surgical treatment ,critical care and pain management , the responsibilities of a fellow as a consultant and professional leader are widening. Developing competencies in different newer facets of health care services related to Anesthesiology is therefore indispensable. The following list is a comprehensive though not complete list of different areas of professional development and patient care and health care at large where all fellows are expected to recognize and develop competencies to work as a professional expert.

By repeated proper assessment of this knowledge skill and compentary of candidate it become outcome basis.

Domains of Expected Competencies for a Fellow:

1. Clinical expertise - patient safety
2. Development and Demonstration of Personal Qualities and Proficiencies
3. Manage services - health system management
4. Communicator
5. Academic commitment for teaching and training
6. Collaboration
7. Scholarship and research
8. Professionalism
9. Promotion of health
10. System based practice

3.1 expertise

Every fellow is expected to possess a defined and continuously expanding body of knowledge fundamental to specialty of Anesthesia ,Critical Care and pain medicine or sub-specialty including other specialities that has direct or indirect effect on his own speciality (e.g. Medicine or surgery). This composed basic and clinical skills of peri-operative medicine, procedural or Anesthtic skills and professional attitude directed to quality operative and critical patient care on Bangladesh perspective. These knowledge and skills are applied to collect and interpret information, make appropriate clinical decisions, carryout investigations and plan therapeutic interventions for proper anesthetic management and management of critical patient . Their roles as experts would be evidence based, ethically bound and patient centered.

Competencies

Fellows in Anesthesiology specialty with its subspecialties should be able to

1.1 Demonstrate competencies as a consultant of this specialty.

1.1.1 Accomplish a clinical anesthetic consultation and make appropriate therapeutic decision based on evidences and reasoning and also document facts in the process.

1.1.2 Prioritize professional responsibilities

1.1.3 Recognize and respond to ethical issues in medical decision making

1.1.4 Demonstrate specialty expertize social and legal affairs

1.2 Show confidence in clinical practice in Anesthesiolgy specialty

1.2.1 Carry out a complete and appropriate Pre operative or pre admission clinical assessment of a patient need anesthesia , critical and pain management (Elicit relevant history, perform clinical examination, arrange investigations)

1.2.2 Make appropriate anesthetic technique or therapeutic decision based on clinical reasoning and up-to-date evidences.

1.2.3 Show problem solving abilities in addressing various peri operative clinical situations

1.3 Recognize and cope with acute and critical presentation of diseases or per-operative complication

1.4 Interpret clinical and laboratory data efficiently both anesthetic patient or critical patient

1.4.1 Efficiently use available investigations required for patient management and interpret the results

1.4.2 Make effective, appropriate and timely therapeutic and management decisions in the context of patients financial, social and religious aspect.

1.5 Procedural skill

1.5.1 Demonstrate expertise in safely performing diagnostic and therapeutic anesthetic procedures relevant to Anesthesia critical care and pain medicine with advance sub-specialty.

1.5.2 Prevent, recognize and take appropriate measures for complications

1.5.3 Document and disseminate information related to procedure performed

1.5.4 Ensure obtaining informed consent

1.5.5 Ensures available preventive and safety measures for patients, professionals and care providers.

3.2 Development and Demonstration of Personal Qualities and Proficiencies

To deliver appropriate, safe and effective service to the patients and other service users, a fellow as a specialist in his field need to draw upon their capabilities, values and strengths. A fellow should also understand own limitations as also appreciate strengths and limits of professional colleagues.

Competencies

A fellow of Bangladesh College of Physicians and Surgeons will be able to

2.1 Develop self- cognizance

2.1.1 Demonstrate efficiency as a safe independent practitioner in Anesthesia, critical care and pain medicine restricts to own specialty.

2.1.2 Show capability to recognize values, principles and limitations of his own and colleagues and understand their impact on behavior and outcome.

2.1.3 Able to ascertain and ensure obligation to seek assistance of colleagues and experts whenever needed.

2.1.4 Recognize and respond to needs of other professional colleagues appropriately

2.2 Work with integrity and maintain a high level of self-esteem.

2.3 Maintain good personal physical and mental health

2.4 Continuing professional development

2.4.1 Strives to heighten personal attributes and professional skills .

2.4.2 Acquire and apply new knowledge and skills appropriately.

3.3. Managerial and leadership Skills

Anesthesiologist as a physicians are inborn characters of leadership skill and they are integral parts of health care delivery system. They participate in their capacity locally, regionally and nationally in different situation. They must have achieved leader of Consultants has to interacts in their environment as individuals members of the team. Consultants contributes by planning activities, allocating resources, distributing personals and also ensuring quality of performances regarding operation theater, ICU and emergency department.

Competencies

A fellow should be able to

3.1 Participate in activities that contribute to anesthetic, ICU and pain clinical services in the departments and hospital as parts of health care system

3.1.1 Contribute to planning of clinical anesthesia services and select strategies for successful outcome of all operative patients.

3.1.2 Prioritize activities and develop policies of working place and appreciate risks and benefit.

3.1.3 Participate in quality evaluation and improvement process.

3.2 Manage healthcare personals related to Operation Theater and ICU of different levels and guide them to ensure safe and effective services.

3.2.1 Select resourceful personals as team members and guide them effectively

3.2.2 Review performances of team members and ensure planned outcome

3.3 Allocate resources appropriately and reduce wastage

3.4 Communicator

Effective health care delivery related intimately to communication care providers and users. Passionate doctor patient relationship and inter-personal relationship amongst health professionals facilitates the process and outcome.

Competencies

A fellow should be able to

4.1 Develop rapport, confidence and fair [ethical, honest] relationship with all pre anesthetic patients and make a relations with families of operative or ICU patient to elicit required information about their problems.

4.1.1 Recognize importance and means of communication in Anesthesia and ICU and pain practice

4.1.2 Build relationship with patients, their relations and professional colleagues based on trust, respect and empathy

4.1.3 Respects and responds to patients beliefs, privacy and confidentiality

4.2 Elicit relevant information regarding patients illness and expectations

4.3 Convey relevant verbal and written consent information and explanations to patients and their families, colleagues and other professionals

4.3 Develop common understanding on issues, problems and plans with patients and their relations, colleagues, and other professionals and other sections of the society to develop action plan for a shared service

4.4 Develop skill of using electronic devices and media to communicate effectively.

3.5 Academic association commitments for teaching and training

Fellow Anesthesiologist becomes engaged in lifelong activity of mastering their domain of expertise. Also they contribute to educate their students, trainees, patients and their colleagues throughout their professional life. Fellows also have to take responsibility to take the task as a medical teacher in an institutional setting.

Competencies

A fellow should be able to

5.1 Facilitate learning of students, trainees and other health professionals

5.1.1 Demonstrate understanding of principles of learning

5.1.2 Identify learning needs of students and trainees and select strategies appropriate to objectives

5.1.3 Plan and conduct effective teaching learning session adopting scientific methods

5.1.4 Select strategies to engage learners in critical thinking

5.2 Design and conduct evaluation and use methods that are scientific valid and objective

5.3 Provide necessary effective feedback to learners and trainees

5.4 Assess and reflect on own teaching ability

5.5 Remain ethical in teaching and assessment

5.6 Contribute to learning of patients and their families appropriately and also engage in Community awareness on different health issues.

3.6.Collaboration

In the present perspective of advancement medical science and technological development of anesthesia ,ICU and Pain management with high expectation of patients and health care users, health care delivery has become more complicate and evidence based . So Some time multi-professional approach are essential where Anesthesiologist work in partnership with others. This may involve different skills and sometimes multiple locations.

Competencies

Fellows of BCPS should be able to

6.1 Develop effective partnership with others fellow colleagues for patients care and make a defined groups within and across the health delivery system that bring added benefits to patients and improve service.

6.1.1 Define roles and responsibilities of members of health care team.

6.1.2 Recognize and respect roles responsibilities and competence of each Member of health care team.

6.1.3 Contribute to plan and integrate tasks with team members

6.2 Build and maintain relationship with other and able to work in Multidisciplinary team

6.3 Be approachable to nursing and all other supporting staff members in a team.

6.4 Prevent, negotiate and resolve inter-professional conflicts

3.7 Scholarship and research

Anesthesiologist as a physicians remain committed to lifelong learning through reflection and experience. They also contribute to creation, dissemination and application of new medical knowledge by research.

Competencies

A fellow should be able to

7.1 Enhance professional efficiencies through continued learning

7.1.1 Show understanding of principles and adopt appropriate strategies to Reinforce professional knowledge and skills.

7.1.2 Identifies and reflects on learning issues within the Anesthesiology related specialty

7.1.3 Access and interpret evidences and evaluate the impact

7.2 Contribute to creation, dissemination, application and practice of new medical Knowledge through a systematic and scientifically sound research.

7.2.1 Select appropriate design to address the research protocol

7.2.2 Collect data and evidence

7.2.3 Process and evaluate data

7.2.4 Present and disseminate findings of the study

7.2.5 Guide trainees and involve in multi-centric studies

7.3. Develop capacity to critically evaluate new medical information and apply in practice.

3.8 Professionalism

Anesthesiologist as a Physicians have unique social role as professionals. This entails professional expertise and personal standards. Professional roles are guided by ethics and commitments to medical expertise.

Competencies

Fellows should be able to

8.1 Shows commitment to patient's care, profession and society by specialty expertise.

8.1.1 Demonstrate appropriate professional behavior in their practice including honesty, integrity, empathy and altruism.

8.1.2 Deliver high quality patient care maintaining confidentiality and privacy

8.1.3 Address ethical issues and regulations

8.1 4 Remain above all commercial interest

8.1.5 Develop and maintain fair and ethical relationship with patients and relatives

8.2 Appreciate and exhibit commitment to professional, social and ethical regulations.

8.2.1 Recognize and uphold professional, ethical and legal codes of practice

8.2.2 Participate in peer review

3.9 Health advocate

Anesthesiologist as a Physicians have the responsibility to improve overall health of individuals, community and population at large supporting the safe surgical treatment . Physicians have to respond to broad health issues at community level also help formulation and implementation of national health related issues.

Competencies

Fellow Anesthesiologist as a Physicians should be able to

9.1 Respond to health needs of the community.

9.2 Determine and prioritize health needs of the community .

9.2 Actively promote measures for prevention of operative related morbidity and mortality and active role for resuscitation for healthy life-style.

3.10 System based practice

Specialists of Anesthesiology need to adjust to prevailing health care delivery system and contribute to its improvement in the field of anesthesia,ICU and pain medicine

Competencies

Fellows should be able to

10.1 Understand how patient care relates to the health care system as a whole and how to use the system to improve the quality and safety of patient during peri –operative period .

10.2 Coordinate patient care within the health care system relevant to Anesthesia Surgery , Critical care and accident and emergency specialty.

10.3 Incorporate considerations of cost awareness and risk-benefit analysis in patient and/or population-based care as appropriate.

10.4 Work in intera-professional teams to enhance patient safety and improve patient care quality.

10.5 Participate in identifying system errors and implementing potential systems solutions.

4. Specialty Specific Competency

Anesthesiology is essentially an integrated multi-speciality and highly advancing specialized field of the Medical Science. Historically on the global perspective, Anaesthesiologists, who exclusively provided anaesthetics to the surgical patients and also effected recovery of the patients from the anaesthetics. But in modern concept they has natural skill and knowledge by utilized this professional knowledge and skill related to the states of consciousness and unconsciousness, respiratory care and lung ventilation, resuscitation, rescue, pain relief, invasive monitoring, management of poly-pharmacy, dealing with the psychological aspect of critical illness and near-death etc. to save patients' lives when they became critically ill. All this criteria of anesthesia are kind of natural skill.

Competent Anesthesiologist should be able to know and performed with best outcome in the following area:

- Pre anesthetic checkup of the patient /diagnosis ,management ,optimization and medication coexisting diseases before surgical treatment
- Conversation with patient and party in relation with surgery and co-existing diseases and overall outcome of patient. (EXCELLENT COMMINICATION SKILL; Risk assessment to be communicate to patient relatives in details – probable complication)
- Maintains and follow the safety checklist with proper record system
- Written and informed consent for anaesthesia / any procedure in OT, ICU and emergency
- Choice of anaesthesia and anaesthetics. (There to be discussed with patient during pre operative counseling /consultation)
- Indication and contra indications of drugs and techniques to be used during Anesthesia.
- Induction, maintenance of anaesthesia and recovery from anaesthesia.
- Proper monitoring of patient in peri-operative period.
- Withdrawal / recovery from anaethesia after surgery
- Transfer of patient from Operation Theater to post operative ward, ICU. HDU
- Post operative care specially oxygenation, I.V. fluid therapy, adequate

Analgesics, antibiotics and others accordingly.

- If any complications- treat accordingly, adequately and competently.
- Adequiete knowledge and skill for providing anesthesia care all surgical speciality
- Involvement of other specialty like cardiologist, Neurologist, diet specialist and so many according to condition of patient.
- Understanding of physics of body physiology for proper artificial support
- Understanding of biomedical monitoring and interpretation peri operative , ICU and emergency
- CPR cardio pulmonary resuscitation, basic life support and advanced cardiac life support (ACLS). Post resuscitation care .
- ICU Management of a critically ill patient , Proper diagnosis , Artificial support , Monitoring, prognosis out come
- Management of mass casualty or acute trauma patient,(PTC and ATC)
- Pain medicine : Acute and chronic pain management (There to be discussed with patient during pre operative counseling /consultation)
- Transfer medicine , Safe transport of critical patient with emergency treatment
- Palliative care . Patient selection and reduces suffering with proper motivation.

5. Program Outline:

5.1 Fellowship program:

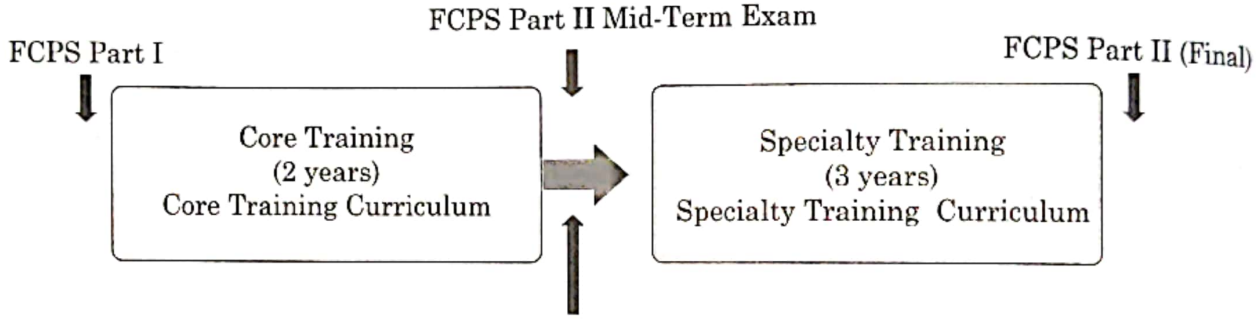
The FCPS Anesthesiology Programme:

The programme consists of three phases:

- **First phase (Part -I):**. Basic medical science
- **Midterm** :: After passing FCPS part 1 and

  Two year basic (CORE) anesthesia training
- **Final phase (Part II):** Three year advance training in Anesthesiology covers the all subspecialty and does not exceed one years in one specialty.
- This curriculum provides a framework for the purpose of training in the core and advance training in anesthesia, ICU and pain management.

The fellowship program (FCPS) of the college has following components:



Selection of specialty is not required like medicine or surgery .

5.2 Trainees, Trainers, Training facilities

5.2.1 Teaching, learning and training

Learning in postgraduate medical science is mostly self-directed. Though organized courses are available in some of the institutes to prepare the candidate but the courses are not mandatory for appearing the examination. Students are encouraged to take tests organized by specialty societies as a part of their responsibilities to develop their specialty. For those who decide on to complete organized course of one year of the same specialty, the period of the course will be included in his/her STC training

A short course on research methodology is mandatory for all the specialties. Five years training in clinical and practical components (CTC+STC) are provided by medical colleges and post-graduate institutes recognized by BCPS for the purpose of training. Training period is divided into slots of minimum six months depending on the need and demand of specialty of anesthesiology . It is also expected that trainees take every opportunity to enhance their clinical and practical skills during their tenure of training in different specialties and areas of specific interest. Trainers are expected to act as mentors and facilitators of learning. It will also be a pressing responsibility

for the trainer to observe the trainee and provide feedback to the college for quality training in regular periodic interval.(Additional to log book certification of training is same important)

Objectives, expected competency and standards of achievement in learning and skill have been laid down in each section of each system. This remains a guideline for trainee, trainers, assessors and other stakeholders of the curriculum. Flexibility to the extent of reasonable adjustment with existing facility of training place may be accommodated in the program.

5.2.2 Entry into training

FCPS Anesthesiology Curriculum is a competency based program. Though a minimum designated training period has been marked compulsory (2 years for core or basic training and 3 years specialized level advance training), there is no timeline for training. Trainees can adjust their training slots according to time and opportunities suitable to them and training slots available in desired place of training. The faculty of Anaesthesiology of BCPS feels confident that in keeping with the global and local historical developments and trends as well as the remarkable past roadmap visible to all today, the proposed FCPS (Anesthesiology) course will be a coveted in addition to the already existing shining array of FCPS courses.

5.2.3 Stages of training.

The training period may be considered in different stages. Satisfactory completion of the training will lead to eligibility to appear in final Part II examination for the award of a fellowship provided other conditions are met. Included are the areas of Clinical information compilation, decision making and provisional diagnosis, effective investigation, Anesthetic and non anesthetic management. Efficient communication with patients in his/her care and their relations is also given weightage. In addition, the program provides the trainee to develop professional skills that allow effective interaction with other professionals and induce predictable behavioral changes and professionalism.

During the early years [First 2years] of training, the trainee may not have even decided upon a career in any particular specialty. They will undergo broad based training, while being able to sample a range of specialties. The objectives will be to attain the knowledge skills and behaviors required of all specialty (i.e. the common and core competences), together with some initial competences relevant to the Anesthesiology.

The trainee must take a clear role in a team, managing pre anesthetic clinic and workplace based providing anesthesia under supervision, including the management of emergency patient after admissions with providing anesthesia if needed. They will have to take part in outpatient pain and pre anesthetic clinics and provide appropriate advice and treatment to patients themselves with the consultant available for advice. Therefore in early years training, in addition to the generic competencies, it is necessary to address the essentials of a developing interest in their specialty. By this time, the trainee will become familiar with the environment both with respect to elective and emergency anesthesia including different intervention methods to resuscitate the patient with

common problems encountered in ICU , Emergency and Accident areas. Trainees must attend departmental meetings and Operation theater activities, ICU , HDU and Post operative ward rounds, deal with both in-patient and day care cases; and actually perform some interventions under appropriate supervision. They will have to manage all patients in the appropriate environment like OT complex ICU and emergency. This includes recognizing and initiating the management of common complications and emergencies, laid out in the generic curriculum.

The trainee will be exposed to emergency experience to have a breadth of experience of the common emergencies as well as gaining exposure to all of the specialty areas.

It is expected that by the end of 5 years of training, the trainee will be able to manage competently providing anesthesia and other critical management for every patient under his/her care. It is anticipated that certain complex emergencies may still need the assistance of more experienced or subspecialist colleagues. The Specialty components at the end include the breadth of conditions likely to be encountered in specialist practice. The degree of specialization may vary depending on individual career aims. The necessary skills should be acquired in five indicative years. Trainees are able to choose the level of expertise they wish to develop by combining components from the syllabus. During different stages of training, the trainee will be involved in the application of generic professional behavior and leadership skills during early periods of training that must be practiced in the later part of traineeship.

Summary of stage of training:

1st stage: After 2 year passing MBBS and registered from BMDC appeared in FCPS part I Examination (All basic science) and Qualify then inters into training process .

2nd stage: Entry of CORE or Basic training in Anesthesiology (peri-operative medicine , Basic ICU and pain management) For 2 years .

3rd stage : Appearing the Midterm examination after Successful core basic training. Assess Knowledge and skill , research protocol or thesis . Successful candidate should enter the specialized level advance training for 3years .

Final stage: Exit part : After completed the 3 year specialized training or fulfill the all criteria candidate appear the final or FCPS part II examination. Qualify Final FCPS II examination become a specialist or consultant Anesthesiologist

5.2.4 Training Program

Training for fellowship in specialty of Anesthesiology has been designed to develop human resources in the field of Anesthesia, Critical care, Emergency resuscitation and pain management with satisfactory knowledge, skill and expertise for offering optimum patient care.

5.2.4.1 Those who will appear FCPS Part II examination without attending organized Part II courses the total training program is of five years duration

Core basic training- 2years

Advanced specialize level of training in the curriculum mention speciality -3years

5.2.4.2 Those who will appear FCPS part II final examination after attending an organized Part II course in an institute approved by BCPS the training program are as follows

Basic Core training- 2years

Advanced training in the respective specialty -2years

Training in organized course-1year

5.2.4.3 A candidate who has MD or any equivalent post graduate degree recognized by BMDC decides to have fellowship in related specialty can enroll directly for Advanced Training in organized course with one year duration. But they have to submit a new thesis duly approve by the college.

5.2.4.4 A candidate who has completed one years or more training in the specialty after completion of their graduation before FCPS part I qualify will be exempted for 1 year advance specialty training or basic core training according to the content of certificate.

2.4.5 A candidate who has completed 2years Course of DA may be get exemption of one specialty training or However they have to undergo the basic 2 years CTC training followed by midterm examination than 2 year specialty training before appearing the final FCPS Part II examination accordingly to existing role.

Exiting role:

Proposed: New DA course is two year with in course training. So training may be counted two years- one year for from basic and one year from specialized training. Those maintain poper log book.

5.2.4.6 A candidate who has FCPS MD/ MS or any equivalent post graduate degree recognized by BMDC decides to have fellowship in related specialty like Critical care or pain medicine can enroll directly for Advanced Training program with three year duration. But they have to submit a new thesis duly approve by the college. They must undergo one year training in medicine including internal medicine for 6 month, 3 month cardiology, one month for pulmonology, nephrology and neurology.

5.2.4.7 Alternative pathway of Training : A condidate who has completed one years or more training in the specialty of medicine including internal medicine for 6 month ,3 month cardiology. one month for pulmonology, nephrology and neurology after completion of their graduation before FCPS part I qualify will be exempted for 6 month of each phage advance specialty training and basic core training according part of peri operative medicine.

5.3 Standards for Training

Specialist Anesthesiologist have to offer their service in diverse situations and circumstances, respond to unpredictable clinical scenarios, take decisions under pressure and many a time in the absence of desirable information. They exercise professional judgment, insight and leadership skills in their everyday practice to work within multi professional teams. They are guided in these situations by professional values and standards.

FCPS curriculum in its syllabus and training structure lays down the standards of Anesthesia ,Critical care and pain medicine based knowledge, clinical judgment, technical and operative skills and professional approach that is desirable of the trainees.

Standards for depth of knowledge

A. **Knows of [Aware }**

B. **Knows basic concept**

C. **Knows in general**

D. **Knows specifically and in depth [apply in practical field]**

Patient care competency

I **Intake Data** Gathering (History And Physical Examination: Pre operative Anesthetis assessment and fellow safety checklist)

II **Diagnostic Processes** (Procedural Skill, Investigation And Interpretation: planning of Anesthesia - IV cannulation ,Drugs preparation and induction with proceed)

III **Developing And Documenting A Diagnosis** , Preparation, optimization of surgical patient for anesthesia or ICU patient

IV **Therapeutic Plan** (Treatment and management plane:Anesthetic plan, peri –operative management performed required skill, Treatment critically ill patient or intervention of pain management. Follow Up, Referral if needed)

Standards for clinical and operative skills

1. **Observer status** [Has observed the procedure being done]
   - Has acquired adequate knowledge of the steps through direct observation
   - Demonstrates handling of instruments relevant to the procedure appropriately and safely: Check all functioning instrument related anesthetic procedure ICU patient management.
   - Can perform parts of the procedure in logical sequence and fluency
2. **Assistant status**
   - Can assist supervisor in straight forward cases
   - Knows all the steps of anesthetic procedure and is acquainted with instruments
   - Can follow commands of supervisor
3. **Performs under direct supervision** [Can do with assistance]

- Knows all the steps and explanations of the anesthetic procedure
- Can perform the procedure in straight forward cases from beginning to end confidently and fluently in peri-operative period and ICU
- Knows and demonstrates when to call for assistance from the supervisors

4. **Performs independently [** including management of complications]

- Can deal with straightforward as well as difficult cases for anesthesia , ICU ,HDU and Postoperative pain patient without assistance of an expert.
- Can deal with uncommon and complicated cases
- Is capable of supervising and helping trainees.

5.4 Training places

Training in Anesthesiology specialty will only be accepted from centers recognized by the college upon evaluation of the center based on defined criteria of training facilities and resources. Training institute includes Medical colleges Hospitals and post graduate institute hospitals, specialized hospitals and district hospitals. College authority also ensures quality of these centers by constant monitoring including frequent inspections and evaluations and feedback.

Accreditation

Training should be in an institute accredited by the BCPS to provide complete or partial training. They should offer the opportunity for interaction with major specialties of surgery related to sub specialty including anesthesia, critical care, emergency and pain medicine . This institute also have academic facility like class room / seminar room ,a library and internet facilities offering access to the current world scientific literature, specifically major international journals relating to Medicine , surgery ,Anesthesia and critical care. This institute should provide the necessary physical infrastructure for training including Standard operation theater complex , post operative facility . ICU , HDU and allocated office space for trainees. The training institution or combination of institutions making up any given training program should have the necessary facilities to ensure that trainees can fulfill all aspects of the curriculum. A certificate of training for a period of less than 6 months at a time will not be accepted. The updated training accreditation list is available in the college office and web-site.

Supervisors should be based in an accredited Training Institution, should be accredited, should have experience in Teaching and Research and should be recognized as a designated Supervisor by the BCPS. There should be a minimum number of senior trained specialists in the unit to ensure expert training for a range of areas included in the curriculum, and sufficient protected teaching time and continuing of training. Delivery of the curriculum may be facilitated by an academic administrative structure which includes a Program Director, a Program Coordinator, and multiple Clinical and Educational Supervisors.

5,5 . Excellent anesthesia Practice decode

1 Knowledge, skills and performance

2 Safety and quality

3 Communication, partnership and teamwork

4 Maintaining trust

Note: Rules, regulations and contents of the examination are subject to modifications as per decision of the college authority.Candidates are requested to contact Department of Examinations for their queries.

6. Teaching and learning process:

The ways in which Supervisors/Trainers enable learning to occur so that the intended outcomes are achieved.

Methods may include:

- Learning with peers
- Work-based experiential learning
- The content of work-based experiential learning is decided by the local faculty for trainee
- Education but includes active participation in:

1. Pre anesthetic clinics regularly specialty demand
2. Specialty- Specific work place activities – Regular Operation theater performance consultant ward-rounds in Post- operative ward , critical care and Emergency
3. Personal ward rounds , operation theater activities and provision of ongoing clinical care on post operative patient and morning presentation of placement attachments
4. Operation theater round by more senior doctors or instuctor and fellow their instruction

- Active performance in Multi-disciplinary team meetings

  Surgical specialities

  Related medical specialities

  Pain medicine

  Critical care

  Palliative and end of life care

- Formal postgraduate teaching
- Independent self-directed learning
- Formal study courses

Special Courses: May be completed

1. Biostatistics and Research Methodology
2. BLS and ATLS During basic core training

Optional course

3. Basic Anesthesia Skill courses : During basic core training 1st 2 year

(Safer Anesthesia From Education Obstetric and Pediatric anesthesia)

7. Learning contents

7.1 FCPS Part I (Three Papers)

Learning Outcomes:

To acquire a sound understanding of human Anatomy, physiology, biochemistry and pharmacology, Pathology, basic principles of physics and clinical measurement and to be able to apply this to clinical practice in anesthesia , critical care and pain medicine at basic core level training .

This knowledge also supports the progress of specialize level training.

Contents

Paper - I: (Anatomy and General Pathology)

Group A:

General anatomy:

Anatomical organization of human body: Cell, tissue, organ, systems of the body.

Cell: its constituents and their functions with emphasis on Cell membrane, organelle, nucleus, chromosome, cell cycle, cell division & Genes, Karyotyping

Basic tissue types: epithelial, connective, muscular and nervous tissues, Bones and cartilage, autonomic nervous system

Systemic anatomy

Respiratory system: mouth, (Oral cavity) Nose (nasal cavity), pharynx, larynx, trachea, principal bronchi, segmental bronchi and structure of bronchial tree.

Airway / respiratory tract blood supply and innervation

Pleura and medisatinum

Lungs, lobes and bronchopulmonary segments and alveoli Structure of lungs and respiratory membrane

Innervations, blood supply and lymphatic drainage

Diaphragm, muscles of respiration, innervations

Cardiovascular system and thoracic cavity pericardium

Heart, Chambers, Conducting system, blood and nerve supply Fetal circulation

Great vessels, main peripheral arteries and veins

Nervous System: Brain and spinal cord. Structure of spinal cord, age variation spinal meninges subdural and extradural space, contents of extradural space , CSF

Spinal nerves, dermatomes

Cervical plexus, Brachial plexus, nerves of arm, intercostals nerve Lumbar plexus, nerves of abdominal wall

Sacral and coccygeal plexuses, nerves of leg

Autonomic nervous system, sympathetic innervation, sympathetic chain, ganglia and plexuses, stellate ganglion

Parasympathetic innervation, celiac plexus

Cranial nerves. Trigeminal ganglion.

Renal system

Structure and functional component

Hepotobilliary system

Structural and functional component

Endocrine system ***Demonstrates knowledge of***

Functional anatomy of the hypothalamic/pituitary system

Functional anatomy of the adrenal gland

Functional anatomy of the thyroid and parathyroid glands

Anatomical organisation of the endocrine pancreas

Skeletal

Vertebral Column: Cervical, thoracic and lumbar vertebrae Sacrum, Sacral hiatus, ligaments of vertebral column

Areas of special interest: Base of skull i The thoracic inlet and Ist rib | Intercostal spaces icluding paravertebral space.

Radiological Anatomy

Coronary circulation and angiogram

Anatomy of imaging: identification and location y normal structure by radiography Radiography of chest, heart, lungs and diaphragm

Interpretation of the normal adult chest x-ray

CT scanning of brain, Thorax and abdomen (Normal findings) The abdominal wall including the inguinal region Antecubital fossa

Anatomy of tracheostomy, laryngotomy, cricothyrotomy

Eye and orbit

Surface anatomy related to the following nerve and plexus

Cervical ganglion

Cervical epidural space

Thoracic epidural space

Lumbar epidural space

Sacral epidural space

All approaches of Brachial plexus and Obrurator nerve

Sciatic nerve

Surface marking of the joints of the upper and lower limbs, temporo-mandibular joints and intervertebral joints

Landmarks for performance of cricoid pressure and surgical airway procedures

Landmarks for insertion of intercostal drainage catheters

Applied anatomty. For venous and arterial access

Peripheral large artery

Large veins of upper arm

Axilla

Large veins of leg

Femoral triangle

Large veins of neck

Triangles of neck

Weightage

Anatomy – 50%

Content	Number of Question
General anatomy:	2-4
Systemic anatomy	21-23
Respiratory system	3-5
Cardiovascular system	3-5
Nervous System	3-5
Renal system	1-3
Hepotobilliary system	1-3
Endocrine system	1-3
Skeletal	1-3
Radiological Anatomy	1-3
Surface anatomy	1-3
Applied anatomty	2-4

Group B : Pathology 50%

General Pathology

a. Cellular adaptation-cell injury & cell death

- Cellular adaptation of growth and differentiation
- Hyperplasia, Hypertrophy, Atrophy, Metaplasia

Overview of cell injury & cell death:

- Depletion of ATP , Mitochondrial damage , Influx of intracellular calcium and loss of Ca homoeostasis , Accumulation of 02 derived free radicals, Difference in membrane permeability and Reversible & irreversible cell injury.

Morphology of cell injury and necrosis:

- Apoptosis .Sub-cellular response to injury Intracellular accumulations
- Pathologic calcifications ,Cellular ageing.

b. Acute & Chronic Inflammation

- Acute inflammation .chemical medications of inflammations
- Outcome of acute inflammation ,Morphologic pattern of acute inflammation
- Chronic inflammation ,systemic effects of inflammations

c. Tissue renewal and repair; Regeneration, Healing and Fibrosis:

- Definition , Control of normal cell proliferation , Mechanism of tissue regeneration
- Extracellular matrix & cell matrix interaction ,Repair by healing, scar formation and fibrosis, Cutaneous wound healing , Fibrosis

d. Infection .

Pathogenesis of bacterial, viral and fungal infection Transmitted infection, HIV and HB C

e. Haemodynamic disorder,

Thromboembolic diseases & Shock:

- Oedema, Hyperanaemia, congestion, haemorrhage, Haemostasis& thrombosis, Embolism, Infarction, Shock, Pathogenesis of septic shock

f. Environmental and Nutritional Pathology:

- Environment and disease, Common environmental and occupational exposures
- Nutrition and disease, Obesity and systemic disease, Chromoprevention of cancer

Systemic pathology

Acute Lung Injury and Lung disease:

- Pulmonary oedema, Classification ,Causes: Haemodynamicoedema, oedema due to alveolar injury, oedema of undetermined injury, oedema caused by Microvascular injury

Acute Respiratory Distress Syndrome:

- Causes, Pathogenesis, Clinical Course

Acid aspiration syndrome:

- Aetiology, Causes, Clinical features, Treatment, Prevention

Liver

- Drug & toxin induced liver disease, Jaundice and cholestasis
- Bilirubin and bile formation,Causes of jaundice, Alcoholic liver disease

Heart disease-

- Congenital heart disease, Left to right shunts, Right to left shunts, Obstructive congenital Anomali, Heart failure: Cardiac hypertrophy, Pathophysiology & progression of failure,Left-sided heart failure, Right-sided heart failure, Valvular heart disease-causes, pathogenesis

Muscle

- Myopathies – congenital and acquired
- Muscle contracture – malignant hyperthermia, myoclonus, burns

Renal disease

1.Acute renal injury ,Path physiology of acute and chronic renal failure .

Endocrine :

Path physiology of DM and thyroid

General Pathology (20-25%)	Weightage No.
a. Cellular adaptation-cell injury & cell death	**1-3**
b. Acute & Chronic Inflammation	1-3
c. Tissue renewal and repair; Regeneration, Healing and Fibrosis:	1-3
d. Infection	1-3
e. Haemodynamic disorder,	1-3
f. Environmental and Nutritional Pathology:	1-3

Systemic pathology (25 – 30%)	
Lung disease and Acute Lung Injury	3-5
Liver disease	2-3
Heart disease-	3-5
Musculoskeletal disease	1-3
Renal disease	1-3
Endocrine disease	1-3

PAPER - II: Physiology and Biochemistry

Candidates should have a good general understanding of human physiology in order to recognise the need to apply physiological principles and knowledge aimed at correcting functional abnormality and save lives of patients.

GROUP A: PHYSIOLOGY

General

Organisation of the human body and control of internal environment

Function of cells; genes and their expression

Cell membrane characteristics; receptors

Protective mechanisms of the body

The ageing process

Characteristics of neonates, infants, children, adults and the elderly

Changes at birth and in early life

Changes with advancing age

Body fluids and their constitution

Capillary dynamics and interstitial fluid

Osmolarity : osmolality, partition of fluids across membranes Lymphatic system

Special fluids : cerebrospinal fluid, ocular, pleural, pericardial and peritoneal

Definition of pH. Strong and weak acids. Acid base balance. Includes buffers, Henderson-Hasselbalch equation and anion gap

HAEMATOLOGY AND IMMUNOLOGY

Blood: physical properties, components, functions

Red blood cells: production and turnover, haematinics, haemoglobin and its variants including abnormal haemoglobins eg thalassaemia, HbS

Anaemia: acute and chronic adaptations – Iron absorption, transportation, metabolism

Polycythaemia: causes and implications

Blood groups: ABO, Rhesus, others

Transfusion reactions; rhesus incompatibility

Haemostasis and coagulation, fibrinolysis – including abnormalities, congenital and acquired

Alternative oxygen carrying solutions

White blood cells: types, origins, characteristics, turnover

The inflammatory response, systemic inflammatory responses, hypersensitivity reactions

Immunity and allergy; innate vs acquired, non-specific vs specific, humoral vs cellular

Immunodeficiency – congenital and acquired

Muscloskeleton system

Action potential generation and its transmission

Neuromuscular junction and transmission, motor end-plate

Disturbances of neuromuscular transmission

Muscle types; skeletal, smooth, cardiac

Skeletal muscle excitation-contraction coupling

Smooth muscle contraction: sphincters

Motor unit concept

Skeletal muscle

Heart and Circulation

Cardiac muscle contraction

The cardiac cycle, pressure and volume relationships

Regulation of cardiac function; general and cellular

Rhythmicity of the heart

Electrocardiogram of the heart and physiological 'dysrhythmias' Neurological and humoral control of blood pressures, blood volume and blood flow (at rest and during physiological disturbances e.g. exercise, haemorrhage and Valsalvamanoeuvre) Peripheral circulation; capillaries, vascular endothelium and arteriolar smooth muscle, tissue

Characteristics of special circulation including pulmonary, coronary, cerebral, renal, splanchnic, portal and foetal

Renal system

Structure and function, renal circulation

Blood flow and glomerular filtration, plasma clearance and tubulo-glomerular feedback

Tubular function and urine formation; transport processes

Assessment of renal function

Regulation of water and electrolyte [Na+, K+, Ca++, Mg++, PO4—,] balance; response to fluid loss /hypovolaemia. Role of urea

and creatinine measurement.

Regulation of acid-base balance

Micturition 1

Regulation of acid base balance

Micturition

Respiratory system

Gaseous exchange : O_2 and CO_2 transport, effects of altitude, hypoxia and hypercarbia

Pulmonary ventilation : volumes, flows, dead space. Effect of IPPV on lungs

Mechanics of respiration : ventilation / perfusion abnormalities

Regulation of respiration

Non-respiratory function of the lungs

Nervous system

Function of nerve cells and synaptic mechanisms

The brain : Functional divisions — cortex, midbrain, medulla, limbic system, brain stem and cerebellum

Intracranial pressure: cerebrospinal fluid, blood flow.

Maintenance of posture

Autonomic nervous system

Neurological reflexes

Sleep, wakeful and unconscious states, electroencephalogram

Motor function : spinal and peripheral

Senses : receptors, nociception, special senses

Pain : afferent sensory and efferent modulatory pathways; peripheral and central mechanisms and response to nociception

Spinal cord : anatomy and blood supply, effects of spinal cord section

Hepatobilliary system

Function of liver

Enzymes

Gastrointestinal system

Gastric function; secretions, nausea and vomiting

Gut motility, sphincters and reflex control – neurohumoral integration

Digestive functions; composition of secretions; digestion of carbohydrates, lipids, proteins, vitamins, minerals

Endocrinology

Mechanisms of hormonal control : feedback mechanisms, effects on membrane and intracellular receptors

Hypothalamic and pituitary function

Adrenocortical hormones. Adrenal medulla

Pancreas

Thyroid and parathyroid hormones and calcium homeostasis

Physiology of Pregnancy

Physiological changes associated with normal pregnancy

Functions of the placenta : dynamics of placental transfer

Foetus : changes at birth

Topics of special interest

Stress response

Fasting, volume and pH of stomach content

Act of vomiting

Natural sleep and arousal, consciousness, unconsciousness

GROUP B: BIOCHEMISTRY

Biochemistry is essential for understanding of physiological processes. Management of peri – operative patient and critically ill patients in ICU requires a fair amount of knowledge of biochemical changes in diseases and recovery. Candidates should know about the basic biochemical substances and processes and their functions and interactions in the human body.

Body fluids

Types and physicochemical properties of different body fluids

Acid base

Acid base balance and buffers Tons e.g. Nat, K+, Ca++, Mg++, Clo, HCO,-

Metabolism

Metabolic pathways and bioenergetics, enzymes, coenzymes and catalysts

Metabolic pathways, energy production and enzymes, metabolic rate

Hormonal control of metabolism : regulation of plasma glucose, response to trauma

Physiological alterations : starvation, obesity, exercise, stress response

Body temperature and its regulation

Nutritional substances

Carbohydrates, lipids, proteins and their metabolism, intermediary metabolic pathways. Metabolism of minerals

DNA and RNA
Nucleic acids and nucleoproteins

Hormones

Insulin, Adrenaline, noradrenaline, corticosteroids, thyroid and pituitary hormones

Eicosanoids
Prostaglanins, prostacyclines, and thromboxanes.

Biochemical changes in diseases
Stress response, Circulatory arrest, trauma, inflammation, dehydration, near drowning

Assessment of biochemical functions
Biochemical tests to assess respiratory, circulatory, renal and liver and hormonal functions

GROUP A: PHYSIOLOGY (70%)	Wieghtage No.
General	2-3
The ageing process	1-2
Body fluids and their constitution	2-3
Haematology And Immunology	2-4
Muscloskeleton	1-3
Heart and Circulation	3-5
Renal system	1-2
Respiratory system	3-5
Nervous system	3-5
Hepatobilliary system	1-3
Gastrointestinal system	1-2
Endocrinology	2-3
Physiology of Pregnancy	1-2
Topics of special interest	1-2
GROUP B: BIOCHEMISTRY (30%)	
Body fluids , Acid base	2-4
Metabolism	3-5
Nutritional substances	1-3
DNA and RNA	1-2
Hormones	2-3
Eicosanoids	1-2
Biochemical changes in diseases	3-4
Assessment of biochemical functions	2-3

Paper- III: Pharmacology, Basic Physics and Basic Biostatistics

Group A: Pharmacology 80%

I. General Pharmacology (10%-15%)

Organic chemistry: drugs as organic molecules: types of intermolecular bonds; interactions between molecules; organic compared with inorganic compounds; bond strength; important atomic constituents: C, N, O, P, S and halides

Organic chemistry: ionization of molecules: type of groups that ionize: amides, hydroxyl, carboxyl. Oxidation and reduction permanently charged [quaternary ammonium] drugs.

Drug chemistry: solubility, partition coefficients and movement of drugs through membranes: Lipid solubility; influence of pKa and pH; partition coefficients. Passive and active transport mechanisms

Basic chemistry and biochemistry pH, pKa, mole, molar, osmolarity, osmolality, etc. etc. Types and nature of solutions, protein binding Ionization, solubility, partition coefficient Diffusion, biological membrane characteristics, osmosis, Career mechanism, active and passive transport system Cell membrane, pores, etc. Isomerism

Isomers: structural and stereoisomers: classification systems; clinical relevance

Mechanisms of drug action: physicochemical; pharmacodynamic; pharmacokinetic: drug-receptor interactions; doseresponseand log[dose]-response curves; agonists, partial agonists, antagonists. Reversible and irreversible antagonism.Potency and efficacy.

Non-specific drug actions: Physicochemical mechanisms: e.g. adsorption; chelation; neutralization

Voltage-gated ion channels; membrane-bound transport pumps. Sodium, potassium and calcium channels as targets for drug action

Receptors

Type and nature Location Mechanism of action Bonding Occupancy Agonists, partial agonists and antagonists Receptors as proteins; ion channels; transmembrane transduction and intermediate messenger systems; intracellular/nuclear receptors. Receptor regulation and tachyphylaxis Transduction systems as receptors: G-protein coupled receptors [GPCRs] and non-GPCR systems. Nuclear receptors: Intracellular hormone receptors. e.g. cytoplasmic receptors for steroids; corticosteroids vs.mineralocorticoid receptors. Enzymes as drug targets: Michaelis-Menten kinetics. Direct and allosteric mechanisms. e.g. acetylcholinesterase, cyclooxygenase; phosphodiesterase, Anticholinesterases: Classification of drugs that inhibit acetylcholinesterase and plasma cholinesterase including organophosphates

Pharmacokinetics: general principles: absorption, distribution and redistribution; elimination, excretion. Chemical properties of drugs and their pharmacokinetics: blood-brain-barrier and placental barrier. Protein binding: plasma and tissue. Body compartments; adipose and vessel-poor tissue. Bioavailability; clearance. Administration and absorption: routes of administration; first-pass metabolism and bioavailability. Selection of appropriate.

Oral administration: Time-course for systemic appearance; factors e.g. pKa, lipid solubility, active transport. Bioavailability ofdrugs given orally and its measureme route.

Uptake and distribution Inhalational agents, Intravenous and orally administered drugs

Drug interaction Metabolism/detoxification .Elemination/clearance and Mechanism of drug action

Predictable side effects of drugs: non-selective actions of drugs; action at multiple receptors; multiple anatomical locations;predictable enzyme induction-inhibition

Idiosyncratic side effects of drugs: e.g. blood and bone-marrow dyscrasias; pulmonary fibrosis; anti-platelet effects. Non-enzymatic drug elimination: Hofmann degradation

Drug elimination from plasma. Mechanisms: distribution; metabolism; excretion: exhalation; renal; biliary; sweat; breast milk.Factors affecting e.g.: pathological state: renal and hepatic failure; age, including extremes of age; gender; drug interactions.Active and inactive metabolites; pro-drugs. Enzyme induction and inhibition

II. Systemic Pharmacology (40%- 50%)

Anesthetic General

Volatile and gaseous anaesthetic agents: Structure of available agents. MAC. Clinical effects: CNS [including ICP], CVS, RS.

Unwanted effects of individual agents. MH susceptibility; hepatitis risks. Factors affecting onset and offset time. Oil/gas partition coefficient

Intravenous anaesthetic agents: Chemical classes. Properties of an ideal induction agent. Adverse effects on CNS including effects on ICP, CVS, RS; pharmacokinetics including metabolism

Mechanisms of general anaesthetic action

Benzodiazepines: classification of action. Clinical actions. Synergism with anaesthetic agents. Antidote in overdose

Local anaesthetic agents. Additional effects, including anti-arrhythmic effects. Mechanism of action. Clinical factors influencing choice: operative site, patient, available agents. Toxicity syndrome; safe clinical and maximum clinical doses;treatment of overdose

Analgesics. Simple analgesics, NSAIDs and opioids. Available routes of administration; peri-operative prescribing; chroniccompared with acute pain prescribing, Aspirin and paracetamol. Comparison of structures; indications and contraindications; mechanisms of action. Bioavailability;

metabolism; toxicity Non-steroidal anti-inflammatory analgesics: Classification. Mechanism of action. Clinical effects and uses; unwanted effects,contraindications

Opioid analgesics: Receptor classification. Mechanism of action. Inhibitory effects, sites of action on pain pathways.Unwanted effects. Full and partial agonists and partial agonists. Routes of administration

Muscle relaxants. Classification. Sites of action. Properties of an ideal muscle relaxant. Dantrolene and management of MH Depolarizing muscle relaxants: Structure, mechanism of action. Organophosphate poisoning. Adverse effects andcontraindications,Non-depolarizing muscle relaxants: Structural classification; sub-classification according to onset-time and duration of action.

General comparison of aminosteroids and bisbenzyisoquinoliniums. Comparison of individual agents; metabolism and active metabolites. Unwanted effects. Reversal of neuromuscular blockade: Indications for use; mechanisms of action; clinically unwanted effects of reversal of neuromuscular blockade

Drugs and the autonomic nervous system: anatomy; myelinated and unmyelinated nerves; ganglia and rami communicantes Neurotransmitters. Sites at which drugs can interfere with autonomic transmission.

Drugs and the sympathetic nervous system: adrenergic receptors and molecular mechanisms of action: Indications forpharmacological use of naturally occurring catecholamines and synthetic analogues. Other classes of drugs active in the sympathetic system: e.g. MAOIs:

Drugs and the parasympathetic nervous system: nicotinic and muscarinic receptors with subgroups. Mechanism of action.Agonists, antagonists. Comparison of available drugs. Hyoscine and antiemesis

Cardiovascular system: general: drug effects on the heart [inotropy and chronotropy] and on the circulation: arterial and venous effects; systemic and pulmonary effects

Inotropes and pressors: Classification; site of action. Synthetic inotropes compared with adrenaline

Drugs used in ischaemic heart disease: Classification of drugs used. Mechanisms of drug action. Unstable angina

Antiarrhythmics: Classification. Indications for use, including use in resuscitation

Hypotensive agents: Classes of drugs to produce acute hypotension in theatre. Therapeutic antihypertensive agents:classification according to mechanism of action. Adverse effects of drugs in each class

Anticoagulants: oral and parenteral. Sites of action; indications use; monitoring effect. Comparison of heparins:unfractionated and fractionated. Newer anticoagulants

Antiplatelet agents. Perioperative management of antiplatelet medication

Pro-coagulants: Drugs. Individual factor concentrates; multi-factor preparations including FFP; vitamin K A,C,

Respiratory system: general: Classes of drugs acting on the respiratory tract including bronchodilators; oxygen; surfactant;mucolytics; pulmonary vasodilators. Methods of administration; indications for use; mechanisms of action; adverse effects Respiratory system: drugs used in acute severe asthma and chronic asthma; volatile agents. Mechanisms of action

Gastrointestinal system: general: antisialogogues; drugs reducing gastric acidity; drug effects on the GI tract including gastric and bowel motility

Antiemetics: Anatomical sites for antiemetic action; central and peripheral inputs to vomiting centre; use of dexamethasone

Renal system: diuretics: Classification of diuretics. Unwanted effects; indications for use

antiepileptic agents: Mechanisms of action; unwanted side effects

Antidepressants: Classes of drug: anaesthetic relevance .

Hormone : Insuline .corticosteroids: Indications for use; clinical effects; long-term complications of glucocorticoid use Hormones: treatment of thyroid disorders: Synthesis and release of thyroid hormones. Preparations used in hyper- and hypothyroidism stimulants; classes, mechanisms of action, uses in anaesthesia RS stimulants including theophyllines, doxapram

Antimicrobial agents: general classification: Types of antimicrobial agents: antiviral; antibacterial; antifungal; bacteriostatic and bacteriocidal. Mechanism of action. Indications for use of different classes of antibiotics. Bacterial resistance Effects of drugs on the eye and vision; includes intra-ocular pressure .

Social drugs including tobacco, alcohol and non-legal drugs: anaesthetic relevance

III. Applied Pharmacology (15% - 20%) (4-6)

Routes of drug administration

Anaphylactic and anaphylactoid reactions: comparison; treatment; identification of responsible drug; risks with polypharmacy Uncommon routes in anaesthesia, advantages and disadvantages, etc. (Special emphasis on inhalational, trans-tracheal, sub-lingual, transdermal, epidural or intra-thecal routes, their complications, per rectal, etc.)

Drug and fluid infusion, uptake by containers and their clinical importance, in-vitro drug interactions

Phlebitis of infusion, Incidence, Agents, Assessment, Prevention, etc.

Bolus versus infusion of anesthetic agents

Tachyphylaxis and tolerance: Examples of drugs demonstrating tachyphylaxis; proposed mechanisms. Opioid dependence andtolerance, Hoffman elimination.

Drug interactions: Types of interaction: synergism, additivity, antagonism; isobolograms. Classification of mechanisms of drug interaction, EMLA

Drug delivery systems: e.g. sustained release, enteric coated, transdermal patch and iontophoretic systems

Therapy for diabetes mellitus: Drugs used in type 1 and type 2 diabetes: Insulins: classification of types available

Colloids, including blood and blood products: Composition of preparations; safe use and avoidance of errors

Crystalloid fluids: Composition; suitable fluids for maintenance and replacement of losses. Comparison with colloids;unwanted effects

Group B: Basic Physics 15% (4-6) Question

Objective : To gain a good understanding of the basic principles of physics and clinical measurement; emphasis is on the function of monitoring equipment, equipment

safety, and measurement techniques.

General principles of physics applied to medicine with specific reference to anaesthesiology. This may include, why and how physics may play a role. Which part of physics may affect anaesthesia, etc.

1. Specific chapters of physics:
   a. Liquid, gas and vapours: Definition, Different forms of liquids, gases and vapours, Difference between the states of substances, Gas laws, intermolecular attraction, atomic structure,. kinetic theory of gases, Boyles, Henry's, Dalton, Charles and Gay-Lussac.
   b. Pressure: Definition ,, Atmospheric pressure, partial pressure and saturated vapour pressure Role in anaesthesiology
   c. Flow: Definition, Types of flow, Bernoulli Principle, Venturi effect and applications and Basic fluidics
   d. Energy: Definition, Forms of energy , Hazards and Uses and complications
   e. Electromagnetic radiation : Definition, Radionuclide and isotopes and Application in medicine
   f. Sound: Use of sound in medicine, types, frequency/intensity, etc.
   g. Electricity: Natures of electricity, ac/dc, electrocution.,Static electricity
   h. Heat and Temperature : Heat transfer and loss: conduction, convection, radiation, evaporation, Critical temperature, critical pressure Temperature measurement: including Hg, alcohol, infrared, thermistor, thermocouple, Bourdon gauge, liquid crystal.Latent heats, triple point of water
   i. Humidity: Defination . absolute and relative humidity; including measurement
   j. Units of measurement: SI units of measurements and their interrelationships

Basic Biostatistics 5% (2-3) question

Fellow candidates will be required to demonstrate understanding of basic statistical concepts, but will not be expected to have practical experience of statistical methods. Emphasis will be placed on methods by which data may be summarized, and presented, and on the section on the statistical measures for different data types. Candidates will be expected to understand the statistical background to measurement error and statistical uncertainty

Categories of data. Statistical distributions (Gaussian, x2 binomial) and their parameters. Non-parametric measures of location and variability. Graphical presentation of data

7.2. FCPS : Midterm

a. CORE TRAINING CONTENTS - 2 Years

Basic Anesthesia , Critical Care and Pain management

Objective : A.Trainees has achieved good knowledge new specialty. Advanced this provides a comprehensive introduction to the principles and practices of the delivery of safe and effective anaesthetic care to patients . They achieve the knowledge and skill in the following field of subject by proper defined training and must be completed satisfactorily:

a. **Anesthesia**

- **Perioperative medicine**
- Preoperative assessment:
- History
- Clinical Examination
- Investigations
- Specific pre-anaesthetic evaluation
- Premedication
- Perioperative management of emergency patients

Conduct of anaesthesia

- Induction of general anaesthesia
- Intraoperative care
- Post-operative and recovery room care
- Infection control
- Management of cardiac arrest in adults and children
- Airway management
- Critical incidents
- Day surgery
- General, urological and gynaecological surgery
- Head, neck, maxillo-facial and dental surgery
- Anesthesia in Non-theatre situation
- Obstetrics
- Orthopaedic surgery
- Pain medicine
- Basic of Regional anesthesia
- Sedation
- Transfer medicine
- Trauma and stabilization

b. **Basis of Critical care**

c. **Applied (Physics) and clinical management**

d. **Biostatistics and research methodology**

a. Anesthesia	weightage %
• **Perioperative medicine**	**15%to 20%**
• Preoperative assessment:	
• History	
• Clinical Examination	
• Investigations	
• Specific pre-anaesthetic evaluation	
• Premedication	
• Perioperative management of emergency patients	
Conduct of anaesthesia	**15%to 20%**
• Induction of general anaesthesia	
• Intraoperative care	
• Post-operative and recovery room care	
• Infection control	
• Management of cardiac arrest in adults and children	
• Airway management	5% to 10%
• Critical incidents	5% to 10%
• Day surgery	0% to 5%
• General, urological and gynaecological surgery	10% to 15%
• Head, neck, maxillo-facial and dental surgery	5% to 10%
• Anesthesia in Non-theatre situation	0% to 5%
• Obstetrics	5% to 10%
• Orthopaedic surgery	5% to 10%
• Pain medicine	5% to 10%
• Basic of Regional anesthesia	5% to 10%
• Sedation	0% to 5%
• Transfer medicine	0% to 5%
• Trauma and stabilization	0% to 5%
b. Critical care	**15%-20%**
c. Applied physics and clinical management	**10%-15%**
d. Biostatic & Research Methodology	**5%-10%**

b. Basis of Critical care

Objective :Trainees has achieved good knowledge about critical care . This provides a comprehensive introduction to the principles and practices of the delivery of basic safe and effective management of a critical ill patient in ICU or emergency. They achieve the knowledge and skill in the following field of subject by proper defined training and must be completed satisfactorily:

- Resuscitation and management of the acutely ill patient 5%
- Diagnosis, Assessment, Investigation, Monitoring and Data Interpretation 5 %

Disease Management

- Therapeutic interventions /Organ support in single or multiple organ failure 5 %
- Perioperative careca 5%
- Transport

c. Applied Physics and clinical measurement : (10 -15)%

Objective: Fellow trainee must achieve the knowledge and skill from applied Physics and clinical measurement to **understand** the basic principle of all equipment , their uses , interpretation and take proper action.

Manufacture and storage of gases and vapours, safety

Cylinders and pipelines, Bourdon gauge

Suction devices

Scavenging devices

Measurement of lung volumes and diffusion

Vaporisation: process of vaporisation

Vaporisers: principles, including plenum and draw-over, temperature com pensation, concentration

Principles of surface tension

a. Exponential functions including wash-in, wash-out, tear-away
b. Area under the curve [integration] and rate of change [differentiation]
   linearit drif hysteresis signal to noise ratiostatic and dynamic response
c. Electrolyte solutions [also drug doses]: conversion between units e.g. molar, mg/ml, %
d. Other non SI units relevant to anaesthesia: including mmHg, bar, atmospheres, cm H2O, psi
e. Simple mechanics: mass, force, work, energy, power
f. Patient warming systems: principles
g. Warming equipment for intravenous fluids: principles
h. Laws of thermodynamics; mechanical equivalent of heat
i. Colligative properties: osmolarity, osmolality, osmometry, diffusion

Basic concepts of electricity and magnetism

Electrical voltage, AC and DC current, resistance, impedance

Electrical circuits: series and parallel

Symbols of basic components of electrical circuits

Capacitance, inductance

Wheatstone bridge: principles, uses

Electrical hazards: causes and prevention

Electrocution: including microshock, earth faults, leakage

Electrical equipment safety: domestic and medical, classification/types of equipment, \

Circuit breakers, fuses Transformers, inductance Transistors, diodes

Amplifiers: band width, low pass, high pass, band pass filters

ECG: principles including electrodes and electrode placement Fourier analysis

Amplification of biological signals: including ECG, EMG , EEG, BIS, CFM, CFAM Piezo-electric devices

Electrical interference: sources, methods of reduction

Transducers and strain gauges

Lasers: basic principles and safety

Ultrasound: basic principles of ultrasound

Doppler effect, principle and clinical application

Cardiac pacemakers: principles and classification

Defibrillators and defibrillation: principles, including thoracic impedance, monophasic, multiphasic, implantable devices Diathermy: monopolar, bipolar; safety and uses Pressure transducers

Resonance, damping, frequency response

Plenum systems: warming blankets, theatre and anaesthetic room ventilation

Breathing systems: Maplesons' classification, coaxial systems, circle systems, T-piece; resuscitation breathing devices

Ventilators: principles, including pressure and flow generators, cycling, minute volume dividers, jet and oscillator ventilators

Disconnection: monitoring of patient ventilatory disconnection

CO2 absorption: chemistry, complications Capnography Pulse oximetry

Fires and explosions: risks and prevention

Measurement of gas pressures

Blood pressure: direct and indirect measurement

Pulmonary artery pressure measurement

Cardiac output: principles of measurement

Measurement of gas and vapour concentrations: e.g. infra-red, paramagnetic, fuel cell, oxygen electrode, mass spectrometry

Measurement of pH, PCO2, PO2, electrolytes

Derived blood gas variables, e.g. HCO3a, HCO3s, BE. Siggaard-Andersen nomogram

Measurement of CO2 production, oxygen consumption, respiratory quotient

Simple tests of pulmonary function: peak flow rate, spirometry

Measurement of perfusion: coronary, cerebral, splanchnic, renal

Assessment of neuromuscular blockade

Infusion pumps and syringe drivers; including PCA drivers and epidural infusion devices: principles, use, safety, and relevant drug infusion calculations

Environmental monitoring: contamination by anaesthetic gases and vapours

Minimum monitoring standards

Understanding the limits of monitoring equipment

Principles of calibration of monitoring equipment

Principles of hygiene, including cleaning and sterilisation of equipment

It is anticipated that the majority of these units of training will not be delivered in dedicated blocks;

d. Biostatistics and research methodology (5% - 10%)

Objective : Fellow candiates will be required to demonstrate understanding of applied statistical concepts, that will be expected to have practical experience of statistical methods. Emphasis will be placed on research methodology by which data may be summarised, and presented, and on the section on the statistical measures for different data types. Candidates will be expected to understand the statistical background to measurement error and statistical uncertainty

Descriptive statistics; Sample selection and study pattern and presentation data from basis data collection . Statistical distributions (Gaussian, x2 binomial) and their parameters. Non-parametric measures of location and variability. Graphical presentation of data

Deductive and inferential statistics

Simple probability theory. Confidence intervals. Linear regression. Linear correlation. The null hypothesis. Type I and type II errors. Probability of error occurrence, and the power ofa test to detect significant difference. Choice of simple statistical tests for different data types.

Research methodology : Demonstrate and perform a research or thesis work which includes all the component of study.

7.3. FCPS Part II- SPECIALIZED ADVANCE TRAINING CONTENT

Contents and final part examination

Learning Objectives: The objective of this final part course is to prepare an anesthesiologist clinically sound and ready for final post graduate examination with an expensive knowledge of the advance and updated anaesthesia, critical care and pain management. They can solve any difficult problem related to anesthesia , critical patient management and advance pain intervention by applying the clinical knowledge and skills which achieved in the 3 years full-time specialized intermediate level of training.

Every trainees have maintains higher level of safety and quality with improvement of education and training. The students will be able to collect clinical data as well as to write thesis. **They have a competency with following field of anesthesia and patient care addition to Basic core Knowledge and skill .**

a. Anesthesia

- Anaesthesia for neurosurgery, neuroradiology and neuro critical care
- Cardiothoracic anaesthesia and cardiothoracic critical care
- Advance and difficult Airway management
- Update Day care anesthesia
- Critical incidents of any form
- General, urology and gynaecology anesthesia with all co-existing diseases
- Specialized anesthetic technique for Head and neck, maxillo-facial and dental surgery
- Management of respiratory and cardiac arrest
- Non-theatre
- Anesthesia for advance and replacement Orthopaedic surgery
- Advance Regional anesthesia uses of high technology
- Sedation in difficult situation
- Transfer medicine and Transplant anesthesia
- Trauma and stabilization
- Anesthesia for high risk pregnancy Obstetrics
- Anesthesia for Neonate and high risk Pediatrics surgery

B. Pain medicine

All form of acute and chronic
Interventional pain management

C .Critical care and Resuscitation

This is the final competency will be achieved by trainee in the specialized intermittent level of traning in the ICU,HDU and Emergency . Basic competencies may not change between training stages – these have been highlighted.They have must demonstrated maintenance of their skills and knowledge in these specific competencies.

- Resuscitation and management of the acutely ill patient
- Diagnosis, Assessment, Investigation, Monitoring and Data Interpretation
- Disease Management
- Therapeutic interventions / Organ support in single or multiple organ failure
- Practical procedures
- Perioperative care
- Comfort and recovery
- Palliative care / End of life care
- Paediatric care
- Transport

7.4. Training Schedule :

Training and learning is composed of six successive levels arranged in a hierarchy .Knowledge - Comprehension - Application - Analysis Synthesis and Evaluation. By this way every trainee can be achieve outcome base competencies. ((**Knowledge orientated competence - Patient care management competence- Skill or procedure orientated competence**)

1. **Core basic anesthesia Training : 2 years duration including 3-6month critical care**
2. **Advanced specialized Training : 3 years duration including thesis.**

7.4.1. Core basic anesthesia Training : 2 years duration

1st step : Introduction to Anaesthetic Practice – the start of training [6 months within 2 year]

Objective : This provides a comprehensive introduction to the principles and practices of the delivery of safe and effective anesthetic care to patients for trainees new to the specialty. Performs task under direct supervision. Very limited knowledge requires considerable guidance to solve a problem within the area. Provided anesthesia for straight forward case. After complete the 1st step training : Performs task straightforward circumstances, requires help for more difficult situations. Sound basic knowledge requires some guidance to solve a problem within the area . Can plan of anesthetic management of straight forward and manage any divergences in short term.

The following units of training must be completed satisfactorily and maintains log book and portfolio.

This unit of training is intended to run in parallel with other units of training and is not designed to be undertaken as a standalone dedicated module. The learning outcomes are applicable to all patients and will be achievable during clinical practice whilst undertaking the other units of training. Attendance at a medically led preoperative assessment clinic is a mandatory component of this unit of training.

Standards for depth of knowledge

Content : 1. Preoperative assessment(Perioperative medicine)		
Objective		
1. Adequately perform a structured preoperative anaesthetic assessment of a patient prior to surgery and recognise when further assessment/optimisation is required 2. Comminication skill to explain options and risks of routine anaesthesia to patients, in a way they understand, and obtain their consent for anaesthesia 3. Always have a plan for the management of common straight forword co-existing diseases in the perioperative period.		
Knowledge	1st year	2nd year
Purpose of pre- operative assessment , relation with anesthesia and surgery. Important of relevant clinical exanmination investigation.	B-C	C-D

Content : Premedication: (Perioperative medicine)		
Objective		
1. To achieve a knowledge prescribe premedication when indicated, especially for the high risk population.		
Knowledge	1st year	2nd year
Purpose of pre-medication, type and time of premedication. Advantage dis advantage, Common drugs used with their effect on anesthetic procedure.New drugs and continuation of previous drug which already used.	B-C	C-D

Content : Post-operative and recovery room care:		
Objective		
1. Must be have adequate knowledge For manage the recovery of patients from general anaesthesia, postoperative pain and nausea and vomiting, postoperative fluid therapy 2. Safe recovery and optimization at the level of pre operative condition		
Knowledge	1st year	2nd year
Definition, type of recovery from anesthesia and post operative care . Post operative need and safety of patient after surgery. Perioperative management of emergency patients : Post operative needs of patient like pain treatment , fluid resuscitation, control infection. Treatment of side effect and complication under direct supervision. Supervision and principle of post operative monitoring	A-C	B-D

Content: Conduct of anaesthesia **Induction of general anaesthesia**		
Objective		
1. Safely conduct induction of anaestshesia in ASA grade 1-2 patients confidently and also ASA 1E and 2E patients requiring emergency surgery 2. Have a skill to recognize and treat immediate complications of induction 3. To manage the effects of common complications of the induction process. 4. Perfectly show the safe induction of anaesthesia for a patients with common co-morbidity . 5. Good skill of airway manage during peri operative period		
Knowledge	1st year	2nd year
Defination of induction and induction agent . Good knowledge of induction agent which includes pharmacology and pharmacokinetics, including doses, interactions and significant side effects of drugs used during induction of anaesthesia Describes the factors that contribute to drug errors in anaesthesia and strategies used to reduce them Describes the effect of pre-oxygenation and knows the correct technique for its use Explains the techniques of intravenous and inhalational induction and understands the advantages and disadvantages of both techniques with management of complication	B	C-D

Content: Intraoperative care :		
Objective		
1. To maintain anaesthesia for elective and emergency surgery. 2. The ability to use anaesthesia monitoring systems to guide the progress of the patient and ensure safety. 3. Considers the effects that co-existing disease and planned surgery may have on the progress of anaesthesia . 4. plans for the management of significant coexisting diseases		
Knowledge	1st year	2nd year
Definition : intra operative care ,Safe intra-operative management of ASA 1 and 2 patients for both routine and emergency surgery Manages the intra-operative progress of spontaneously breathing and ventilated patients Maintains anaesthesia with a face mask in the spontaneously breathing patient Uses of muscle relanxant Uses a nerve stimulator to assess the level of neuromuscular blockade 1 Safely maintains anaesthesia and shows awareness of potential complications and their management	B-C	C-D

Content : Infection control		
Objective		
1. Must have a understand the need for infection control processes 2 To understand types of infections contracted by patients in the clinical setting 3 To understand and apply most appropriate treatment for contracted infection 3 To understand the risks of infection and be able to apply mitigation policies and strategies 4 To be aware of the principles of surgical antibiotic prophylaxis 5. The acquisition of good working practices in the use of aseptic techniques		
Knowledge	1st year	2nd year
Identifies the universal precautions and good working practices for the control of infection including but not limited to: Decontaminate hands before treating patients; when soap and water hand wash is appropriate; when alcohol gel decontamination is appropriate • The use of gloves • The use of recognize equipment • The disposal of used clinical consumables [single use and reusable] Lists the types of hospital acquired infections and identifies the precautions needed to reduce their transmission Recalls/discusses the concept of cross infection including: • Modes of cross infection • Common cross infection agents	B-C	C-D

Content : Management of cardiac and respiratory arrest in adults and children		
Objective		
1. Must have gained a thorough understanding of the pathophysiology of respiratory and cardiac arrest and the skills required to resuscitate patients 2. Understand the ethics associated with resuscitation 3. Be able to resuscitate a patient in accordance with the latest Resuscitation ALS course .		
Knowledge	1st year	2nd year
Definition ,type and diagnosis of cardiac respiratory arrest The causes of a respiratory arrest, including Drugs, toxins,Trauma, Pulmonary infection Neurological disorders,Muscular disorders The causes of a cardiac arrest, including:Ischaemic heart disease Valvular heart disease, Drugs, Hereditary cardiac disease,Cardiac conduction abnormalities,Electrolyte abnormalities Electrocution,Trauma,Thromboembolism Basic physiology of underpinning expired air ventilation and external chest compressions		

Describes the basis of the ECG, and recognize arrhythmias including:Ventricular fibrillation, Ventricular tachycardia,Asystole Rhythms associated with pulseless electrical activity [PEA] Know the mode of action of drugs used in the management of respiratory and cardiac arrest in adults and children,including • Adrenaline • Atropine • Amiodarone • Magnesium sulphate • Naloxone Doses of drugs, routes given and frequency, during resuscitation from a respiratory or cardiac arrest		

Patient care competency			
Sl. No.	**Content of Care**	**1st year**	**2nd year**
1	.Pre operative assessment ; Perioperative medicine Structured history : History taking is a art of medical science to diagnosis of any disease . Appropriate history accurately recorded and synthesise the history for further progress	III-IV	IV
2	Clinical Examination :Achieve skill for relevant and accurate clinical examination . Co- relate physical findings to history in order to establish a diagnosis and formulate a management plan	III	IV
3	Investigations: Plan of preoperative investigations and interpret and act upon basic investigations with relevance to anaesthesia and surgery.	II	III
4	Premedication: Prescribe appropriate medication according to patient need.	II	III
5	Post-operative and recovery room care: Recovery and Post operative safe positioning of patient. Transport of patient with active monitoring	II	III
6	Satisfactorily communicates with the patient during induction	I	II
7	The ability to maintain anaesthesia for elective and emergency surgery	II	III
8	The ability to use anaesthesia monitoring systems to guide the progress of the patient and ensure safety	II	III
9	Plans for the management of significant coexisting diseases before surgery and anesthesia	I	II
10	Manages the cardiovascular and respiratory function during anesthesia	II	III
11	As a the team leader directs to safely transfer the patient and position of patient on the operating table and is aware of th potential hazards including, but not exclusively, nerve injury, pressure points, ophthalmic injuries	II	III
12	Maintains accurate, detailed, legible anesthetic records and relevant documentation	IV	IV

Clinical and operative/ procedural skills			
Sl. No.	Content of SKILL	1st year	2nd year
1	Prepare problem list and the patient is risk assessed and optimally prepared. . Recognizes the importance of working as a member of the theatre team.	1	2
2	Safe practice behaviours including briefings, checklists and debriefs	2	3
3	Demonstrates correct pre-anaesthetic check of all equipment required ensuring its safe functioning including the anaesthetic machine/ventilator in both th anaesthetic room and theatre if necessary	2	4
4	Intravenous cannulation	2	3
5	Prepares drugs for the induction of anaesthesia, Administers drugs at induction of anaesthesia	2	4
6	Perform correct use of oropharyngeal, laryngeal and tracheal suctioning Positions the patient for airway management Maintains the airway with oral/nasopharyngeal airways, Laryngeal Mask Airway	2	3-4
7	Intubation :Successfully places nasal/oral tracheal tubes using direct laryngoscopy		
i.	Method of Confirms correct tracheal tube placement	2	3
8	Have a good ability to show the different technique of normal induction .(IV. Inhalation.Oral	3	4
9	Rapid sequence induction (in the high risk situation of emergency surgery for the acutely ill patient)	2	4
10	Decontaminate hands before treating patients; Hand wash : soap with water and alcohol gel decontamination , The use of gloves	2	3
11	ALS and BLS	2	4

Special note: The core anaesthetic units of training are:

It is anticipated that the majority of these units of training will not be delivered in dedicated blocks; the exception is intensive care medicine, which must be completed in a three or six month block. Trainees would benefit from other units of training being dedicated; obstetrics, pediatrics and pain

2nd step Core basic anaesthesia training – (12 - 15 months within 24)

Once the trainee has completed all the minimum clinical learning outcomes identified in 'The basis of anaesthetic practice', they will move on to the remainder of Core Level training. This will provide a comprehensive introduction to all aspects of elective and emergency anaesthetic practice with the exceptions some special interest areas of practice including that for cardiothoracic surgery, neurosurgery and specialist paediatric surgery amongst others]. The core anaesthetic units of training are:

It is anticipated that the majority of these units of training will not be delivered in dedicated blocks; the exception is intensive care medicine, which must be completed in a three or six month block. Trainees would benefit from other units of training being dedicated; obstetrics, paediatrics and pain

Standards for depth of knowledge

Content : Airway management		
Objective		
1. Able to assess and predict difficulty with an airway a preoperative assessment and plan appropriate step 2. Able to maintain an airway and provide definitive airway management as part of emergency resuscitation 3. Demonstrates the safe management of the can't intubate can't ventilate scenario 4. Maintains anaesthesia in a spontaneously breathing patient via a facemask for a short surgical procedure [less than 30 mins]		
Knowledge	1st year	2nd year
Definition of airway and difficult airway. Explains the methods commonly used for assessing the airway to predict difficulty with tracheal intubation. Describes the effect and role of pre-oxygenation in deficult and knows the correct technique for its use in induction of GA Describes the principles of management of the airway including techniques to keep the airway open and the use of facemasks, oral and nasopharyngeal airways and laryngeal mask airways in induction of GA Explains the technique of inhalational induction and describes the advantages and disadvantages of the technique in induction of GA Knows the factors influencing the choice between agents for inhalational induction of anaesthesia in difficult airway management .	B-C	C-D

Content : Critical incidents: during Peri-operative period		
Objective		
1. To gain knowledge of the principle causes, detection and management of critical incidents that can occur in theatre and ICU 2. To be able to recognise critical incidents early and manage them with appropriate supervision 3. To learn how to follow through a critical incident with reporting, presentation at audit meetings, and discussions with patients 3. To recognise the importance of personal non-technical skills and the use of simulation in reducing the potential harm caused by critical incidents		
Knowledge	1st year	2nd year
Discuss the etiology , identification and management of critical event inperioperative period. Cardiac and/or respiratory arrest Unexpected fall in SpO2with or without cyanosis Unexpected increase in peak airway pressure Progressive fall in minute volume during spontaneous respiration or IPPV ,Fall in end tidal ,Rise in end tidal , Rise in inspired Unexpected hypotension ,Unexpected hypertension ,Unexpected ArrhythmiasSinus tachycardia / Badycardia ,ST segment changes, Sudden tachyarrythmias,Sudden bradycardia Ventricular ectopics Broad complex tachycardia,Ventricular Fibrillation Atrial fibrillation Pulseless electrical activity [PEA] Convulsions	A-B	C

Content : Anesthesia for Day surgery		
Objective		
1. To make a expert perioperative anaesthetic care of ASA 1 and 2 patients presenting in a dedicated Day Surgery Unit involving a range surgical specialities 2. Understand and apply agreed protocols with regard to patient selection and perioperative care of day surgery patients 3. Understand the importance of minimising postoperative complications, such as nausea and pain, in patients who are returning home the same day		
Knowledge	1st year	2nd year
Define day case anesthesia and surgery. Explains the role of appropriate preoperative investigations for day surgery patients. Describes protocols for selection of day surgery patients including medical, surgical and social factors Explains the importance of providing appropriate postoperative instructions to patients and relatives following day surgery including, but not confined to, level of care required following discharge, transport arrangements and when to drive.Describes anaesthetic techniques appropriate for day cases	A-B	C

Content : Anesthesia for General, urological and gynecological surgery		
Objective		
1. Must have a experience of the perioperative anaesthetic care of patients requiring elective and emergency general, urological and gynaecological surgery 2. Proper understanding of the perioperative management of patients requiring intra-abdominal laparoscopic surgery and the particular issues related to anaesthetic practice, demonstrating the ability to manage such straightforward cases in adults 3. To be able to recognise and manage the perioperative complications associated with intra-abdominal surgery that are relevant to anaesthesia 4. To gain understanding of special peri-operative needs of elderly, frail patients		
Knowledge	1st year	2nd year
Describes the anaesthetic management of straightforward common surgical procedures and their complications, including but not limited to: Body surface surgery including breast procedures and thyroid surgery.Urological procedures procedures on the kidney and urological tract Laparoscopic surgery including but not exclusively: Diagnostic laparoscopy, Laparoscopic and open cholecystectomy,Intra-abdominal major general surgery procedures including but not exclusively: Elective colorectal resection Elective and emergency surgery for peptic ulcer disease •Endoscopic procedures on the GI and GU tracts including, but not exclusively: OGD; flexible and rigid, Sigmoidoscopy, Colonoscopy, Cystoscopy Elective laparoscopic and open procedures on the uterus Elective and Emergency procedures in patients in early pregnancy such as ERPC and salpino-oophrectomy for ectopic pregnancy Explains the physical and physiological effects of laparoscopic surgery including the effects of positioning	B-C	D

Content : Anesthesia or sedation in Non-theatre situation		
Objective		
1. Show the safely undertake the intra-hospital transfer of the stable critically ill adult patient for diagnostic imaging 2. Understand the risks for the patient of having procedures in these sites 3. To understand the responsibilities as a user/prescriber of diagnostic imaging services		
Knowledge	1st year	2nd year
Explains risks and benefits to patients, and risks to staff from common radiological investigations and procedures, including the use of contrast media Explains current statutory radiological regulations practitioner or operator of diagnostic services Explains the general safety precautions and equipment requirements in specific environments e.g. MRI suites	A-B	C

Content : Obstetrics- Anesthesia		
Objective		
1. Good experience of basic physiology of the healthy pregnant woman who need anesthesia care 2. Have a ability for initial assessment of obstetric patient anaesthesia and provide analgesia and anaesthesia as required for the majority of the women in the delivery suite or operation theater 3. To understand the management of common obstetric emergencies and be capable of performing immediate resuscitation and care of acute obstetric emergencies [e.g. eclampsia; pre-eclampsia; haemorrhage],		
Knowledge	1st year	2nd year
Recall the basic Knowledge of pregnancy . Recalls/describes how to assess fetal well being in utero Describes the grading of urgency of Caesarean section Explains why anaesthetic techniques must be modified in the pregnant patient (Aortocaval compression and how to avoid it) Lists methods of analgesia during labour and discusses their indications and contraindications Describes epidural or CSE analgesia in labour and recalls/discusses the indications, contraindications and complications Explains how to provide regional anaesthesia for operative delivery Define labour Analgesia and its implication . Define and causes of obstetric emergency	B-C	C

Content : Anesthetic management for Orthopaedic surgery and trauma		
Objective		
1. Achieve experience of the perioperative anaesthetic care of patients requiring orthopaedic surgery including the elderly and patients with long-bone fractures 2. Understand the relevance of diseases of bones and joints to anaesthesia 3. To be able to recognise and manage the perioperative complications of orthopaedic surgery relevant to anaesthesia 4. Deliver perioperative anaesthetic care to uncomplicated ASA 1-3 adult patients for straightforward elective and emergency orthopaedic/trauma surgery to both upper and lower limbs, including Open Reduction Internal Fixation [ORIF] surgery .		
Knowledge	1st year	2nd year
Recall knowledge about indication of orthopedic surgery . Explains the basic pathophysioly of disease procees which need corrected surgery like Rheumatological disease, osteoarthritis, osteoporosis and ankylosing spondylitis etc.	B	C

Explains the basic changes after trauma and need emergency and routine surgery . Effect and complications of prolonged immobility, including those due to traction Explain the problems associated with limb tourniquets Explains the potential hazards associated with positioning (supine, lateral, prone, sitting) and during anaesthesia for surgery in the prone and lateral positions Describes the pathophysiology, diagnosis and management of specific orthopaedic surgical complications that are relevant to anaesthesia including but not exclusively: Bone cement Implantation Syndrome Diagnosis and management of fat embolism Upper and lower limb compartment syndromes Discusses strategies for blood conservation in major orthopaedic surgery		

Content : Basic Anesthesia principle for Paediatrics/ Child protection		
Objective		
1. Obtain principles 1.Ability of the underlying the practice of anaesthesia for children aged 1 year and older and the specific needs there in 2. Have completed training in child protection 3 .Demonstrates correct management of the paediatric airway in the different size airway devices correctly insertion 4. Maintains anaesthesia in a spontaneously breathing patient via a facemask for a short surgical procedure		
Knowledge	1st year	2nd year
Recall knowledge from basic core training and basic science explains the specific different to children aged 1 year and above from adult . Describes the preoperative assessment and psychological preparation of children aged 1 year and above and their parents for surgery Explains the importance of fasting and avoiding excessive starvation times Describes how anaesthesia can be induced for children aged 1 year and above Describes maintenance of anaesthesia for children aged 1 year and above Describes how recovery from anaesthesia is managed in children aged 1 year and above Explains the management of postoperative pain, nausea and vomiting in children Describes the management of acute airway obstruction including croup, epiglottitis and inhaled foreign body Recalls/explains how blood volume is estimated and how correct solutions and volumes are used for replacement of fluid loss. Particular attention must be given to the risks of hyponatraemia if hypotonic solutions are used for fluid resuscitation Explains the importance of modification of drug dosages	A-B	C

Content : Anesthesia for Head, neck, maxillo-facial and dental surgery		
Objective		
1. Have a good ability for perioperative anaesthetic care of patients undergoing minor to intermediate ear, nose and throat maxilla-facial and dental surgery 2. To be able to recognise the specific problems encountered with a 'shared airway' and know the principles of how to manage these correctly 3. Deliver perioperative anaesthetic care to ASA 1-3 adults, and ASA 1 and 2 children over 5, for non-complex ear, adenotonsillar and nasal surgery		
Knowledge	1st year	2nd year
Explains anesthetic problem with the airway shared surgery. Lists specific conditions that may complicate airway management [e.g. anatomical variation; tumour; bleeding] Describes how the surgeon operating in the airway, or requiring access via the airway, complicates anaesthesia for this type of surgery Describes the pathophysiology of obstructive sleep apnoea and its relevance to anaesthesia Describes the specialised devices used to maintain the airway during head and neck surgery	B	C

Content : Pain medicine		
Objective		
1.To be competent in the assessment and effective management of acute post-operative and acute non post-operative pain 2. To recognise the special circumstances in assessing and treating pain in children, the older person and those with communication difficulties 3. To demonstrate an understanding of the basic principles of post-op analgesic drugs requirements for treatment of patient (children to adult) with or without co existing disease .		
Knowledge	1st year	2nd year
Recall knowledge :The anatomy and physiology of pain medicine to include nociceptive, visceral and neuropathic pain . To acquire knowledge necessary to provide a basic understanding of the management of acute and chronic pain in adults and pediatric patient . Describes drugs used to manage pain and their pharmacology Explains the principles of neural blockade for acute pain management Describes the methods of assessment of pain Explains the relationship between acute and chronic pain Describes a basic understanding of chronic pain in adults Explains the importance of the biopsychosocial aspects of pain	A-B	C

Content : Regional Anesthesia		
Objective		
1. To become competent in all generic aspects of block performance 2. Able to obtain consent for regional anaesthesia from patients 3. Create a safe and supportive environment in theatre for awake and sedated patients 4. Be able specifically to perform spinal and lumbar epidural blockade 5. Demonstrate clear understanding of the criteria for safe discharge of patients from recovery following surgery under regional blockade 6. Establish safe and effective spinal and lumbar epidural blockade and manage immediate complications in ASA 1-2 patients 7. Ability to establish a simple nerve block safely and effectively		
Knowledge	1st year	2nd year
Recalls the relevant Anatomy , physiology and pharmacology Explains the basic of physics and clinical measurement related to the use of nerve stimulators and ultrasound in regional Discusses the definition, advantages/ disadvantages, risks/benefits and indications/contra-indications of regional blockade Describes how to obtain consent from patients undergoing regional blockade Describes the principles of performing the different regional and local anaesthetic procedures: • Subarachnoid and Lumbar/caudal epidural blockade Brachial plexus blocks: axillary, interscalene and supraclavicular Intravenous Regional Anaesthesia [IVRA] Explains the use of continuous epidural infusions and the need to prescribe correctly. Recalls/discusses the complications of spinal and epidural analgesia and their management .	A-B	C

Content: Sedation- Monitoring anesthesia
Objective
1. To gain a fundamental understanding of what is meant by conscious sedation and the risks associated with deeper levels of sedation 2. To be able to describe the differences between conscious sedation and deeper levels of sedation, with its attendant risks to patient safety 3. Understands the particular dangers associated with the use of multiple sedative drugs especially in the elderly 4. To be able to manage the side effects in a timely manner, ensuring patient safety is of paramount consideration at all times 5. To be able to safely deliver pharmacological sedation to appropriate patients and recognise their own limitations 6. Provision of safe and effective sedation to ASA 1 and 2 adult patients, aged less than 80 years

Knowledge	1st year	2nd year
Defination of sedation , conscious sedation and why understanding the definition is crucial to patient safety The differences between conscious sedation and deep sedation and general anaesthesia The fundamental differences in techniques /drugs used /patient safety That the significant risks to patient safety associated with sedation technique requires meticulous attention to detail, the continuous presence of a suitably trained individual with responsibility for patient safety, safe monitoring and contemporaneous record keeping Describes the pharmacology of drugs commonly used to produce sedation Knowledge of each drugs time of onset, peak effect, duration of action and potential for synergism Describes how drugs should be titrated to effect and how the use of multiple drugs with synergistic actions can reduce the therapeutic index and hence the margin of safety Describes the importance of recognising the following when multiple drug techniques are employed:	A-B	B-C

Content : Trauma and stabilization		
Objective		
1. To understand the basic principles of how to manage patients presenting with trauma 2. To recognise immediate life threatening conditions and prioritise their management 2. Understands the principles of prioritizing the care of patients with multi-trauma including airway management		
Knowledge	1st year	2nd year
Explains the principles of the primary and secondary survey in trauma patients A Explains the importance of early recognition of and the potential for airway compromise Explains the importance of correct airway management in the trauma patient Describes how to recognise and correctly manage hypovolaemia and other causes of shock Recalls/describes the indications for invasive cardiovascular monitoring, the relevant anatomy, principles of placement, associated complications and principles of their management	A-B	C

Content : Perioperative medicine: (This unit of training is intended to run in parallel with other units of training and is not designed to be undertaken as a standalone dedicated unit)

Objective

1. Explains the main patient, anaesthetic and surgical factors influencing patient outcomes
2. Describes the benefits of patient-centred, multidisciplinary care
3. Delivers high quality preoperative assessment, investigation and peri-operative management of ASA 1-3 patients for elective and emergency surgery with emphasis on the peri-operative management of co-existing medical conditions
4. Delivers high quality individualized anesthetic care to ASA 1-2 [E] patients, focusing on optimizing patient experience and outcome
5. Plans and implements high quality individualised post-operative care for ASA 1-2 [E] patient

Knowledge	1st year	2nd year
Describes the importance of comorbid disease in the planning and safe conduct of anaesthesia	A-B	B-C
Describes the role of `do not resuscitate` procedures		
Describes the effects of acute and chronic disease on patient outcomes after surgery		
preoperative investigations including indications for specific tests		
Interprets fundamental preoperative investigations		
Describes the adjustments needed to provide anaesthesia for the following patient groups: the elderly, pregnant women, patients with cognitive impairment, patients with chronic pain, and substance misusers		
Recounts implications of lifestyle factors such as smoking, alcohol intake and substance abuse on patient outcomes	A	B
Describes methods of patient optimisation which reduce risk in the perioperative period		
Describes how integrated perioperative care pathways in primary and secondary care affect patient outcomes		
Describes specific organisational interventions which improve patient outcomes (e.g. care bundles, enhanced recovery pathways)		

Content: Transfer medicine

Objective

1. Correctly assesses the clinical status of patients and decides whether they are in a suitably stable condition to allow intra-hospital transfer
2. Gains understanding of the associated risks and ensures they can put all possible measures in place to minimise these risks
3. Safely manages the intra-hospital transfer of the critically ill but stable adult patient for the purposes of investigations or further treatment .

Knowledge	1st year	2nd year
Explains the importance of ensuring the patient's clinical condition is optimised and stable prior to transfer Explains the risks/benefits of intra-hospital transfer Recalls/describes the minimal monitoring requirements for transfer Lists the equipment [and back up equipment] that is required for intra-hospital transfer Outlines the physical hazards associated with intra-hospital transfer Explains the problems caused by complications arising during transfer and the measures necessary to minimise and pre-empt Difficulties	A	B-C

Patient care competency

Patient care competency		1st year	2nd year
1	Patient selection for day surgery by proper history taking , clinical examination and appropriate investigation during preoperative assessment and grading for risk assessment	I	II
2	Preoperative preparation patients undergoing major and minor surgery, including guidelines on the appropriateness.	I	II
3	Proper action for local feeding / starvation policies and the reasons behind them.	I	II
4	Special care and can maintain anaesthesia for stable critically ill adult patients requiring diagnostic imaging	I	II
5	.Special care and can maintain anaesthesia and analgesia for stable obstetric patient and critically ill pre-eclampsia and eclampsia, PIH , and High risk pregnant patients.	II	III
6	Practical initial assessment by proper evaluation for resuscitation high risk obstetric major obstetric hemorrhage, PIH related complication and co-existing d isease. It may be required for the majority of the women in the delivery suite.	II	III
7	Take proper action about Thromboprophylaxis requirements in high risk patient and pregnancy patient.	I	II
8	Take proper care during peri-operative period of a patient having special condion like rheumatological disease, osteoarthritis, osteoporosis and ankylosing spondylitis	I	II

9	Special care of a patient having a complications of prolonged immobility, including those due to traction and long time bed retains	I	II
10	.Selection the right patients for regional anaesthesia – Demonstrates safely at all times during performance of blocks including: marking side of surgery and site of regional technique; meticulous attention to sterility;selecting, checking, drawing up, diluting, and the adding of adjuvants, labelling and administration of local anaesthetic agents.	I	II
11	Monitoring the all anesthetized and sedated patient with using of standard protocol for determined level of anesthesia and sedation scoring	I	II
12	Communicate associated complications and management plane in the perioperative period with patient and relative .	I	II
13	Explains the management of concurrent medication	I	II
14	Care of the potential hazards associated with positioning (supine, lateral, prone, sitting) during anaesthesia	I	II
15	Plan of fasting and avoiding excessive starvation times	I	II

Clinical / therapeutic / procedural skill		1st year	2nd year
1	Airway Management : a. Assessment: examination, relevant investigation, classification and grading for predict difficult intubation and ventilation Difficult/failed mask ventilation: Failed intubation Can't intubate, can't ventilate mange situation	1-2	2-3
2	Bag and mask ventilation +/- an oral airway : Adult and pediatric patient	2-3	3-4
3	Method of pre-oxygenation: during induction, before intubation in normal and difficult airway.	2-3	3-4
4	4.Deliver safe perioperative anaesthetic care to uncomplicated ASA 1-3 adult and pediatric patients. Induction Intubation Maintenance	1-2	3
5	Interpret the monitoring parameter during peri-operative period. Like Spo2.NIBP RESP. TEPM ECG	1-2	3

6	Identify and management peri –operative of specific surgical complications that are related to specific surgery - Pneumoperitonium Bone cement Implantation Syndrome, Diagnosis and management of fat embolism, Upper and lower limb compartment syndromes	1-2	3
7	Proper comminucation and psychological preparation of children aged 1 year and above and their parents for surgery	1-2	3
8	Perform a number of regional and local anaesthetic procedures; Spinal and epidural block Brachial plexus block Local infiltration and individual nerve block	1-2	3
9	Assessment of acute surgical and non surgical pain and demonstrate the ability to treat effectively.	1	2
10	Blood transfusion and Blood conservation in major surgery	1	2

3rd step Core anaesthesia – Basis of Critical care (3- 6 months within 24 months)

In order to facilitate the smooth functioning of training the full competence schedule in critical care for Anaesthetic trainees with a competence progression mention in this program . Whilst no trainee should view critical care attachments as the only place to acquire and demonstrate critical care medicine competence, it may be possible in emergency , HDU and peri operative period . For Providing a Certification that a trainee has reached the required level must be assessed by a faculty ofAnesthesia , critical care and pain medicine . The trainee may be place other than ICU where critical ill patient can managed.

Standards for depth of knowledge in Critical care medicine.

Content : Resuscitation and management of the acutely ill patient		
Objective		
1. To achieved basis of ICU 2. Achieve knowledge for requires considerable guidance to solve a problem related to critical ill patient management.. 3. Must be perform basic principle of resuscitation		
Knowledge	1st year	2nd year
1. Adopts a structured and timely approach to the recognition, assessment and stabilisation of the acutely ill patient with disordered physiology 2. Triages and prioritises patients appropriately, including timely admission to hospital	A-B	B-C

Content: Diagnosis, Assessment, Investigation, Monitoring and Data Interpretation		
Objective		
1. Achieve ability for requires considerable guidance to diagnosed a straight forword cases 3. Properly expertise management for straight forward case. 4. Can initiate emergency management and continue a management plan, recognising acute divergences from the plan. 5. Ability to diagnosis of a primary disease and their effect.		
Knowledge	1st year	2nd year
1. Achieve knowledge and skill about history taking and performs an accurate clinical examination 2. Undertakes timely and appropriate investigations 3. Obtains appropriate microbiological samples and interprets results 4. Integrates clinical findings with laboratory investigations to form a differential diagnosis 5. Manages the care of the critically ill patient with specific acute medical management plan	A-B	B-C

Content : Disease Management		
Objective		
1. Performs task under direct supervision. 2. Achieve ability for requires considerable guidance to solve a problem within the area of disease management 3. Understands indication and complications of a requirement 4. Sound basic knowledge; requires some guidance to solve a problem within the area. 5. Will have knowledge of appropriate guidelines and protocols for microbial infection		
Knowledge	1st year	2nd year
1. Manages the care of the critically ill patient with specific acute medical conditions 2. Identifies the implications of chronic and co-morbid disease in the acutely ill patient 3.Recognises and manages the patient with circulatory failure 4. Manages the patient with, or at risk of, acute renal failure 5. Recognises and manages the patient with neurological impairment 6. Recognises and manages the septic patient	A	B-C

Content: Therapeutic interventions / Organ support in single or multiple organ failure		
Objective		
1. Understands indication and complications of any possible therapeutic intervention 2. Sound basic knowledge; requires some guidance to solve a problem with organ failure .		
Knowledge	1st year	2nd year
Manages antimicrobial drug therapy Initiates, manages, and weans patients from invasive and non-invasive ventilatory support Recognises and manages electrolyte, glucose and acid-base disturbances	A	B-C

Content : Perioperative care High risk surgical patient		
Objective		
1. Can initiate emergency management and continue a management plan, recognising acute divergences from the plan patient of perioperative period		
Knowledge	1st year	2nd year
Discuss and identify the high risk surgical patient who need special care in ICU . Manages the pre- and post-operative care of the high risk surgical patient	A-B	B-C

Content: Transport		
Objective		
1. Ability to give decision about indication of transfer of a critically ill 2. Have a plan for emergency management of a transfer patient and continue a management plan in same status.		
Knowledge	1st year	2nd year
Undertakes transport of the mechanically ventilated critically ill patient outside the ICU inter or intra hospital	A-B	B-C

Patient care Compentency

Patient care Compentency		1st year	2nd year
1	1.Dignosis of critically ill patient : By proper history taking , clinical examination and appropriate investigation. With proper documentation	I	II
2	Biochemical report. S blood glucose , Hematological report. S. Electrolyte report Arterial blood gas report Radiological report : X-ray chest , X-ray skeleton , CT scan brain Electrocardiograph ECG	II	III
3	Manages the care of the critically ill patient with specific acute medical conditions Recognizes and manages the patient with circulatory failure; Manages the patient with, or at risk of, acute renal failure	I	II
4	Recognizes and manages the septic patient Manages antimicrobial drug therapy :.Initiates, manages, and weans patients from invasive and non-invasive ventilatory support Recognises and managses electrolyte, glucose and acid-base disturbances	I	II
5	Manages the pre- and post-operative care of the high risk surgical patient	I	III
6	Undertakes transport of the mechanically ventilated critically ill patient outside the ICU	I	II

Clinical / Procedural Skill 1-3			
1	Airway management : Uses of different airway device , oropharyngeal nasopharygeal LMA . Uses of AMBU Endotracheal Intubation 3	1-2	2=3
2	Oropharyngeal Suction	2	3
3	. Ryle's tube insertion	3	3
4	Intravenous cannulation in different site	2	4
5	.Oxygen delivery system	2	3
6	Patient position and patient bed manipulation	2	4
7	Artificial ventilator checkup and different parameter setup	1	2
8	Multiparameter patients monitor SPO2,Pulse . Temparature, Non invasive Blood pressure ECG	2	3
9	Lumbar puncture	2	3
10	. Setup syringes pump and infusion pump	1	2
11	Dilution and calculation of drugs	2	3

Knowledges

- Anaesthesia for neurosurgery, neuroradiology and neuro critical care
- Cardiothoracic anaesthesia and cardiothoracic critical care
- Advance Airway management
- Anesthesia for Day case surgery
- Anesthesia for General, urological and gynaecological surgery incorporating peri-operative care of the elderly
- Anesthesia for Head, neck, maxillo-facial and dental surgery
- Management of respiratory and cardiac arrest in adults and children in Peri operative period and any situation
- Anesthesia for Non-theatre situation
- Anesthesia for Orthopaedic surgery (incorporating peri-operative care of the elderly)
- Preoperative Medicine
- Regional Anesthesia
- Sedation and monitoring anesthesia
- Transfer medicine
- Trauma and stabilization
- Obstetrics Anesthesia
- Geriatric anaesthesia
- Paediatric anaesthesia
- Pain medicine
- Ophthalmic Anesthesia
- Plastics and burns
- Vascular surgery
- Resuscitation and management of the acutely ill patient
- Diagnosis, Assessment, Investigation, Monitoring and Data Interpretation
- Disease Management
- Peri operative care
- Comfort and recovery
- Transport
- End of life care

7.4.2. Advanced specialized Training : 3 years duration

Once the trainee has completed all the minimum clinical learning outcomes identified in Core basic Anesthesia and move on to the specialized training. This will provide a comprehensive introduction to all aspects of elective and emergency anaesthetic practice with includes some special interest areas of practice including that for cardiothoracic surgery, neurosurgery and specialist paediatric surgery amongst others.. Trainee who has successfully completed a Resuscitation ALS course adults and pediatric during basic core training and used this knowledge and skill in specialized training. Training the coverage the following area.

Standards for depth of knowledge in Anesthesia and pain Medicine

Content : Anaesthesia for neurosurgery, neuroradiology and neuro critical care			
Objective			
1. Develop and modify the skills of administering general anaesthesia to include a focus on the special difficulties presented by neurosurgery. 2.Developing experience of the perioperative anaesthetic care of patients undergoing major elective and emergency surgery on the brain and spinal cord and associated bony structures as well as for neuroradiology 3. Deliver safe perioperative anaesthetic care to uncomplicated ASA 1-3 adult patients undergoing non-complex elective intracranial and spinal surgery 4. Deliver safe perioperative anaesthetic care to uncomplicated ASA 1-3 adult patients undergoing non-complex emergency surgery 5.Be an effective team member for resuscitation, stabilisation and transfer of adult patients with brain injury with distant supervision			
Knowledge	3rd year	4th year	5th year
Describes the relevance of the anatomy of the skull, skull base, Explains the relevance of applied physiology and pathophysiology related to the central nervous system to neuroanaesthetic practice Describes techniques for decreasing the intra-cranial pressure. Explains the indications for using neurophysiological monitoring to benefit patients requiring neurosurgery/neuro-critical care. How do drugs can impact on neurophysiological monitoring Explains the pharmacology of drugs which act on the central nervous system Explains the complications of positioning for neurosurgical procedures: prone, sitting, lateral, park bench Discuss the understanding of the perioperative anaesthetic management of patients for neurosurgery and neuroradiology.	A-B B	B-C C	D D

Discuss basic understanding of anaesthesia for neurosurgical procedures including:Shunt surgeryEvacuation of intracranial haematoma Planned supratentorial and posterior fossa surgery Emergency surgery for traumatic brain injury,Spinal column surgery Discusses the principles of anaesthesia for neuroradiology including but not exclusively: Emergency and elective imaging of the central nervous system including the principles of stereotactic surgery interventional procedures including coiling of intracranial aneurysm Explains the anaesthetic implications of pituitary disease including endocrine effects and trans-sphenoidal surgery Describes anaesthesia for trigeminal neuralgia including thermocoagulation Explains the anaesthetic implications of spinal cord trauma Describes how to recognize an unstable cervical spine and explains how it should be managed Discusses the indications for postoperative ventilation Explains the techniques used for recognition and management of air embolism Describes the special risk associated with prion diseases during neurosurgery Describe the basic principles of anaesthesia for patients with neurological disease including Guillain-BarreMyasthenia gravis Myasthenic syndrome Dystrophia myotonica,Muscular dystrophy,Paraplegia and long term spinal cord damage Discusses the specific risks of venous thromboembolic disease in neurosurgical patients and how these are managed . The principles of management of acute head and spinal cord injury with controlling ICP and indication of ICU management. Describes the control of status epilepticus Describes the requirements for safe transfer of patients with brain injury Explains the issues related to the management of organ donation in neuro-critical care Demonstrates provision of safe perioperative anaesthetic care for a variety of neurosurgical procedures including elective and emergency intracranial surgery shunt surgery Cervical and lumbar spinal surgery Ability to explain , via physiological and pharmacological manipulation, to improve intra-cranial homeostasis in pathological states Discuss the manage a patients with acute head injuries for:anaesthesia for emergency neurosurgery non-surgical management if indicated the on-going neuro critical care	A-B A-B B B	B-C C C C	D D D D

Content: Cardiothoracic anaesthesia and cardiothoracic critical care			
Objective			
1. To gain knowledge and understanding of the underlying principles of anaesthesia for cardiac surgery, both on and 'off' pump, and thoracic surgery 2. Understands the skills required to provide safe and effective anaesthetic care to patients undergoing elective cardiac and thoracic surgery 3. To understand the pathophysiology and presentation of advanced cardiac disease to better understand the peri-operative management of such patients who undergo coincidental surgery 4. Deliver safe and effective perioperative anaesthetic care to patients undergoing elective coronary artery surgery and thoracic surgery			
Knowledge	3rd year	4th year	5th year
Cardiac Describes the principles of the perioperative anaesthetic management of patients for cardiac surgery Understands and explains the principles of cardiopulmonary bypass including the use of cardioplegia Learns from the perioperative management of patients with cardiac disease knowledge applicable to those requiring non cardiac surgery	A-B	B-C	B_C
Understands the pathophysiological changes and organ dysfunction associated with cardiac disease, and their implications in the perioperative period Correctly assesses the risk of operation in a patient who has cardiac or respiratory disease, using common scoring systems Understands and explains the principles of antibiotic prophylaxis in patients with cardiac disease Describes the anaesthetic and surgical problems associated with "off pump" cardiac surgery Describes the problems associated with post-cardiac surgery including bleeding and the clinical signs and symptoms of cardiac tamponade, and its management	B	C	C
Evaluates the indications for invasive and non-invasive cardiovascular monitoring, and is able to interpret the common findings Describes the methods used to cool and re-warm patients during cardiac surgery, and the complications Explains the need for, and methods of, altering blood coagulability during cardiac surgery Describes the indications for cardiac pacing and lists the different modes available	A	B	C
Describes the principles of action, and the use of, Intra-aortic balloon counter-pulsation and other assist devices	A	B	B

Explains the abnormalities found in the adult patient with congenital heart disease including corrected and the implications for anaesthesia in these patients Discribe the indications for the use of inotropes and vasodilators during cardiac surgery			
THORACIC Explains assess and recommend treatments to optimise a patient about to undergo thoracic surgery Discuss safe delivery of perioperative anaesthetic care to patients for minor thoracic procedures, in particular bronchoscopy, including the safe use of the Sanders injector Discuss the safe delivery of perioperative anaesthetic care for major thoracic procedures, including correct airwayand ventilatory management, positioning and patient protection Explain manage a patient undergoing one lung ventilation Plan and discuss to formulate correct post-operative care plans, taking into account the patient's condition and the surgical procedure, including an assessment of the need for management in Intensive care or high dependency	A-B A-B	B B	C C

Content: Advance Airway management			
Objective			
1. Build expertness on advance Level airway management and provide training to junior on basic airway management 2. Develop ability and experience of safe airway management in more complex cases undergoing major elective and emergency surgery including fibreoptic intubation 3. Have a ability to recognise the specific problems encountered with the airway			
Knowledge	3rd year	4th year	5th year
Discuss the risks associated with all technique of intubation including of a wake fibreoptic endotracheal intubation and describe the process of obtaining consent for this procedure Discusses the identification and assessment of pathology in or around the airway, including Discussion with surgeons Outlines the anaesthetic management of potential threats to the airway, including external compression, Foreign body, blood clots, masses Inhalational injury, inflammation Blunt and penetrating trauma Lists the indications for tracheostomy Outlines the anaesthetic principles for tracheostomy Describes the management of the obstructed/misplaced tracheostomy	C-D C-D	D D	D D

Content : Anesthesia for Day case surgery			
Objective			
1. Ability to provide appropriate anaesthetic management for selected ASA 3 patients including insulin-dependent diabetics and patients with a BMI >35 2. Gain knowledge of the organisational aspects of running a day surgery unit 3. Deliver safe perioperative anaesthetic care to ASA 1-3 patients having more extensive or specialized day surgery procedures with or without direct supervision			
Knowledge	3rd year	4th year	5th year
Describes the key organisational issues surrounding day surgery including suitability of facilities and staffing	C-D	D	D
Provides a clear explanation of current local and national guidelines for provision of day surgical services	C-D	D	D
Explain the knowledge of audit and other quality assurance activities relevant to day surgery			
Discuss the advances and controversies in anaesthesia for day surgery			
Explains the delivery of safe perioperative anaesthetic care to ASA 1-3 patients including those with significant comorbidities			
including, but not limited to:			
Obese patients [BMI > 35]			
Insulin dependent diabetics			
Those with significant cardiac and respiratory diseases			
Elderly patients			

Content: Anesthesia for General, urological and gynaecological surgery incorporating peri-operative care of the elderly			
Objective			
1 Have a ability to anesthetic management of more complex patients and also with transplanted organs for non-transplant surgery 2. Excellent experience of the peri-operative anesthetic care of patients requiring major general urological and gynecological surgery, including the immediate management of major blood loss 3. To manage the peri-operative care of an elderly patient in general, urological or gynaecological surgery, focusing on the issues of advancing age 4. Deliver safe perioperative anaesthetic care to complex ASA 1-3 adult patients requiring elective and emergency intra-abdominal surgery			
Knowledge	3rd year	4th year	5th year
Describes the principles off the peri-operative management of the commoner complex cases including, but notexclusively: Pancreatic and liver resection	C-D	D	D

Oesophagectomy [including one lung ventilation] Resection of neuroendocrine tumours [carcinoid and phaeochromocytoma] Splenectomy Resection of retroperitoneal masses .Explains the effects of chemotherapy/radiotherapy, and the implications for anaesthesia Describes the anaesthetic considerations of co-existing diseases including problems such as spinal injury Describes the ethical considerations of cadaveric and live-related organ donation for the donor [and relatives],recipient and society as a whole Describes the issues of anaesthesia for renal transplant surgery Explains the anaesthetic management of patients with transplanted organs for non-transplant surgery to disturbance of fluid balance, oedema, and dehydration Describes the anaesthetic implications of bariatric surgery Explain the principles of enhanced recovery programmes Describes the rationale and principles of perioperative hemodynamic management and optimization Explains principles of preoperative evaluation of patients at risk of post-operative morbidity, including risk stratification tools, for example scoring systems and measures of functional capacity [including cardiopulmonary exercise testing] Discusses the importance of the timing of non-elective surgery and the effect that this may have on the delivery ofemergency surgery.	C-D	D	D

Content: Anesthesia for Head, neck, maxillo-facial and dental surgery			
Objective 1. Develop experience of safe perioperative anaesthetic care of patients undergoing major elective and emergency surgery in these specialty areas 2. To be able to recognise the specific problems encountered with the 'shared airway' and manage correctly 3. To have the clinical judgement and skills to organise and manage the anaesthesia for routine ENT, dental and maxillo-facial operating lists involving ASA 1-3 patients requiring minor to intermediate surgery and such patients for emergency surgery without direct supervision 4. Deliver safe perioperative anaesthetic care to ASA 1-3 adult patients requiring routine and emergency non-complex minor/intermediate ENT and maxillo-facial surgery [including list management] under distant supervision			
Knowledge	3rd year	4th year	5th year
Explains the special requirements of anaesthesia for all common procedures encountered in specialised head and neck surgery Explains the principles of anaesthesia for middle ear surgery, including use of TIVA and hypotensive techniques	C-D	D	D

Explains the principles of management of anaesthesia for major head and neck surgery and: Describes the pathophysiological changes and co-morbidities associated with head and neck cancer Identifies the particular requirements for acute maxillo-facial emergencies e.g. fractured mandible, intra-oral abscesses and other pathological causes of upper airway obstruction Describes the causes, pathophysiology and management of obstructive sleep apnoea and the surgical procedures used to treat it Describes the characteristics of the lasers used for surgery and the circumstances in which they are used Explains the hazards of laser surgery Discuss the specialised airway techniques used for laser surgery in, or near, the airway Describes the safe use of equipment and airways devices used for surgery on and below the vocal chords, including bronchoscopes, Venturi devices and fibre-optic scopes Explains the use of specialised imaging techniques [CT, MRI] in planning anaesthesia and surgery for head and neck surgery Lists the problems associated with chair dental procedures including consent, the specific needs of patients with learning disabilities, Child Protection and the Mental Capacity Act plains the principles of the recognition and appropriate management of acute ENT emergencies, including bleeding tonsils, epiglottis, croup, and inhaled foreign body Describes appropriate emergency management of fractures of the face including le Fort fractures and fractures of the mandible Describes the emergency management of the obstructed airway including tracheostomy . Mention the indications for tracheostomy .Describes the principles of the care of the tracheostomy Explains the principles of jet ventilation . Anesthesia protocol for bleeding tonsil obstructed upper airway obstructed lower airway mandibular and maxillary fractures Discuss the ability to work with all members of the theatre and surgical teams to manage an operating list with a mixture of ASA 1- 3 non-complex minor/intermediate cases effectively, along with the ability to provide safe perioperative anaesthetic care for the patients Shows the ability to lead [where appropriate] the theatre team in the perioperative management of patients requiring out of hours minor/intermediate ENT, maxillo-facial and dental surgery, including understanding of when to seek help appropriately Discuss the specific measures needed to provide appropriate analgesia, and other postoperative care including oxygen therapy, airway monitoring, fluids and anti-emetics in patients following major head, neck, maxillo-facial and dental surgery	C-D	D	D

Content: Management of respiratory and cardiac arrest in adults and children in Peri operative period and any situation			
Objective			
1. Must have a ability to recall the previous experience which have achieved during core basic training in 1st and 2nd year. 2. Develop the skills necessary to safely and effectively manage patients in the peri-operative arrest period 3. Trainee is an effective member of the multi-disciplinary member of the resuscitation team and takes responsibility for the initial airway management , cardiac ,respiratory arrest in hospital or outside hospitak			
Knowledge	3rd year	4th year	5th year
Describes the interpretation of arrhythmias seen in the peri-arrest period, including but not limited to: Narrow complex tachycardias	C-D	D	D
Broad complex tachycardias Atrial fibrillation Paroxysmal SVT Bradycardia 1st 2nd and 3rd degree heart block	C-D	D	D
Describes the pharmacology of drugs used to treat common arrhythmias, dosage and frequency, including but notlimited to: Adenosine, Digoxin Magnesium ,Beta-blockers Amiodarone and Atropine			
Indications for performing cardioversion and the energies used Outlines the indication for, and principles of, pacing including percussion, external and transvenous . Indications for use of thrombolysis	B	C	D
Discusses the indications and principles of therapeutic hypothermia after cardiac arrest . Outlines indications and principles of: Open chest cardiac compressions Resuscitative thoracotomy			
Describes the principles of managing cardiac arrest in the prone position Explains the difference in aetiology of cardiac arrest between adults and children			
Describes how to recognize the sick/deteriorating ill child and what treatment should be initiated to reverse such deterioration and prevent, where possible, respiratory or cardiac arrest	B	C	
Mention the specific conditions likely to deteriorate to respiratory or cardiac arrest in children and describes their initial management			D
Mention in details the indications for, and use of, cuffed and uncuffed tubes in the critically ill child requiring tracheal intubation			
Describes how to: Recognise supra-glottic airway obstruction and understands the indications/contra-indications of supra-glottic,airway devices to bypass such obstruction	B	B	D
Manage complications of tracheostomy in children Outline the principles of safe inter-hospital transfer of the resuscitated patient			

Content: Anesthesia for Non-theatre situation			
Objective			
1. Trainee must have a used competencies gained in basic curriculum to include managing patients in a greater variety of out of theatre environments. 2. To deliver safe procedure anaesthesia/sedation to adult patients outside the operating theatre, but within a hospital setting, for painful or non-painful therapeutic procedures under distant supervision			
Knowledge	3rd year	4th year	5th year
Describes, and critically evaluates, the different techniques of anaesthesia/sedation for adults and children for procedures	C-D	D	D
that may take place outside the operating theatre, but within a hospital setting, either diagnostic or therapeutic for both			
elective and emergency procedures, including but not exclusively in the following settings:			
X-Ray, CT scan, Angiography, MRI scan, Radiotherapy, [ECT]			
Explains the indications/contraindications of sedation for patients in the non-theatre environment [Cross Ref sedation]			
Explains the problems of providing safe post- anaesthetic care for patients in the out of theatre environment			
Recalls/discusses the unique safety precautions required in each of the environments, particularly MRI	C-D	D	D
ECT			
Describes the specific physical and physiological effects of ECT			
Explains the rationale behind the choice of anaesthetic technique for ECT			
Discusses the physical and psychological needs of patients who present for ECT			
Discusses the place of the Mental Capacity Act in relation to the provision of ECT			
Diagnostic imaging and interventional radiology			
Describes common interventional procedures and their pathophysiological consequences			

Content: Anesthesia for Orthopaedic surgery (incorporating peri-operative care of the elderly)			
Objective			
1. Trainee have a ability and experience of the perioperative anaesthetic care of patients requiring major spinal and pelvic orthopaedic surgery 2. Deliver safe perioperative anaesthetic care to complicated ASA 1-3 adult patients for all elective and emergency orthopaedic/trauma surgery identified at the 3. Basic Level as well as those requiring lower limb primary joint replacement surgery 4. Manage elective and emergency operating sessions with such patients with distant supervision			
Knowledge	3rd year	4th year	5th year
Explains the difference in anaesthetic and surgical complexity between primary and secondary lower limb arthroplasty	C-D	D	D
Recalls/describes the principles of perioperative anaesthetic care for elective and emergency spinal surgery including but not exclusively: Scoliosis surgery including the need for, and implications of, neurophysiological monitoring Spinal trauma and the associated complications of spinal cord trauma	C-D	D	D
Describes the principles of perioperative anaesthetic care for pelvic bone and joint surgery Discusses blood conservation strategies that are used in orthopedic surgery			

Content: Preoperative Medicine			
Objective			
1.Trainee delivers high quality preoperative assessment, investigation and management of ASA 1-4 patients for elective and emergency surgery 2. To deliver high quality individualised anaesthetic care to ASA 1-3 [E] patients, focusing on optimising patient experience and outcome 3.To plan and implement high quality individualised post-operative care for ASA 1- 3 [E] patients and ASA 4-6 if cover the hospital protocol			
Knowledge	3rd year	4th year	5th year
Preoperative care: Describes the uses and limitations of common risk scoring systems. Describes the use of 'do not resuscitate' procedures and appropriate limitations of care Describes strategies for prehabilitation and patient optimisation and the limits of such strategies ,Mention the principles of enhanced recovery pathways	C-D	D	D

Describes the requirements for investigations in patients with complex comorbidities . Lists methods of assessment of functional cardiorespiratory capacity .Describes appropriate preoperative strategies for minimising the use of blood products .Describes the effects of ethnicity on pre-operative assessment Intraoperative care: Describes the concept of Goal-Directed Therapy Describes the use of different types of intravenous fluid Explains the potential impact of anaesthetic technique on patient outcome Describes the effects of deviation from normal physiological parameters on short and long-term outcomes .Describes rationale for point of care testing Intraoperative care: Recalls the principles and interpretation of depth of anaesthesia monitoring Explains how ethnicity may influence conduct of anaesthesia Postoperative care: Explains how a multidisciplinary team approach improves patient recovery and outcomes Manages common anaesthetic and surgical complications safely as part of a multidisciplinary team	C-D C-D	D D	D D

Content: Regional Anesthesia			
Objective			
1. Trainee have a ability by using the previous training in 1st and 2nd year gained in basic regional anaesthesia Increase the range of block techniques practiced 2. Become skilled in performing some more complex blocks 3. Become skilled in performing some simple nerve blocks 4. Perform one each of the following blocks satisfactorily Thoracic epidural and/or combined spinal/epidural An upper/lower limb plexus block with peripheral nerve stimulation or ultrasound guidance			
Knowledge	3rd year	4th year	5th year
Discusses advantages and disadvantages, techniques and complications including management of a wide variety of blocks including, but not exclusively, major peripheral blocks of the limbs, some cranial nerve blocks and blocks used to treat chronic pain conditions	C-D	D	D

Demonstrates understanding in the choice of local anaesthetic agents, opioids, use of additives and techniques of administration Outlines the principles of continuous catheter techniques for peripheral nerve blockade and for postoperative analgesia Demonstrates an in-depth understanding of the principles of ultra sound guided nerve blocks including: The principles of scanning including machine ergonomics, probe selection/handling and the use of acoustic couplant to improve skin contact The importance of the angle of insonation on visibility of structures specifically related to nerves and tendons The normal sonoanatomy of peripheral nerves and surrounding structures The basic concepts of needling techniques relating to ultrasound guidance Understanding and recognition of spread of local anaesthetic under ultrasound guidance, distinction between normal intraneural and intravascular injection	C-D	D	D

Content: Sedation and monitoring anesthesia			
Objective			
1Trainee have a ability to perfume the sedation and monitoring anesthesia in very complex situation with more co-existing disease by using the experience gained in 1st and 2nd year of training .. 2. To be able to discuss where and when deeper levels of sedation may be indicated 3. To be able to deliver pharmacological sedation to patients of all ages, safely and effectively, whilst recognising their own limitations 4. To recognise the important principal of minimum intervention, where the simplest and safest technique which is likely to be effective is used to achieve the clinical goal 5. Provision of safe and effective sedation to any adult patient using multiple drugs if required			
Knowledge	3rd year	4th year	5th year
Explains what is meant by deep sedation and when its use may be justifiable, identifies the associated risks and how these may be minimised to ensure patient safety is not compromised	C-D	D	D
Discusses how multiple drug use may enhance sedation techniques, whilst detailing how this increases risks	C-D	D	D
Explains why it is essential to titrate multiple drugs [sedatives, analgesics and anaesthetic agents] to effect whilst recognising that the possibility of differing times of onset, peak effect and duration, can result in unpredictable responses			

Discusses the place of infusions compared to bolus doses as well as target-controlled infusions [TCI], and the pharmacologicalmodels and pump technology relevant to their use Discusses options for 'alternative' route of delivery of drugs used for conscious sedation including intra-nasal and rectal Discusses the unpredictable nature of sedation techniques in the 'extremes of life' and strategies for safe delivery Discusses the use of sedation in the high risk patient and the advantages disadvantages of using general anaesthesia as opposed to sedation to cover necessary investigations/procedures in such patient			

Content: Transfer medicine

Objective

1. Build on the knowledge, understanding and skills obtained in Basic Level training, so developing greater confidence and ability to provide clinical care to patients requiring transfer, including those for inter-hospital transfer
2. To deliver safe and efficient transfer of Complex patients for intra-hospital including retrieving a newly referred ITU patient from A&E or the wards
3. An uncomplicated ventilated patient for inter-hospital transfer by land [Less than 4 hours

Knowledge	3rd year	4th year	5th year
Explains the risks/benefits of Interhospital patient transfer Explains the concept of primary/secondary/tertiary transfer C Outlines the hazards associated with Interhospital transfer, including but not limited to physical, psychological andorganisational Describes the increased risks to critically ill patients of transfer and the reasons for these risks Outlines strategies to minimise risk during Interhospital transfer, including but not limited to: Stabilisation, Pre-emptive intervention, Sedation Monitoring and Packaging Choice of mode of transfer Explains how critical illness affects the risk of transfer Explains how time-critical elements may influence risks to the patient and transfer personnel and how these should bemanaged to reduce them Understands the increased risk of interventions during Interhospital transfer Outlines the specific considerations for transfer of patients with specific clinical conditions, including but not limited to:head, spinal, thoracic and pelvic injuries	C-D	D	D
Special critically ill medical patients burns in children ans pregnant women	C-D	D	D

Lists and explains the critical care equipment used during transfer including but not exclusively:Ventilators,Infusion pumps, Monitoring Lists the different modes of ventilation and explains the selection of appropriate parameters in e.g. Asthma/COPD and ARDS Outlines the different modes of transport available for inter-hospital transfer, including risks/benefits Understand the safety implications of electrical and hydraulic equipment that may be used during patient transfer Describes the physiological effects of transport including the effects of acceleration and deceleration, includingNewton's laws of motion Understands the effects of high ambient noise on patients and alarm status Recalls/discusses the reasons for patients becoming unstable during transfer and strategies for management Recalls/describes how to manage patients who develop sudden airway difficulties whilst in transit [both in the intubated an un-intubated patient] Outlines the ethical issues related to patient transfer, including the need to brief patients and their relatives Awareness of the laws relating to deaths in transit Outlines how to find and use the national register of critical care beds Outlines the regional protocols for organising transfers between units Outlines the importance of maintaining communications between the transfer team and the base/receiving units Outlines the roles and responsibilities of all staff accompanying the patient during transfer including the ambulance technicians and paramedics Describes the personal equipment needed when leading a transfer, especially when a prolonged journey is anticipated Discusses the importance of auditing practice and reporting critical incidents that arise during Interhospital transfer and theneed for appropriate research	B	C	D

Content: Trauma and stabilization

Objective

1. Build on the knowledge, understanding and skills obtained in Basic Level training, so developing greater confidence and ability to provide clinical care to patientswith multiple injuries
2. To gain an in-depth understanding of how to manage massive blood loss in the multiply injured patient with an associated head injury
3. To gain in-depth understanding of the problems associated with trauma and: severe burns; electrical injuries; drowning/near drowning; hypothermia
4. Trainee is an effective member of the multi-disciplinary trauma team and takes responsibility for the initial airway management of the multiply injured patient
5. Be able to manage acute life-threatening airway problems safely and effectively with distant supervision
6. Provide safe perioperative anaesthetic care [from arrival in the Emergency Department through to post-operative discharge to the ward from recovery or intensive care] for ASA 1-3 patients with multiple injuries with distant supervision, whilst demonstrating understanding of knowing when to seek senior help

Knowledge	3rd year	4th year	5th year
Describes the complex pathophysiological changes that occur in all patients [including children] with multiple injuries Describes the perioperative anaesthetic management of patients with multiple injuries including head, facial, neck/spinal thoracic, abdominal, pelvic and peripheral trauma Explains the reasons for, and benefits of, the hospital triage of trauma patients and the scoring systems used Describes strategies for minimising secondary brain injury in patients with multiple injures Describes the initial assessment, management and resuscitation of patients with:Severe burns ,Electrical injuries ,Drowning and near drowning Hypothermia Explains the management of massive blood loss including the use of rapid infusion devices Explains the implications, prevention and management of coagulopathy, hypothermia and acidosis in multiply injured patients Describes the management of children with multiple injuries, comparing and contrasting with that of adults	C-D	D	D
Describes the specific ethical and ethnic issues associated with managing the multiply injured patient, including issues that relate to brain stem death and organ donation Discusses the indications and contraindications of regional anaesthesia and peripheral nerve blocks in multiply injuredpatients for the provision of analgesia, both initially and perioperatively Discusses the principles of clinical management for stabilisation of patients with multiple injuries requiring inter-hospitaltransfer strategies used, how safe transfer is undertaken, monitoring requirements and the options for modes of transfer	C-D	D	D

Content: Obstetrics Anesthesia			
Objective			
1. It is expected that the majority of hospitals with an obstetric unit should be able to deliver anesthetic service successfully. 2. To build on experience of basic training to be able to work 3. Able to provide emergency and non-emergency obstetric anaesthetic care in the majority of patients including those with co-morbidities and obstetric complications 4. Perform immediate resuscitation of acute obstetric emergencies			
Knowledge	3rd year	4th year	5th year
Describes the influence of common concurrent medical diseases on pregnancy Discusses the obstetric and anaesthetic management of a premature delivery Discusses the obstetric and anaesthetic management of multiple pregnancy Explains the classification of placenta praevia and the associated risk to the patient Describes the recognition and management of amniotic fluid embolus Describes the recognition and management of inverted uterus	C-D	D	D
Demonstrates understanding of the methods of treating post-dural puncture headache Discusses common causes of maternal morbidity and mortality, including national reports Discusses the particular sensitivity of patient choices in obstetric practice – even when this is not in line with accepted evidence based best practice e.g. choice of birth plan, and refusal of blood products	C-D	D	D

Content: Paediatric anaesthesia
Objective
1. Build on the knowledge and skills gained during Basic Level training Develop in-depth knowledge and understanding of the anaesthetic needs of children and neonates 2. Understand the potential hazards associated with paediatric anaesthesia and have obtained practical skills in the management of such events 3. Deliver safe perioperative anaesthetic care to ASA 1 and 2 children aged 5 years and over for minor elective and emergency surgery (e.g. inguinal hernia repair, orchidopexy, circumcision, superficial plastic surgery, grommets, manipulation of fractures, appendicectomy)

Knowledge	3rd year	4th year	5th year
Explains the relevance of the knowledge of applied basic sciences to pediatric age groups including neonates	C-D	D	D
Explains the implications of paediatric medical and surgical problems including major congenital abnormalities (egtracheoesophageal fistula, diaphragmatic hernia,) congenital heart disease and syndromes eg Down's for anaesthesia			
Explains the adverse effects of starvation and hypoglycaemia in neonates and children			
Recalls the specific factors in preoperative assessment and preparation of neonates for surgery			
Describes special anaesthetic techniques for neonates			
Explains the difficulty of thermoregulation in the newborn and the measure required to prevent hypothermia			
Explains the law as relates to children in respect of Consent, Restraint and Research and the concept of 'Gillick competence'			
Describes the anaesthetic management of neonates and infants for minor operations, major elective and emergency surgery Calculates the analgesic requirements of neonates and infants			
Describes the specific anaesthetic and monitoring equipment required for neonates			
Lists common anaesthetic problems in the neonatal period and explains their perioperative anaesthetic management [e.g. inguinal hernia, intestinal obstruction, pyloric stenosis]	C-D	D	D
Describes the special problems of the premature and ex-premature neonate			
Explains the importance of a comprehensive knowledge of Child Protection and how to be responsible for taking appropriate action when non-accidental injury is suspected			
Immediate Care			
Explains how to recognise the critically ill child with e.g. sepsis, trauma, convulsions, diabetic emergencies and describes their timely management			
Explains the principles of stabilisation and safe transport of critically ill children and babies			

Content: Pain medicine			
Objective 1. Trainee should be fully competent in the assessment and management of acute surgical and non surgical and acute on chronic pain in most patient groups and circumstances, including infants, children, the older person and those with communication difficulties 2. Trainees have a ability to become effective member of the acute pain team 3. To be aware of the need for multi-professional input and to embrace this in the management of chronic and cancer pain 4. To understand the importance of managing acute or chronic pain in a timely manner			
Knowledge	3rd year	4th year	5th year
Describes the assessment and management of acute pain in all types of surgery	C-D	D	D
Describes the assessment and management of acute non surgical pain			
Describes the assessment and management of acute pain in special groups to include children, infants, the older person, the cognitive impaired, those with communication difficulties, the unconscious and critically ill patient	C-D	D	D
Describes the basic assessment and management of chronic pain in adults			
Describes the basic assessment and management of cancer pain in adults			
Recalls advanced pharmacology of drugs used to manage pain including neuropathic pain			
Explains the rationale for the use of opioids in the management of chronic non malignant pain			
Describes the requirement for the multidisciplinary management of chronic pain			

Content: Ophthalmic Anesthesia
Objective
1. Trainees should be achieved experience of the perioperative anaesthetic care of patients undergoing ophthalmic surgery 2. To understand the rationale behind the choice of local or general anaesthesia for common ophthalmic procedures 3. Deliver safe perioperative anaesthetic care to adults and children requiring routine ophthalmic surgery and emergency anaesthesia for ASA 1 and 3 patients requiring minor/ intermediate ophthalmic surgery under distant supervision 4. Demonstrates the ability to provide local anaesthesia for eye surgery with competence in one techniq. 5. Trainees have a ability to take a leadership in monitoring anesthesia

Knowledge	3rd year	4th year	5th year
Discusses the preoperative assessment of ophthalmic patients with particular reference to associated co-morbidities and how the care of high risk patients requiring ophthalmic surgery may be optimized Recognizes that a relatively large proportion of patients requiring ophthalmic surgery are elderly and understands their particular needs including, but not exclusively, the effects of physiological changes associated with ageing and altered pharmacological responses Discusses the choice of local or general anaesthetic techniques in relation to the patient and surgery including their all of the following: Cataract surgery, Strabismus surgery,Glaucoma surgery Vitreoretinal surgery and Oculoplastic surgery Describes the oculocardiac reflex, its treatment and prevention Describes the action of anaesthetic drugs on the eye Recalls the physiological mechanisms which control intraocular pressure disadvantages and indications with particular reference to: Topical anaesthesia: local anaesthesia drops Superficial injection anaesthesia: subconjunctival block	C-D	D	D
Needle blocks: extraconal [peribulbar] and intraconal [retrobulbar] injections Canular blocks: sub-tenon's anaesthesia Describes the risks associated with needle blocks Awareness of the national guidelines regarding local anaesthesia for intraocular surgery Awareness of specific risk of wrong-site surgery when operating on paired organs such as the eyes Outlines the specific factors in the postoperative care of patients who have had ophthalmic surgery	C-D	D	D

Content: Plastics and burns
Objective
1. Trainees have a ability of the initial resuscitation and management of a patient with mild to severe burns prior to transfer to a specialist centre. 2. To gain an understanding of the specific requirements of anaesthesia for burns and plastic surgery including the principles of safe perioperative anaesthetic care to patients for a wide range of surgical procedures undertaken by plastic surgeons [to include microsurgery and free-flap reconstructive techniques] 3. Delivers safe perioperative anaesthetic care to ASA 1-3 adult patients for minor to intermediate plastic surgery [e.g. tendon repair or split skin grafting]

Knowledge	3rd year	4th year	5th year
BURNS Describes the pathophysiology of burn injury including thermal airway injury and smoke inhalation Describes the initial assessment and management of a patient with severe burns, including electrical & chemical burns Explains the principles of anaesthetic management of burns patients for surgery including dressing changes, grafting and related procedures	B-C	C-D	D
Plastic Can explain the specific features of preoperative assessment of patients for major plastic surgery procedures Explains and critically evaluates anaesthetic techniques appropriate for plastic surgical procedures including major reconstructive cases procedures Explains the factors affecting tissue blood flow with respect to free-flap surgery Describes methods for improving blood flow to the surgical field during plastic surgery	B-C	C-D	D

Content: Vascular surgery			
Objective			
1. Trainees have a experience to perform the perioperative anaesthetic management of patients undergoing elective and emergency peripheral , central and abdominal aortic surgery and newer stenting techniques 2. To anaesthetise patients for carotid endarterectomy and aortic aneurysm surgery			
Knowledge	3rd year	4th year	5th year
Describes the cardiovascular physiology and pharmacology relevant to perioperative vascular surgery Lists the methods of assessment of the patient's functional cardiovascular capacity Explains the preoperative management of the patient with atherosclerotic disease Describes the perioperative management of the patient for major vascular surgery Describes the resuscitation and management of major vascular accidents including the management of ruptured aortic aneurysms Explains the management of patients for endovascular radiological procedures [e.g. Stenting] including anaesthesia in isolated locations [Cross reference non-theatre anaesthesia]	C-D	D	D

Describes the management of elective carotid artery surgery with general or regional anaesthesia Explains the principles and anaesthetic implications of sympathectomy, including thoracoscopic procedures Describes the postoperative management and critical care of vascular patients Explains the effects of smoking on health Describes the morbidity and mortality associated with vascular surgery Explains the principles of blood conservation and red cell salvage when major haemorrhage is predicted Discuss the pathophysiology of aortic cross-clamping and of renal protection strategies	C-D	D	D

Patient care competency

Patient care competency		3rd year	4th year	5th year
1	Patient selection for a.elective and emergency specialized surgery on the brain and spinal cord and associated bony structures by proper history taking , clinical examination and appropriate investigation during preoperative assessment and grading for risk assessment: This includes: Preoperative assessment and optimization of patients with neurological disease.	II	III	IV
2	Patient selection for a. Elective and emergency specialized cardiac surgery including those with valvular and ischemic heart disease. by proper history taking , clinical examination and appropriate investigation during preoperative assessment and grading for risk assessment; Explains the results of the special investigations used during the assessment of patients with cardiac disease including, X -rays, Coronary angiography, ECHO, and Scanning techniques including CT, MRI and PET.	I	II	III
3	Assesses the patient with simple and complex comorbidities by proper history taking , clinical examination and appropriate investigation And also is taking into account their individual needs and requirements	II	III	IV
4	Ability to the pre-operative assessment of vascular patients with coexisting disease by proper history , relevant clinical examination and investigation.	II	III	IV

5	Preoperative preparation patients undergoing major and minor surgery, including guidelines on the appropriateness. Performs the pre-operative optimisation of high risk vascular patients , neurological cardiovusculat and respiratory diseases.	I	III	IV
6	Proper action for local feeding / starvation policies and the reasons behind them gut preparation different aged group in different special type of surgery	II	III	IV
7	Must have a ability to neurocritical care management of traumatic brain injury including indications for ventilation recognition and management of raised ICP cerebral protection strategies fluid and electrolyte balance in the head injured patient systemic effects of traumatic brain injury	II	III	IV
8	Special care and can maintain anaesthesia for stable and unstable critically ill adult patients requiring diagnostic imaging	II	III	IV
9	Special care and can maintain anaesthesia and analgesia for un stable and high risk obstetric patient and critically ill pre-eclampsia and eclampsia, PIH , and ASA 3 or more . Practical initial assessment by proper evaluation for resuscitation high risk obstetric major obstetric hemorrhage, PIH related complication and co-existing d isease. It may be required for the any where in hospital .	II	III	IV
10	Perioperative anaesthesia care for a patient undergoing elective coronary bypass including the management of:A patient during cardiopulmonary bypass and A patient having cardiac surgery off bypass	II	II	III
11	Spacial care of neurosurgical or cardiac surgery patient for management of emergence from anaesthesia in a smooth and controlled way	I	II	IV
12	Have a ability to recognize and manage the complication during major surgery and specialized surgery e.g . diabetes insipidus/SIADH , ARF,or cardiac complication.	I	II	IV
13	Special ability to manipulate blood pressure as appropriate for the clinical situation specially neuro ,cardiac vascular high tech ENT surgery	II	III	IV
14	Get a experience of ability to manage for neuroradiology patient in per operative and the immediate postoperative period	II	III	IV
15	Forms postoperative care plans appropriate to the surgery and the patient's condition including postoperative analgesia and espiratory support.Post Special care of a patient having a complications of prolonged immobility, including those due to traction and long time bed retains	II	III	IV

16	Selection the right patients for regional anaesthesia –Perfomes safely at all times during performance of blocks including: marking side of surgery and site of regional technique; meticulous attention to sterility; selecting, checking, drawing up, diluting, and the adding of adjuvants, labelling and administration of local anaesthetic agents. Anaesthesia and surgery for the procedure Coagulation management	II	II	IV
17	Monitoring the all anesthetizedpatient maintains protocol for determined level of anesthesia and hemodynamic status Select and use appropriate invasive monitoring when indicated in patients undergoing neurosurgical, cardiac , thoracic or other major surgical procedures amd manages their complication.	II	II	IV
18	Communicate associated complications and management plane in the perioperative period with patient and relative: Anesthetic outcome of specialized major surgical process neuro ,cardiac plastic and orthopedic etc. Good ability to communicate well with the surgical team including ensuring the exchange of relevant information .	I	II	III
19	Conducts a comprehensive preoperative assessment for a patient with multiple co-morbidities in the outpatient pre assessment clinic Manages existing medications and makes appropriate changes Discusses requirements of postoperative organ support and its limitations Explains the management of concurrent medication	I	II	III
20	Care of the potential hazards associated with positioning (supine, lateral, prone, sitting) during specialized surgery like neurosurgery orthopedic during anaesthesia	I	II	III
21	Plan of fasting and avoiding excessive starvation times with special situation. Initiates communication with patients regarding adverse events and organises appropriate follow up Contributes to discharge planning .	I	II	IV

Clinical / therapeutic / procedural skill		3rd year	4th year	5th year
1	Advance Airway Management : Assessment:Relevant history, examination, relevant investigation , classification and grading for predict difficult intubation and ventilation Interpretation of investigations such as lateral C-spine X-ray, cross sectional imaging of the upper airway (MRI/CT), ultrasonography flow volume loops Difficult/failed mask ventilation: Failed intubation Can't intubate, can't ventilate mange situation Pediatric airway, ability to:Control the airway rapidly using different airway devices Ability to perform elective fibreoptic intubation, either for an awake or an anaesthetized patient, Vedio laryngoscopy Demonstrates correct use of a variety of advanced airway devices COMBEE tube ,Advance LMA Perform positive pressure ventilation using bag/mask systems insert single or double lumen endobronchial tubes and bronchial blockers Surgical Airway : Cricothyroid puncture ,Mani-tracheostomy Conventional Tracheostomy , percunteneos tracheostmy	2-3 2-3 2-3	3-4 2-3 2-3	4 4 4
2	Invasive cardiovascular monitoring, and is able to permorme and interpret the common findings IBP , ICP, CO,CVP,PAWP , Non-invasive cardiac output monitoring devices utilizing a variety of technologies, such as LIDCO, PICCO and ODM and Transesophygeal echocardiography	2-3	3-4	4
3	Different Method of oxygenation and pre-oxygenation : during induction, before intubation in normal and difficult airway.	2-3	3-4	4
4	Deliver safe perioperative anaesthetic care to complicated ASA 2-3 adult and pediatric patients for nomal , major and specialized surgery like neuo,cardiac,thoracic vascular and transplants Induction of anesthesia in special and complex situation Intubation Maintenance	1-2	3	4
5	Intrepret the monitoring parameter during peri-operative period. Interprets information from commonly used modalities for advanced haemodynamic monitoring Demonstrates and performed (optional) the use of external cardiac pacing Good Technical expert to treatment of arrhythmias using drugs and cardioversion any situation OT, ICU Emergency and any whare .	1-2	3	4

6	Identify and management peri –operative of specific surgical complications that are related to specific surgery Pneumoperitonium Bone cement Implantation Syndrome, Diagnosis and management of fat embolism, Upper and lower limb compartment syndromes	1-2	3	4
7	Performed safe perioperative anaesthetic management of patients with multiple injuries requiring early surgery, including Primary resuscitation , transfer and ATLS .	1-2	3	4
8	Perform the CSE, subarachnoid, and epidural analgesia for labour Alterative method to provide intravenous opiate analgesia including PCA for labour Must have a documentation to manage complications of regional block including failure to achieve an adequate block, management of accidental dural puncture and post-dural puncture headache To provide CSE for an operative delivery	2	3	4
9	Perform central nerve blocks including Caudal and thoracic epidural and CSE , Spinal in advance Perform major nerve blocks including: Upper limb blocks Lower limb blocks perform minor nerve and other blocks including as many Superficial Cervical plexus block Trunk (penile, rectus sheath, intercostal and inguinal blocks) Upper limb (elbow and distal) Lower limb (ankle and distal) Ophthalmic blocks IVRA Infiltration and fascial plane blocks Uses	1-2	3	4
10	Describes the methods used to cool and re-warm patients during cardiac surgery, and the complications	1	2	3
11	To establish vascular access in children with 'difficult veins', including the use of intraosseous devices. Uses of Ultrasono for venous access large or small vien . From jugular, Subclavian and femoral .	2	3	4
12	Assessment of acute surgical and non surgical pain and demonstrate the ability to treat effectively. Different Pain assessment tools or Score. Plans appropriate postoperative analgesia using multimodal techniques, including those required for patients with complex analgesic needs	1	2	4
13	Ability to develop special technique , risks and benefits of the transfusion of blood and blood products patients according to proper protocol. To manage the effects of sudden major blood loss effectively. Blood conservation in major surgery Good skill for the management of major blood loss and associated coagulopathy, hypothermia and acidosis	2	3	4

SPECIALIZED LEVEL OF CRITICAL CARE AND RESUSSCITATION

This training program schedule ensure that evidence of all items include which matches the portfolio of specialized training in critical care and resuscitation..

Standards for depth of knowledge In critical care medicine

Content: Resuscitation and management of the acutely ill patient			
Objective			
1.Performs task individually with recall knowledge from basic core training,. 2. Develop a very good knowledge; requires limited guidance to solve a problem within the area. 3 Trainee has become expert to take history, examine and arrange investigations for any complicated case or complex diagnosis s). Have a ability to initiate emergency management and continue further management plan 4. Recognising acute divergences from the plan. That is managed individually.			
Knowledge	3rd year	4th year	5th year
Discuss the recent advance adopts a structured and timely approach to the recognition, assessment and stabilisation of the acutely ill patient any complex situation	C-D	D	D
Triages and prioritises patients appropriately, including timely admission to ICU	C-D	D	D
Describe the assesses and provides initial management of the complex trauma patient.			
Discuss the different acute disease process which need acute emergency support or resuscitation			

Content: Diagnosis, Assessment, Investigation, Monitoring and Data Interpretation
Objective
1. Performs task related to critical patient management in straight forward and complex circumstances, with or without help of supervisor.
2. Understands indications and complications of a management plan for critical ill patient.
3. Fellow the appropriate guidelines and protocols for the standard ICU which comparable to world standard.
4. Can be initiate emergency management with definitive management including artificial support of a organs .
5. Can manage most complications, has a good understanding of contraindications and alternatives.

Knowledge	3rd year	4th year	5th year
Discuss the correlation of obtains a history , performs an accurate clinical examination and undertakes timely and appropriate investigations	C-D	D	D
Explain the method of obtains appropriate microbiological samples and interprets results Interprets imaging studies Integrates clinical findings with laboratory investigations to form a differential diagnosis Discuss the diagnosis process of complex diseases from H\history investigations in a more complex case in a focused manner. Can initiate emergency management. In a most cases, can plan management and manage any divergences. Discuss the all organ supporting item , patient bed Ventilator , Dialysis , Discuss the diseases of different system need Critical support with reasoning .And also considering the Prognostics value, cost effective , patient and family suffering .	C-D	D	D

Content: Disease Management
Objective
1. Performs task self dependent . 2. Achieve ability for requires considerable guidance to solve a problem within the area of disease management 3. Understands indication and complications of a requirement 4. Sound advance knowledge; requires some guidance to solve a problem within the area. 5. Will have knowledge of appropriate guidelines and protocols for microbial infection

Knowledge	3rd year	4th year	5th year
Discuss the defferent Manages plan the care of the critically ill patient with specific acute medical conditions or complex disease state Identifies the implications of chronic and co-morbid disease in the acutely ill patient Recognises and manages the patient with circulatory failure Recognises and manages the patient with, or at risk of, acute renal failure	C-D	D	D
Recognises and manages the patient with neurological impairment Recognises and manages the patient with severe acute respiratory failure / acute lung injury or syndromes (ALI / ARDS) Recognises and manages the septic patient Discuss correct use of invasive and non-invasive monitoring in patients with cardiac or respiratory disease including An understanding of effective and evidence based use of inotropes and vasodilators	C-D	D	D

Content: Peri operative care			
Objective			
1. Can initiate emergency management and continue a management plan, recognising acute divergences from the plan patient of perioperative period			
Knowledge	3rd year	4th year	5th year
Manages the pre- and post-operative care of the high risk surgical patient .Delay recovery from anesthesia , Elective ventilation for specializes surgery cases , Post resuscitation care of per operative complication. Post –operative management of ASA 3 or more complicated patient.	C-D	D	D
Manages the pre- and post-operative care of the severe trauma patient	C-D	D	D

Content: Comfort and recovery			
Objective			
Respects privacy, dignity, confidentiality and legal constraints on the use of patient data Collaborates and consults; promotes team-working Supports clinical staff outside the ICU to enable the delivery of effective care Appropriately supervises, and delegates to others, the delivery of patient care Formulates clinical decisions with respect for ethical and legal principles			
Knowledge	3rd year	4th year	5th year
Identifies and attempts to minimise the physical and psychosocial consequences of critical illness for patients and families	C-D	D	D
Manages the assessment, prevention and treatment of pain and delirium Manages sedation and neuromuscular blockade	C-D	D	D
Communicates the continuing care requirements, including rehabilitation, of patients at ICU discharge to health care professionals, patients and relatives Manages the safe and timely discharge of patients from the ICU			

Content: Transport
Objective
1. Correctly assesses the clinical status of patients and decides whether they are in a suitably stable condition to allow intra-hospital transfer 2. Gains understanding of the associated risks and ensures they can put all possible measures in place to minimise these risks 3. Safely manages the intra-hospital transfer of the critically ill but stable adult patient for the purposes of investigations or further treatment

Knowledge	3rd year	4th year	5th year
Discus the advance development in undertakes transport of the mechanically ventilated critically ill patient outside the ICU. Both for diagnostic and treatment purpose.	C-D C-D	D D	D D

Content: End of life care			
Objective			
Communicates effectively with patients and relatives Communicates effectively with members of the health care team Maintains accurate and legible records / documentation Involves patients relative in decisions about care andtreatment Demonstrates respect of cultural and religious beliefs and an awareness of their impact on decision making			
Knowledge	3rd year	4th year	5th year
Manages the process of withholding or withdrawing treatment with the multidisciplinary team Discusses end of life care with patients and their families / surrogates Manages palliative care of the critically ill patient Performs brain-stem death testing Manages the physiological support of the organ donor Manages donation following cardiac death	C-D C-D	D D	D D

Content: Patient safety and health systems management			
Objective			
1. Have ability Participates in research or audit 2. Seeks learning opportunities and integrates new knowledge into clinical practice 3. Participates in multidisciplinary teaching 4. Takes responsibility for safe patient care			
Knowledge	3rd year	4th year	5th year
Leads a daily multidisciplinary ward round Complies with local infection control measures Describes commonly used scoring systems for assessment of severity of illness, casemix and workload Demonstrates an understanding of the managerial and administrative responsibilities of the ICM specialist	C-D C-D	D D	D D

Patient care Competency in Critical care

Patient care Compentency		3rd year	4th year	5th year
1	Obtains a history and performs an accurate clinical examination; Undertakes timely and appropriate investigations; Dignosis of complex critically ill patient .With proper documentation including the all system of the humen body.	III	III	IV
2	Take proper and appropriate action and periodic intervention by interpret the following investigation report : Biochemical report. S blood glucose , s. lactate s. cardiac enzyme Hematological report. Cell component and plasma component S. Electrolyte report Obtains and interprets the results of blood gas samples; Radiological report : X-ray chest , X-ray skeleton , CT scan brain Electrocardiograph ECG, EEG Transesophygeal Echocardiography Demonstrates how to interpret CT and MRI scans of the head and neck	III	III	IV
3	Adopts a structured and timely approach to the recognition, assessment and stabilization of the acutely ill patient with disordered physiology. Manages the care of the critically ill patient with specific acute medical conditions . Recognizes and manages the patient with mutliorgan dysfunction circulatory failure; Manages the care of the critically ill patient with complex acute medical conditions Manages antimicrobial drug therapy;	II	III	IV
	Demonstrates understanding of the Neurocritical care management of traumatic brain injury including indications for ventilation recognition and management of raised ICP cerebral protection strategies fluid and electrolyte balance in the head injured patient systemic effects of traumatic brain injury	II	III	IV

4	Recognises and manages the patient with, or at risk of, acute liver failure Recognises and manages the patient with acute gastrointestinal failure Recognises and manages the patient following intoxication with drugs or environmental toxins Recognises life-threatening maternal peripartum complications and manages c Recognizes and manages the septic patient Manages antimicrobial drug therapy :.Initiates, manages, and weans patients from invasive and non-invasive ventilatory support Recognises and manages electrolyte, glucose and acid-base disturbances	II	III	IV
5	Manages the pre- and post-operative care of the high risk surgical patient . Care of all drains , Out put and input , Chest drain	II	III	IV
6	Demonstrates and perfomed to determine when patients are in their optimum clinical condition for transfer Demonstrates the ability to optimally package a patient for Inter hospital transfer to minimise risks Demonstrates the ability to establish appropriate ventilation and monitoring required of a critically ill patient for inter hospital Undertakes transport of the mechanically ventilated critically ill patient outside the ICU	II	III	IV

Clinical / Procedural Skill 1-3		3rd year	4th year	5th year
1	Advance Airway management Including Surgical airway Uses of different airway device , oropharyngeal nasopharygeal LMA Uses of AMBU Performs emergency airway management Performs difficult and failed airway management according to local protocols Endotracheal Intubation Demonstrates the ability to provide anaesthesia for procedures in cardiac intensive care including re-sternotomy, reintubation, tracheostomy and cardioversion Perform anaesthesia for patients having cardiological electrophysiological procedures, including pacemaker insertion Fibroptic Laryngoscopy and Broncheoscpoy Oropharyngeal Suction and bronchial toileting	2	2-3	3-4

2	Performs endotracheal suction Performs chest drain insertion Performs arterial catheterisation Performs ultrasound techniques for vascular localisation Performs central venous catheterisation Performs defibrillation and cardioversion Describes how to perform pericardiocentesis Demonstrates a method for measuring cardiac output and derived haemodynamic variables Performs lumbar puncture (intradural / 'spinal') under supervision Manages the administration of analgesia via an epidural catheter Describes Sengstaken tube (or equivalent) placement Performs nasogastric tube placement Performs urinary catheterisation	2	3	4
3	. Ryles tube insertion	3	3	
4	Intravenous cannulation in different site	2	4	
5	.Oxygen delivery system Administers oxygen using a variety of administration devices; Performs arterial catheterisation	2	3	
6	Patient position and patient bed manipulation	2	4	
7	Artificial ventilator checkup and different parameter setup	1	2	
8	Multiparameter patients monitor SPO2, Pulse. Temperatures, Non invasive Blood pressure ECG	2	3	
9	Lumbar puncture	2	3	
10	Setup syringes pump and infusion pump	1	2	
11	Dilution and calculation of drugs	2	3	
12	Practical procedures Performs fibreoptic bronchoscopy and BAL in the intubated patient			

8. Training supervision, monitoring and appraisal

A trainee who will be preparing yourself for the fellowship in Anesthesiology will be under continuous supervision and monitoring by research and training monitoring department (RTMD) of BCPS.

The institution and hospital responsible for imparting training to the trainee for Anesthesiology must be accredited by BCPS. An MOU between RTMD and the training institute or facility is made provided the facility ensures effective and quality training according to set criteria determined by BCPS.

An institutional monitoring committee (ITMC) will ensue ongoing supervision and monitoring of the trainee's performance as well as the institute capability of providing quality training. The ITMC will be a body of medical educators, senior fellows of the college and teachers/consultants of a particular institution who are actively engaged in the academic activities and training workshops arranged by BCPS and local facility or institute.

A trainees acquisition of academic knowledge, development of clinical and practical skills and his/her overall performance will be assessed at six month interval(i.e. performance status for 6 month period) by a specialist committee formed by RTMD of BCPS.

A set criteria for a supervisor is that he/she must have fellowship of the college or an equivalent qualification in that particular specialty working in the capacity of an assistant professor or senior consultant in a teaching hospital or institute accredited by BCPS. Number of trainees under any supervisor will be a specific time frame shall also be determined by RTMD of BCPS.

The key assessment tools for monitoring the adequacy and quality of training shall comprise of at least 2 (two) CBD's (Case based Discussion) and 2(two) Mini-CEX (mini clinical evaluation exercise) within a 6 months training slot along with the attitude, professionalism, commitment, communication skill, scholarly and linguistic capability. A log book is mandatory.

A competency progression report in a format prescribed by RTMD is to be completed by the supervisor and signed by the trainee is to be submitted to RTMD every six month.

All the documents containing the assessment of trainee's performance shall be compiled and reviewed by a specialized body of RTMD before the trainee for the final examination.

Details about the research and training monitoring system is available online or BCPS website.

Record of training

Details of training and performances of all trainees needs [has] to be recorded. Trainees as well as trainers both shall execute their responsibilities. Documents [information] that might be required for this purpose includes

- Details of official training placements, weekly time-table and duty rosters
- Monthly report of number of patients and procedures performed with details of case mix and management outcome.

- Confirmation of attendance and performance in clinical, academic and management activities
- Confirmation of attendance and satisfactory performance in educational or skill based workshops or instructional courses
- Maintenance of logbook with regular updating
- Supervisors report of satisfactory progression of training on observed performance in WBA programs

Log Book

A trainee is required to maintain a log book in which entries of academic activities and practical procedures observed and performed either independently or under supervision is to be made regularly and checked and signed by the trainer. Completed and duly certified log book is a pre-requisite for appearing the fellowship examination. Trainees shall be encouraged to maintain this log book updating it time to time throughout his/her training carrier.

Thesis / Research work

In order to develop critical thinking, ability to review medical literature and to carry out a research work on a particular topic, it is imperative to develop research competencies which forms an important part of the curriculum. Every trainee will be assigned a project of writing a thesis on a topic approved by the faculty of specialty of Bangladesh College of Physicians and Surgeons under the guidance and supervision of the trainer. The protocol is to be approved $1^1/_2$ years before the anticipated date for sitting the fellowship examination. A completed dissertation is to be submitted to The Bangladesh College of Physicians and Surgeons of Bangladesh 6 months before the date of examination. Satisfactory completion of thesis and thesis defense is a pre-requisite for appearing in FCPS Part II examination.

9. Assessment System

9.1 Formative Assessment

Assessment during the period of training is Work Place Based. Both generic and specialty elements of knowledge and skills will be assessed. Informal assessment during clinical rounds, academic discussions and operation procedure will be done through direct observation [DOPS], Procedure based assessment, Mini-CEX, Case based discussion and other procedures.

Formal assessment at the end of each block of training may be arranged by trainers and institutional training management body. Trainees will be evaluated for satisfactory performance and progression in each of following components and competencies

- Specialty Medical Knowledge
- Clinical Skills
- Procedural and operative Skills [Technical skills]
- Communication Skills
- Professionalism

A review committee formed by RTMD [Research Training Monitoring Department] of BCPS will scrutinize all the documents related to training progression at the end of each block and evaluate evidences of optimum achievement during the period based on the criteria and standard laid down in the curriculum. All these assessments are designed to

- Provide feedback to trainees and trainers on effectiveness of learning
- Guide alterations in training and learning practice
- Encompass knowledge, skills, behavior and attitude in everyday clinical practice
- Provide reference point for expected competence
- Documentation of evidences of achievement and correctional steps.

Types of Assessment

Assessments can be categorized as *assessment for learning* and *assessment of learning*, although there is a link between the two the purposes are different.

Assessment for Learning - Is primarily aimed at aiding learning through constructive feedback that identifies areas and sources of learning deficiencies and provides means and measures for improvement. Alternative terms are ***Formative*** **assessment.**

They can and should be repeated frequently. This increases their reliability and helps to document progress. Such assessments are ideally undertaken in the workplace. Assessments for learning are used in the curriculum as part of a developmental or on-going teaching and learning process and mainly comprise workplace-based assessments. They provide the trainee with educational feedback

from skilled clinicians that should result in reflection on practice and an improvement in the quality of care.

Assessment of Learning - Is primarily aimed at determining the level of competence to permit progression through training or for certification at the completion of training. Such assessments are undertaken infrequently (e.g. examinations) and must have high reliability as they often form the basis of decisions. Alternative terms are **summative or high-stakes assessments.**

Assessments of learning in the curriculum are focused on the strategic points in the specialty syllabuses. For the most part these comprise the examinations with multiple and structured assessment tools which, cover the important elements of the syllabus and ensure achievement of competencies and standard

The balance between the two assessment approaches principally relates to the relationship between competence and performance. Competence (can do) is necessary but not sufficient for performance (does), and as trainees' experience increases so performance-based assessment in the workplace becomes more important

Formative assessments have been integrated with training schedule covering the whole training program of post-graduate trainees and supports development of expected competencies.

The purpose of the formative assessment program is to:

- Monitor progress and deficiencies of performance and the standards of trainees in common and specialty-based knowledge, clinical judgement, Anesthetic,operative and technical skills, and generic professional behavior and leadership skills specified at various stages in the curriculum for surgical and sub-specialty training.
- Identify learning deficiencies and their probable reasons for any specific trainee or group of trainees.
- Provide systematic and comprehensive feedback as part of the learning cycle and take remedial actions.
- Address all the domains of Good Medical Practice.

Components of the Assessment system

The components of the assessment system are:

- Regular workplace-based assessments covering knowledge and its appropriate application, clinical skills and judgement, technical and procedural (Anesthetic, resuscitation , Critical patient , pain management) skills and professional behavior and attitudes.
- These are complemented by the Anesthestic and patient care ICU ,Emergency pre and post operative ward in logbook of procedures to support the assessment of all related knowledge and skills
- Examinations held at key stages; during the period of training and towards the end of specialty training

The Bangladesh College of physicians and Surgeons (BCPS) has its responsibility for setting and regulating standards for post-graduate medical education and training of fellows in different specialties and sub-specialties in the country. These competencies and standards are adapted from Bangladesh Medical and Dental Council. College (BCPS) has developed a systematic program to assure growth of knowledge and training of clinical skills and development of professional behavior and attitude. In this regard BCPS works with other organizations, like universities, different post-graduate institutes and Medical Colleges.

To achieve this assessment methods are selected which are valid, reliable and applicable in our context. The following criteria are considered for each assessment method.

- **Validity** –To ensure validity, the assessments comprise direct observations of performance of workplace tasks; the complexity of the tasks increases in line with progress thorough the training program. The assessment instruments have been complemented against content area and the standards set in the curriculum.
- **Reliability**- In order to increase reliability, there will be multiple measures of outcomes for each of the trainee. Assessments will be done by several observers' judgements, multiple assessment methods (triangulation) and take place frequently. This is supplemented by a planned, systematic and permanent program of assessor training for trainers and Supervisors.
- **Feasibility** - Frequency and time for assessment are selected such as not to add a significant load to training schedule. Whole encounter is time-bound and include feedback part of the assessment.
- **Cost-effectiveness** – Once staff have been trained in the assessment process, the only significant additional costs should be any extra time taken for assessments and feedback.
- Opportunities for feedback –Structured feedback is a fundamental component of high quality assessment and has been incorporated throughout workplace based assessments.
- **Impact on learning** - The assessments are all designed to include immediate feedback as part of the process and has a continuous developmental impact on learning. The emphasis given to reflective practice within the portfolio also impacts directly on learning.

Types of Assessment [Workplace Based Assessments]

Assessment methods (WBA) suitable for trainees in surgical disciplines are

CBD	Case Based Discussion
CEX	Clinical evaluation Exercise
Mini CEX	Mini Clinical Evaluation Exercise
PBA	Procedure based Assessment
DOPS	Direct Observation of Procedural Skills
Observation of Teaching	
Assessment of Audit	
MSF	Multi Source Feedback

Most of these methods are applicable in our situation and may be adopted as the trainers and supervisors find it practicable and suitable. Of importance is, all encounters are to be documented and communicated to trainees and the academic bodies [? authorities] Tools for each WBA are designed to record performance of a trainee in procedures and competencies selected appropriate to the stage and expected standard and criteria. Every assessment form has space for documenting feedback provided for correction and improvement

The purpose of workplace based assessment (WPBA)

The most important use of the workplace-based assessments is in providing trainees with short loop feedback to support learning. Assessments are done as the trainees are performing their task (Does). Each encounter is completed only for the purpose of providing meaningful feedback on one task or competency. The number, types and difficulty level of each WPBA in any one assessment cycle will be initially determined by the Learning goals of a training placement and is regularly reviewed. The assessments should be viewed as part of a process throughout training, enabling trainees to build on assessor feedback and chart their own progress. Surgical trainees also can use different tools to assess themselves against important criteria of various competencies (e.g. clinical reasoning and decision-making) as they learn and perform practical tasks, including behavior and attitudes during day-to-day surgical practice

CBD (Case Based Discussion)

This method is designed to assess clinical judgement, decision-making and the application of medical knowledge in relation to patient care in cases for which the trainee has been directly responsible. The method is particularly designed to test higher order thinking and synthesis as it allows assessors to explore deeper understanding of how trainees compile, prioritizes and apply knowledge. The CBD is not focused on the trainees' ability to make a diagnosis nor is it a viva-style assessment. The CBD should be linked to the trainee's reflective practice.

The process is a structured, in-depth discussion between the trainee and the Assigned Supervisor trainer about how a clinical case was managed by the trainee; talking through what has presumably occurred, considerations and reasons for actions. By using clinical cases that offer a challenge to the trainee, rather than routine cases, the trainee is able to explain the complexities involved and the reasoning behind choices they made. It also enables the discussion of the ethical and legal framework of practice. It uses patient records as the basis for dialogue, for systematic assessment and structured feedback. As *the actual record is the focus for the discussion*, the assessor can also evaluate the quality of record keeping and the presentation of cases.

Most assessments take no longer than 15-20 minutes. After completing the discussion and filling in the assessment form, the assigned educational supervisor should provide immediate feedback to the trainee. Feedback would normally take about 5 minutes.

<u>Guidelines for using the Case-Based Discussion (CBD)</u>

Case-Based Discussion (CBD) is one of a number of assessment methods used in the clinical setting to help the teaching and assessment of a clinical skill. In common with the other workplace-based

assessments (WBAs), its primary purpose is to provide structured teaching and feedback in a particular area of clinical practice.

CBD uses the records and investigations of a case for which the trainee has been directly responsible as the basis for dialogue between the trainee and the assessor, who is usually a clinical supervisor, to explore the knowledge, judgement and clinical reasoning of that trainee. CBDs are used throughout training and should encourage a reflective approach to learning. More complex cases are used as training progresses.

CBD can be utilized for assessment of factual knowledge, assessment and management skills of a case, decision making capability, including ethical and professional behavior. Quality of the record keeping and presentation can be explored during an encounter.

The setting may be varied but would include outpatient or case presentations at departmental meetings ensuring that the assessment form is used to provide structured feedback. The assessor's evaluation is recorded using a structured form which facilitates structured feedback during debriefing.

CBD in the context of workplace-based assessment

It is important that their purposes and modus operandi are understood. They should not be used in a mechanistic way. First and foremost, they should stimulate the trainer/assessor to observe and consider all the aspects of the practice of the trainee and in so doing to gain adequate insights into the specific training needs of each trainee.

Who should assess CBD?

The assessor would normally be the trainee's supervisors and include other consultant clinical supervisors and senior specialty registrars who are trained and approved by the appropriate authority of the college. Assessors should be trained in when and how to use the CBD and be expert in the clinical problem/task.

When and how often should CBDs be carried out?

At least six CBDs should be conducted throughout a six month placement. Given the great variation in the rate of progress between individuals, absolute number of assessments are not fixed, rather a range between six and twelve is recommended. In clinical practice a number of observed performances, even if completed to a satisfactory level, are insufficient if not underpinned by adequate experience. Ideally, trainees and supervisors should use the assessment instruments during every training exercise i.e. at every possible opportunity.

The great benefit of WBAs such as the CBD is that by obliging the trainer to review the performance of the trainee across the full range of components involved in the management of a case, a comprehensive picture of the trainee's strengths and weaknesses can be obtained and kept under review during the whole placement. Each CBD should represent a different clinical problem covered by the curriculum and characterize a range of clinical settings. The process may be initiated

by the supervisor or the trainee, but it remains the responsibility of the trainee to take a proactive approach and to ensure that sufficient exercises are completed. Critical incidents are ideal for CBDs. A quiet area may be preferred in some circumstances for a one-to-one interview, but used appropriately, a case presentation at a clinical meeting can provide an excellent setting. The assessor should discuss the case in depth with the trainee talking through the clinical situation, the findings and the decisions or courses of action that the trainee would recommend. Most discussions should take no longer than 15-20 minutes and should be concluded with a 5-10 minute debriefing, feedback and completion of the CBD form. The original form should be kept by the assessor as a means of validating the assessment.

Completing the CBD form

These notes may be helpful when using the CBD form:

- Trainee and Assessor details: The trainee and assessor should complete their details.
- Assessor particulars: The training undertaken by the assessor should be indicated on the form. Assessors should have read the guidance notes and CBD form.
- Clinical setting: The assessor should state the setting in which the case is based, for example Out-patients, OT, ER etc.
- Reflective writing: It is expected that the trainee would produce a piece of reflective writing for the assessment and discussion.
- Summary of the problem: It is optional for trainees to write in short about the nature of the case to aid re-call at a later date. Entries must ensure the confidentiality of patient information.
- Focus of clinical encounter: The assessment should cover all or most of the areas named and there should be a tick against each area that applies.
- Complexity of case: The assessor should match the complexity of the case according to the stage of training to which it is considered to be most appropriate.
- Competency ratings: Performance of trainee in any of the Competency should be recorded as per prescribed range of the rating scale detailed in the assessment form and should be used for each area. Comparison should be made by the assessor between the trainee being observed and the level of performance expected of a doctor who is ready to complete the stage. It is expected that some ratings of Development required will be a reflection of a deficit in experience.
- Feedback: It must be emphasized that the most important purpose of the assessment exercise is to provide the trainee with formative feedback, offering a significant impact on learning. Ratings are used only for the purpose of identifying strengths and weaknesses and providing accurate feedback on that performance.

The assessor should summarize the discussion with agreed actions. Following discussion of the case, feedback should take about 5-10 minutes. It should be conducted in a suitable, quiet environment immediately after the assessment and should be constructive. Assessors should expand on the reasons for any ratings below Satisfactory and make practical suggestions for any remedial steps if it is felt that the rate of progress is insufficient. It may be necessary to make substantial changes to the clinical timetable and sessional exposure that a trainee has during a placement, if it is deemed in the best interests of the trainee.

- Global summary 0-4: The global summary should only be used if the assessor has reviewed all areas 1-8 with the trainee. If there is sufficient evidence to make a judgement, the assessor should rate the trainee's overall performance according to a scale of training stages.

- The standards to be applied: The assessments in CBD should be judged against the standard expected at completion of the stage of training defined in the syllabus.

Clinical Evaluation Exercise (CEX)

The CEX is a method of assessing skills essential to the provision of good clinical care and to facilitate feedback. It assesses the trainee's clinical and professional skills as the trainee takes care of his patients in the ward, on ward rounds, in Accident and Emergency or in outpatient clinics. Trainees will be assessed on different clinical problems in a range of clinical settings.

One of the purposes of the assessment is to enable trainees to demonstrate to their trainers that they are maintaining progress during the placement and that they are on course to reach the standard required by the syllabus and their learning agreements for successful completion of the stage.

Each assessment should be done by the assigned supervisor. The assessment involves observing the trainee's interaction with a patient in a clinical encounter. The areas of competence covered include: history taking, physical examination, professionalism, clinical judgement, communication skills, organization and efficiency of overall clinical care. Most encounters should take between 15-20 minutes.

The assessor's evaluation is recorded on a structured form that enables the assessor to provide developmental verbal feedback to the trainee immediately after the encounter. Feedback would normally take about 5 minutes.

Guidelines for using the Clinical Evaluation Exercise (CEX)

CEXs are used throughout training. The setting would include outpatients or the ward and interviews with patients and/or relatives. The assessor's evaluation is recorded on a form which is used by the assessor to provide the trainee with structured feedback during debriefing. The aim should be to make the exercise part of routine surgical training practice.

Who should assess CEX?

Each trainee should be evaluated on several different occasions by different assessors. Assessors should be known to, and approved by appropriate authority. The range of assessors should always include the supervisors and other members of the multi-disciplinary team where appropriate. In general, however, assessments of this kind will be carried out by the trainers since they provide useful insights on the training that is required.

Assessors should be trained in when and how to use the CEX and be expert in the clinical problem/task.

When and how often should CEX be carried out?

Four to six CEXs should be conducted throughout each placement of six months. Ideally, trainees and trainers should use the assessment instruments during every training exercise i.e. at every possible opportunity. Important benefit of CEX is that by involving the supervising clinician to review the performance of the trainee across the full range of components involved in a consultation, a comprehensive picture of the trainee's strengths and weaknesses can be obtained and kept under review during the whole placement.

Using the CEX

Ideally there should be evidence of competence in different clinical problems from a range of clinical settings covered by the curriculum. The encounter should be representative of the trainee's workload.

Patient safety and well-being has to be ensured. The supervising assessor should ensure that the patient is informed, has provided consent for the exercise and suffers no increased risk or discomfort. The supervisor retains responsibility for patient care throughout and will intervene as the situation requires.

The process comprises the trainer/assessor observing the trainee during a consultation of whatever type; an outpatient consultation, interviewing a patient on the ward pre-operatively or interviewing relatives would all be appropriate. The CEX evaluation form will provide some structure to the encounter from the point of view of feedback as well as a record for the training portfolio.

The assessor should observe the trainee undertaking the consultation and doing what they would normally do in that situation. Most encounters should take no longer than 15-20 minutes and should be concluded with a 5-10 minute debriefing, feedback and completion of the CEX form. Assessors should record a rating for each competency on the assessment form.

Completing the CEX form

These notes may be helpful when using the CEX form:

- Trainee and Assessor details
- Assessor Training

- Clinical setting
- Summary of the clinical problem
- Focus of clinical encounter
- Complexity of case:
- Competency ratings
- Feedback

The assessor should summarize the feedback given together with agreed actions. Feedback should take about 5-10 minutes. It should be conducted in a suitable, quiet environment immediately after the assessment and should be constructive and have significant impact on learning. Scores are used only for the purpose of identifying strengths and weaknesses.

Assessors should expand on the reasons for any ratings below Satisfactory and make practical suggestions for any remedial steps if it is felt that the rate of progress is insufficient.

• Global summary 0-4:

The global summary should only be used if the assessor has reviewed all areas 1-7 with the trainee. If there is sufficient evidence to make a judgement, the assessor should rate the trainee's overall performance according to a scale of training stages.

The standards to be applied to the CEX assessments

The assessment should be judged against the standard expected at completion of the stage of training defined in the syllabus.

Examples of CEX settings

- Clinic/ Pre operative clinic
- Ward/ Post operative ward/ ICU/HDU
- Accident and Emergency dept
- OSCE

Examples of encounters for CEX

- Dealing with a patient/relative who has a complaint
- Guiding a junior trainee in clinic
- Breaking bad news in expected / unexpected / complex / sensitive settings
- Leading a ward round
- Ward – severely ill patients and their relatives
- A&E – severely ill patients and their relatives
- Dealing with the dying patient
- Conflict resolutions

Procedure-based Assessment (PBA)

The PBA has been developed to assess trainee's technical, operative and professional skills. It includes variety of specialty procedures or parts of procedures. Level of performance is compared with competency expected at the end of training placement.

The assessment method is centered on competences within six domains common to all procedures. Performance of trainees are divided into four levels of overall global rating. The highest rating is the ability to perform the procedure to the standard expected of a specialist in practice.

The assessment form is supported by a worksheet consisting of descriptors outlining desirable and undesirable behaviours that assist the assessor in deciding whether or not the trainee has reached a satisfactory standard for certification, on the occasion observed, or requires development. The procedures chosen should be representative of those that the trainee would normally carry out at that level and will be one of an indicative list of index procedures relevant to the specialty.

The assessor will normally be the trainee's, Clinical Supervisor or another surgical consultant trainer. One of the assessors must be the trainee's supervisor. Trainees are encouraged to request assessments on as many procedures as possible with a range of different assessors.

Direct Observation of Procedural Skills in Anesthesiology (DOPS)

The DOPS for trainees is used to assess the trainee's technical, operative and professional skills in a range of basic diagnostic and interventional procedures, or parts of procedures, during routine surgical practice and to facilitate developmental feedback. Some specialties may also use specialty level DOPS in higher specialty training. The DOPS is used in simpler environments and can take place in wards or outpatient clinics as well as in the operating theatre. The assessment involves an assessor observing the trainee perform a practical procedure within the workplace

The DOPS form can be used routinely every time the trainer supervises a trainee carrying out one of the specified procedures, with the aim of making the assessment part of routine surgical training practice. The procedures reflect the index procedures in each specialty syllabus which are routinely carried out at the trainees' workplace.

Mostly procedures take no longer than 15-20 minutes. The assessor will provide immediate feedback to the trainee after completing the observation and evaluation. Feedback will normally take about 5 minutes.

The overall rating on any one assessment can only be completed if the entire procedure is observed.

The Logbook

The logbook is the trainee's record of all operative procedures performed on patients. It allows the trainee to build a complete record of their operative experience. Maintenance of an up to date logbook is a mandatory requirement of the curriculum .Logbook entries complement procedure-based assessment of competence and together ensure that trainees work at a level commensurate with their experience. Trainees record their level of involvement in a procedure and the supervision received using the descriptors below.

- Observed (O)
- Assisting (A)
- Supervised (S)
- Performed (P)

9.2. Summative Assessment : Examinations : final stage of unite training and course.

Examination for the award of fellowship consists of Three parts. The examination is conducted solely by the College.

FCPS Part I

Eligibility Full registration with BMDC

Format

It will comprise of written examination

Fifty Multiple choice questions -Multiple true false (MTF) and single best answer (SBA)

There are three papers

Component	Format	Subject/syllabus	Marks
Paper I	MTF, SBA	Anatomy and pathology	100
Paper II	MTF, SBA	Physiology and biochemistry	100
Paper III	MTF, SBA	Pharmacology and basic physics, basic biostatistics	100

Criteria : A candidate has to pass all the papers according to BCPS roll

FCPS Mid-term Examination/ Intermediate Evaluation

Eligibility

1. Pass FCPS Part I Examination
2. Complete two years Core Training

Components	Format	Marks
Written Paper I Paper II	Single best answer (SBA) Short Answer Questions (SAQ)	 100 100
Practical & Clinical	OSCE Five clinical stations (5x10=50) Ten practical stations (10x5=50)	100

FCPS PART II Final

Eligibility

1. Pass FCPS Part I examination
2. Complete two years Core Training
3. Qualified Mid- term Evaluation
4. Complete two years Advanced Training in the specialty and One-year Part II course or Complete three years Advanced Training in the specialty
5. Complete Log Book after proper evaluation with summery presentation
6. Submit a thesis/ Research based on student's research work duly approved by the authority and successful defense of thesis.

Format

Examination has Written, Oral, Practical and Clinical components

Component	Format	Subject / syllabus	Mark
Written Paper I & II	Structured Essay Questions (SEQ) Short Answer Questions (SAQ) Sero based proben structure question	A list B list	100 100
Practical	OSPE/OSCE		50
IOE	Structured Interactive Oral Examination (SIOE)		50
Clinical	Long Cases and Short cases		200

A. Written examination: two papers- Paper I & II. (SAQ /SEQ)

Mark distribution: Total marks-200

Paper I: A

1. Pre-anaesthetic assessment, risk stratification and planning for anaesthetic technique
2. Operating theatre management
3. Special monitoring in anaesthesia, intensive care and pain management
4. Audit in anaesthesia
5. Anaesthesia and co-existing disease
6. Intensive care medicine
7. Anaesthesia for urological surgical patient

8. Anaesthesia for geriatric surgical patient
9. Anaesthesia for orthopaedic surgery
10. Neuroanaesthesia & neuro critical care

B. Paper II

List B

1. Ethics and medico legal aspect in anaesthesia
2. Anaesthesia outside operating theatre (Anaesthesia for ECT, Radiology, Resuscitation
2 Recent development in anaesthesia
3 Transplant anaesthesia
4 Palliative care
5 Advance medicine pain
6 Paediatric anaesthesia
7 Obstetric anaesthesia
8 Cardiac anaesthesia
9 Trauma care and emergency anaesthesia

A candidate has to score grade point 14 and above in written component for eligibility to be selected for appearing in Practical OSPE / OSCE / IOE. A candidate has to to score grade point 14 and above in Practical OSPE / OSCE to be selected for appearing in Clinical.

If a candidate scores grade point 15 or above in written component of the examination he/she will be exempted from written component of subsequent two examinations but will have to appear in Practical, Clinical and Oral components of the examination.

A **candidate has to score grade point 15 in Written, Oral-Practical and Clinical components to be admitted as a fellow of the college**

Note: Details of the training programme will be available in RTMD. Candidates are requested to contact RTMD for specific queries.

Curriculum Implementation System and Management

Curriculum will be implemented primarily through the trainers and supervisors. All up-to-date version of curriculum of different specialties and sub-specialties will be made available in the website of BCPS. This will be readily accessible to all trainees and trainers for copy or print. Hard copy may also be available from the office of BCPS. Ever body will be instructed to follow the curriculum for contents and assessments

For recording of progression of training and achievement of competencies, RTM of BCPS will monitor the events through institutional monitoring committees and supervisors' reports and other documents.

10. Curriculum Review

Rapid advances in different field of medical sciences demands review and updating of the curriculum at regular basis. The curriculum is specifically designed to guide trainers and trainees on the contents and educational process and will continue to be the subject of active redrafting to reflect changes in the field of both medical science in its broadest perspective and also in teaching learning including assessment system. This will be accomplished by feedback from trainees, trainers and supervisors along with experts of respective specialties. Trainees, supervisors and people associated with implementation of the curriculum will be encouraged to apply the curriculum and discuss different aspects of curriculum and provide feedback to appropriate authority.

Curriculum review may be done every 3-5 years or as is deemed necessary by specialty and authority