The Iraqi Board for Medical Specializations

The Scientific Council of Neurosurgery

Neurosurgical Curriculum Program

2025

Contents

Introduction

1.1. Neurosurgery

Neurosurgery is the surgical specialty concerned with the diagnosis and treatment of diseases affecting the brain, spine and peripheral nerves. The scope of the specialty is extensive and includes, but is not necessarily confined to: head &cranial injuries, spinal & peripheral nerve injuries, pediatric and congenital anomalies affecting head & spine ,neuro oncology and modalities of treatment that including surgery and radiosurgery, vascular and endovascular neurosurgery, corrective spinal surgeries ,pain surgery with different modalities including classical spine and peripheral nerve surgeries, neuromodulation surgeries , radiosurgery for pain and minimal invasive pain managements, functional neurosurgeries with different modalities from classical ablative surgeries for epilepsy management , neurostimulations like vagal nerve stimulation, deep brain stimulation, spinal cord stimulation for pain, sacral nerve stimulation for uro-fecal incontinence and intrathecal pump surgeries for spasticity and pain management, endoscopic surgeries for skull base and intraventricular surgeries ,Gamma knife radiosurgery for treatment of brain and upper cervical tumors, vascular pathology like AVM and cavernomas,pain management for trigeminal,glossopgaryngeal neuralgia, cancer bone pain ,other functional and psychiatric diseases.

The aim of this curriculum is to ensure the highest standards of neurosurgical practice in Iraq by delivering high quality surgical training and education with attainment of knowledge, skills and professional behaviors relevant to the practice in the specialty.

This curriculum was founded on a common format and similar framework of all the surgical specialties in the Iraqi Board for Medical Specializations.

1.2. Overview of the curriculum

The Scientific Council of Neurosurgery of the Iraqi Board for Medical Specializations provides a five-year training and education program for the specialty that involves doing research.

The program culminates in awarding the trainees with the degree of Fellow of the Iraqi Board for Medical Specializations (FIBMS) in Neurosurgery which is considered to be the highest professional degree in the field of the specialty.

All applicants willing to enter the specialty program must submit to a credentialing process which includes qualification from medical colleges and passing a written competitive enrollment examination which is in Multiple Choice Question- (MCQ) single best answer format, Essay format or both with a minimum 60% pass mark.

Internship in Neurosurgery is not mandatory but will add special remarks for competitors

All trainees will need to complete all the essential elements of the specialty syllabus satisfactorily in order to be awarded the FIBMS degree.

The academic year starts on the 1st of October, the five-year training and education program consists of the following frame:

1.2.1. Clinical training

ϖ First year: 6 months residency in general surgery.

3 months residency in neurology
1 month residency in psychiatry
1 month residency in RCU
1 month residency in ophthalmology

ϖ Second year:

The resident during this year should assess ,prepare , attend ,observe , assist, doing the 1st aid & follow in different neurosurgical trauma cases which includes:

- Head
  - Craniotomies for different intracranial hemorrhages evacuation & decompressive surgeries.
  - Craniectomies for depressed skull fracture
  - Burr hole surgeries for chronic hematoma evacuation, intraventricular hemorrhage drainage
  - Surgeries for bullet and shell trauma to head
- Spine

  Observe & assist in different urgent spinal surgeries like,

  - spinal fractures
  - shell & bullet injury to the spine
  - Urgent decompressive spinal surgeries

. ϖ Third, Fourth and Fifth years:

Residency in Neurosurgery and the resident during this years should assess ,prepare ,assist and doing surgeries of different neurosurgical operations in different neurosurgical centers which includes:

- Cranial surgeries for
  - Brain tumors
  - Traumatic brain injury
  - Congenital anomalies
  - Vascular pathology
  - Infectious
- Spine surgeries for
  - Decompressive surgeries
  - Corrective surgeries and fixations
  - Cage implantations
  - Spinal tumors
  - Spinal trauma
  - Congenital anomalies
  - Pain surgeries
  - Minimal invasive spine surgery
- Peripheral nerve surgeries
  - Post traumatic nerve repair
  - Decompressive nerve surgeries
- Functional surgeries
  - Vagal nerve stimulation surgery
  - Deep brain stimulation surgery
  - Spinal cord stimulation surgery
  - Sacral nerve stimulation surgery
  - Baclofen intrathecal infusion pump surgery
- Paediatric neurosurgical operations
  - Brain tumors
  - Shunt surgeries (ventriculoperitoneal , atrial)
  - Congenital anomalies (head & spine)
- Orbital surgeries

- Vascular surgeries

- Cranial surgeries for treating aneurysms ,AVM,& cavernomas.
- Attend endovascular interventions

- Endoscopic surgeries
  - Skull base endoscopic surgery
  - Intraventricular surgery
- Gamma knife radiosurgery for:
  - Brain tumors (benign & malignant)
  - Vascular malformationsa
  - Pain management
  - Psychiatric diseases (obsessive compulsive disorders)

1.2.2. Lectures and seminars ¬

- During the first year the trainees receive lectures on basic neurosciences .
- During the 2^{nd} ,3^{rd} ,4^{th} ,5^{th} years the trainees are actively engaged in
  - seminars and journal clubs to improve their abilities in presentation and critical thinking, also they are actively engaged in daily lectures from ,
  - Youman`s textbook
  - Core neurosurgery

1.2.3 Research requirements:

At the beginning of the third year, the trainees are required to conduct a research work that is supervised by assigned educational supervisors.

At the end of the fourth year & the beginning of the 5^{th} year the trainees should submit their theses to be discussed by qualified committee, after approval of the theises ,the trainees will be eligible to be examined and approved by examining committees assigned by the Scientific Council as a fulfillment of the requirement for the final examination.

1.2.4. Assessment

The assessment consists of 3 examinations held at three key stages:

- Primary examination: A machine-marked written examination conducted at the end of the first year, it consists of two papers in MCQ single best answer format,
  - Paper one : applied basic sciences (neuroanatomy, neurophysiology and neuro pathology)
  - Paper two :principles of neurosurgery.

- Mid examination: A clinical examination should be conducted during the third year & including two parts.
  - Long case assessment:

The trainees should take full history and clinical examination from a patient in the neurosurgical ward and discuss with examination committee all the details in history, examination & managements.

- Short cases assessment:

The trainees should do proper general and neurological examinations for different candidates in different selected cases.

- Final examination: It is a comprehensive assessment in neurosurgery conducted at the end of the five-year training in two sections: ¬
  - Section 1: It is a written examination composed of 2 papers:
    - ✓ paper 1: - 100 MCQ single best answer.
    - ✓ paper 2:- Short essay questions

. Candidates must meet the required standard in Section 1 in order to gain eligibility to proceed to Section 2.

  - Section 2: It is the clinical component of the final examination, it consists of 3 parts; OSCE , Slide exam & Oral exam.

2- Mission statement The Iraqi Board for Medical Specializations in Neurosurgery provides specialty training, attainment of the necessary knowledge, experience and skills for a competent specialist in neurosurgery and a commitment to continuous learning and contemporary practice.

The 5-year training program integrates supervised surgical training with theoretical learning for the key topics that are considered essential for the specialty, it also provides the trainees with the ability to develop their experience in academic research, presentations and contribute to the specialty literature.

Throughout the training period, all trainees will be assessed by practice - based assessments covering knowledge, clinical judgement, technical skills and professional behavior, complemented by the surgical logbook of procedures to support the assessment of operative skills, in addition to examinations held at 3 key stages; at the end of the first year, at the end of the third year and towards the exit examination at the end of specialty training.

3. Program requirements

3.1. Training centers The trainees entering the specialty of neurosurgery will undertake initial basic surgical training for 1 year to develop the basic and fundamental surgical skills common to all surgical specialties, together with a few surgical skills relevant to Neurosurgery.

This is followed by a 1 year training in different medical and surgical disciplines that treat neurosurgical conditions providing a good interaction with these disciplines.

The final 3 years of specialty training is undertaken in recognized Neurosurgery training centers.

The recognition of the training centers by the Scientific Council follows strict rules and regulations and depends on the academic standards and clinical experience of the trainers and on the medical and teaching facilities available in the center.

The head of the center should hold a title of professor or Assistant Professor or be a Consultant Neuro surgeon with teaching and academic interest and involvement.

The trainers should have the highest Academic degree in the specialty with at least 5-year experience after qualification.

Selection of trainers and heads of training centers is decided by the Scientific Council of Neurosurgery according to the above criteria.

Currently there are recognized Neurosurgical training centers for the Iraqi Board for Medical Specializations in Baghdad (4 centers), Najaf, Basra, Babil, Mosul, Di qar , Erbil, Sulaymaniyah & Duhok.

3.2. The Scientific Council, trainers and educational supervisors The administrative structure of the Scientific Council of Neurosurgery consists of a Chairman and 4 members with academic degrees who are representatives of different Universities in Iraq in addition to one consultant member who is a representative of the Iraqi Ministry of Health

The trainers should have the highest professional degree in the specialty (FIBMS or equivalent) with at least 5-year experience after qualification.

The trainers are responsible for 1 to 3 trainees at any time depending on factors such as the size of the unit and the overall number of trainees.

The roles of trainers are to:

¬ Ensure that the trainee has appropriate day-to-day supervision in relation to their stage of training;

¬ Ensure patient safety in relation to trainee performance.

At the beginning of the third year, the trainees will have assigned educational supervisor who should be a Professor or Assistant Professor (Ministry of Higher Education and Scientific Research) or Consultant Neurosurgeons (Ministry of Health).

The roles of the educational supervisor are to: ¬ Have overall educational and supervisory responsibility for the trainee in a given placement and to act as a mentor to the trainee and help with both professional and personal development.

¬ Keep the Chairman of the Scientific Council informed of any significant problems that may affect the trainee's training.

¬ Supervise the research work.

3.3. Admission requirements :

The following is required in order to be admitted to the specialty training and education program:

1. Qualification in Medicine (M. B. Ch. B.) & finishing the residency.
2. For candidates who work for the government, an official permission from the employer is required.
3. Passing a competitive enrollment examination which is in MCQ single best answer format, with a minimum 60% pass mark.
4. The applicants who pass the enrollment examination are ranked according to the points collected as follows: ¬ The examination mark: 70 points. ¬ The rank and the final average for the 6 years in medical study: 30 points.
5. Additional 0.5 point for every month of internship in Neurosurgery with a maximum of 6 points.
6. The number of the trainees who are enrolled in the training program is determined by the annual plan of the Iraqi Board for Medical Specializations.
7. After enrollment the new trainees are interviewed by a special committee headed by the Chairman of the Scientific Council for assigning the trainees to the training centers.

3.4. Rotation of trainees through the program

ϖ First year: six months' residency in general surgery; 3 months in Neurology; one month in Ophthalmology; one month in Psychiatry; & one month in R.C.U.

during this period, trainees will acquire the competences that are common to all surgical specialties together with a limited range of competences that are relevant to their chosen specialty.

ϖ Second, Third, Fourth and Fifth years: Residency in Neurosurgery, during these years the trainees will progress in surgical training in the domains of specialty-based knowledge, clinical and technical skills and professional behavior and leadership toward the development of competent surgical practice.

The trainees will practice at the workplace and their tasks and responsibilities will increase in complexity in line with the progression through the training program. They will acquire the generic skills to allow:

- Team working and perform as a member of the team caring for Neurourgical patients.

- Receive patients as emergencies and review patients in outpatient clinics and initiate management and diagnostic processes based on a reasonable differential diagnosis.

- Manage the perioperative care of the patients and recognize common complications and either be able to deal with them or know to whom to refer.

- To be safe and useful assistant in the operating room and perform some simple procedures under minimal supervision and perform more complex procedures under direct supervision.

The trainees should record their operative experience in the surgical logbook (Appendix 1) corresponding to the operative levels: operator, first assistant or second assistant, observer.

- The trainees need to be able to perform in differing conditions and circumstances, respond to the unpredictable, and make decisions under pressure using the professional judgement in everyday practice.

3.5. Educational program:

3.5.1. Lectures During all the years of training, the trainees will receive a series of lectures on basic sciences and Neurosurgery to acquire the knowledge of the basic surgical principles that are common to all surgical specialties. The lectures are given on a weekly basis in their centers & 3times a week through zoom meeting at night.

3.5.2. Seminars and journal clubs Throughout the training period, the trainees will participate in the seminars and journal clubs held at the residency departments and units covering the subjects and topics relevant to the knowledge of the specialty to improve their abilities in presentation and critical thinking of the up-to-date literature.

3.5.3. Research requirements:

The trainees are required to conduct a research work which should be approved firstly by ethical committee from the scientific council, then supervised by assigned educational supervisors and they should submit their theses to be examined and approved by examining committees assigned by the Scientific Council as a fulfillment of the requirement for the final examination.

4. The training objectives:

The purpose of training in the specialty of Neurosurgery is to produce surgeons competent to work as specialists in Iraq in the three main domains of competency; knowledge, skills and attitudes/behavior.

In general terms, by the end of training, surgeons have to demonstrate:

¬ Theoretical and practical knowledge related to surgery in general and to their specialty practice.

¬ Technical and operative skills.

¬ Clinical skills and judgement.

¬ Generic professional and leadership skills.

¬ An understanding of the values that underpin the profession of Neurosurgery and the responsibilities that come with being a member of the profession.

¬ The special attributes needed to be a Neurosurgeon.

¬ A commitment to their on-going personal and professional development and practice using reflective practice and other educational processes.

¬ An understanding and respect for the multi-professional nature of healthcare and their role in it.

¬ An understanding of the responsibilities of being an employee in the government's health systems and/or a private practitioner.

Generally, the training objectives of Neurosurgery can be divided into 3 parts: areas of expertise, areas of competence, and areas of familiarity.

Areas of expertise & competence

- ✓ Head trauma care & surgeries
- ✓ Spinal trauma care & surgeries
- ✓ Brain & spinal tumors management & surgeries
- ✓ Spinal decompressive & reconstructive surgeries.
- ✓ Paediatric neurosurgery
- ✓ Vascular neurosurgery
- ✓ Neuromodulation surgeries
- ✓ Functional neurosurgery

- ✓ Gamma knife radiosurgery
- ✓ Endoscopic & skull base surgeries
- ✓ Peripheral nerve surgeries
- ✓ Neuropathic pain surgeries

Areas of familiarity

- ✓ Endovascular interventions
- ✓ Spinoscopic surgeries
- ✓ Minimal invasive pain management.

At the end of this training and education program, the Neurosurgeon will be able to:

1. Manage patients presenting with problems relating to the head ,spine & peripheral nerves.

2. Manage patients requiring Neurosurgical interventions for different elective & urgent cases

. 3. Manage patients presenting with head & spinal trauma.

4.1. Patient Care :

Trainees must be able to provide patient care that is compassionate, appropriate, and effective for the treatment of Neurosurgical problems and the promotion of health.

Residents are expected to:

a. Demonstrate caring and respectful behavior when interacting with patients and their families.

b. Obtain essential and accurate information about their patients.

c. Make informed decisions about diagnostic and therapeutic interventions based on patient information and preferences

d- up-to-date scientific evidence, and clinical judgment.

e. Educate the patients and their families.

f. Perform all procedures that are considered essential for the practice of the specialty.

g. Provide services aimed at preventing health problems or promoting health.

h. Interact with health care professionals, including those from other disciplines, to provide quality care.

i. Provide competent care and management for patients consistent with the patient's values and desires for treatment.

4.2. Medical Knowledge:

At the end of the training program, the trainees must demonstrate an adequate level of knowledge in basic medical sciences, basic principles of surgery and all the fields of Neurosurgery, they are expected to be able to demonstrate knowledge in:

a. Human anatomy, in particular head ,brain ,spine & peripheral nerves anatomy, appropriate for surgery including development and embryology, gross and microscopic anatomy, surface and imaging anatomy.

b. Physiology relevant to surgical practice including homeostasis, metabolic pathways and abnormalities, blood loss and shock, fluid balance and fluid replacement therapy, bleeding and coagulation, thermoregulation and nutrition & relevant to neurosurgical practice including motor & sensory involvement, cranial nerves insults.

c. Neuropathological principles underlying system specific pathology, this include inflammation, wound healing, cellular injury, pathology of neoplasms, tumor development and classification, staging and grading of cancers.

d. Pharmacology relevant to the surgical practice and the safe prescription of drugs.

e. Microbiology relevant to surgical practice including surgically important microorganisms, sources of infection, sepsis, principles of disinfection and sterilization and principles of antibiotics.

f. Radiobiological effect ,effective doses & planning protocols in Gamma knife radiosurgery.

g. Principles of diagnostic and interventional imaging including x-rays, ultrasound, CT, cone beam CT, MRI. PET, neuro angiography.

4.3. Interpersonal and Communication Skills:

The trainees must be able to demonstrate interpersonal and communication skills that result in effective information exchange with patients, families, and health professionals.

Residents are expected to:

a. Create and sustain a therapeutic and ethically sound relationship with patients.

b. Use effective listening skills and elicit and provide information using effective nonverbal, explanatory, questioning, and writing skills.

c. Work effectively with others as a member or leader of a health care team or other professional group.

d. Demonstrate effective communication skills, while handling difficult situations (breaking bad news and managing difficult patient).

e. Maintain empathy with patients even under difficult circumstances.

f. Manage appropriate boundaries with patients and families.

g. Manage transference and counter-transference with patients and families.

h. Demonstrate sensitivity to the sociocultural issues and differences.

i. Communicate their treatment plans to patients and their families in an understandable way.

j. Maintain a polite and courteous attitude at all times with all people.

k. Listen to and learn from others, even those with different viewpoints and backgrounds.

l. Communicate effectively within a multi-disciplinary inpatient treatment team.

m. Communicate effectively with colleagues from all disciplines.

n. Communicate effectively with peers.

o. Communicate effectively with supervisors and teachers for purpose of learning

p. Maintain all necessary and appropriate documentation of patient care.

q. Demonstrate ability to lead a clinical team.

4.4. Professionalism:

The trainees must demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

Residents are expected to:

a. Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients and society that supersedes self-interest; and a commitment to on-going professional development and excellence.

b. Demonstrate a commitment to ethical principles pertaining to withholding of clinical care, confidentiality of patient information, informed consent, and business practices.

c. Demonstrate sensitivity and responsiveness to patients‘culture, age, religion, sex, and disabilities.

d. Maintain professional dress, and professional attire.

e. Put needs of patients and families first.

f. Maintain professional boundaries.

g. Understand and respect issues related to patient confidentiality and informed consent.

h. Work well with peers including helping out with group issues, emergencies, and cross-coverage.

i. Be on-time, available, and arranging for appropriate cross-coverage.

j. Maintain appropriate documentation.

k. Contribute to the overall welfare of the hospital and the program.

l. Demonstrate leadership in clinical and educational settings.

m. Serve as a role model for students.

4.5. Practice-based Learning and Improvement:

The trainees must demonstrate the knowledge, attitude and skills necessary to initiate self-directed learning to keep abreast of current information and practices

relevant to the practice of Neurosurgery, to correct any areas of information or skill gaps, and to improve patient care.

Trainees are expected to exhibit progressive improvement in their level of knowledge and skill throughout their training. Practice-based learning includes ability to:

a. Recognize and accept limitations in knowledge base and clinical skills and understand the need for life-long learning;

b. Obtain, evaluate, and utilize evidence from the scientific literature to improve their patient care including prestigious journals and medical information databases (e.g., PubMed, Science Direct, Medline, EMBASE etc.) and on-line services and information technology;

c. Utilize evidence based approaches in providing treatment for the patients;

d. Use direct feedback to improve their performance;

e.Use systematic evaluation of case load and practical experience to assess practice, growing competence and expanding knowledge and skills;

f. Participate in research and/or scholarship, attend all classes, journal clubs, case conferences, ward rounds and special conferences and actively participate in these educational activities;

g. Present scholarly work at conferences or meetings within and outside the program to improve patient care and knowledge base;

h. Demonstrate effective contribution to the teaching of medical students and other health care professionals.

4.6. System-based Practice:

The trainees are expected to exhibit progressive improvement in their level of knowledge and skill throughout their training.

System-based practice includes:

a. Understanding the influence of sociocultural factors on seeking, receiving, and assuring effectiveness of treatment;

b. The ability to understand, use, or work with the resources available within the hospital health care system and the larger community in the care of patients

requiring knowledge of social service systems, legal system and educational system;

c. Understanding and ability to work within multi-disciplinary treatment setting;

d. Identifying and reporting system errors; learning from these to reduce medical system errors;

e. Understanding of and compliance with the hospital and program policies, systems, by-laws and regulations pertaining to patient care and residency training;

f. Attention to cost-efficacy in patient care;

g. Attention to patient advocacy within the hospital and the health-care system.

Examples of the 3 domains of competency that need to be acquired by the trainees In basic principles of surgery Knowledge Skills Attitude/behavior

¬ Basic principles of surgery

¬ Classification of surgical wounds

¬ Principles of management of wounds; incision and closure

¬ Pathophysiology of wound healing

¬ Scars and contractures

¬ Creation of a sterile field

¬ Antisepsis

¬ Ability to use scalpel, diathermy and scissors

. ¬ Accurate and tension free apposition of wound edges

¬ Tying surgical knots

¬ Control of bleeding

¬ Tissue handling

¬ Work effectively with others as a member or leader of a health care team

¬ Demonstrate caring and respectful behavior when interacting with patients In Neurosurgery/head & spine fractures Knowledge Skills Attitude/behavior

¬ Etiology of head & spine trauma Preliminary management of trauma

¬ Signs and symptoms of fractures of head & spine skeleton Investigations and radiographic interpretation

¬ Surgical anatomy of the Brain, head and neck ,spine & peripheral nerves

¬ Principles of management of cranio-spinal fractures and soft tissue injuries

¬ Potential complications Pharmacology and therapeutics

¬ General assessment of the trauma patient

¬ Assessment and emergency treatment of Neuro trauma

¬ Clinical neurological examination &Ability to formulate a treatment plan

¬ Carry out of steps of the neurosurgical procedures safely and correctly;

¬ Soft tissue handling and suturing techniques

¬ Pain control /prevention of infection and management of complications

¬ Work effectively with others as a member or leader of a health care team

¬ Communicate their treatment plans to patients and their families in an understandable way.

¬ Communicate effectively within a multidisciplinary inpatient treatment team;

¬ Demonstrate a commitment to ethical principles pertaining to withholding of clinical care, confidentiality of patient information and informed consent.

Neurosurgery Knowledge Skills Attitude/behavior

¬ Etiological factors of neurosurgical problems and differential diagnosis

¬ Specialized investigations Classification of neurosurgical problems

¬ Principles of management

¬ History and examination of the patient with neurosurgical problems

¬ Techniques of neurosurgical procedures

¬ Ability to formulate treatment plan

¬ Safe use of power tools Plating and fixation skills

¬ Post-operative care and follow-up

¬ Management of complications

¬ Work effectively with others as a member or leader of a health care team

¬ Communicate their treatment plans to patients and their families in an understandable way.

¬ Demonstrate a commitment to ethical principles pertaining to withholding of clinical care, confidentiality of patient information and informed consent.

Syllabus

5.1. Theoretical program

5.1.1. Lectures During the first year of training,

the trainees will receive a series of lectures on basic neurosciences and principles of neurosurgery to acquire the knowledge of the basic neurosurgical principles. The lectures are given on a weekly basis.

The appropriate level of knowledge can be found in the following textbooks:

1-Part 1 Youman`s Neurological surgery ,8th edition ,2022

2-Handbook of neurosurgery

3-Snell`s neuroanatomy

4-Ganong`s review of medical physiology

5.1.2. Seminars and journal clubs Throughout the training period.

The trainees will participate in seminars and journal clubs covering the subject and topics relevant to the knowledge of the specialty to improve their abilities in presentation and critical thinking of the up-to-date literature,

the Scientific Council utilizes e-learning through online communication technology services in seminars and journal clubs.

5.2. Clinical Program

ϖ First year:

- ✓ Six months residency in general surgery
- ✓ Three months in Neurology
- ✓ One month in ophthalmology
- ✓ One month in psychiatry
- ✓ One month in R.C.U units

ϖ Second ,3rd ,4th &5th year: residency in neurosurgery.

5.3. Research

At the beginning of the third year, the trainees are required to conduct a research work that is supervised by assigned educational supervisors; Professor or Assistant Professor (Ministry of Higher Education and Scientific Research) or Consultant Neurosurgeons (Ministry of Health and Environment).

The trainees and their assigned educational supervisors submit the study protocols to the Council to be reviewed and approved by a scientific & ethical committee assigned by the Council.

The reviewing process include the research question and aims of the study, the methodology, the study design and the research methods used in the study, the use of proper statistical analysis in addition to the ethical issues involved in the research.

At the end of the fourth year the trainees should submit their theses to be examined and approved by examining committees assigned by the Scientific Council as a fulfillment of the requirement for the final examination.

The trainees should contribute to the literature by publishing one article at least in a prestigious journal indexed in Scopus and/or Clarivate Analytics. Or an indexed Iraqi medical journal

5.4. Assessment

5.4.1. Purpose of the assessment

¬ To determine whether trainees are meeting the standards of competence and performance specified at various stages in the curriculum for surgical training.

¬ To determine whether trainees have acquired the common and specialty-based knowledge, clinical judgement, operative and technical skills, and professional behavior and leadership skills required to practice the specialty.

5.4.2. Components of assessment

¬ Workplace-based assessments covering knowledge, clinical judgement, technical skills and professional behavior and attitudes by direct observation of the workplace tasks.

¬These are complemented by the surgical logbook of procedures to support the assessment of operative skills.

¬ Examinations held at key stages; at the end of the first year and the third year and towards the end of specialty training.

The examinations are held at three key stages:

ϖ Primary examination:

A machine-marked written examination conducted at the end of the first year, it consists of two papers in MCQ single best answer format, one in applied basic neurosciences (neuroanatomy, neurophysiology and neuro pathology) and the other in Principles of neurosurgery.

ϖ Mid examination:

A clinical exam in two parts;

- ✓ Long case based assessment and interview
- ✓ Short cases clinical neurological examination

Both exams conducted at the mid of the third year covering history and clinical examination in neurosurgery:

Topics 1. Long history and examination with management(diagnosis & treatment) interview & discussion for neurosurgical cases admitted to the neurosurgical ward

2. Short cases general & neurological examinations with discussion about the differential diagnosis of certain neurological candidates in the ward.

ϖ Final examination:

It is a comprehensive assessment in Neurosurgery conducted at the end of the five-year training in two sections:

¬ Section 1:

It is a written examination composed of 2 papers;

paper 1: 100 MCQ single best answer;

paper 2: Short answers essay exam

. Candidates must meet the required standard in Section 1 in order to gain eligibility to proceed to Section 2.

¬ Section 2: It is the clinical component of the final examination, it consists of three parts:

Part1: Slide exam

Part2: OSCE exam

Part3: Oral exam

5.4.3. Examination regulations:

The examinations are conducted twice a year in October and in April.

In the primary examination the pass mark in each paper is 60% and the average pass mark for both papers is 70%.

The trainees are eligible to sit four attempts and if unsuccessful their relation with the specialty program is terminated.

In the final examination the pass mark in each paper in section 1 is 60% and the average pass mark for both papers is 70%; for section 2, (part 1 30%, part 2 30% & part 3 40%),the passing mark for each should be not less than 50 %; the passing mark for all the 3 parts should be at least 70%.

The trainees are eligible to sit four attempts, if unsuccessful, they should do one trial for primary exam ,if succeed they have two trials in final exam .their relation with the specialty program is terminated if not succeeded .

Monitoring and evaluation Monitoring and evaluation of the educational and training program is achieved through regular annual meetings held by the members of the Scientific Council headed by the Chairman of the Council with the directors of the training centers, supervisors, trainers and the trainees to assess the progress of the trainees and the challenges encountered throughout the stages of the training program.

Professor

Yasir Mohammed Hasan Hamandi

Chairman of scientific Iraqi neurosurgical committee

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