Guidelines
of
Competency Based Training Programme
in
General Surgery
FORMAT FOR GUIDELINES OF COMPETENCY BASED TRAINING
PROGRAMME IN GENERAL SURGERY

Institutional Objectives
The aim of the course is to develop human resources and personnel in the field of surgery who shall:
1. Provide the health care to the patients needing surgical care.
2. Teach and train future undergraduate and postgraduate medical students and junior doctors in General Surgery in Medical Colleges, Institutions and other Hospitals.
3. Carry out and guide research to improve the practice of the art and science of surgery.
4. Have management capabilities to manage personnel and budgets to make health care more cost-effective.
5. Organise health teams to provide care during natural or man-made calamities.
6. Develop further in the areas of their interest and/or specialise to practice existing or new specialties allied to surgery through further training programmes as required.

Departmental Objectives
At the end of the course, the Diplomate of National Board in Surgery shall be able to:
1. Practise the art and science of surgery in his/her field of practice and seek and provide consultation as required. He will be able to provide comprehensive and good quality surgical care in general surgery including pre-interpretative and postoperative care.
2. Conduct research and communicate the findings, result and conclusion to his fraternity.
3. Acquire necessary skills of teaching and training his junior colleagues and medical students and para-medical personnel.
4. Keep abreast with the latest developments by self-learning and/or participating in continuing medical education programmes.
5. Organise and manage administrative responsibilities for routine day to day work as well as new situations including natural and/or man-made accidents/calamities.
6. Manage situations calling for emergency interventions in the sphere of surgical specialities and also routine problems in their areas within the ambit of the general surgeon.
7. Develop his/her knowledge, skills and attitudes of his/her areas of interest and become specialists in allied specialities.
8. Exhibit awareness of the importance of surgical audit and the need for considering cost-effectivity in patient management.
9. Be aware of one's professional limitations and be able to refer to appropriate centres at the optimum time, when required.
10. Exhibit awareness of the need for accurate documentation in medical records including medico-legal cases.
11. Adopt ethical procedures in the field of doctor-patient relationship.
12. Exhibit proper attitude in dealing with patients and relatives and be able to
communicate with them effectively.

Specific Objectives

Section-A : Objectives

After qualifying in the final examination of the NBE, the candidate should be able to function as a specialist in General Surgery. This requires a thorough knowledge of the fundamentals. He/She should be reasonably acquainted with the recent advances and be able to perform basic operative procedures independently. He/She should be able to make decisions regarding patient management and adopt favourable attitudes. During this period, the candidate will also acquire skills of experience in research methodology by writing a dissertation/thesis.

Overall Objectives:

At the end of the training, the candidate should be able to:

1. Acquire knowledge of deranged structures and functions of human body as related to the practice of General Surgery.

2. Acquire knowledge of deranged structure and functions of human body, causes thereof and of principles underlying the use of drugs and therapeutic procedures for restoring the deranged structures and functions to normalcy.

3. Demonstrate the ability to critically evaluate recent medical literature from journals, update knowledge and adapt diagnostic and therapeutic procedures based on this appraisal.

4. Demonstrate familiarity with such diagnostic skills and laboratory procedures as are relevant to the diagnosis evaluation of patient under his care and be able to conduct some of these procedures in case it becomes necessary to do so.

5. Demonstrate comprehensive knowledge of theoretical aspects of general surgery including recent advances.

6. Manage adequately routine as well as complicated problem of clinical care including emergencies in relation to general surgery.

7. Demonstrate the knowledge of ethics and medico-legal aspects related to the practice of general surgery.

Section - B: Content

1. A sound knowledge of principles and practice of surgery.

2. Special emphasis on the understanding of diseases prevalent in our country.

3. Adequate knowledge, skill and competence of diagnosis, treatment and prognosis of surgical disorders.


5. A thorough knowledge of all the operative procedures, both emergency and elective, within the realms of general surgery as listed in annexure.

6. Adequate proficiency in pre-operative and post-operative management of patients.

7. Knowledge of basic principles, management of common conditions and emergencies in other specialities like neurosurgery, orthopaedic surgery, cardiothoracic surgery, urology, plastic and paediatric surgery as applied to general surgery.

8. Sound understanding of the various laboratory investigations including
diagnostic procedures, as used in clinical surgery would be expected.

9. Familiarise with basic principles of anaesthesiology and resuscitative measures.

10. Candidate should have adequate knowledge of basic science as applicable to general surgery.

SYLLABUS

1. Applied Anatomy and Physiology
   Surgical anatomy and applied physiology of all systems in the syllabus.
   - Metabolism and nutrition in surgical patient
   - Surgical bleeding and Hemostasis
   - Disorders of coagulation and DIC
   - Blood transfusion and component therapy
   - Metabolic response to trauma including surgery
   - Fluid and electrolyte management
   - Shock and resuscitation
   - Physiological monitoring of the surgical patient
   - Molecular biology; DNA, RNA, PCR

2. Surgical Pathology, applied Biochemistry and Pharmacology
   Surgical pathology of all systems in the syllabus.
   - Wound healing and management
   - Classification of surgical wounds
   - Wound dehiscence
   - Inflammation
   - Burns-pathophysiology sequelae & management
   - Role of prostaglandins, thromboxane and leucotrienes in surgery

Surgical sepsis and prevention
   - Surgically important microorganisms
   - Body response to infection
   - Principles of asepsis and antisepsis
   - Aseptic techniques
   - Sterilisation / hospital infections and its control
   - Basic principles in the designing of operating theatre
   - Antibiotic prophylaxis / choice of antibiotics
   - Surgical aspects of AIDS
   - Surgical aspects of diabetes mellitus

Principles of neoplastic diseases
   - Tumor Biology
   - Tumor markers
   - Immunobiology and immunotherapy
   - Carcinogenesis
   - Genetics in cancer
   - Epidemiology of common cancers
     - cancer registry
     - cancer screening
   - Early detection of malignancy
   - Nuclear isotopes in surgery
   - Principles of cancer treatment
     - Surgery, Radiotherapy, Chemotherapy, Immunotherapy and Hormone-therapy.
   - Terminal care of cancer patients

3. Imaging modalities in Surgery
   - Conventional X-rays and angiography
   - CT/MRI/MRCP
   - Ultrasound/Doppler
   - Image guided interventional procedures

4. Anaesthesia
   - Principles of general anaesthesia / care & monitoring of anaesthesia
   - Local and regional anaesthesia
- Complications, prevention of nerve injuries
- Explosion hazards in laparoscopic and endoscopic surgery
- Pain relief and palliation surgery

5. Basic Surgical Tech
- Basic OT etiquette
- Skin preparation and draping
- Skin incisions and closure
- Suture materials
- Dressings
- Diathermy
- Lasers in surgery
- Harmonic Scalpel
- Lymph node biopsy
- Excision of cysts and lesions of skin
- Techniques of biopsy and FNAC
- Incision and drainage of abscess
- Use of drains in surgery
- Surgical wounds & classification of wounds heeding management wound dehiscence.
- Principles of intestinal and vascular anastomosis
- Principles of minimally invasive surgery
- Evaluation of risk of bleeding / anti-coagulated patient
- Deep vein thrombosis prophylaxis
- Antibiotic prophylaxis
- Gastrointestinal prophylaxis (stress induced)
- Steroid prophylaxis
- Venous acces - central lines, CVP, PWP monitoring
- Post-operative fluid, electrolyte management and nutritional support
- Post-operative pain control
- Post-operative respiratory management
- Post-operative monitoring of vital functions

7. Trauma and the critically ill patients
- Principles of pre-hospital care
- Haemorragie & shock
- Assessment of severity of injury (scoring systems)
- Management of acute injury
- Recognition and management of specific injuries such as:
  - Blunt and penetration wounds, gun shot and blast injuries
  - Fractures, head injuries, chest injuries (pneumothorax, flail chest)
  - Cardiac tamponad lung injuries and vascular injuries
  - Abdominal organ injuries - liver, spleen, pancreas, intestine
  - Urinary tract injuries
- Management of the unconscious patient
- Airway management in injured / unconscious patient
- Cardiac arrest
- Immune response to trauma & infection
- Management of pulmonary embolisin

6. Perioperative management
- Evaluation of patient for anaesthesia and surgery pre medication & sedation
- Assessment of fitness for anaesthesia / Surgery
- Cardiac, respiratory and renal evaluation
- Evaluation of associated medical condition such as:
  - Hyper tension, diabetes, coronary disease, respiratory disease, renal disease
- Evaluation of the immunocompromised patient / patient on immunosupressent drugs
- Evaluation of aptient of steroids. Diabetic, Jaundices patient
9. Lymph nodes and spleen
   - Diseases of lymph nodes especially tuberculosis
   - Primary and secondary lymph node malignancies
   - Haemolytic disease of surgical importance
   - Lymph oedema
   - Splenomegaly - causes
   - Indications for splenectomy
   - Overwhelming post-splenectomy sepsis
   - Segmental resection of spleen
   - Complications of splenectomy

10. Tuberculosis
    - Diagnosis and management of tuberculosis of all the systems in the syllabus

11. The Alimentary System
    - Management of the acute abdomen / abdominal pain
    - Intra-abdominal abscesses
    - Stomas
    - Endoscopy in diagnosis and treatment

Role of Minimal Access Surgery
Oesophagus
    - Motor disorders;
      • Achalasia
      • Diffuse oesophageal spasm
    - Diverticulae;
      • Pharyngo oesophageal
      • Mid oesophageal
    • Epiphrenic
    - Dysphagia
    - Gastro-esophageal reflux disease (GERD)
    - Diaphragmatic hernia
    - Oesophageal perforation / injuries fro caustics, acids
    - Tumours

Stomach and duodenum
    - Peptic ulcer;
      • Medical and surgical treatment
    - Complications
      - Gastric outlet obstruction
      - Stress ulcers
    - Upper GI tract haemorrhage including obscure GI haemorrhage
    - Gastric tumours
    - Gastric surgery for obesity

Small Intestine and Appendix
    - Intestinal obstruction
    - Meckel's diverticulum
    - Tuberculosis intestine
    - Crohns disease
    - Intestinal fistulae
    - Short bowel syndrome
    - Neoplasms
    - Acute appendicitis
    - Appendicular abscess
    - Neoplasms of appendix

Colon rectum and anus
    - Inflammatory bowel disease;
      • Crohns
      • Ulcerative colitis
      • Tuberculosis
      • Amoebiasis
    - Colonic is chemai
    - Obstruction
      • Valvulus
      • Intussusception
      • Inflammatory
      • Malignant stictures
    - Rectal prolapse
    - Polyps and cancer
    - Lower Gastrointestinal haemorrhage
- Anal and perianal disorders;
  - Fistula in ano
  - Fissure in anna
  - Haemorrhoids
  - Pilonidal sinus
  - Peritoneum
- Inflammatory and malignant disorders
- Peritonitis

Pancreas
- Acute and chronic pancreatitis
- Benign tumours and cyst of the pancreas
- Cancer pancreas
- Neuro-endocrine tumours

Biliary system
- Calculus disease
- Choledochal cysts and carolis disease
- Benign bile duct strictures
- Neoplasm of Gall Bladder and Bile duct
- Obstructive Jaundice

Liver
- Segmental anatomy & principle of segmental resection, liver abscess & portal hypertension & its management
- Benign non-cystic liver lesions
- Liver cysts
- Hepato cellular carcinoma
- Liver metastasis
- Portal hypertension
- Evaluation and management of liver trauma
- Principles of liver transplantation

12. Hernia and abdominal wall defects
- Groin hernias
- Abdominal wall hernias

13. Abdominal trauma
- Diagnostic evaluation
- Initial management
- Intra-operative management of internal injuries
- Complications

14. Endocrine

Parathyroid
- Localisation techniques
- Hyperparathyroidism
- Surgery - indications, techniques and complications

Thyroid
- Thyroid function tests
- Hyper and hypo-thyroidism Thyroid goitre
- Solitary thyroid nodule - evaluation Thyroid cancer
- Surgery, technique and complications

Adrenal
- Adrenal imaging
- Hyperaldosteronism Cushings disease
- Pheochromocytoma
- Adrenocortical carcinoma

Neuroendocrine tumours of GI tract
- Islet cell tumour
- Gastrinoma
- Carcinoid tumour

Multiple endocrine neoplasia (Type - 1 & 2)

15. Head and neck
- Lymphnodes of the neck and drainage areas
- Metastatic cervical node from occult primary
- Pre-malignant lesions of oral cavity
- Tumours of oral cavity, tongue, oropharynx and larynx
- Disorders of paranasal sinuses
- Salivary glands
- Differential diagnosis of neck swellings

16. Breast
- Acute breast infections - abscess
- Nipple discharge
- Mastalgia
- Benign breast disease
17. Skin
- Skin malignancies
  - Melanoma

18. Soft tissue sarcoma
- Localisation, staging and treatment
- Retroperitoneal sarcomas - evaluation and treatment

19. Vascular Surgery
- Investigation of vascular disease
- Arterial occlusive disease
- Limb ischemia / Atherosclerosis, thrombo angiitis obliterance
- Chronic leg ulceration
- Venous disorders of lower limb
- Deep vein thrombosis and thromboembolism
- Vascular prosthesis
- Angiography and endovascular stenting
- By-pass surgery
- Evaluation and management of vascular trauma

20. Lungs, Heart and Great Vessels
- Pulmonary Tuberculosis
- Pulmonary function tests
- Pulmonary neoplasms
- Trauma Pneumothorax
  - Hemothorax
  - Flail Chest
  - Injury to oesophagus and tracheo bronchial tree
  - Pulmonary contusion
- Empyema thoracis
- Bronchoscopy, thoracoscopy, mediastinoscopy
- Principle of cardio-pulmonary bypass

21. Organ Transplantation
- Immunology of transplantation
- Brain death & legal aspect of organ transplantation act
- Immuno-suppression and rejection
- Infection in the immuno-compromised patient

22. Genito-urinary system
- Urinary tract infections
- Hematuria
- Retention of urine
- Urinary calculi
- Torsion testis
- Testicular swellings and tumours
- Disorders of prostate (benign hypertrophy and carcinoma)
- Tuberculosis of genito-urinary tract
- Malignancies of genito-urinary tract
- Pelvic inflammatory diseases

23. Central nervous system
- Head injury
- Extradural hematoma & its management
- Sub-dural hematoma & its management
- Spinal cord injuries
- Space occupying intracranial lesions principles of diagnosis and management

24. Paediatric surgery
- Gastrointestinal tract abnormalities
- Correctable life threatening congenital abnormalities
  - Imperforate anus
  - Tracheo oesophageal fistula
  - Hypertrophic pyloric stenosis
  - Eventration of diaphragm
  - Abdominal wall defects
- Hirschsprung's disease
- Groin hernias
- Mal-descended testis
- Torsion testis
THESIS

Guidelines for Submission of Thesis/Dissertation by Candidates
Research shall form an integral part of the education programme of all candidates registered for DNB degrees of NBE. The Basic aim of requiring the candidates to write a thesis/dissertation is to familiarize him/her with research methodology. The members of the faculty guiding the thesis/dissertation work for the candidate shall ensure that the subject matter selected for the thesis/dissertation is feasible, economical and original.

Guidelines
a) The dissertation may be normally restricted to the size of 100 pages, to achieve this, following item may be kept in view:-
i. Only contemporary and relevant literature may be reviewed.
ii. The techniques may not be described in detail unless any modification / innovations of the standard techniques are used and reference may be given.
iii. Illustrative material may be restricted
iv. Since most of the difficulties faced by the residents related to the work in clinical subject or clinically oriented laboratory subjects the following steps are suggested:
   - The number of clinical cases to be included in the dissertation may be limited. No number is therefore, prescribed and it will vary from topic to topic.
   - For prospective study, as far as possible the number of cases should be such that adequate material, judged from the hospital attendance, will be available and the candidate will be able to collect the case material within a period of 6-12 months so that he / she is in a position to complete the work within the stipulated time.
- The objective of the study should be limited and well defined.

- As far as possible, only clinical or laboratory data of investigations of patients or such other material easily accessible in the existing facilities should be used for the study.

- The laboratory work required to be performed by the residents of clinical departments should be minimal. For this purpose technical assistance, wherever necessary, may be provided by the department concerned. The resident of one specialty taking up some problem related to some other specialty should have some basic knowledge about the subject and he/she should be able to perform the investigations independently. Wherever some specialized laboratory investigations are required, a co-guide may be co-opted from the concerned investigative department. The quantum of laboratory work to be carried out by the candidate should be decided by the guide and co-guide by mutual consultation.

- The clinical residents may not ordinarily be expected to undertake experimental work or clinical work involving new techniques not hitherto perfected or the use of chemicals or radio isotopes not readily available. They should however, be free to enlarge the scope of their studies or undertake experimental work on their own initiative but all such studies may be feasible within the existing facilities.

- The residents should be able to use freely the surgical pathology / autopsy data if it is restricted to diagnosis only. If however, detailed histological data are required
the resident will have to study the case himself with the help of guide / co-guide. The same will apply in case of clinical data.

b. Statistical methods used for analyses will be described in detail.

**Thesis Submission to NBE**

1. As per NBE norms, writing a thesis is essential for all DNB candidates towards partial fulfillment of eligibility for award of DNB degree certificate.

2. The protocol of Thesis/ Dissertation should be submitted to the office of the NBE through head of the institutions within three (3) months of joining the training in Medical college/university/DNB accredited institution.

3. No correspondence will be made in regard to acceptance of the protocol except only in the case of rejected protocols for which individual will be informed by office through mail/website.

4. DNB candidates are required to submit their thesis before the cut off date which shall be 30th June of same year for candidates appearing for their scheduled December final theory examination. Similarly candidates who shall be appearing in their scheduled June DNB final examination shall be required to submit their thesis by 31st of preceding December.

5. Thesis should be hard bound and the front cover page should be printed in the standard format. A hard bound thesis should be accompanied with:
   
   I. A summary of thesis.
   II. Thesis submission form duly completed.
   III. NBE copy of challan in original.
   IV. Soft copy of thesis in a CD duly labeled.
   V. Copy of letter of registration with NBE.
6. A declaration of thesis work being bonafide in nature and done by the candidate himself at the institute of DNB training need to be submitted bound with thesis.

7. It must be signed by the candidate himself/herself, the thesis guide and head of the institution, failing which thesis shall not be considered.

8. If thesis is rejected or needs to be modified for acceptance, NBE will return it to the candidate with suggestion of assessors in writing for modification.

9. If any unethical practice is detected in work of the Thesis, the same is liable to be rejected. Such candidates are also liable to face disciplinary action as may be decided by NBE.

10. The thesis is to be submitted 6 MONTHS before the commencement of the DNB examination along with thesis evaluation fees of Rs. 3000/- drawn in favor of NATIONAL BOARD OF EXAMINATIONS - payable at New Delhi, for evaluation.

Guidelines for Writing of Thesis/Dissertation

Title - Should be brief, clear and focus on the relevance of the topic.

Introduction – Should state the purpose of study, mention lacunae in current knowledge and enunciate the Hypothesis, if any.

Review of Literature – Should be relevant, complete and current to date.
Material and Methods- Should include the type of study (prospective, retrospective, controlled double blind) details of material & experimental design procedure used for data collection & statistical methods employed; statement of limitations ethical issues involved.

Observations– Should be organized in readily identifiable sections having correct analysis of data be presented in appropriate charts, tables, graphs & diagram etc. These should be statistically interpreted.

Discussion- Observations of the study should be discussed and compared with other research studies. The discussion should highlight original findings and should also include suggestion for future.

Summary and Conclusion

Bibliography - Should be correctly arranged in Vancouver pattern.

Appendix— All tools used for data collection such as questionnaire, interview schedules, observation check lists etc should be put in the annexure.

ASSESSMENT

The formative assessment will be observation of the trainee's performance in day to day practice. This requires close interaction between the trainee and trainer, allowing direct observation of the trainee's performance in a range of clinical settings. Formative assessment of knowledge will also include annual appraisals by external subject experts, assessment of presentations in clinics, grand rounds, seminars etc., and in future using MCQs, when a reliable and valid set has been developed. The log book will also be assessed periodically.
The summative assessment of competence will be done in the form of DNB Final Examination leading to the award of the degree of Diplomate of National Board in General Surgery. The DNB final is a two-stage examination comprising the theory and practical part. An eligible candidate who has qualified the theory exam is permitted to appear in the practical examination.

Examination

a) Theory Exam:

I. The theory exam comprise of Four papers (I, II, III & IV), maximum marks 100 each divided into I) Principles and practice of Surgery II) Principles and Practice of Surgery III) Allied Surgical Specialties VI) Basic medical sciences including anatomy as applied to General Surgery.

II. There are 10 short notes of 10 marks each, in each of the papers.

III. Maximum time permitted is 3 hours for each paper. The number of short notes and their respective marks weightage may vary in some subjects/some papers.

IV. Candidate must score at least 50% in the aggregate of 4 papers to qualify the theory exam.

V. Candidate who have qualified the theory exam are permitted to take up the practical exam.

b) Practical Exam:

I. Maximum Marks: 300.

II. Comprises of Clinical Examination and Viva.

III. Candidate must obtain a minimum of 50% marks in the Clinical Examination (including Viva) to qualify for the Practical exam.
IV. There are a maximum of three attempts that can be availed by a candidate for Practical Exam.

V. First attempt is the practical exam following immediately after the declaration of theory results.

VI. Second and third attempt in practical examination shall be permitted out of the next three sessions of practical examinations placed along with the next three successive theory examination sessions; after payment of full examination fees as may be prescribed by Board.

VII. Absentation from Practical Exam is counted as an attempt.

VIII. Appearance in first practical exam is compulsory;

IX. Requests for change in centre of exam are not entertained, as the same is not permissible.

X. Candidates are required not to canvass with NBE for above.

LOG BOOK
A candidate shall maintain a log book of operations (assisted / performed) during the training period, certified by the concerned post graduate teacher / Head of the department / senior consultant. In general it will be a portfolio of material documenting the trainees progress and clinical performance and might include: summaries of exemplary clinical case material, profile of clinical case mix seen and surgical procedures performed/assisted each month, training/educational courses attended, published or unpublished audit, critical review of literature presentations of audit, clinical cases & research work at local or national meetings and peer reviewed publications.
Recommended Reading - Latest Editions

3. Pye's surgical Handicraft by James Kyle Varghese Company PB 7119 Bombay 31 India
4. Text book of operative surgery - Farquharson Eric L
6. Clinical Methods - K Das
7. An introduction to the symptoms and signs of surgical diseases Norman Browse - Astra Zen ENCA
8. Recent advances in surgery - Selwyn Taylor

Desirable:
1. Surgery of the Anus, Rectum and Golob by JC Goligher

Journals:
BJS, JACS, AJS, SCNA, Anals of Royal College of Surgeons (Edin and England)
Recent advances in surgery - Selwyn Taylor
Year Book of Surgery.