

## **Curriculum**

### **M.S. General Surgery**

#### **Goals**

The goals of postgraduate training course in General Surgery would be to train a MBBS doctor who will:

- Practice surgery efficiently and effectively, backed by a sound scientific knowledge and skill base.
- Shall have acquired a spirit of scientific inquiry and is oriented to the principles of research methodology and epidemiology;
- Exercise empathy and a caring attitude and maintain high ethical standards.
- Continue to evince keen interest in continuing surgical education
- Be a motivated 'teacher' –to share his knowledge and skills with a colleague or a junior
- Shall recognize the health needs of the community, and carry out professional obligations ethically and in keeping with the objectives of the national health policy.

#### **Objectives:**

The following objectives are laid out to achieve the goals of the course. These objectives are to be achieved by the time the candidate completes the three year course. The Objectives may be considered under the subheadings.

1. Knowledge (Cognitive domain)
2. Skills (Psycho motor domain)
3. Human Values, Ethical practice and Communication skills.

#### **COMPONENTS OF THE POSTGRADUATE CURRICULUM:**

The major components of the Postgraduate curriculum shall be :

- Theoretical knowledge
- Practical and clinical skills
- Thesis skills.
- Attitudes including communication skills.
- Training in research methodology

**Knowledge:**

Objectives related to knowledge and higher cognitive abilities that are expected to be achieved during the course are given below.

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

- Describe aetiology, pathophysiology, principles of diagnosis and management of common surgical problems including emergencies, in adults and children.
- Describe indications and methods for fluid and electrolyte replacement therapy including blood transfusion.
- Describe common malignancies and their management including prevention.
- Demonstrate understanding of basic sciences relevant to General Surgery.
- Recognize conditions that may be outside the area of his specialty / competence and to refer them to proper specialist.
- Update himself by self study and by attending courses, conferences and seminars relevant to surgery
- Teach and guide his team, colleagues and other students.
- Undertake audit and carry out research with the aim of publishing his work and presenting his work at various scientific fora.

**Skills**

- Take a proper clinical history, examine the patient, perform essential diagnostic procedures, order relevant tests and interpret the results to come to a reasonable diagnosis about the surgical condition.
- Perform minor operative procedures and common general surgical operations independently.
- Provide basic and advanced life saving support services (BLS & ALS) in emergency situations.
- Manage acute abdominal emergencies and poly trauma.
- Management of wounds including burn wounds.
- Monitoring patients
- Preoperative and post operative care of the patient.

**Human values, Ethical practice and communication skills**

- Adopt ethical principles in all aspects of his surgical practice. Professional honesty and integrity are to be fostered. Surgical care is to be delivered irrespective of the social status, caste, creed or religion of the patient.
- Develop communication skills and to obtain an informed consent from the patient.
- Provide leadership and get the best out of his team.
- Apply high moral and ethical standards while carrying out human or animal research.

- Accept the limitations of his knowledge and skill and to ask for help from colleagues when needed.
- Respect patients' rights and privileges

### Essential Knowledge

General Surgery today mainly covers abdominal operations, thyroid and breast diseases. A General Surgeon should also have knowledge of some common problems in allied specialties. Furthermore, he should be familiar with complications, current controversies and recent advances in these topics.

The topics are considered under:

- Basic sciences
- General Surgery topics
- Specialty topics.

**Basic sciences include** anatomy, physiology, biochemistry, microbiology and pathology as found in current textbooks. The stress is on applied anatomy of areas dealt with by surgeons, pathophysiology and surgical pathology.

**General Surgery topics** including the following

|   |
|---|
| <b>History of Surgery</b>   |
| <b>Clinical history and examination</b> - detailed systematic history taking, clinical examination of various systems, coming to a provisional working diagnosis.   |
| <b>Rationale of diagnostic tests-</b> Ordering diagnostic test with prioritizing the needs, based on the clinical, hospital and the patient's socioeconomic conditions.   |
| <b>Informed consent / Medico legal cases-</b> Understanding the implications of acts of omission and commission in practice. Issues regarding Consumer protection Act.- Implications in a medico- legal case like accidents assaults etc. |
| <b>Communication skills with the patient-</b> Understanding clarity in communication, compassionate explanations and giving emotional support to at the time of suffering and bereavement.  |
| <b>Principles of surgical audit-</b> Understanding the audit process and outcome. Methods adopted for the same. Basic statistics to understand and critically evaluate published research paper   |

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| <b>Principles of evidence based medicine</b> - Understanding journal based literature study; the value of textbook, reference book articles; value of review articles; original articles and their critical assessment. Understanding the value of retrospective, prospective, randomized controlled and blinded studies.- Understanding the principles and meanings of various biostatistical tests applied In these studies |
| <b>Medical ethics / Social responsibilities of surgeons</b>   |
| <b>Use of computers in surgery</b>  |
| <b>Health insurance, Health Care financing</b><br><b>Few lectures or a seminar on basic understanding of pharmacoeconomics.</b>   |
| <b>Undertaking clinical audit</b>   |
| <b>Prospective data collection/ writing case reports and clinical papers</b>  |
| <b>Giving presentation / Computer presentation</b>  |
| <b>Preoperative work up-</b> concept of fitness for surgery; basic medical workup; workup in special situation like diabetes, renal failure, cardiac and respiratory illness; risk stratification   |
| <b>Principles of operative surgery like asepsis, antisepsis, sterilization</b>  |
| <b>Surgical sutures, drains, prosthetic grafts</b>  |
| <b>Postoperative care-</b> concept of recovery room care; airway management; management of cardio vascular instability in this period; pain management  |
| <b>Basic surgical instrumentation-</b> Principles of surgical instrumentation; their maintenance and sterilization  |
| <b>Surgical diathermy, Lasers, Harmonic scalpel</b>   |
| <b>Wound management-</b> wound healing; factors influencing healing; basic surgical techniques; properties of suture materials  |
| <b>Assessment of head, chest and abdominal trauma and triage-</b> Assessment of a trauma victim, ATLS resuscitation; care at the site; triage; care in the accident department; criteria for immediate surgery; immediate workup and logical referral criteria  |
| <b>Fluid electrolyte balance/Acid–Base metabolism-</b> The body fluid compartments; metabolism of water and electrolytes; factors maintaining homeostasis;acidosis and alkalosis  |
| <b>Blood transfusion-</b> Blood grouping; cross matching; blood component therapy; complications of blood transfusion; blood substitutes; auto transfusions; cell savers.   |
| <b>Surgical infections:</b> - Asepsis , antisepsis; microbiological principles; rational use of antibiotics; special infections like synergistic gangrene and diabetic foot infections. Hepatitis and AIDS. Tetanus, gas gangrene.  |
| <b>Surgical nutrition-</b> nutritional assessment; metabolic response to stress; need for nutritional support; enteral nutrition; routes of access to GI tract; parenteral nutrition; access to central veins for nutritional support.  |
| <b>Principles of Laparoscopy / GI endoscopy-</b> Laparoscopic instrumentation; physiology of pneumoperitoneum; complications of laparoscopy; diagnostic and therapeutic applications. GI Endoscopic instrumentation; Diagnostic and therapeutic applications of upper GI, Lower GI and ERCP studies.  |

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| <b>Principles of Oncology-</b> cell kinetics; causation of tumours; principles of oncologic surgery, radiotherapy, and chemotherapy, paraneoplastic syndromes; cancer pain management; palliative care. |
| <b>Principles of burn management</b> – types of thermal injury; assessment of extent; immediate management; late management; skin cover; rehabilitation.  |
| <b>Principles of fracture management-</b> fracture healing; principles of immobilization; complications; principles of internal fixation.   |
| <b>Airway obstruction / management-</b> anatomy of the airway; principles of keeping the airway patent; oropharyngeal airway; Endotracheal intubation; crico-thyroidotomy; tracheostomy                 |
| <b>Shock and pulmonary failure:-</b> types of shock; diagnosis; resuscitation; pharmacological support; ARDS and its causes, prevention, ventilatory support; SIRS, MODS                                |
| <b>Anaesthesia:-</b> stages of anesthesia; pharmacology of inhalational, intravenous and regional anesthetics; muscle relaxants   |
| <b>Assessment of trauma;</b> multiply injured patient/ closed abdominal and chest injuries / penetrating injuries; fractures pelvis; urological injuries; vascular injuries; trauma scores              |
| <b>Acute abdomen-</b> appendicitis/ peritonitis / perforated viscus / intestinal obstruction  |
| <b>Hernias-</b> various types of hernias; their repair; synthetic materials for hernioplasty.   |
| <b>Critical care-</b> cardiorespiratory failure- management of shock; including monitoring; sepsis scores; pharmacological support  |
| <b>Pain control-</b> acute and chronic pain; cancer and non cancer pain; patient controlled analgesia   |
| <b>Breast disease-</b> benign and malignant disease; diagnosis; investigation; screening for cancer; genetics of breast cancer.   |
| <b>Thyroid disease</b> – solitary nodule; investigation; Multinodular goiter; Hashimoto's disease; Thyrotoxicosis; Thyroid cancer.  |
| <b>Upper GI disease</b> – esophageal disease and gastro duodenal disorders.   |
| <b>Hepato- Biliary disease</b>  |
| <b>Pancreatic disease</b>   |
| <b>Colo rectal disease / anal disease</b>   |
| <b>Soft tissue neoplasm</b>   |
| <b>Endocrine disease</b>  |
| <b>Organ transplantation-</b> Transplant immunology; Brain death  |
| <b>Introduction to the non-linear mathematics - the theory of chaos</b>   |

**The specialty topics include the following:**

- GI endoscopy and Laparoscopy:

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|---|
| Principles of GI endoscopy  |
| Complications including infective considerations  |
| Diagnostic and therapeutic GI endoscopy including upper GI , lower GI and pancreato Biliary systems |
| Physiology of pneumoperitoneum  |
| Diagnostic Laparoscopy  |
| Laparoscopic therapeutic procedures   |

- Neuro surgery

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|---|
| Head and neck trauma; acute management and rehabilitation |
| Concept of brain death/ medico legal implications         |
| Peripheral nerve injuries                                 |
| Neoplasms of the brain and meninges                       |
| Acute and chronic infections of brain and meninges        |
| CSF circulation ,Hydrocephalus                            |
| Spinal injuries   |
| Monitoring intracranial tension                           |

- Urology

|   |
|---|
| Urological injuries                             |
| Urothelial tumours / Chemotherapy; urolithiasis |
| Prostatic hypertrophy                           |
| Hypospadias                                     |
| Pyleonephritis / perinephric abscess            |
| GU tuberculosis                                 |
| Scrotal disease, Hydrocele; Testicular tumours  |
| Endourology                                     |
| Peritoneal dialysis/ CAPD / Haemodialysis       |
| Transplantation/ harvesting kidney              |
| Urinary diversion                               |
| Infertility / Vasectomy                         |
| Pyleoplasty / hydronephrosis                    |

- Oncology

|  |
|--|
| Imaging-CT/ MRI                        |
| Breast thyroid and GI malignancies     |
| Head and neck tumours. Neck dissection |
| Chemotherapy/ Adjuvant therapy         |
| Post excision reconstruction           |
| Radiotherapy                           |

- Plastic surgery

|                               |
|-------------------------------|
| Burns management              |
| Facial injuries               |
| Principles of tissue transfer |
| Cleft lip and palate          |
| Congenital defects of hand    |
| Pressure sores                |
| Principles of microsurgery    |
| Hypospadias                   |
| Details of skin flap          |
| Nerve repair                  |
| Vascular repair               |
| Hand injuries/ tendon injury  |

- Cardio- thoracic surgery

|                                 |
|---------------------------------|
| Flail chest/ thoracic trauma    |
| Bronchogenic carcinoma          |
| Endocarditis prophylaxis        |
| Pulmonary function tests        |
| Control of major haemorrhage    |
| Operations on the diaphragm     |
| Coronary artery disease         |
| Valvular heart disease          |
| Lobectomies and pneumonectomies |
| Oesophageal disease             |

|                                    |
|------------------------------------|
| Operations on thoracic aorta       |
| Mediastinal tumours                |
| Basics of congenital heart disease |

- Vascular surgery

|  |
|--|
| Vascular imaging   |
| A V malformation   |
| Exposure of major arteries and veins/ vascular anastamosis   |
| Varicose veins   |
| Chronic venous insufficiency                                 |
| Vascular emergencies – trauma, embolism                      |
| Peripheral vascular disease – Atherosclerosis, arteries- TAO |
| Details of vascular prosthesis                               |

- Paediatric surgery

|                                       |
|---------------------------------------|
| Fluid and electrolyte management      |
| Preparation for surgery / postop care |
| Hernias                               |
| Spinal fusion defects                 |
| Ventral defects                       |
| Undescended testis                    |
| Hypertrophic pyloric stenosis         |
| Hirschsprung's disease                |
| Diaphragmatic hernia                  |
| Tracheo oesophageal fistula           |
| Anorectal anomalies                   |
| Necrotizing enteritis                 |

- Gynaecological surgery

|                             |
|-----------------------------|
| Pelvic inflammatory disease |
| Ectopic pregnancy           |
| Ovarian Cysts               |
| Caesarean section           |
| Family planning             |



## Essential Surgical skills

Surgery is a skill-based discipline. The following list is drawn up with a view to specifying basic minimum skills to be acquired. While an attempt has been made to specify the year wise distribution of the learning of skills (in the latter part of curriculum), it is recognized that the process is a continuous one. The year wise distribution of the skills recommended are to be used as general guideline.

Provision of training in various specialty subjects has been made during the second year of the course. The list within the tables, indicates the surgical procedures that the students should, by the end of the course, be able to perform independently (PI) by himself / herself , performed with assistance (PA) ,observed (O) or have assisted the operating surgeon (A). Note, for all categories, the student washes up in the operating room. There may an overlap in the skill list between the General Surgery list and specialty list.

Skills may be considered under the following headings.

- a) Basic skills
- b) Ward procedures
- c) ICU procedures
- d) Emergency room procedures
- e) Preoperative work up
- f) Post operative care
- g) Minor surgical procedures
- h) Major operating room techniques
- i) General surgical procedures
- j) Specialty surgical procedures

### a) Basic skills

The student should have acquired certain skills during his under-graduation and internship. These skills have to be reinforced at the beginning of the training period. These skills include:

| Procedure   | Category | Year | Number |
|---|----------|------|--------|
| Insertion of I.V.lines, nasogastric tubes, urinary catheters, etc | PI       | 1    | 75     |

|                                       |    |   |     |
|---------------------------------------|----|---|-----|
| Minor suturing and removal of sutures | PI | 1 | 75  |
| Removal of tubes and drains           | PI | 1 | 50  |
| Routine wound dressing                | PI | 1 | 100 |

#### **b) Ward procedures**

Ward work forms an important part of the training of the training of the surgeons. In addition to the touting examination of the patient with proper recording of findings, diligent practice of the following is recommended.

| Procedure  | Category | Year     | Number |
|--|----------|----------|--------|
| Abdominal Paracentesis including diagnostic Peritoneal Lavage  | PI       | II,III   | 3      |
| Ability to teach undergraduates and interns  | PI       | 1        | NA     |
| Blood sampling – Venous and arterial   | PI       | 1        | NA     |
| Bone marrow Aspiration   | PI       | 1        | 2      |
| Wound debridement  | PI       | II       | 10     |
| Communication skills with patients, relatives, colleagues and paramedical staff  | PI       | 1        | NA     |
| Ordering laboratory and Radiological investigations and interpretation of the report in light of the clinical picture. | PI       | 1        | NA     |
| Proficiency in common ward procedures  | PI       | 1        | NA     |
| FNAC/Trucut biopsy   | PI       | 1        | 10     |
| Hand held Doppler for varicose veins/arterial disease  | PI       | 1        | 10     |
| Per-rectal examination and Proctoscopy   | PI       | 1        | NA     |
| Thoracocentesis, Tube thoracostomy   | PI       | II       | 5      |
| Universal precautions against communicable diseases  | PI       | 1        | NA     |
| Venesection  | PI       | 1+II+III | 5      |

NA: Not applicable

#### **C) ICU Procedures**

| Procedure                         | Category | Year | Number |
|-----------------------------------|----------|------|--------|
| Insertion of Arterial lines       | PI       | II   | 10     |
| Insertion of central venous lines | PI       | II   | 10     |
| Insertion of Endotracheal tubes   | PI       | II   | 10     |

|   |      |          |    |
|---|------|----------|----|
| Insertion of Peritoneal Dialysis Catheters            | A/PA | I,II,III | 5  |
| Intercostal drainage                                  | PI   | II       | 5  |
| Suprapubic puncture / Stab Cystostomy                 | PI   | II       | 5  |
| Tracheostomy  | PI   | I        | 2  |
| Working knowledge of ventilators and various monitors | PI   | I        | NA |
| Interpretation of Arterial Blood gases                | PI   | I        | NA |
| Correction of Electrolyte disturbances                | PI   | I        | NA |
| Prescribing Parenteral and Enteral nutrition          | PI   | I        | NA |

#### **d) Emergency Room Procedures**

| Procedure  | Category | Year | Number |
|--|----------|------|--------|
| Application of Splints for fractures                       | PI       | I    | NA     |
| Arterial and venous lines                                  | PI       | I    | NA     |
| Assessment and initial management of polytrauma            | PI       | I    | NA     |
| Cardiopulmonary Resuscitation                              | PI       | I    | NA     |
| Management of Airway obstruction                           | PI       | I    | NA     |
| Management of Shock and Cardiac / Respiratory failure      | PI       | I    | NA     |
| Recognition and initial management of surgical emergencies | PI       | I    | NA     |
| Suturing Techniques  | PI       | I    | NA     |

#### **e) Preoperative work up**

| Procedure  | Category | Year | Number |
|--|----------|------|--------|
| Ability for adequate pre- operative preparation in special situations like diabetes, renal failure, cardiac and respiratory failure etc. and risk Stratification | PI       | I    | NA     |
| Communication skills with special reference to obtaining informed consent  | PI       | I    | NA     |
| Proper pre operative assessment and preparation of patients including DVT prophylaxis, Blood transfusion and antibiotics   | PI       | I    | NA     |

#### **f) Post operative Care**

| Procedure | Category | Year | Number |
|-----------|----------|------|--------|
|-----------|----------|------|--------|

|  |    |   |    |
|--|----|---|----|
|  |    |   |    |
| Airway management  | PI | I | NA |
| Basic Physiotherapy                                      | PI | I | NA |
| Management of epidural analgesia                         | PI | I | NA |
| Management of Fistulae                                   | PI | I | NA |
| Management of postoperative hypotension and hypertension | PI | I | NA |
| Post operative pain control                              | PI | I | NA |
| Skills for Nutritional rehabilitation of patients        | PI | I | NA |
| Skills for proper Fluid and Antibiotic management        | PI | I | NA |
| Stoma care   | PI | I | NA |

**g) Minor O.T. procedures**

| Procedure  | Category | Year | Number |
|--|----------|------|--------|
| Circumcision under local anesthesia  | PI       | I    | 5      |
| Drainage of abscess  | PI       | I    | 10     |
| FNAC   | PI       | I    | 10     |
| Major dressings  | PI       | I    | 20     |
| Minor Anorectal procedures (Haemorrhoids – Banding, Cryotherapy, Anal dilatation ) | PI       | III  | 10     |
| Minor Biopsies – Lymphnode, ulcer, swellings etc                                   | PI       | I    | 20     |
| Reduction and plaster application of simple fractures and dislocations             | PA       | II   | 10     |
| Removal of simple subcutaneous swellings   | PI       | I    | 10     |
| Sigmoidoscopy and upper GI endoscopy ( preferable in endoscopy room)               | PA/A/O   | II   | 10     |
| Suturing Techniques  | PI       | I    | 20     |
| Vastectomy   | PI / PA  | I    | 5      |
| Wound debridement  | PI       | I    | 10     |

**h) Major Operating room techniques**

| Procedure   | Category | Year | Number |
|---|----------|------|--------|
| Instrument arrangement and trolley layout                   | PA       | I    | NA     |
| Skills in Sterilization techniques, O.T. Layout and asepsis | O        | I    | NA     |
| Skin preparation – painting and draping                     | PI       | I    | NA     |
| Techniques of scrubbing and gowning                         | PI       | I    | NA     |

**i) General Surgical Operative Procedures**

| Procedure  | Category                | Year     | Number |
|--|-------------------------|----------|--------|
| Appendicectomy   | PA                      | I        | 10     |
| Appendicectomy   | PI                      | III      | 5      |
| Cholecystectomy  | PI ,PA                  | III      | 1 , 3  |
| Closure of Colostomy   | PA                      | III      | 2      |
| Closure of perforated duodenal ulcer / under running bleeding ulcer        | PI                      | III      | 3      |
| Colostomy  | PA                      | III      | 2      |
| Cysts and sinuses of the neck  | PA                      | III      | 2      |
| Diagnostic Laparoscopy   | PA                      | III      | 3      |
| Drainage of Breast abscess/ Excision of breast lump                        | PI                      | I        | 10     |
| Groin hernia repair  | PI                      | II/ III  | 5      |
| Gynaecomastia  | PA                      | III      | 2      |
| Haemorrhoidectomy/ Fistulectomy /Simple fistulectomy                       | See Minor OT procedures |          |        |
| Hemicolectomy  | PA                      | III      | 1      |
| Herniotomy / Orchidopexy in children                                       | PA                      | III      | 3      |
| Laparotomy for abdominal trauma/ splenectomy                               | PI                      | III      | 3      |
| Laparotomy for intestinal obstruction /bowel resections/ bowel anastomosis | PI                      | III      | 3      |
| Management of complex wounds   | PI                      | I        | 10     |
| Mastectomy   | PA/ A                   | III      | 2      |
| Opening and closing the abdomen  | PI                      | I        | 5      |
| Opening and closing the chest  | PI                      | III/ III | 1      |
| Parotidectomy  | A                       | III      | 2      |
| Release of bands and multiple adhesive obstruction                         | PI                      | II       | 5      |
| Thyroid lobectomy / Thyroidectomy  | PA                      | III      | 2      |
| UGI Endoscopy  | A/O                     | II /II   | 10     |
| Ventilation  | PI                      | II       | 5      |
| Wide excision of breast tumours / Mastectomy / microdochectomy             | PA                      | III      | 3      |
| Gastrostomy / feeding jejunostomy  | PA                      | III      | 3      |

**a) Specialty Procedure**

There may be repetition of some of the procedures listed under this category and those listed under General surgical procedures. Where different numbers are mentioned

for the same / similar procedures between the general surgery and specialty lists, the higher number is applicable as the prescribed number. (Note that the total number is not the sum of the numbers mentioned for the same / similar procedures in the general surgery and specialty lists.)

### **Laparoscopy and GI Endoscopy**

| Procedure   | Category | Year | Number |
|---|----------|------|--------|
| Diagnostic and therapeutic Upper and Lower GI Endoscopy | PA       | III  | 10     |
| Diagnostic Laparoscopy                                  | PA       | III  | 3      |
| Diagnostic Upper GI Endoscopy                           | PA       | III  | 10     |
| Laparoscopic Cholecystectomy                            | A        | III  | 3      |

### **Neuro surgery**

| Procedure  | Category | Year | Number |
|--|----------|------|--------|
| Craniotomy                                       | A        | II   | 2      |
| Management of paraplegia                         | A        | II   | 2      |
| Peripheral nerve repair                          | A        | II   | 2      |
| Prevention of nerve injury – specific operations | A        | II   | 2      |
| Suturing complex scalp wounds                    | PI       | II   | 2      |
| Trephining                                       | PA       | II   | 2      |

### **Urology**

| Procedure                             | Category | Year    | Number |
|---------------------------------------|----------|---------|--------|
| Catheterization                       | PI       | I       | 20     |
| Circumcision                          | PI       | I       | 5      |
| Diagnostic cystoscopy                 | PA/A     | II      | 3      |
| Inguinal block dissection             | PA       | II      | 1      |
| Meatotomy                             | PI       | II      | 3      |
| Nephrectomy – partial / total         | A        | II      | 3      |
| Nephrolithotomy                       | A        | II      | 3      |
| Orchidectomy                          | PA / A   | II      | 3      |
| Orchidopexy                           | A        | II      | 3      |
| Retroperitoneal lymph node dissection | O        | II /III | 1      |

|                                   |      |             |    |
|-----------------------------------|------|-------------|----|
| Supra pubic Cystostomy            | PI   | II          | 3  |
| Total/partial amputation of penis | A    | II          | 1  |
| TURP / Open prostatectomy         | A    | II          | 5  |
| Ureterolithotomy                  | A    | II          | 3  |
| Urethral/ Urogenital injuries     | A    | II          | 3  |
| Urethral dilatation               | PI   | II          | 5  |
| Varicocele                        | PA/A | II          | 3  |
| Vasectomy                         | PI   | I / II / II | 10 |

### **Oncology**

| Procedure   | Category | Year | Number    |
|---|----------|------|-----------|
| All radical operations – Breast , Thyroid , GI and Facio – maxillary malignancies | A        | II   | 2<br>EACH |
| Breast lumpectomy   | PI       | II   | 5         |
| Functional neck node dissection   | A        | II   | 3         |
| Gastrectomy / Bowel resection   | A        | II   | 3         |
| Imprint cytology  | PA       | II   | 3         |
| Metastatic workup   | PA       | II   | 5         |
| Stoma care  | PI       | II   | 5         |
| Thyroid surgery   | A        | II   | 5         |
| U/s guided biopsy   | A/O      | II   | 3         |

### **Plastic Surgery**

| Procedure                    | Category | Year | Number |
|------------------------------|----------|------|--------|
| Burn resuscitation           | PI       | II   | 5      |
| Lip surgery                  | A        | II   | 5      |
| Local blocks in anesthesia   | PI       | I    | 10     |
| Minor hand injuries          | PI       | II   | 5      |
| Nerve repair                 | A        | II   | 2      |
| Post excision reconstruction | A        | II   | 2      |
| Reimplantation of digits     | O        | II   | 1      |
| Skin flap surgery            | O        | II   | 2      |
| Split skin graft             | PI       | II   | 3      |
| Tendon repair                | PA       | II   | 2      |
| Wound Debridement            | PI       | I    | 10     |

### Paediatric Surgery

| Procedure                           | Category | Year    | Number |
|-------------------------------------|----------|---------|--------|
| Anorectal Anomalies                 | A        | II      | 2      |
| Circumcision / Meatoplasty          | PA       | II      | 10     |
| Herniotomy                          | PA       | II/III  | 2      |
| Intercostal aspiration              | PI       | II      | 2      |
| Laparotomy for peritonitis          | PA       | II      | 5      |
| Lymph node biopsy                   | PI       | II/III  | 5      |
| Non operative treatment of Volvulus | A/ O     | II      | 2      |
| Orchidopexy                         | PA/A     | II      | 5      |
| Ostomies                            | PA       | II      | 2      |
| Paediatric emergencies              | A/PA     | II      | 10     |
| Pyloromyotomy                       | PA/A     | II/ III | 5      |

### Cardiothoracic surgery

| Procedure                        | Category | Year    | Number |
|----------------------------------|----------|---------|--------|
| Canulation of artery and vein    | A        | II      | 2      |
| Chest injuries                   | PA       | II/ III | 5      |
| Empyema drainage / decortication | PI       | II      | 2      |
| Endotracheal intubation          | PI       | I       | 10     |
| Intercostal drainage             | PI       | I       | 5      |
| Lobectomies and pneumonectomies  | O        | II      | 2      |
| Oesophageal surgery              | O        | II/ III | 2      |
| Opening and closing the chest    | PA       | II      | 2      |
| Pericardiectomy                  | O        | II      | 2      |
| Removal of FBs                   | A        | II/III  | 2      |
| Remove pulse generator (pacing)  | PA/A     | II      | 1      |
| Rib resection                    | PA       | II/III  | 2      |
| Tracheostomy                     | PI       | III     | 5      |
| Sternotomies                     | PA       | II/III  | 2      |
| Vein and arterial harvesting     | PA/A     | II/III  | 2      |
| Ventilator Management            | PA       | I       | 10     |

### Vascular surgery



| Procedure                     | Category | Year   | Number |
|-------------------------------|----------|--------|--------|
| AV shunts for vascular access | PA       | II/III | 2      |
| Bypass graft – prosthetic     | A        | II/III | 2      |
| Conservative amputations      | PI       | II/III | 5      |
| Embolectomy                   | PA       | II/III | 2      |
| Post traumatic aneurysms      | A        | II/III | 2      |
| Sympathectomy                 | PA       | II/III | 2      |
| Use of heparin                | PI       | II/III | 10     |
| Varicose veins surgery        | PI       | II/III | 2      |
| Vascular suturing             | PA       | II/III | 2      |
| Vein graft                    | A/O      | II/III | 2      |
| Vein patch repair             | A/O      | II/III | 2      |

### Teaching and Learning Activities

A candidate pursuing the course should work in the institution as a full time student. Each year should be taken as a unit for the purpose of calculating attendance.

Every student shall attend teaching and learning activities during each year as prescribed by the department and not absent himself / herself from work without valid reasons.

A list of teaching and learning activities designed to facilitate students acquire essential knowledge and skills outlined is given below. The students shall enter in the Log Book relevant details of all teaching/learning activities.

1. Lectures: Lectures are to be kept to a minimum. Lectures may be didactic or integrated.

a) Didactic Lectures: Recommended for selected common topics for postgraduate students of all specialties. Few topics are suggested as examples:

- 1) Bio-statistics
- 2) Research Methods
- 3) Medical code of Conduct and Medical Ethics
- 4) Communication Skills etc.

These topics may preferably taken up in the first few months of the I<sup>st</sup> year. Few lectures or other type of exposure to human behavior studies shall be taken.

b) Integrated Lectures: These are recommended to be taken by multidisciplinary teams for selected topics, eg. Jaundice, Diabetes mellitus, Thyroid etc.

2. Journal Club: Recommended to be held once a month. All the PG students are expected to attend and actively participate in discussion. Further, every candidate must make a presentation from the allotted journal (s), selected articles at least four times a year. The presentations would be evaluated using checklists and would carry weightage for internal assessment (see checklist in Chapter IV).
3. Subject Seminar: Recommended to be held once a week. All the PG students are expected to attend and actively participate in discussion. Further, every candidate must present on selected topics at least four times a year and total of 12 seminar presentations in three years. The presentations would be evaluated using checklists and would carry weightage for internal assessment (see checklist in Chapter IV). A timetable for the subject with names of the student and the moderator should be scheduled at the beginning of every year.
4. Student Symposium: Recommended as an optional multi disciplinary Programme. The evaluation may be similar to that described for subject seminar.
5. Ward Rounds: Ward rounds may be service or teaching rounds.
  - a) Service Rounds: Postgraduate students and Interns should do every day for the care of the patients. Newly admitted patients should be worked up by the PGs and presented to the seniors the following day.
  - b) Teaching Rounds: Every unit should have grand rounds for teaching purpose. A diary should be maintained for day-to-day activities by the students. Entries of (a) and (b) should be made in the Log book.
6. Clinico – Pathological Conference: Recommended once in three months for all post graduate students. Presentation to be done by rotation. If cases are not available due to lack of clinical postmortems, it could be supplemented by published CPCs.
7. Inter Departmental Meetings. Strongly recommended particularly with departments of Pathology and Radio-Diagnosis at least once a month. These meetings should be attended by post graduate students and relevant entries must be made in the Log Book.

Pathology: Interesting cases may be chosen and presented by the post graduate students and discussed by them as well as the senior staff of Surgery and Pathology departments.

Radio-diagnosis: Interesting cases and the imaging modalities should be discussed.

7. Teaching Skills: Postgraduate students must teach under graduate students (Eg. Medical,Dental,Nursing) by taking demonstrations, bedside clinics, tutorials, lectures etc. Assessment is made using a checklist by surgery faculty as well students. (See model check in Chapter IV). Record of their participation be kept in Log book. Training of postgraduate students in Educational Science and Technology is recommended.
8. Continuing Medical Education Programmes (CME): Recommended that at least 2 National/State level CME programmes should be attended by each student in 3 years.
9. Conferences: Recommended that at least 2 National/State level conferences should be attended by each student in 3 years. The candidates are encouraged to present papers at these conferences/CME

#### **Rotation and posting in other departments**

The listed knowledge and skills are to learnt over a period of 3 years. The process is a continuous one. However the recommended period and timing of training in basic subjects, allied department and specialty departments is given below.

In the first year, during the morning session, student should work in the parent department. It is recommended that 2 years and 2 months are spent in general surgery and 10 months in allied and specialty departments. Depending on the time and opportunities available, some of the procedures listed for second year activity can be shifted to the first or third year. Students must be on call on a regular basis. The total duration of postings in core and other specialties will be eight months.

#### **Basic science**

Basic science should be an essential part of training. It should be done as concurrent studies during the 1<sup>st</sup> year of training. It is recommended that the candidate spends at least one hour

daily, in the afternoons, for the first six months in the respective departments learning basic science relevant to surgery

Topics for study to include anatomy, Physiology, Pathology, Microbiology, Pharmacology, Anaesthesia and Radiology

Pathology: concurrent study – recommend daily grossing sessions, weekly surgical pathology sessions and monthly CPCs.

Radiology: adequate exposure to modern imaging modalities like USG, CT, MRI and angiography

### **Surgical specialty Subjects**

Postings to other specialty departments will be during the second year. The departments and duration of postings are as under:

| Department  | duration |
|---|----------|
| Paediatric surgery  | 4 weeks  |
| Plastic surgery   | 4 weeks  |
| CVTS  | 4 weeks  |
| Neurosurgery  | 4 weeks  |
| Urology   | 4 weeks  |
| Oncology  | 4 weeks  |
| GI surgery  | 4 weeks  |
| Orthopaedics including trauma<br>(Accident and Emergency) | 8 weeks  |
| Anesthesia and ICU  | 4 weeks  |

### **Dissertation**

Every candidate pursuing MS Degree course is required to carry out work on a selected research project under the guidance of a recognized postgraduate teacher. The results of such a work shall be submitted in the form of a dissertation

The dissertation is aimed to train a post graduate student in research methods and techniques. It includes identification of a problem, formulation of a hypothesis, search and review of literature, getting acquainted with recent advances, designing of a research study, collection of data, critical analysis, comparison of results and drawing conclusions.

Every candidate shall submit to the University in the prescribed proforma, a synopsis containing particulars of proposed dissertation work within 6 months from the date of commencement of the course on or before the dates notified by the university. The synopsis shall be sent through proper channel.

Such synopsis will be reviewed and the dissertation topic will be registered by the university. No change in the dissertation topic or Guide shall be made without prior approval of the university.

The dissertation should be written under the following headings

- i) Introduction
- ii) Aims or objectives of study
- iii) Review of literature
- iv) Materials and methods
- v) Results
- vi) Discussion
- vii) Conclusion
- viii) Summary
- ix) References
- x) Tables
- xi) Annexures

The written text of dissertation shall not be less than 50 pages and shall not exceed 150 pages excluding references, tables, questionnaires and other annexures. It should be neatly typed in double line spacing on one side of paper (A4 size, 8.27" x 11.69") and

bound properly. Spiral binding should be avoided. The dissertation shall be certified by the guide, head of the Department and head of the Institution.

Four copies of dissertation thus prepared along with the same matter on CD shall be submitted to the University, six months before final examination on or before the dates notified by the University.

The dissertation shall be valued by examiners appointed by the University. Approval of dissertation work is essential precondition for a candidate to appear in the University examination.

For some more details regarding Guide etc., please see Chapter 1 and for books on research methodology, ethics etc., see Chapter IV.

### **Monitoring learning process**

It is essential to monitor the learning process of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring to be done by the staff of the department based on participation of students in various teaching/learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Chapter IV.

The learning outcomes to be assessed should include (i) Personal attitude (ii) acquisition of knowledge (iii) Clinical and operative skills (iv) Teaching skills and (v) Dissertation.

**i) Personal attitudes.** The essential items are

- Caring attitude
- Initiative
- Organizational ability
- Potential to cope with stressful situations and undertake responsibility

- Trustworthiness and reliability
- To understand and communicate intelligibly with patients and others
- To behave in a manner which establishes professional relationships with patients and colleagues
- Ability to work in team
- A critical enquiring approach to acquisition of knowledge

The methods used mainly consist of observation. It is appreciated that these items require a degree of subjective assessment by the guide, supervisors and peers.

ii) **Acquisition of Knowledge:** The methods used comprise of Log Book which records participation in various teaching / learning activities by the students. The number of activities attended and the number in which presentations are made are to be recorded. The logbook should periodically be validated by the supervisors. Some of the activities are listed. The list is not complete. Institutions may include additional activities. If so, desired.

***Journal Review Meeting (Journal Club):*** The ability to do literature search, in depth study. Presentation skills, and use of audio visual aids are to be assessed. The assessment is made by Faculty members and peers attending the meeting using a checklist (see Model Checklist – I, Chapter IV)

***Seminars / Symposia:*** The topics should be assigned to the student well in advance to facilitate in depth study. The ability to do literature search, in depth study, presentation skills and use of audio visual aids are to be assessed using a checklist (see Model Checklist II, Chapter IV)

***Clinico - pathological conferences:*** This should be a multidisciplinary case study of an interesting case to train the candidate to solve diagnostic and therapeutic problems by using an analytical approach. The presenter (s) are to be assessed using a check list similar to that used for seminar.

***Surgical Audit:*** Periodic morbidity and mortality meeting be held. Attendance and participation in these must be insisted upon. This may not be included in assessment.

**iii) Clinical Operative skills**

***Day-to-Day work:*** Skills in outpatient and ward work should be assessed periodically. The assessment should include the candidates sincerity and punctuality, analytical ability and communication skills (see Model Checklist III, Chapter IV).

***Clinical meetings:*** Candidates should periodically present cases to his peers and faculty members. This should be assessed using a check list (see Model checklist IV, Chapter IV).

***Clinical and Operative skills:*** The candidate should be given graded responsibility to enable learning by apprenticeship. The performance is assessed by the guide by direct observation. Particulars are recorded by the student in the logbook. (Table No.3, Chapter IV)

**iv) Teaching skills:** Candidates should be encouraged to teach undergraduate medical students and paramedical students, if any. This performance should be based on assessment by the faculty members of the department and from feedback from the undergraduate students (See Model checklist V, Chapter IV)

**v) Dissertation** in the department: Periodic presentation are to be made in the department. Initially the topic is to be presented before submission to the University for registration, again before finalisation for critical evaluation and another before final submission of the completed work (See Model Checklist VI & VII, Chapter IV)

**vi) Periodic tests:** The departments may conduct three tests, two of them be annual tests, one at the end of first year and the other in the second year. The third test may be held three months before the final examination. The tests may include written papers, practicals / clinicals and viva voce.

**vii) Work diary / Log Book** – Every candidate shall maintain a work diary and record his/her participation in the training programmes conducted by the department such as journal



reviews, seminars, etc. Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any conducted by the candidate.

**viii) Records:** Records, log books and marks obtained in tests will be maintained by the Head of the Department and will be made available to the University or MCI.

### **Log book**

The log book is a record of the important activities of the candidates during his training. Internal assessment should be based on the evaluation of the log book. Collectively, log books are a tool for the evaluation of the training programme of the institution by external agencies. The record includes academic activities as well as the presentation and procedures carried out by the candidate.

**Format for the log book** for the different activities is given in Tables 1,2 and 3 of Chapter IV. Copies may be made and used by the institutions.

**Procedure for defaulters:** Every department should have a committee to review such situations. The defaulting candidate is counseled by the guide and Head of the Department. In extreme cases of default, the departmental committee may recommend that defaulting candidate be withheld from appearing for the examination, if she / he fails to fulfill the requirements in spite of being given adequate chances to set himself or herself right.

## **Scheme of Examination**

### ***i) Theory***

There shall be four question papers, each of three hours duration. Each paper shall consist of two long essay questions each question carrying 20 marks and 6 short essay questions each carrying 10 marks. However, one essay question in Paper 1 is recommended to be substituted by 20 MCQs, each carrying 1 mark. Total marks for each paper will be 100. Questions on recent advances may be asked in any or all the papers. Details of distribution of topics for each paper will be as follows:

Paper I: Basic Sciences- 100 Marks

- Anatomy
- Physiology
- Other basic science topics covered in syllabus

Introduction to Surgery, Basic Surgical Principles. Wounds, tissue repair and scars. Critical care: fluid, electrolyte and acid-base balance: Blood transfusion. Nutritional support and rehabilitation. Anaesthesia and pain relief. Wound infection. Special infections. Acquired immunodeficiency Syndrome (AIDS). Sterile precautions. Transplantation. Tumours, Cysts, Ulcers, Sinuses. Plastic and reconstructive surgery, Skin lesions. Burns. Arterial disorders. Venous disorders. Lymphatic system. Day surgery. Audit in surgery. Surgical ethics.

Paper II: 100 Marks

Eye and orbit. Cleft lip and palate, developmental abnormalities of the face, palate, jaws and teeth. Maxillofacial injuries. Nose and sinuses. Ear. Oral and oropharyngeal cancer and procancer. Salivary gland disorders. Pharynx, larynx and neck. Thyroid gland and the Thyroglossal tract. Parathyroid and Adrenal glands. Breast . Thorax. Heart and pericardium.

Paper III 100 Marks

Anastomoses, Oesophagus. Stomach and duodenum. Liver. Spleen . gallbladder and bile ducts. Pancreas. Peritoneum, omentum, mesentery and retroperitoneal space. Small and large intestines. Intestinal obstruction. Vermiform appendix. Rectum. Anus and anal canal. Hernias, Umbilicus, Abdominal wall. Principles of Laparoscopic surgery.\

Paper IV 100 Marks

Orthopedics: Musculoskeletal disorders. Fracture and dislocations- General, specific. Diseases of bones and joints- infection, tumours, generalized diseases and chronic joint diseases, congenital disorders. Wrist and hand . Foot.

Nervous system : Neurological disorders affecting the musculoskeletal system. Spine, vertebral column and spinal cord. Nerves. Cranium (scalp, skull, brain ).

Genito- urinary system: Urinary symptoms, Investigation of the urinary tract, anuria. Kidneys and ureters. Urinary bladder. Prostate seminal vesicles. Urethra and penis. Testis and scrotum.

**Note: The distribution of chapters / topics shown against the papers are suggestive only.**

ii) Clinical

There shall be one long case and two short cases to be examined and presented by each candidate.

Type of cases

|             |            |           |
|-------------|------------|-----------|
| Long case   | 1          | 100 marks |
| Short cases | 2 (50 x 2) | 100 marks |

iii) Viva voce

**1) Viva voice examination: (80 Marks)**

All examiners will conduct viva voce on all components of course contents. In addition, candidates may be also be given case reports, charts, gross specimens, Histo pathology slides, X-rays, ultrasound, CT scan images, etc., for interpretation. Questions on operative surgery and use of instruments will be asked. It includes discussion on dissertation also.

**2) Pedagogy Exercise: (20 Marks)**

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a micro-teaching presentation(for under graduate level) on the topic of 8-10 minutes.

iv)

|                                    |               |                  |             |                    |
|------------------------------------|---------------|------------------|-------------|--------------------|
| Maximum marks for M.S Gen. Surgery | Theory<br>400 | Practical<br>200 | Viva<br>100 | Grand Total<br>700 |
|------------------------------------|---------------|------------------|-------------|--------------------|

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MS General Surgery

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## **Recommended books and Journals**

### **Textbooks**

1. Charles V, Mann, R.C.G. Russell, Norman S. Willians, Bailey and Loves Short Practice of Surgery 24th Edition, Chapman & Hall
2. David C. Sabiston: Text book of Surgery: The Biological Basis of Modern Surgical Practice, 17th Edition, 1971, W.B. Saunders
3. Seymour I. Schwarts, G. Tom Shines, Frank C. Spencer, Wendy Cowles Husser: Principles of Surgery, Vol. 1& 2,7th Edition, 1999, Mc. Graw Hill
4. JSP Lumley: Hamilton Baileys Physical Signs, 18th Edition, 1997, Butterworth / Heinemann.
5. R.W.H.McMinn: Lasts Anatomy: Regional and Applied 10th Edition, 1999, Churchill Livingstone.
6. Sir Charles Illingworth, Bruce M. Dick, A Text Book of Surgical Pathology, 12th Edition, 1979, Churchill Livingstone.
7. K.Das: Clinical Methods in Surgery, 8th Edition, 1868, Suhas Kumar Dhar, Calcutta
8. R.F.Rintoul: Farqharsons Text Book of Operative Surgery, 8th Edition, 1995, Churchill Livingstone
9. Somen Das: A practical Guide to Operative Surgery, 4th Edition, 1999, S. Das, Calcutta.
10. Pankaj Patel, V.V.Devoodkar, Handbook of Surgical Instruments for Undergraduates, 1992, Bhalani publishing, House
11. R.A.Jamieson and A.W.Kay: Textbook of Surgical Physiology, Lavingstone.
12. James Kyle: Pyes Surgical Handicraft, Indian Edition, K.M. Varghese Company.
13. Revision- Number / Latest edition + consolidations

### **Reference text books**

1. William F. Ganong : Review of Medical Physiology, 2000, Lange Medical Publication
2. Roshan Lall Gupta: Year Book of Surgery, (Series) Jaypee Brothers\
3. Roshan Lall Gupta : Recent advances in Surgery, (Series) Jaypee Brothers

4. I.Taylor and C.D. Johnson : Recent Advances in Surgery, (Series) Churchill Livingstone.
5. Lloyd M. Nyhus, Robert J.Baker and Joseph E. Fischer : Mastery of Surgery Vol. 1 & 2, 3rd Edition, 1997, Little Brown & Company.
6. Peter J.Morris and Ronald A Malt : Oxford Text Book of Surgery. Vol. 1 & 2, 1994, Oxford University Press
7. Charles Rob and Rodney Smith : Operative Surgery (All Volumes). 2nd Edition. 1971, Butterworths.
8. C.Palanivelu : Art of Laproscopic Surgery .1999 . Paras Publishing
9. Michael J. Zinner, Seymour I. Schartz and Harold Ellis: Maingot's abdominal operations, Vol. 1& 2, 10th Edition, 1997. Prentice Hall International.
10. Kevin G. Burnand and Anthony E. Young: The New Aird's companion to surgical studies, 1992, Churchill Livingstone.
11. Guyton: Text Book of Medical Physiology .9th Edition, 1998, W.B. Saunders.
12. Hamilton Bailey: Emergency Surgery, 1999, Butterworth
13. Cuschieri: Essentials of Surgical Practice, 3rd Edition, 1995, K.M. Verghese Company
14. Goliger: Surgery of the Anus, Rectum and Colon
15. Oxford text book of surgery
16. Lee McGregor: Synopsis of Surgical Anatomy, 12th (Indian) Edition, 1998, K.M. Verghese Company
17. W.T Irvine: Modern Trends in Surgery, Series, Butterworths

#### **Reference books**

1. Irving Taylor, Timothy G. Cooke and Perra Guillou: Essential General Surgical Oncology, 1996, Churchill Livingstone.
2. James A, O'Neil, Maro I. Owe. Jay L, Grosfeld, Eric W. Fopnkalsrud and Arnold G. Coran: Pediatric Surgery, Vol. 1 & 2, 5th Edition, 1998, Mosby
3. Anthony S Fauci and Ouners Haririson's Principles of Internal Medicine. Vol. 1 & 2. 14th Edition, 1998, Mc Graw Hill

4. Sheila Sherlock and James Dooley: Diseases of the Liver and Biliary System, 10th Edition, 2000, Blackwell Scientific Publication
5. Incent J. Devita, Samuel Hellman and Steven A. Roseburg, Cancer: Principles and Practice of Oncology, 6th Edition, 2000, Lippincott
6. Blumgart: Surgery of Liver & Biliary Tract, Vol. 1 & 2, 2nd Edition, 1994, Churchill Livingstone
7. Campbell and Smith : Urology, Vol. 1, 2 & 3, 5th Edition, 1986, W.B. Saunders
8. Smith : General Urology
9. Grab and Smith : Plastic Surgery, 5th Edition, 1997

#### **Journals for reference**

Indian Journal of Surgery  
 British Journal of Surgery  
 American Journal of Surgery  
 Surgery International  
 New England Journal of Medicine  
 Surgery, Gynecology & Obstetrics  
 Year Book of Surgery  
 Surgical Clinics of North America  
 Lancet  
 British Medical Journal  
 Urological Clinics of North America  
 Indian Journal of Medical Research

#### **Additional reading**

1. Compendium of Recommendations of Various Committees on Health and Development (1943-1975) DGHS, 1985 Central Bureau of Health Intelligence, Directorate General of Health Services, Min. Of Health and Family Welfare, Govt. Of India, Nariman Bhawan, New Delhi, P – 335
2. National Health Policy: Min. Of Health & Family Welfare, Nirman Bhawan New Delhi, 1983

3. Samosh Kumar: The Elements
4. Srinivasa D K etal: Medical Education Principles and Practice, 1995. National Teacher Training Centre, JIPMER, Pondicherry
5. Indian Council of Medical Research: Policy Statement of Ethical considerations involved in Research on Human Subjects, 1982, I.C.M.R., New Delhi
6. Code of Medical Ethics framed under section 33 of the Indian Medical Council Act, 1956. Medical Council of India, Kotla Road, New Delhi
7. Francis CM: Medical Ethics, Jaypee Publications, Bangalore, 1993.
8. Indian National Science Academy, Guidelines for care and use of animals in Scientific Research, New Delhi, 1994.
9. Internal National Committee of Medical Journal Editors, Uniform requirements for manuscripts submitted to biomedical journal, N Engl J Med 1991, 424-8
10. Kirkwood B.R.: Essentials of Medical Statistic, Ist Ed., Oxford, Blackwell Scientific Publications 1988.
11. Mahajan B.K.: Methods in Bio – statistics for Medical Students, 5th Edition, New Delhi, Jaypee Brothers Medical Publishers, 1989.
12. Raveendran B Gitanjali: A Practical approach to PG dissertation, New Delhi, Jaypee Publications, 1998.
13. R.K. Chaube: Consumer Protection Act and Medical Profession, Ist Edition, 1999, Jaypee Brothers

**Model checklist for Assessment of Scientific papers for publications**

| Sl.No | Criteria  | Distribution of marks | Marks awarded |
|-------|---|-----------------------|---------------|
| 1     | Originality   | 10                    |               |
| 2     | Clarity and quality of presentation   | 10                    |               |
| 3     | Relevance   | 10                    |               |
| 4     | Review of literature  | 10                    |               |
| 5     | Quantum of works involved   | 15                    |               |
| 6     | Methodology, sensitivity, sample size, controlled, not controlled study etc | 25                    |               |
| 7     | Advancement in knowledge  | 10                    |               |
|       | Total   | 90                    |               |

Signature of the evaluator

Name

Designation



## **Chapter IV**

### **Monitoring Learning progress**

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only also helps teachers to evaluate students, but also students to evaluate themselves. The monitoring is to be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Model checklists are given in this chapter which may be copied and used.

The learning outcomes to be assessed should include: (i) Personal Attitudes,(ii) Acquisition of Knowledge, (iii) Clinical and operative skills, and (iv) Teaching skills.

**i) Personal Attitudes.** The essential items are:

- Caring attitudes
- Initiative
- Organisational ability
- Potential to cope with stressful situations and undertake responsibility
- To understand and communicate intelligibly with patients and others
- To behave in a manner which establishes professional relationships with patients and colleagues
- Ability to work in team
- A critical enquiring approach to the acquisition of knowledge

The methods used mainly consist of observation. It is appreciated that these items require a degree of subjective assessment by the guide, supervisors and peers.

**ii) Acquisition of Knowledge:** The methods used comprise of Log Book which records participation in various teaching / learning activities by the students. The number of activities attended and the number in which presentations are made are to be recorded. The logbook should periodically be validated by the supervisors. Some of the activities are listed. The list is not complete. Institutions may include additional activities if so desired.

***Journal Review Meeting (Journal Club):*** The ability to do literature search, in depth study. Presentation skills, and use of audio visual aids are to be assessed. The assessment is made by Faculty members and peers attending the meeting using a checklist (see Model Checklist – I, Chapter IV)

***Seminars / Symposia:*** The topics should be assigned to the student well in advance to facilitate in-depth study. The ability to do literature search, presentation skills and use of audio visual aids are to be assessed using a checklist (see Model Checklist II, Chapter IV)

***Clinico - pathological conferences:*** This should be a multidisciplinary case study of an interesting case to train the candidate to solve diagnostic and therapeutic problems by using an analytical approach. The presenter (s) are to be assessed using a check list similar to that used for seminar.

***Medical Audit:*** Periodic morbidity and mortality meetings are to be held. Attendance and participation in these must be insisted upon. This may not be included in assessment.

### **iii) Clinical skills**

***Day-to-Day work:*** Skills in outpatient and ward work should be assessed periodically. The assessment should include the candidates sincerity and punctuality, analytical ability and communication skills (see Model Checklist III, Chapter IV).

***Clinical meetings:*** Candidates should periodically present cases to his peers and faculty members. This should be assessed using a check list (see Model checklist IV, Chapter IV).

***Clinical and procedural skills:*** The candidate should be given graded responsibility to enable learning by apprenticeship. The performance is assessed by the guide by direct observation. Particulars are recorded by the student in the logbook. (Table No.3, Chapter I

**iv) Teaching skills:** Candidates should be encouraged to teach undergraduate medical students and paramedical students, if any. This performance should be based on assessment by the faculty members of the department and from feedback from the undergraduate students (See Model checklist V, Chapter IV)

**v) Periodic tests:** The departments may conduct three tests, two of them be annual tests, one at the end of first year and the other in the second year. The third test may be held three months before the final examination. In case of diploma courses of two-year duration, the departments may conduct two tests. One of them at the end of first year and the other in the second year three months before the final examination. The tests may include written papers, practicals/clinicals and viva voce.

**vi) Work diary / Log Book** – Every candidate shall maintain a work diary and record his/her participation in the training programmes conducted by the department such as journal reviews, seminars, etc. Special mention may be made of the presentations by the candidate as well as details of clinical or laboratory procedures, if any conducted by the candidate.

**vii) Records:** Records, log books and marks obtained in tests will be maintained by the Head of the Department and will be made available to the University or MCI.

### **Log book**

The log book is a record of the important activities of the candidates during his training. Internal assessment should be based on the evaluation of the log book. Collectively, log books are a tool for the evaluation of the training programme of the institution by external agencies. The record includes academic activities as well as the presentation and procedures carried out by the candidate.

**Format for the log book** for the different activities is given in Tables 1,2 and 3 of Chapter IV. Copies may be made and used by the institutions.

**Procedure for defaulters:** Every department should have a committee to review such situations. The defaulting candidate is counseled by the guide and head of the department. In extreme cases of default the departmental committee may recommend that defaulting candidate be withheld from appearing the examination, if she / he fails to fulfill the requirements in spite of being given adequate chances to set himself or herself right.

## CHAPTER IV (CONTD.)

### Format of Model Check Lists

#### Check List – I MODEL CHECK LIST FOR EVALUATION OF JOURNAL REVIEW PRESENTATIONS

Name of the Student:

Name of the Faculty / Observer:

Date

|    | <b>Items for observation during presentation</b>                            | <b>Poor<br/>0</b> | <b>Below<br/>average<br/>1</b> | <b>Average<br/>2</b> | <b>Good<br/>3</b> | <b>Very<br/>good<br/>4</b> |
|----|---|-------------------|--------------------------------|----------------------|-------------------|----------------------------|
| 1. | Article chosen was  |                   |                                |                      |                   |                            |
| 2. | Extent of understanding of scope & objectives of the paper by the candidate |                   |                                |                      |                   |                            |
| 3. | Whether cross references have been consulted                                |                   |                                |                      |                   |                            |
| 4. | Whether other relevant publications consulted                               |                   |                                |                      |                   |                            |
| 5. | Ability to respond to questions on the paper/subject                        |                   |                                |                      |                   |                            |
| 6. | Audio-Visual aids used  |                   |                                |                      |                   |                            |
| 7. | Ability to defend the paper   |                   |                                |                      |                   |                            |
| 8. | Clarity of presentation   |                   |                                |                      |                   |                            |
| 9. | Any other observation   |                   |                                |                      |                   |                            |
|    | Total Score   |                   |                                |                      |                   |                            |

Check List – II  
MODEL CHECK LIST FOR EVALUATION OF SEMINAR PRESENTATIONS

Name of the Student:

Name of the Faculty / Observer:

Date

|     | Items for observation during presentation     | Poor<br>0 | Below<br>average<br>1 | Average<br>2 | Good<br>3 | Very<br>good<br>4 |
|-----|---|-----------|-----------------------|--------------|-----------|-------------------|
| 1.  | Whether other relevant publications consulted |           |                       |              |           |                   |
| 2.  | Whether cross reference have been consulted   |           |                       |              |           |                   |
| 3.  | Completeness of Preparation                   |           |                       |              |           |                   |
| 4.  | Clarity of presentation                       |           |                       |              |           |                   |
| 5.  | Understanding of subjects                     |           |                       |              |           |                   |
| 6.  | Ability to answer questions                   |           |                       |              |           |                   |
| 7.  | Time scheduling                               |           |                       |              |           |                   |
| 8.  | Appropriate use of Audio – Visual aids        |           |                       |              |           |                   |
| 9.  | Overall performance                           |           |                       |              |           |                   |
| 10. | Any other observation                         |           |                       |              |           |                   |
|     | Total Score                                   |           |                       |              |           |                   |

Check List – III

MODEL CHECK LIST FOR EVALUATION OF CLINICAL WORK IN WARD/ OPD

(To be completed once a month by respective Unit Heads including posting in other departments)

Name of the Student:

Name of the Unit head :

Date

| Sl No | Points to be considered  | Poor<br>0 | Below<br>average<br>1 | Average<br>2 | Good<br>3 | Very<br>good<br>4 |
|-------|--|-----------|-----------------------|--------------|-----------|-------------------|
| 1.    | Regularity of attendance   |           |                       |              |           |                   |
| 2.    | Punctuality  |           |                       |              |           |                   |
| 3.    | Interaction with colleagues and supportive staff                                   |           |                       |              |           |                   |
| 4.    | Maintenance of case records  |           |                       |              |           |                   |
| 5.    | Presentation of cases during rounds  |           |                       |              |           |                   |
| 6.    | Investigations work up   |           |                       |              |           |                   |
| 7.    | Bedside manners  |           |                       |              |           |                   |
| 8.    | Rapport with patients  |           |                       |              |           |                   |
| 9.    | Counseling patients relatives for blood donation or Post mortem and Case follow up |           |                       |              |           |                   |
| 10    | Over all quality of Ward work  |           |                       |              |           |                   |
| 11.   | <b>Total Score</b>   |           |                       |              |           |                   |

Check List – IV  
EVALUATION FORM FOR CLINICAL PRESENTATION

Name of the Student:

Name of the Faculty:

Date

| Sl No | Points to be considered   | Poor<br>0 | Below<br>average<br>1 | Average<br>2 | Good<br>3 | Very<br>good<br>4 |
|-------|---|-----------|-----------------------|--------------|-----------|-------------------|
| 1.    | Completeness of history   |           |                       |              |           |                   |
| 2.    | Whether all relevant point elicited   |           |                       |              |           |                   |
| 3.    | Clarity of presentation   |           |                       |              |           |                   |
| 4.    | Logical order   |           |                       |              |           |                   |
| 5.    | Mentioned all positive and negative points of importance                            |           |                       |              |           |                   |
| 6.    | Accuracy of General physical examination  |           |                       |              |           |                   |
| 7.    | Whether all physical signs elicited correctly                                       |           |                       |              |           |                   |
| 8.    | Whether any major signs missed or misinterpreted                                    |           |                       |              |           |                   |
| 9.    | Diagnosis:<br>Whether it follows logically from history and findings                |           |                       |              |           |                   |
| 10    | Investigations required   |           |                       |              |           |                   |
|       | • Complete list   |           |                       |              |           |                   |
|       | • Relevant order  |           |                       |              |           |                   |
|       | • Interpretation of investigations  |           |                       |              |           |                   |
| 11.   | Ability to react questioning Whether it follows logically from history and findings |           |                       |              |           |                   |
| 12    | Ability to defend diagnosis   |           |                       |              |           |                   |

|     |   |  |  |  |  |  |
|-----|---|--|--|--|--|--|
| 13. | Ability to justify differential diagnosis |  |  |  |  |  |
| 14  | Others                                    |  |  |  |  |  |
|     | <b>Grand Total</b>                        |  |  |  |  |  |

Check List – V

**MODEL CHECK LIST FOR EVALUATION OF TEACHING SKILL PRACTICE**

Name of the Student:

Name of the Faculty:

Date

| <b>Sl No</b> |   | <b>Strong Point</b> | <b>Weak Point</b> |
|--------------|---|---------------------|-------------------|
| 1.           | Communication of the purpose of the talk              |                     |                   |
| 2.           | Evokes audience interest in the subject               |                     |                   |
| 3.           | The introduction                                      |                     |                   |
| 4.           | The sequence of ideas                                 |                     |                   |
| 5.           | The use of practical examples and /or illustrations   |                     |                   |
| 6.           | Speaking style (enjoyable, monotonous, etc., specify) |                     |                   |
| 7.           | Attempts audience participation                       |                     |                   |
| 8.           | Summary of the main points at the end                 |                     |                   |
| 9.           | Asks questions  |                     |                   |
| 10           | Answers questions asked by the audience               |                     |                   |
| 11.          | Rapport of speaker with his audience                  |                     |                   |
| 12.          | Effectiveness of the talk                             |                     |                   |
| 13.          | Uses A V aids appropriately                           |                     |                   |



Check List – VI  
MODEL CHECK LIST FOR DISSERTATION PRESENTATIONS

Name of the Student:

Name of the Faculty:

Date

| Sl<br>No | Points to be considered                 | Poor<br>0 | Below<br>average<br>1 | Average<br>2 | Good<br>3 | Very<br>good<br>4 |
|----------|---|-----------|-----------------------|--------------|-----------|-------------------|
| 1.       | Interest shown in selecting a topic     |           |                       |              |           |                   |
| 2.       | Appropriate review of literature        |           |                       |              |           |                   |
| 3.       | Discussion with guide and other faculty |           |                       |              |           |                   |
| 4.       | Quality of protocol                     |           |                       |              |           |                   |
| 5.       | Preparation of proforma                 |           |                       |              |           |                   |
|          | <b>Total Score</b>                      |           |                       |              |           |                   |

**Check List – VII**  
**CONTINUOUS EVALUATION OF DISSERTATION WORK BY GUIDE / CO –**  
**GUIDE**

Name of the Student:

Name of the Faculty:

Date

| Sl No | Items for observation during presentations  | Poor<br>0 | Below<br>average<br>1 | Average<br>2 | Good<br>3 | Very<br>good<br>4 |
|-------|---|-----------|-----------------------|--------------|-----------|-------------------|
| 1.    | Periodic consultation with guide / co-guide |           |                       |              |           |                   |
| 2.    | Regular collection of case material         |           |                       |              |           |                   |
| 3.    | Depth of analysis / discussion              |           |                       |              |           |                   |
| 4.    | Departmental presentation of findings       |           |                       |              |           |                   |
| 5.    | Quality of final output                     |           |                       |              |           |                   |
| 6.    | Others                                      |           |                       |              |           |                   |
|       | <b>Total Score</b>                          |           |                       |              |           |                   |

LOG BOOK

Table – 1: Academic activities attended

Name:

Admission Year:

College:

| Date | Type of Activity   | Particulars |
|------|--|-------------|
|      | Specify Seminar, Journal Club, Presentation, UG Teaching |             |
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## LOG BOOK

Table – 2: Academic presentation made by the student

Name:

Admission Year

College:

| Date | Topic | Type of Presentation   |
|------|-------|--|
|      |       | Specify Seminar, Journal Club, Presentation, UG Teaching etc |
|      |       |  |
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### LOG BOOK

Table –3: Diagnostic and Operative procedures performed

Name: Admission Year

College:

| <b>Date</b> | <b>Name</b> | <b>ID No</b> | <b>Procedure</b> | <b>Category<br/>O, A, PA, PI*</b> |
|-------------|-------------|--------------|------------------|-----------------------------------|
|             |             |              |                  |                                   |
|             |             |              |                  |                                   |
|             |             |              |                  |                                   |
|             |             |              |                  |                                   |
|             |             |              |                  |                                   |

\* Key      O - Washed up and observed  
               A - Assisted a more senior Surgeon  
               PA –Performed procedure under the direct supervision of a senior surgeon  
               PI – performed independently

### Model Overall Assessment Sheet

Name of the college:

Academic Year

| Sl.<br>No   | Faculty Member &<br>Others | Name of Student and Mean Score |   |   |   |   |   |   |   |   |   |
|-------------|----------------------------|--------------------------------|---|---|---|---|---|---|---|---|---|
|             |                            | A                              | B | C | D | E | F | G | H | I | J |
| 1           |                            |                                |   |   |   |   |   |   |   |   |   |
| 2           |                            |                                |   |   |   |   |   |   |   |   |   |
| 3           |                            |                                |   |   |   |   |   |   |   |   |   |
| 4           |                            |                                |   |   |   |   |   |   |   |   |   |
| 5           |                            |                                |   |   |   |   |   |   |   |   |   |
| 6           |                            |                                |   |   |   |   |   |   |   |   |   |
| Total Score |                            |                                |   |   |   |   |   |   |   |   |   |

Note: Use separate sheet for each year