



# **ZAMBIA COLLEGE OF MEDICINE & SURGERY**

*Advancing Specialist Care & Professional Growth*

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Specialty Training Programme

Curriculum & learning guide

for

**GENERAL SURGERY**

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## Table of Contents

GENERAL INTRODUCTION .....	1
Vision .....	1
Mission Statement .....	1
Values:.....	1
RATIONALE FOR THE TRAINING PROGRAMME .....	2
Outcome 1. Apply, at mastery level, Biomedical Sciences, Behavioural & Sociology, and Scientific Principles to Practice.....	2
Outcome 2. Competence, at mastery level, in Clinical Practice.....	3
Category I: Scientific foundations .....	4
Category II: Clinical Skills .....	4
Category III: Communication and Interpersonal Skills .....	5
Category IV: Prevention .....	5
Category V: Diagnosis .....	5
Category VI: Treatment, Acute and Chronic. ....	5
Category VII: Patient Safety .....	5
Category VIII: Information Management .....	5
Category IX: Ethics, Humanities, and the Law .....	5
Category X: Professionalism .....	6
Category XI: Leadership & Management .....	6
ADMISSION CRITERIA.....	6
CURRICULUM DESIGN/MODEL .....	6
TEACHING METHODS .....	6
CURRICULUM STRUCTURE AND MAP.....	7
ASSESSMENT.....	7
Grading Scheme .....	8
GENERAL SURGERY HANDBOOK & CURRICULUM.....	9
Part 1 Examinations .....	10
Part 2 Examinations .....	18
INDICATIVE RESOURCES .....	24



## GENERAL INTRODUCTION

This Curriculum and Learning Guide describes the work and competence-based professional training programme for the Specialty Training Programme (STP) in General Surgery (GS) in Zambia. The intended readership for the curriculum and guideline include the following:

- ✦ Trainees, host departments and managers of GS healthcare services;
- ✦ STP GS trainers, which includes all those involved in supervising, coordinating, assessing and delivering specialist education and training in General Surgery;
- ✦ Academic, administrative and professional staff within Higher Education Institutions (HEIs), the Higher Education Authority (HEA), and the Zambia Qualifications Authority (ZAQA);
- ✦ Strategic partners involved in supporting GS care and the training of healthcare practitioners in its various related fields.

Zambia College of Medicine and Surgery (ZACOMS) advances professional training of medical specialists using the professional competence-based certification model beyond traditional university-based specialist training. It promotes specialist training as a vital pursuit for a successful professional medical career. The ZACOMS also promotes the increase of universal health coverage (UHC) by promoting equitable access to cost-effective quality specialist care as close to the family as possible for people in Zambia at all levels of socioeconomic status and geographical location. The ZACOMS certifies and admits members and/or fellows as specialists in a medical and/or surgical specialty in any of the various specializations of medicine and surgery.

The Zambia College of Medicine and Surgery (ZACOMS) oversees the training of General Surgery specialists working through the Surgical Society of Zambia (SSZ). The programme is independent but is aligned to the curriculum and requirements of the College of Surgeons of East Central and Southern Africa (COSECSA).

General Surgery encompasses the diagnosis, assessment and surgical management of disorders of the human systems. The STP GS training provides specialist training in General Surgery. This is a relevant programme because of the critical shortage of Surgeons, including general surgeons. The STP GS will equip trainees with core competencies reflecting the wide array of surgical subspecialties. This will mean for every trainee who completes this programme, the population they serve will have gained access to various surgical competencies. Furthermore, the graduate of this programme will offer support to the various surgical subspecialties, improving outcomes in the management of a broad spectrum of surgical pathology.

### **Vision**

Our vision is to be innovative in providing a teaching and support structure that will empower every trainee to excel in General Surgery knowledge, skills and research through internal and external collaboration.

## **Mission Statement**

The mission of the STP GS training in Zambia is to train specialists who shall endeavour to improve the General Surgery health care services to all by providing safe, evidence based, humanistic specialist care in the field of General Surgery in an efficient and proficient manner to meet the needs of the Zambian community, and contribute to the field of General Surgery in the region and globally.

## **Values:**

- Professional excellence
- Integrity
- Sensitivity to reproductive health needs
- Interdisciplinary, inter institutional collaboration
- Continuous professional development
- Innovation
- Academic Excellence
- Self and peer review

## **RATIONALE FOR THE SPECIALTY TRAINING PROGRAMME IN GENERAL SURGERY**

The STP GS aims to train specialists in General Surgery in order to prepare them for specialist service in the healthcare system. The STP GS aims to bridge the critical shortage of General Surgeons by advancing professional training of General Surgeons using the competence-based certification model beyond traditional university-based specialist training. Simply put, this model works on the principle that every health facility equipped well enough to support a General Surgery practice has the basic requirements to train a General Surgeon. The STP GS curriculum is therefore informed by the training requirements of the Health Professions Council of Zambia (HPCZ), the professional creed of the Surgical Society of Zambia (SSZ) and is alive to the unique opportunities obtaining across the various training sites. The training programme encourages self-directed, life-long learning, and student-centred training approaches while providing robust and structured guidance.

This curriculum provides a framework for the four-year postgraduate specialty training and educational curriculum in General Surgery. Trainees who successfully complete the requirements and meet the minimum standards set out in this curriculum should be expected to demonstrate competence in General Surgery at specialist level.

The key outcomes are twofold as stipulated in Outcomes 1 and 2 below:

**Outcome 1. Apply, at mastery level, Biomedical Sciences, Behavioural & Sociology, and Scientific Principles to the Practice of General Surgery**

1. The graduate should be able to apply to General Surgery practice biomedical scientific principles, method and knowledge relating to anatomy, biochemistry, cell biology, genetics, immunology, microbiology, nutrition, pathology, pharmacology and physiology. The graduate should be able to:
  - a) Explain normal human structure and function relevant to General Surgery.
  - b) Explain the scientific basis for common diseases and conditions' signs, symptoms and treatment relevant to General Surgery.
  - c) Justify and explain the scientific basis of common investigations for diseases and conditions relevant to General Surgery.
  - d) Demonstrate knowledge of drugs, drug actions, side effects, and interactions relevant to General Surgery.
2. Apply Behavioural and Sociology Principles to the Practice of General Surgery
  - a) Explain normal human behaviour relevant to General Surgery.
  - b) Discuss psychological and social concepts of health, illness and disease relevant to General Surgery.
  - c) Apply theoretical frameworks of psychology and sociology to explain the varied responses of individuals, groups and societies to General Surgery.
  - d) Explain psychological and social factors that contribute to illness, the course of the disease and the success of General Surgery interventions.
3. Apply Population Health to the Practice of General Surgery
  - a) Discuss population health principles related to determinants of health, health inequalities, health risks and surveillance relevant to General Surgery.
  - b) Discuss the principles underlying the development of health and health service policy, including issues related to health financing, and clinical guidelines relevant to General Surgery.
  - c) Evaluate and apply basic principles of infectious and non-communicable disease control at community and hospital level relevant to General Surgery.
  - d) Discuss and apply the principles of primary, secondary, and tertiary prevention of disease relevant to General Surgery.
4. Apply Scientific Method and Approaches to General Surgery Research.
  - a) Evaluate research outcomes of qualitative and quantitative studies in the medical and scientific literature relevant to General Surgery.
  - b) Formulate research questions, study designs or experiments to address the research questions relevant to General Surgery.
  - c) Discuss and apply appropriate research ethics to a research study relevant to General Surgery.

## **Outcome 2. Competence, at mastery level, in General Surgery Clinical Practice.**

On successful completion of the work-based General Surgery STP:

1. The trainees should have clinical and specialist expertise in General Surgery, underpinned by broader knowledge, skills, experience and professional attributes necessary for independent practice;

2. The trainees should be able to undertake complex clinical roles, defining and choosing investigative and clinical options, and making key judgements about complex facts and clinical situations.
3. The trainees should contribute to the improvement of General Surgery services in the context of the national health priorities, by means of outstanding scientific research and application of safe, high quality, cost effective, evidence based practice within the Zambian health system.
4. The trainees should possess the essential knowledge, skills, experience and attributes required for their role and should demonstrate:
  - ✦ A systematic understanding of clinical and scientific knowledge, and a critical awareness of current problems, future developments, research and innovation in General Surgery practice, much of which is at, or informed by, the forefront of their professional practice in a healthcare environment;
  - ✦ Clinical and scientific practice that applies knowledge, skills and experience in a healthcare setting, places the patient and the public at the centre of care prioritizing patient safety and dignity and reflecting outstanding professional values and standards;
  - ✦ Clinical, scientific and professional practice that meets the professional standards defined by the Health Professions Council of Zambia (HPCZ);
  - ✦ Personal qualities that encompass self-management, self-awareness, acting with integrity and the ability to take responsibility for self-directed learning, reflection and action planning;
  - ✦ The ability to analyze and solve problems, define and choose investigative and scientific and/or clinical options, and make key judgments about complex facts in a range of situations;
  - ✦ The ability to deal with complex issues both systematically and creatively, make sound judgements in the absence of complete data, and to communicate their conclusions clearly to specialist and non-specialist audiences including patients and the public;
  - ✦ The ability to be independent self-directed learners demonstrating originality in tackling and solving problems and acting autonomously in planning and implementing tasks at a professional level;
  - ✦ A comprehensive understanding of the strengths, weaknesses and opportunities for further development of General Surgery as applicable to their own clinical practice, research, innovation and service development which either directly or indirectly leads to improvements in clinical outcomes and scientific practice;
  - ✦ Conceptual understanding and advanced scholarship in their specialism that enables the graduate to critically evaluate current research and innovation methodologies and develop critiques of them and, where appropriate, propose new research questions and hypotheses;
  - ✦ Scientific and clinical leadership based on the continual advancement of their knowledge, skills and understanding through the independent learning required for continuing professional development.
5. Once registered as a specialist in General Surgery, a range of career development options will be available including sub-specialist training. Alternatively, others may opt to undertake further career development in post, as specialist, through

structured Continuing Professional Development (CPD), provided by Accredited CPD providers. Specialist surgeons who have successfully completed the STP GS will be eligible to compete for available Consultant positions in General Surgery.

The outcomes of the STP GS training are affiliated to the following curriculum outcome categories:

### **Category I: Scientific foundations**

- Goal 1:** Understand the normal structure and function of the human body, at levels from molecules to cells to organs, to the whole organism.
- Goal 2:** Understand the major pathological processes and their biological alterations.
- Goal 3:** Understand how the major pathologic processes affect the organ systems.
- Goal 4:** Integrate basic science and epidemiological knowledge with clinical reasoning.
- Goal 5:** Understand the principles of scientific method and evidence-based medicine including critical thinking.

### **Category II: Clinical Skills**

- Goal 6:** Obtain a sensitive, thorough medical history.
- Goal 7:** Perform a sensitive and accurate physical exam including mental state examination.
- Goal 8:** Establish and maintain appropriate therapeutic relationships with patients.

### **Category III: Communication and Interpersonal Skills**

- Goal 9:** Develop the knowledge, skills, and attitudes needed for culturally-competent care.
- Goal 10:** Participate in discussion and decision-making with patients and families.
- Goal 11:** Work effectively with other providers in the health system.
- Goal 12:** Clearly communicate medical information in spoken and written form.

### **Category IV: Prevention**

- Goal 13:** Develop knowledge, skills, and attitudes to practice the basic principles of prevention.
- Goal 14:** Practice personalized health planning for long-range goals.
- Goal 15:** Understand the planning for communities and populations.

### **Category V: Diagnosis**

- Goal 16:** Elicit and correctly interpret symptoms and signs of General Surgery conditions.
- Goal 17:** Diagnose and demonstrate basic understanding of common disease and conditions.
- Goal 18:** Appropriately use testing to help guide diagnostic and therapeutic decisions.
- Goal 19:** Demonstrate sound clinical reasoning.



### **Category VI: Treatment, Acute and Chronic.**

**Goal 20:** Understand therapeutic options and participate in the multidisciplinary care of patients with complex problems.

**Goal 21:** Recognize acute life-threatening medical problems and initiate appropriate care

**Goal 22:** Acquire the knowledge and skills necessary to assist in the management and rehabilitation of chronic diseases.

**Goal 23:** Participate in care in a variety of settings; including knowledge about palliative care.

### **Category VII: Patient Safety**

**Goal 24:** Identify and remove common sources of medical errors.

**Goal 25:** Understand and apply models of Quality Improvement.

**Goal 26:** Appreciate the challenges associated with reporting and disclosure.

### **Category VIII: Information Management**

**Goal 27:** Use information and educational technology to facilitate research, education, and patient care.

### **Category IX: Ethics, Humanities, and the Law**

**Goal 28:** Develop a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to diversity.

**Goal 29:** Develop a critical understanding of the multiple factors that affect the practice of medicine, public health and research.

**Goal 30:** Incorporate ethical principles in clinical practice and research.

### **Category X: Professionalism**

**Goal 31:** Develop healthy self-care behaviours and coping skills.

**Goal 32:** Model service to patients and community.

### **Category XI: Leadership & Management**

**Goal 33:** Develop interpersonal and communication skills that result in leadership in patient health service delivery and health human resource management.

## **ADMISSION CRITERIA TO THE SPECIALTY TRAINING PROGRAMME IN GENERAL SURGERY**

Applicants to the STP GS must possess a primary qualification in medicine, that is, Bachelor of Medicine and Bachelor of Surgery (MB ChB) or equivalent, from a recognized university. Additionally, they must have completed internship and retain full registration and a practising licence issued by the Health Professions Council of Zambia. Other Ministry of Health policies and directives, for example, completion of rural posting, may apply.



## CURRICULUM DESIGN/MODEL OF THE SPECIALTY TRAINING PROGRAMME IN GENERAL SURGERY

The STP GS Curriculum is a work and competence-based professional training situated in an accredited training facility managed by specialists in General Surgery with oversight by the Zambia College of Medicine and Surgery (ZACOMS) working through SSZ. This curriculum is based on a process model of curriculum and is designed to be flexible and open ended rather than predetermined; maximizing the potential for growth and development.

During the STP GS programme the specialty registrar is an integral member of the clinical work of the department in which they are training to gain the required clinical experience and competence. The STP GS programme is a work based professional competence-based training leading to the award of the Certificate of Completion of Specialty Training (CCST) by the Zambia College of Medicine and Surgery (ZACOMS). Graduates are then eligible to apply to the Health Professions Council of Zambia to enter the Specialist Register in General Surgery.

## TEACHING METHODS IN THE SPECIALTY TRAINING PROGRAMME IN GENERAL SURGERY

The STP GS training is a work-based professional competence-based programme and should encompass diverse teaching and learning approaches that are appropriate for the target educational domain, i.e., cognitive (knowledge), psychomotor (practical), or affective (attitude) domain. The teaching methods may include, but not limited to, the following: expository lectures, tutorials, seminars, practical classes, skills laboratories, clinical demonstrations, clinical clerkships (bedside teaching, ward rounds, ambulatory care teaching, operating theatre experience, post-mortem, and on-call duties), field and community based learning, and ICT supported learning experiences.

The Health Professions Specialty Training Guidelines for Zambia and Zambia College of Medicine and Surgery Society Objectives and By-Laws provide detailed guidance to the trainee about the STP and ZACOMS, respectively.

## SPECIALTY TRAINING PROGRAMME IN GENERAL SURGERY CURRICULUM STRUCTURE AND MAP

Curriculum Map for the STP GS Programme

<b>STP YEAR 1</b> SGY 1020	ZACOMS PT 1 ARCP	<b>STP YEAR 2</b> SGY 2020	ARCP	<b>STP YEAR 3</b> SGY 3020	ARCP	<b>STP YEAR 4</b> SGY 4020	ZACOMS CCST Exams
Basic Sciences to Underpin Surgery Practice (3 months)		Basic Surgical Training (3 months)		Adult Abdominal Surgery (3 months)		Research methods (3 months)	

Basic Surgical Training (3 months)	General Surgery Rotation (3 months)	Thoracic Surgery (3 months)	Health systems management (3 months)
Basic Surgical Skills Course (3 months)	Orthopaedics & Trauma Rotation (3 months)	Paediatric Surgery (3 months)	Leadership and management (3 months)
Basic Surgical Science Skills Course (3 months)	Critical Care and Trauma Course (3 months)	Plastic Surgery (3 months)	Global rotation (3 months)
Part 1: Generic Education & Training (1 Year)	Part 2: Themed & Specialist Education & Training (3 Years)		

N.B. The total number of years, in particular, the themed specialist education and training may vary between different specialties.

1. ARCP = Annual Review of Competence Progression
2. CCST = Certificate of Completion of Specialty Training Examination;
3. STP = Specialty Training Programme;
4. ZACOMS PT 1 = Zambia College of Medicine and Surgery Part 1 Examinations in Basic Sciences, Behavioural Sciences, Health Population Studies, and Professionalism & Ethics; ZACOMS CCST Examinations = Certificate of Completion of Specialist Training in General Surgery Examinations
5. Global Rotation = Attachment to a surgical unit away from the primary training site to gain experience of comprehensive general surgery care.

## ASSESSMENT IN THE SPECIALTY TRAINING PROGRAMME IN GENERAL SURGERY

Progression to the next level of training is NOT automatic and is dependent on the trainee satisfying all the competency requirements of each defined level as per this curriculum and learning guide. Progression is based on passing both clinical and written examinations. The assessment framework is designed to provide a coherent system of assessing both formative and summative assessment which are workplace based and in examination settings.

Each training site must ensure that they use valid, reliable and appropriate methods for assessing the knowledge, clinical skills and attitude domains. The continuous assessments and final annual assessments are weighted at 40% and 60% of the final mark of Annual Review of Competence Progression, respectively. Assessment methods may include, but are not limited to, the following: Log of experiences and procedures completed, case reports, portfolios, project reports, multiple choice questions, essay questions, short answer questions, modified essay questions, short and long cases, objective structured clinical

examinations (OSCE), practical examinations, objective structured practical examinations (OSPE), Mini-clinical Examination (MiniCEX), and Viva Voce, etc.

It is emphasized that marks from theory examinations **may not** compensate for poor scores in the clinical examinations; Students **MUST** pass the clinical examinations in order to progress to the next stage of training or completion.

Assessment	Knowledge, Skill and Attitude Domain	Examining Body
Formative Workplace Based Assessments (every 4 to 6 months)	Outcome 1 & 2	Training Site
Annual Review of Competence Progression (annually, at the end of each academic year)	Outcome 1 & 2	Training Site in conjunction with ZACOMS
ZACOMS Part 1 Examination (end of year 1)	Outcome 1	ZACOMS
ZACOMS Certificate of Completion of Specialist Registration Examinations (end of year 4)	Outcome 2	ZACOMS

A candidate shall be allowed a maximum of three attempts for ZACOMS Part 1 and/or Part 2 Examinations. Candidates must have submitted a completed log book to be eligible to attempt the ZACOMS Part 2 Examination.

For ease of tracking progress and planning for General Surgery care, all STP GS trainees will be registered with ZACOMS and SSZ for the duration of their training.

### **Grading Scheme**

The STP GS Curriculum and Guide are the basis for all specialty training which contextualize the standards of proficiency set down by the Zambia College of Medicine and Surgery (ZACOMS) in consultation with the Society of General Surgery of Zambia (SSZ) in a way that is accessible to the profession and the public. The Certificate of Completion of Specialist Training (CCST) is not graded. Separate assessments and examinations may be graded to show the level of achievement of the trainee in a particular course or assignment.

## Assessment of Attainment of Competence in an Academic Subject

Status & Level	Description of Competence Features	% Range
Outright Fail [D]	<ul style="list-style-type: none"> <li>Has poor and inaccurate command of the subject vocabulary</li> <li>Has poor and inaccurate command of the concepts (knowledge, skills and attitudes) of the subject across a broad range of topics.</li> </ul>	44.9% & Below
Bare Fail [D+]	<ul style="list-style-type: none"> <li>Has the basics of subject vocabulary</li> <li>Has the basics of concepts (knowledge, skills and attitudes) of the subject across a broad range of topics</li> <li>Unable to transfer and apply knowledge, skills and attitudes of the subject in a range of situations.</li> <li>Unable to exercise independent judgement in a range of situations</li> </ul>	45 – 49.9
Clear Pass [C]	<ul style="list-style-type: none"> <li>Has sound command of subject vocabulary</li> <li>Has sound command of concepts (knowledge, skills and attitudes) of the subject across a broad range of topics</li> <li>Able to formulate responses and demonstrate skill and exhibit appropriate attitude in well-defined and abstract problems/professional settings across a broad range of topics of the subject</li> </ul>	50 – 64.9
Meritorious Pass [B]	<p>All of above in level 3 and:</p> <ul style="list-style-type: none"> <li>Able to transfer and apply knowledge, skills and attitudes and exercise significant independent judgement in a broad range of topics of the subject</li> </ul>	65 – 74.9
Distinction Pass [A]	<p>All of the above in level 4 and:</p> <ul style="list-style-type: none"> <li>Displays mastery of complex and specialised areas of knowledge, skills and attitudes in a broad range of topics of the subject.</li> </ul>	75% & Above

## GENERAL SURGERY HANDBOOK & CURRICULUM

The detailed STP General Surgery Handbook and Curriculum is presented in full in the next section.

### GENERAL SURGERY HANDBOOK & CURRICULUM

9

#### Part 1 Examinations

The Part 1 Examination will be held at the end of the first year of training.

The Part I Examination is designed to assess the basic principles of surgery and a broad knowledge of surgery in general. It is designed to identify surgical trainees who can recognise and deal with the wide variety of problems that may be met by trainees. They should be able to take responsibility for emergency surgical admissions, deal independently with life threatening situations due to trauma or critical illness, and be able to diagnose and plan treatment of a wide variety of surgical complaints.

The Part I of ZACOMS STP GS does not confer specialist status but signifies that the trainee is ready to pursue higher surgical training in general surgery or another surgical subspecialty. Higher surgical training in the chosen specialty is examined ZACOMS through the relevant affiliate professional association, which will confer specialist status.

#### Logbook

During the training period candidates must keep a logbook recording all of their training experience. The logbook should also contain details of all courses attended and the trainee and post assessment forms for the whole training period. This will serve as an accurate record of the trainees' competencies acquired during the training programme. It will therefore serve as an objective means of assessing a trainee's suitability to complete their training. This is an important aspect of the training because it is what helps track and confirm the competencies acquired by the trainee during the programme.

More detail on completing logbooks is provided in the logbook itself.

Before submission to the examination the Programme Directors should check the logbook for completion. Before the start of the clinical and oral examinations, the logbook should be handed to the examination panel. Proof of attendance at an approved Basic Surgical Skills course, Basic Surgical Science course and Critical Care or Trauma Course should be brought to the oral examination. Candidates will not be allowed to sit for the examination if this is not done.

## Syllabus

### SURGERY IN GENERAL SYLLABUS INTRODUCTION

The Part 1 Examination is designed to pass out those surgeons in training who have a broad knowledge of surgical problems in general and who are capable of recognizing and dealing safely and efficiently with the wide range of surgical conditions which may be handled by the trainee surgeon. Candidates should demonstrate the basic surgical skills which are essential in confidently handling emergency surgical admissions, and dealing independently with life-threatening situations from traumatic and other critical diseases.

The trainee surgeon should be able accurately to diagnose and plan management of a wide variety of surgical diseases even in situations where investigative and therapeutic facilities are limited.

Trainees will be expected to have a good understanding of the anatomy, physiology and pathology relevant to clinical examination of the various branches of surgery, and to the understanding of functional disorders in those areas. Trainees are expected to have sufficient knowledge in those aspects of regional and radiological anatomy that are relevant to clinical and operative surgery. They are expected to have knowledge in some detail of both histological and intracellular anatomy. A detailed knowledge of embryology will not be needed but trainees are expected to know the general principles and should have a more detailed knowledge of those aspects of embryology and genetics which are valuable in the understanding of the pathogenesis of the common correctable congenital anomalies.

The trainees will be expected to have a sound knowledge of human physiology and those deviations that occur in surgery, anaesthesia, shock, haemorrhage, dehydration and other abnormal states in surgical practice.

Candidates will also be expected to have some knowledge of pharmacology in relation to surgical practice and of the action of more important substances in use such as anaesthesia, antibiotics, analgesics, steroids and those acting on the autonomic, vascular and pulmonary systems. Some basic knowledge is expected about the effects of radiation on the body and the use of radioactive isotopes.

In biochemistry, a detailed knowledge of chemical analysis reactions and synthesis is not expected but knowledge of biochemistry which enables understanding of the effects of common surgical diseases and injuries upon the normal structure and function of the various systems of the body will be expected.

Trainees will be expected to have a very sound knowledge of the pathology of diseases specific to Africa in general and East and Central and Southern Africa in particular. The trainees will be required to understand the basic principles underlying disease processes. They must have an understanding of the general pathology including principles of

immunology. Candidates are expected to show that they are able to apply the general principles to the problems met in surgical practice. Trainees should make themselves familiar in particular with the causation, character, and sequence of inflammation, trauma degeneration, regeneration, repair, hypertrophy, atrophy, hyperplasia, thrombosis, embolism, infarction, ischaemia, blood transfusion, and immunology, particularly due to the Human Immunodeficiency Virus.

Trainees are expected to be familiar with the general characteristics and behaviour of bacteria and viruses with more detailed knowledge of those that are relevant to surgical practice. They are expected to have an understanding of toxins, allergy and the methods of action the antimicrobial agents and the manner in which the sensitivity to those agents is assayed.

No syllabus can be comprehensive enough to contain all the topics expected to be covered but the list below is just a guide to the topics which may be covered during the course and subsequent examinations for the Membership. A basic, but not detailed, understanding of the following topics will be expected:

## PRINCIPLES OF SURGERY IN GENERAL

### **1. SURGICAL TECHNIQUES AND TECHNOLOGY**

- The operation theatre and its team
- Skin preparation & sterilization
- Prevention of sharps injuries
- Local and regional anaesthesia
- Incision and incision repair
- Suture and ligature materials, staplers
- Dressings
- Coagulation disorders and homeostasis
- Pathophysiology of wound healing
- Classification of surgical wounds
- Principles of wound management
- Scars and contracture
- Hypertrophic scars and keloid
- Wound dehiscence
- Excision of cysts and tumours of skin and subcutaneous tissues
- Principles of biopsy and cytological sampling
- Drainage of superficial abscesses
- Basic principles of anastomosis
- Use of drains

### **2. SURGICAL SEPSIS AND ITS PREVENTION**

- Surgically important micro-organisms
- Anaerobic infections
- Pathophysiology of the body's response to infection
- Septic shock
- Sources, prevention and control of surgical infections
- Principles of asepsis and antisepsis; disinfection



- Aseptic techniques
- Antibiotic use in surgery
- Cellulitis, Necrotizing fasciitis, Pyomyositis, Gas Gangrene, Osteomyelitis
- Abscesses, Pus in body cavities/organs
- Surgical aspects of tuberculosis
- Transmission of HIV and hepatitis
- Signs of HIV disease
- Antiretroviral therapy – prophylactic and therapeutic
- Condylomata

### **3. TRAUMA AND CRITICAL SURGICAL ILLNESS; GENERAL PRINCIPLES OF MANAGEMENT**

- Principles of pre-hospital care; triage
- Clinical assessment of critically ill and severely injured patients
- Scoring systems
- Haemorrhage and shock; acute renal failure; cardiac arrest.
- Resuscitation and haemodynamic support
- Monitoring of vital function in critically ill or severely injured patients
- Respiratory failure: pulmonary oedema, ARDS, pulmonary collapse, pulmonary embolism, fat embolism
- Penetrating injuries
- Gun shot and blast injuries
- Animal injuries
- Burns; emergency treatment & follow-up care
- Polytrauma
- Skin loss; principles of treatment by grafts and flaps
- Pathophysiology of fracture healing
- Principles of management and complications of fractures & tendon injuries
- Traumatic oedema and compartment syndromes
- Maxillofacial trauma
- Management of closed and open head injury
- Spinal injury
- Closed and penetrating chest and neck injuries
- Pneumothorax, haemothorax, cardiac tamponade
- Blunt and penetrating abdominal trauma
- Peritonitis & Common acute abdominal emergencies
- Traumatic haematuria
- Bladder and urethral injuries
- Arterial injuries

### **4. PREOPERATIVE MANAGEMENT**

- Assessment of operative risks – selection of patients
- Assessment of fitness for anaesthesia and surgery, and need for ICU care
- Techniques of venous access
- Techniques of nerve blocks
- Ultrasonography and surgical diagnostic methods

- Preoperative investigations
- Preparation for operation - management of associated medical conditions *inc.* diabetes mellitus, respiratory & cardiovascular disease, malnutrition, HIV disease, anaemia, jaundice, bleeding disorder, steroid, anticoagulant, antipsychotic therapy
- Correction of fluid and electrolyte deficiencies
- Antibiotic prophylaxis
- Premedication and sedation
- Prophylaxis of thromboembolic disease

## **5. INTRAOPERATIVE MANAGEMENT**

- Principles of anaesthesia
- Care and monitoring of the anaesthetized patient
- Prevention of nerve and other injuries in the anaesthetized patient
- Tourniquets – uses and precautions
- Methods for haemostasis, diathermy
- Blood transfusion – indications, hazards, complications; use of plasma substitutes

## **6. POSTOPERATIVE MANAGEMENT**

- Pain control
- Basic nursing care and instructions
- Respiratory complications – prevention, recognition and treatment
- Assessment and maintenance of fluid and electrolyte balance
- Postoperative monitoring
- Nutritional support, mobilization, rehabilitation
- Postoperative complications – prevention, recognition and management
- Abdominal compartment syndrome, burst abdomen, incisional hernia

## **7. PRINCIPLES OF SURGICAL ONCOLOGY**

- Principles of molecular biology of cancer; carcinogenesis
- Genetic aspects of oncology
- Screening tests
- Mechanism of invasion and metastasis
- Epidemiology of common cancers; the role of a cancer registry
- Clinico-pathological staging of cancer and premalignant states
- Principles of cancer therapy (surgery, radio/chemo/immuno/hormone therapy)
- Prevention of cancer
- Terminal care of cancer patients – pain and symptom relief

## **8. HAEMOPOIETIC AND LYMPHORETICULAR SYTEMS**

- Lymphadenopathy: causes, diagnosis and management
- Lymphoma: presentation, staging, typing and treatment
- Leukopenia and thrombocytopenia in relation to surgery
- Kaposi sarcoma: presentation and treatment
- Pathophysiology of the spleen, hypersplenism
- Indication for splenectomy, splenic preservation
- Chronic primary and secondary lymphoedema; filariasis
- Surgical effects of sickle cell disease

- Leishmaniasis

## 9. THE EVALUATION OF SURGERY AND GENERAL TOPICS

- Decision making
- Clinical audit and Quality Assurance • Statistics and computing in surgery
- Principles and research methodology
- Health service management and economic aspects of surgical care
- Medico-legal ethics and medico-legal aspects as relating to surgery
- Psychological effects of surgery and bereavement
- Communications with patients, relatives and colleagues
- Rehabilitation of surgical patients

## 10. PAEDIATRIC SURGERY

- Special problems of anaesthesia and surgery in the neonate
- Principles of surgery for correctable life-threatening congenital anomalies: hydrocephalus, oesophageal atresia, intestinal obstruction, exomphalos, gastroschisis, ectopia vesicae, imperforate anus, meningomyelocele
- Principles of surgery for common paediatric disorders: cleft lip and palate, pyloric stenosis, intussusception, hernia; maldescended testis, abnormal genitalia, torsion, Hirschsprung's disease, nephroblastoma, neuroblastoma, Burkitt's lymphoma

## 11. BREAST SURGERY

- Benign breast disease *inc.* lumps, nipple discharge, mastalgia, hyperplasia, gynaecomastia
- Malignant breast disease *inc.* carcinoma, lymphoma, sarcoma, Paget's disease

## 12. ENDOCRINE SURGERY

- Management of Thyroid disease
- Disorders of calcium metabolism
- Precocious puberty
- Differentiation of intersex states
- Cushing's syndrome
- Hyperaldosteronism (Conn's syndrome)
- Surgical causes of secondary hypertension

## 13. HEAD AND NECK SURGERY

- Diagnosis and management of swellings in the neck
- Acute and chronic inflammatory disorders of the ear, nose, sinuses and throat
- Tonsillectomy
- Foreign bodies in the eye, ear, nose and throat
- Fundoscopy, auroscopy, laryngoscopy
- Epistaxis: causes and management
- Nasal and laryngeal polyps
- Common eye conditions: uveitis, conjunctivitis, corneal ulcer, glaucoma, exophthalmos, ectropion, onchocerciasis
- Salivary gland enlargement

- Ludwig's angina, Cavernous sinus thrombosis, Cancrum oris
- Basic principles of head and neck tumour management
- Indications for tracheostomy

#### **14. THORACIC SURGERY**

- Bronchoscopy, esophagoscopy: biopsy techniques, oesophageal dilation, injection of varices
- Use of Sengstaken tube
- Thoracentesis, chest drainage
- Mediastinitis
- Foreign bodies in the oesophagus and bronchus
- Corrosive oesophagitis, rupture of the oesophagus, oesophageal strictures
- Oesophageal varices
- Achalasia, Pharyngeal pouch
- Rupture of the diaphragm, hiatus hernia
- Principles of management of bronchial, oesophageal and lung tumours
- Pericardial effusion, pleural effusion
- Principles of closed mitral valvotomy

#### **15. VASCULAR SURGERY**

- Peripheral limb ischaemia
- Indications for cervical sympathectomy
- Aneurysms & HIV-vasculopathy
- Principles of reconstructive surgery and amputation
- Varicose veins
- Deep venous thrombosis: causes, diagnosis, treatment and complications
- Chronic leg ulceration and gangrene
- Arterio-venous malformations & shunts

#### **16. GASTRO-INTESTINAL SURGERY**

- Abdominal wall hernias & dehiscence
- Esophagogastroduodenoscopy, proctoscopy, sigmoidoscopy, colonoscopy: biopsy techniques, polypectomy, haemostatic injection
- Peptic ulceration, gastritis
- Gastric outlet obstruction
- Upper and lower gastrointestinal haemorrhage – overt and occult
- Typhoid, amoebiasis, enterocolitis, schistosomiasis
- Ulcerative colitis, Crohn's disease
- Intestinal fistulae
- Stomas: gastrostomy, jejunostomy, ileostomy, colostomy
- Investigation of abdominal masses
- Intestinal obstruction, adhesions
- Gastro-intestinal malignancy
- Appendicitis, appendix mass
- Ascaris infestation
- Malignant diseases of the gastrointestinal tract

- Tuberculosis of the gastrointestinal tract
- Sigmoid Volvulus, Intussusception in adults
- Diverticular disease of the colon
- Constipation, irritable bowel syndrome, megacolon, pica
- Anorectal strictures
- Common anal and perianal disorders

## **17. PANCREATIC & HEPATO-BILIARY SURGERY**

- Portal hypertension
- Hydatid disease
- Hepatoma, & other liver tumours
- Liver biopsy
- Jaundice – differential diagnosis and management
- Cholecystitis, cholangitis, empyema of the gallbladder, carcinoma of the gallbladder
- Pancreatitis, pancreatic pseudocyst, pancreatic carcinoma

## **18. GENITO-URINARY SURGERY**

- Congenital abnormalities,
- Hydronephrosis, hydroureter
- Renal, ureteric and bladder calculi
- Renal tumours
- Cysto-urethroscopy
- Schistosomiasis, bladder tumours
- Retention of urine, urinary incontinence
- Urinary diversion, ileal conduit
- Urethral & suprapubic catheterization
- Urethral stricture
- Benign prostatic hypertrophy, carcinoma of the prostate.
- Scrotal swellings, epididymitis, testicular torsion, testicular tumors
- Fournier's gangrene
- Vasectomy: pre- and post-operative advice
- Phimosis, paraphimosis
- Balanitis, priapism, Peyronie's disease, penile carcinoma Genito-urinary tuberculosis
- Gynaecology for the general surgeon: gynaecological causes of acute abdominal pain, ectopic pregnancy, pelvic inflammatory diseases, endometriosis, ovarian tumors, principles of Caesarean section & symphysiotomy

## **19. NEUROSURGERY**

- Intervertebral disc problems – spinal compression
- Spinal tuberculosis
- Tumors of the central nervous system
- Neurofibromatosis
- Sciatica
- Paraplegia and quadriplegia – principles of management
- Prevention & management of pressure sores

- Principles of craniotomy
- Peripheral nerve lesions and nerve repair
- Nerve entrapment syndromes

## 20. ORTHOPAEDIC SURGERY

- Contractures *inc.* burns, polio, Dupuytren's
- Club foot
- Congenital dislocation of the hip, Perthe's disease
- Kyphoscoliosis
- Metabolic, endocrine and degenerative disorders of bones
- Fractures and principles of fracture management
- Principles of internal fixation of fractures, osteotomy, bone grafting
- Principles of tendon repair
- Ganglions
- Rheumatic disorders
- Gout and degenerative arthritis, joint disorders
- Bone dysplasia
- Neuromuscular disorders
- Principles of arthrotomy, tendon repair, amputation
- Arthroscopy
- Hand deformities - congenital and acquired
- Surgical complications of leprosy
- Common disorders of the foot, ainhum
- Mycetoma, phycomycoses
- Malignant disease of bone and soft tissue

### List of Recommended Procedures

80% of the following procedures are recommended to have been done as first assistant or independently by a trainee, having been previously supervised in these same procedures:

- Excision of skin lesion
- Incision & drainage of abscess
- Removal of superficial & deep foreign body
- Debridement/desloughing wound
- Suturing complex laceration Fasciotomy/escharotomy Insertion central venous line
- External cardiac massage & defibrillation
- Insertion of intercostal drain
- Arterial sampling
- Lumbar puncture
- Intercostal & brachial nerve blocks
- Tarsorrhaphy
- Skin grafting
- Excision of breast lump

- Trucut needle biopsy of solid tumour
- Fine needle aspiration
- Simple mastectomy
- Subcutaneous mastectomy for gynaecomastia
- Rib resection
- Dental extraction Tracheostomy Endotracheal intubation
- Long saphenous ligation & stripping of varicose vein
- Lymph node biopsy Orchidopexy & orchidectomy Vasectomy
- Urethral catheterization
- Suprapubic cystotomy
- Circumcision
- Lower segment Caesarean section
- Tendon repair
- Carpal tunnel release Insertion of Steinmann pin Manipulation of fractures  
Application of POP Application of external fixator Below-knee amputation Above-knee amputation
- Proctoscopy & Sigmoidoscopy
- Rectal biopsy
- Insertion of seton for perianal fistula
- Lateral anal sphincterotomy Injection of haemorrhoids Inguinal herniotomy in a child Inguinal herniorrhaphy Epigastric herniorrhaphy Umbilical herniorrhaphy Laparotomy
- Appendicectomy
- Closure perforated duodenal ulcer
- Salpingectomy
- Upper GI endoscopy

## **Part 2 Examinations**

The Part 2 Examination will be conducted at the end of year 4 of the training and is the exit examination in the GS STP.

The Part 2 examination in General Surgery leads to the specialist qualification in general surgery of the ZACOMS. This qualification is in recognition that the candidate has reached the level of knowledge, understanding and practice of surgery sufficient to practice independently at a consultant or specialist level. It should be recognised, however, that surgery is not a static art and fellows should continue to increase knowledge and skills by means of research, conferences, meetings and reading.



## Logbook

During the training period candidates must keep a logbook recording all of their training experience. The logbook should also contain details of all courses attended and the trainee and post assessment forms for the whole training period. This will serve as an accurate record of the trainees' competencies acquired during the training programme. It will therefore serve as an objective means of assessing a trainee's suitability to complete their training. This is an important aspect of the training because it is what helps track and confirm the competencies acquired by the trainee during the programme.

More detail on completing logbooks is provided in the logbook itself.

Before submission for examination, the Programme Director should check the logbook for completion. Before the start of the clinical and oral examinations, the logbook should be handed to the examination panel. Proof of attendance at an approved Basic Surgical Skills course, Basic Surgical Science course and Critical Care or Trauma Course should be brought to the oral examination. Candidates will not be allowed to sit for the examination if this is not done.

## Syllabus

The Part 2 STP examination in General Surgery is an examination aimed at assessing competence in General Surgery at specialist level. The syllabus below is an outline of what the candidate will be expected to know. It is not exhaustive, but provides a guideline to the topics candidates should understand and operative procedures with which they should be familiar. It should be noted that section 7.15 includes topics that are not always included in the term "general surgery". This section is included because in this region of Africa many surgeons practice in areas where they might be the only surgeon available or might be covering at night for colleagues in other surgical disciplines. The level of competence expected in the topics of section 7.15 will not be at a specialist level, but the candidate should have a sufficient understanding and skills necessary to provide adequate emergency care.

Topics and practical procedures in italics are not practised widely in this region so the candidates will not be expected to know about them in detail, or to have practical experience

TOPICS	PRACTICAL PROCEDURES
<p><b>7.1 Non Trauma Emergency Surgery</b>            Assessment of the acute abdomen            Biliary tract emergencies            Acute pancreatitis            Swallowed foreign bodies            Gastrointestinal bleeding            Appendicitis and right iliac fossa pain            Abdominal pain in children            Peritonitis            Acute intestinal obstruction            Intestinal pseudo-obstruction            Strangulated hernia            Intestinal ischaemia            Toxic megacolon            Acute ano-rectal sepsis            Ruptured aortic aneurysm            Acutely ischaemic limb            Acute presentations of urological disease            Acute presentations of gynaecological disease            Scrotal emergencies in all age groups  <i>Diagnostic laparoscopy</i></p>	<p>Closure of perforated peptic ulcer, open and laparoscopic            Endoscopy for upper GI bleeding            Operations for GI bleeding including partial gastrectomy            Emergency cholecystectomy            Emergency hernia repair            Laparotomy for small bowel obstruction            Small bowel resection            Ileostomy            Laparotomy for large bowel obstruction            Laparotomy for perforated colon            Hartmann's operation            Colostomy            Appendicectomy            Drainage of ano-rectal sepsis            Laparotomy for post operative complications            Urethral catheterisation            Suprapubic cystostomy            Exploration of scrotum            Reduction of paraphimosis            Embolectomy            Fasciotomy  <i>Organ retrieval for transplantation</i></p>
<p><b>7.2 Trauma Surgery</b>            Assessment of the multiple injured patient including children            Closed abdominal injuries, especially splenic, hepatic and pancreatic injuries            Closed chest injuries            Stab and gunshot wounds            Arterial injuries</p>	<p>Injuries of the urinary tract            Initial management of head injuries and interpretation of CT scans            Initial management of severe burns            Tracheostomy            Emergency thoracotomy            Splenectomy for trauma            Laparotomy for abdominal injury</p>

<p><b>7.3 Surgical sepsis</b>          Superficial sepsis and abscesses          Pyomyositis          Abdominal sepsis          Empyema and thoracic sepsis          Intracranial sepsis</p>	<p>Tuberculous disease of the chest and abdomen          Drainage of superficial abscesses          Laparotomy for sepsis          Chest drainage for sepsis          Thoracotomy for sepsis          Burr holes and craniotomy for intracranial abscess</p>
<p><b>7.4 Critical care</b>          Hypotension          Haemorrhage          Haemorrhagic and thrombotic disorders          Blood transfusion and blood component therapy          Septicaemia and the sepsis syndrome          Antibiotic therapy and the management of opportunist infection          Gastro-intestinal fluid losses and fluid balance, including in children          Nutritional failure and nutritional support          Respiratory failure          Renal failure and principles of dialysis          Fluid overload and cardiac failure          Myocardial ischaemia          Cardiac arrhythmias          Multiple organ failure</p>	<p>Pain control          Cardiac arrest, respiratory arrest and brain death  <i>Organ donation</i>          Hypo and hyperthermia          Diagnosis of brain death  <i>Legal &amp; ethical aspect of transplantation</i>          Tracheal Intubation          Tracheostomy          Surgical airway          Cardio-pulmonary resuscitation          Chest drain insertion          Central venous line insertion          Insertion of peritoneal dialysis catheter          Primary vascular access for haemodialysis</p> <p>A detailed knowledge of the methods and results of invasive monitoring will <i>not</i> be required</p>

<p><b>7.5 Gastrointestinal surgery</b>  Neoplasms of the upper GI tract  Gallstone disease  Jaundice  Gastro-oesophageal reflux and its complications  Hiatus hernia  Peptic ulceration and its complications  Radiation enteritis  <i>Neoplasms of large bowel</i>  Diverticular disease  Irritable bowel syndrome  Haemorrhoids  Anal fissure  <i>Rectal prolapse</i>  Fistula in ano  Diverticular disease/fistula  Colostomy complications  <i>Ileostomy complications</i>  Inflammatory bowel disease (inc medical management)</p>	<p>Diagnostic upper GI endoscopy  <i>Laparoscopic cholecystectomy</i>  <i>Conversion to open cholecystectomy</i>  Exploration of common bile duct  Biliary bypass  Gastrectomy  Splenectomy  Proctoscopy/rigid sigmoidoscopy  Flexible sigmoidoscopy &amp; colonoscopy, diagnostic and therapeutic  Outpatient haemorrhoid treatment  Haemorrhoidectomy  Procedures for fistula in ano  Right hemicolectomy  Left hemicolectomy  Sub-total colectomy  Resections for rectal cancer, restorative and excisional  Ileorectal anastomosis  Panproctocolectomy  Closure of Hartmann's procedure  Rectal injuries</p>
<p><b>7.6 Surgery of the skin &amp; integument</b>  Pathology, diagnosis and management of skin lesions, benign and malignant  Basal and squamous cell carcinoma  Malignant melanoma  Other skin cancers</p>	<p>Excision of skin lesions  Excision of skin tumours  Split and full thickness skin grafting  Node biopsy  Block dissection of axilla and groin  Surgery for soft tissue tumours including sarcomas</p>
<p><b>7.7 Endocrine surgery / neck surgery</b>  Diagnosis &amp; management of neck lumps</p> <p><b>Physiology &amp; pathology of:</b>  <i>Thyroid</i>  Parathyroid  Adrenal cortex  Adrenal medulla</p>	<p>Thyroid lobectomy  Retrosternal goitre  Thyroglossal cystectomy  Submandibular salivary gland excision  Parotidectomy  Approach and exploration of adrenal glands</p>

<p><b>Management of:</b>  Thyrotoxicosis  Adrenal insufficiency  Hyper and hypo thyroidism  Carcinoid syndrome  Anaesthetic and pharmacological problems  Imaging techniques for endocrine organs</p>	
<p><b>7.8 Breast surgery</b>  Carcinoma of the breast  Benign breast disease  Hormone therapy for benign and malignant breast disease  Histo-/cytopathology  Mammography  Ultrasound  Adjuvant chemotherapy:  Chemotherapy for advanced disease  Radiotherapy  Counselling  Hospice care</p>	<p>Treatment of breast abscess  Fine needle aspiration cytology  Trucut biopsy  Excision of breast lump  Mastectomy  Wide excision of breast tumours  Axillary dissection with other breast operations</p>
<p><b>7.9 Hernias</b>  External and internal abdominal herniae.  Anatomy, presentation, complications  Hernia in childhood</p>	<p>Surgery for all abdominal herniae, using open <i>and laparoscopic</i> techniques  Repair of childrens' herniae</p>
<p><b>7.10 Urology</b>  Undescended testicle  Development and natural history of the prepuce  Pathology of the scrotum and its contents  Male sterilization, including counselling and informed consent</p>	<p>Operations for hydrocoele, epididymal cyst and varicocele  Adult circumcision  Vasectomy</p>
<p><b>7.11 Paediatric surgery</b>  Infantile pyloric stenosis  Childrens tumours eg Wilms  Congenital abnormalities of bladder and abdominal wall</p>	<p>Ramstedt's procedure  Orchidopexy  Circumcision in children</p>

Anorectal anomalies Tracheoesophageal abnormalities	
<b>7.12 Vascular surgery</b> Atherosclerosis Ischaemic limb Aneurysmal disease Venous thrombosis & embolism Hyper-hypo coagulable state Chronic venous insufficiency Arteriography Vascular CT scanning <i>Magnetic Resonance Angiography</i> <i>Vascular ultrasound</i> Varicose veins Mesenteric ischaemia	Vascular suture/anastomosis Approach to/control of infra-renal aortic, iliac and femoral arteries Control of venous bleeding <i>Balloon thrombo-embolectomy</i> Amputations of the lower limb Fasciotomy Primary operation for varicose veins <i>Abdominal aortic aneurysm repair, elective and ruptured</i> <i>Femoro-popliteal bypass</i> <i>Femoro-femoral bypass</i>
<b>7.13 Research and ethics</b> Critical appraisal of the surgical literature Scientific method & statistics as applied to surgery Informed consent Ethical aspects of surgical practice Genetic aspects of surgical disease	
<b>7.14 Minimal Access surgery</b> <i>Physiology of pneumo-peritoneum</i> <i>Informed consent for laparoscopic procedures</i> <i>Pre and post operative management of laparoscopic cases</i> <i>Port complications</i> <i>Technology of video imaging, cameras, insufflator etc</i> <i>Laparoscopic instruments, clips, staplers and port types</i> <i>Management of equipment failure</i> <i>Recognition and management of laparoscopic complications</i> <i>Use and dangers of diathermy</i>	<i>Diagnostic laparoscopy</i> <i>Closed and open techniques of port insertion</i> <i>Laparoscopic biopsy</i> <i>Laparoscopic appendicectomy</i> <i>Laparoscopic adhesiolysis</i> <i>Thoracoscopy</i> <i>Laparoscopic suturing and knotting</i> <i>Control of laparoscopic bleeding</i>

<i>Anaesthetic problems in laparoscopic surgery</i>	
<p><b>7.15 Other surgical specialties</b></p> <p>Limb trauma</p> <p>Open and closed Fractures</p> <p>Dislocation of joints</p> <p>Nerve injuries</p> <p>Flexor and extensor tendon repairs</p> <p>Acute septic arthritis</p> <p>Spinal injury</p> <p>Head injury</p> <p>Open and closed Chest injuries</p> <p>Obstetric and gynaecological emergencies</p> <p>Anaesthesia</p>	<p>Open and closed reduction of dislocations</p> <p>Manipulation and POP splintage of fractures</p> <p>Skin and skeletal traction</p> <p>Open fracture debridement and external fixation</p> <p>Nerve repair</p> <p>Flexor and extensor tendon repair</p> <p>Surgical approaches to the joints and arthrotomy</p> <p>Emergency management of spinal injury</p> <p>Emergency management of closed and open head injury</p> <p>Burr holes and craniotomy</p> <p>Insertion and management of chest drains</p> <p>Thoracotomy and post-operative management</p> <p>Approaches to the female pelvis</p> <p>Episiotomy</p> <p>Caesarean section</p> <p>Surgery for ruptured ectopic pregnancy</p> <p>Use of local anaesthesia</p> <p>Digital block</p> <p>Axillary block</p> <p>Spinal anaesthesia</p> <p>Use of ketamine</p> <p>Simple general anaesthesia</p>



## INDICATIVE RESOURCES

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Rafferty A (2008) **Applied Basic Science for Basic Surgical Training**, 2<sup>nd</sup> Edition, Churchill Livingstone, Edinburgh, United Kingdom.

Townsend C, Beauchamp D, Evers M and Mattox K (2021) **Sabiston Textbook of Surgery, The Biological Basis of Modern Surgical Practice**, 21<sup>st</sup> Edition, Elsevier Inc. St. Louis, USA.

Williams N, O'connell R and McCaskie A (2018) **Bailey & Love's Short Practice of Surgery**, 27<sup>th</sup> Edition, CRC Press, Taylor and Francis group, Florida, USA.