

SURGERY-IN-GENERAL RESIDENCY

TRAINING REQUIREMENTS

(A) INTRODUCTION

The Surgery-in-General (SIG) programme is a comprehensive 24 month programme which provides residents with a common trunk broad-based training before entering into surgical specialty training in Cardiothoracic Surgery, Hand Surgery, Neurosurgery, Plastic Surgery, Urology and Paediatric Surgery.

(B) PROGRAMME OVERVIEW

In the 24 months, the SIG resident is expected to consolidate his clinical skills in surgical patient management and achieve competence in clinical and operative surgery. SIG residents must document involvement in a sufficiently broad spectrum of complex procedures to be able to progress to R3 (i.e., into respective surgical specialties).

(C) ADMISSION REQUIREMENTS

Entry Criteria/Pre-requisites

To be eligible to apply for the SIG programme, the applicant must have completed transitional residency year or an approved house officer year. They must have been pre-selected for residency training via national interviews, ranking and matching to a surgical specialty. The number of resident positions is to be set by the SIG RAC under the advice of MOH. Residents must complete the training in the same programme.

(D) TRAINING SYLLABUS

Core Knowledge

SIG residents are expected to have an in-depth knowledge of the following:

Surgical Anatomy and Pathology

- a) The breast
- b) Gastrointestinal system
- c) Hepatobiliary system (including the pancreas)
- d) Head and neck
- e) Skin and soft tissues

Clinical Surgery

- a) Nutrition support (parenteral and enteral) and fluid/electrolyte balance in surgical conditions
- b) Considerations in preparation for surgery
- c) Principles of skin and wound closure/healing
- d) Sepsis and antisepsis in surgery
- e) Antibiotic therapy and prophylaxis in surgery
- f) Electrocautery and other coagulation devices including lasers in surgery
- g) Considerations in the elderly surgical patient

Acute Care

- a) Resuscitation and circulatory physiology
- b) Physiological response in trauma, injury and burns
- c) Assessment and management of the patient with multiple injuries

Adjunct Topics

- a) Haematologic disorders
- b) Immunology in relation to transplantation
- c) Oncology
- d) Surgical endocrinology

Core Surgical Procedures

SIG residents should have a broad exposure to cases. At the minimum, procedural experiences must include:

- a) Surgical incisions and wound closure
- b) Incision and drainage of abscesses
- c) Lumps and bumps
- d) Abdomen opening (laparotomy) and closure
- e) Appendicectomy
- f) Hernia repair
- g) Perianal procedures
- h) Circumcision
- i) Emergency resuscitation of the surgical patient

Postings

SIG residents are to complete the following postings based on their surgical specialty.

Surgical specialty	Rotations
Cardiothoracic Surgery	General Surgery (12 months) Anaesthesiology (3 months) Emergency Medicine (3 months) Cardiothoracic Surgery (3 months) Cardiology (6 weeks) Respiratory Medicine (6 weeks)
Hand Surgery	General Surgery (12 months) Anaesthesiology (3 months) Emergency Medicine (3 months) Hand Surgery (3 months) 3 months in relevant posting e.g., Orthopaedic Surgery or Plastic Surgery
Neurosurgery	General Surgery (6 months) Anaesthesiology (3 months) Emergency Medicine (3 months) Neurosurgery (6 months) Neurology (3 months) 3 months in 1 of the elective postings: Orthopaedic Surgery Otorhinolaryngology/ENT Plastic Surgery Ophthalmology
Paediatric Surgery	General Surgery (12 months) Children's Emergency (3 months) Paediatric Anaesthesia (3 months) 6 months in either of the following postings: Urology Thoracic
Plastic Surgery	General Surgery (12 months) Anaesthesiology (3 months) Emergency Medicine (3 months) Plastic Surgery (3 months) 3 months in relevant posting e.g., Orthopaedic Surgery or Plastic Surgery
Urology	General Surgery (12 months) Anaesthesiology (3 months) Emergency Medicine (3 months) Urology (3 months) 3 months in relevant posting e.g., Renal Medicine

Training and teaching programmes

The training programme must regularly provide both structured lectures and clinical teaching (e.g., Grand Ward Rounds, Journal Club, M&M Sessions, X-Ray Meetings, Topic Presentations, etc.). The content of teaching must include the core knowledge listed in Annex A. All residents should be granted protected time for training programmes and are expected to attend at least 80% of all training activities. The programme should document recommended textbooks for the resident's reference, with the caveat that sole reliance on textbook review is inadequate.

(E) CORE COMPETENCIES ASSESSED

The SIG residents must attain proficiency as stipulated in Annex A except for Paediatric Surgery residents as the following areas are exempted:

2.1.4 Management of the geriatric patient

The SIG resident must attain proficiency in 7 competency areas.

Medical Knowledge

Residents must have a good grasp of the basic sciences, clinical epidemiology as applied to the *core knowledge* topics (listed above), namely in surgical anatomy and pathology; clinical surgery; acute care; and the adjunct topics.

Interpersonal and Communication Skills

Residents must have strong interpersonal skills that allow the establishment of rapport and trust with patients, their relatives and other healthcare professionals. Residents are expected to:

- Accurately elicit and synthesize information obtained from patients, families and colleagues;
- Demonstrate an awareness of both verbal and non-verbal cues in communication;
- Conduct patient consultations effectively, conveying information and explanations accurately and in a manner that is respectful, empathetic and honest;
- Demonstrate the ability to deal with difficult situations e.g. breaking bad news, dealing with distraught or verbally abusive patients or relatives, counselling for organ donation or HIV testing etc.

Practice-based Learning and improvement

Residents must demonstrate the self-motivation to direct their own learning, as well as the means to address deficiencies. Residents are expected to:

- Consult other healthcare professionals as appropriate;
- Identify and participate in appropriate learning opportunities;
- Be open to providing and receiving feedback to and from other healthcare professionals;
- Critically appraise medical literature and apply knowledge to practice, as appropriate;
- Be adept at using information technology for learning and improvements to healthcare delivery;
- Participate in departmental/programme learning opportunities e.g. mortality and morbidity meetings, Journal club, etc;
- Keep abreast of medical knowledge relevant to practice and ensure that clinical and technical skills are maintained.

Professionalism

Patients and the public must be able to trust physicians implicitly with their lives and well being. To justify this trust, doctors have to maintain a good standard of care, conduct and behaviour. The resident must:

- Be dedicated to providing competent, compassionate and appropriate medical care to patients;
- Be an advocate for patients' care and well being and endeavour to ensure that patients suffer no harm;
- Provide access to and treat patients without prejudice of race, religion, creed, social standing, disability or financial status;
- Maintain the highest standards of moral integrity and intellectual honesty;

- Treat patients with honesty, dignity, respect and consideration, upholding their right to be adequately informed and their right to self-determination;
- Keep confidential all medical information about patients;
- Regard all fellow professionals as colleagues, treat them with dignity and accord them respect.

Systems-based Practice

Residents must be familiar with the healthcare system of Singapore and be aware of his/her role in the healthcare system. The resident must demonstrate:

- Ability to work as part of an inter-professional team in the delivery of patient care, and appreciate the role of the different healthcare professionals in the context of holistic patient management;
- Awareness of the cost-benefits and effective allocation of finite healthcare resources in healthcare;
- An understanding of the continuum of healthcare, including primary, tertiary and long-term care, as well as palliative and end-of-life care.

Patient Care

Residents must be able to deliver care that is patient-centred and medically necessary/appropriate. Residents must demonstrate proficiency in:

- Identification of the clinical problem(s);
- Formulation and implementation of care that is patient-centric and medically necessary;
- Procedural skills necessary for executing care plans;
- Stabilization and/or initial management of patients with severe, complex illnesses and injuries.

Faculty Development

Residents as Future Teachers is uniquely included in the list of core competencies the residents have to be cultivated in. Residents have to be trained as effective role models, teachers and leaders to junior doctors, other healthcare trainees and medical students. Residents are expected to

- To teach and guide junior residents in clinical skills, procedures, and patient care
- Participate in co-ordinating medical students and junior residents teaching programs

(F) SUPERVISION OF RESIDENTS

All residents will be supervised by a designated supervisor. The ratio of all teaching faculty to residents should be 1:1. The number of core clinical faculty¹ to resident ratio must be no less than 1:6.

(G) ASSESSMENT AND FEEDBACK

Log of operative experience

All residents are expected to keep a log of their operative experience in the designated case log system. Residents should record cases only if they were actively involved in the pre-operative assessment, operative procedure and post-operative care.

Residents must perform minimum number of 150 operative cases over 2 years and to record the types of cases performed/observed as of below table².

Type of cases	Performed	Observed
Total operative cases		
Cases in A&E		
Intubation (Rapid Sequence Intubation)		
FAST Ultrasound in Trauma		
Resuscitation of the sick surgical patient		
Chest Tube insertion		

¹ The core faculty of the training department (e.g., core faculty of general surgery) can also be considered if they are engaged in teaching of SIG residents.

² Some procedures that residents may not experience in A&E/Anaesthesia rotations but done in skills laboratory and workshops should be stated separately.

Venous cutdown		
Cases in Anaesthesia & ICU		
Intubation		
Setting Intra-arterial line		
Sedation/Monitored Anaesthesia Care		
Insertion of CVP line		
Cases in General Surgery		
Surgical incisions and extension		
Wound closure (suturing, stapling and others)		
Incision and drainage of superficial abscesses		
Haemostatic techniques, including adjuncts		
Lumps and Bumps excision		
Abdomen opening (laparotomy) and closure		
Hernia repair		
Appendicectomy		
Basic Laparoscopic Skills		
Bowel suturing		
Vascular anastomoses		
Drains: insertion techniques and pitfalls		
Perianal procedures		
Circumcision		
Nail avulsion		

Residents are expected to observe and assist in a variety of endoscopic procedures and basic laparoscopy which must be logged into their operative experience.

Assessment

The supervisor's evaluation of the resident should be performed using the designated form and then submitted to the RAC for review.

Feedback

Residents should perform an evaluation of teaching faculty and the training programme using the designated forms. These forms must be submitted to the RAC and kept absolutely confidential.

Intermediate examination

SIG residents are expected to complete the Intercollegiate MRCS exam, or equivalent, in order to be eligible for progression into R3 year.

(H) CHANGES IN TRAINEESHIP PERIOD AND WITHDRAWAL OF TRAINEESHIP

I. Changes in Training Period

Residency should be continuous. If a training programme is interrupted for any reason whatsoever, the SIG RAC may at its discretion, require the trainee to undergo a further period of training in addition to the minimum requirements of the programme or terminate the residency altogether. All trainees are required to conform to the residency training plan as approved by SIG RAC and complete all the exit and training requirements within the maximum candidature.

II. Leave of Absence

All residents are to comply with the prevailing MOH policy on Leave of Absence.

III. Overseas Postings

Overseas attachment during Senior Residency training is not permitted with the exception of Radiation Oncology and Neurosurgery (*refer to JCST Circular 114*).

Table A1: Foundational Surgical Core Competencies Required by All Surgeons

Categories	Core Competencies
1. Applied Basic Science Knowledge	<ul style="list-style-type: none"> • Applied anatomy • Physiology and pathophysiology • Pathology • Pharmacology • Microbiology • Medical physics • Medical statistics
2. Clinical Skills and Knowledge in Surgical Practice	<ul style="list-style-type: none"> • Peri-operative management of patients with concurrent medical conditions • Critical care <ul style="list-style-type: none"> - Trauma management - Sepsis management - Intensive care medicine • Palliative care for the surgical patient • Organ donation and organ transplant • Management of surgical patients during mass casualty incidents
3. Basic Surgical Skills	<ul style="list-style-type: none"> • Basic suturing and surgical skills
4. Communication Skills	<ul style="list-style-type: none"> • Communication skills with patient & family • Team-based practice
5. Professionalism, Ethics and Legal Aspects of Medical Practice	<ul style="list-style-type: none"> • Professionalism, ethics and legal aspects of medical practice
6. Practice-Based Learning and Improvement	<ul style="list-style-type: none"> • Practice-based learning and improvement • Evidence-based training and practice
7. Systems-Based Practice	<ul style="list-style-type: none"> • Healthcare economics and value-based care • Appropriate and safe use of diagnostic tests
8. Health Promotion	<ul style="list-style-type: none"> • Health promotion

Table A2: Foundational Surgical Training Curriculum Required by All Surgeons

Legend:
 R = Rotation(s) C = Course(s)
 D = Didactic session(s) S = Self-study

S/N	Core Competencies	Suggested Curriculum Delivery			
		R	D	C	S
1	Applied Basic Science Knowledge				
1.1	Applied Anatomy - Residents must acquire and demonstrate a knowledge of the following, particularly in which in applies to the practice of surgery: <ul style="list-style-type: none"> • Gross and microscopic anatomy • Surface anatomy • Imaging anatomy - This includes anatomy of the head and neck, thorax, abdomen, pelvis, perineum, limbs and spine.		✓		✓
1.2	Physiology and Pathophysiology - Residents must acquire and demonstrate a knowledge of general physiological and pathophysiological principles, including but not limited to: <ul style="list-style-type: none"> • Cardiorespiratory homeostasis • Metabolic, electrolyte and acid/base homeostasis • Haemostasis • Thermoregulation - Residents must acquire and demonstrate a knowledge of organ system-specific physiology and pathophysiology which is relevant to surgical care, including that of the cardiovascular, respiratory, gastrointestinal, urogenital, renal, endocrine, musculoskeletal, neurological and immunological systems.		✓		✓
1.3	Pathology - Residents must acquire and demonstrate a knowledge of general pathological principles, including but not limited to: <ul style="list-style-type: none"> • Necrosis and apoptosis • Inflammation and immunity, including transplant rejection • Repair, regeneration and healing • Thrombosis and embolism • Shock, systemic inflammatory response syndrome and multiple organ failure • Neoplasia including carcinogenesis, the biology of tumour growth, metastasis and the principles of grading and staging • Genetics 		✓		✓
1.4	Pharmacology - Residents must acquire and demonstrate a knowledge of: <ul style="list-style-type: none"> • The pharmacology and safe prescription of drugs used in surgical practice, both for treatment and prophylaxis, including analgesics, antibiotics, anticoagulants and local anaesthetics • The pharmacology and recommended modification in the perioperative period of the common agents used for the treatment of chronic concurrent diseases • The pharmacological principles of general anaesthesia and intensive care medicine • The pharmacological principles relevant to the treatment of malignancy • The pharmacological principles of immunosuppression 		✓		✓

S/N	Core Competencies	Suggested Curriculum Delivery			
		R	D	C	S
1.5	Microbiology - Residents must acquire and demonstrate a knowledge of: <ul style="list-style-type: none"> • Infection control including sources of infection, asepsis, disinfection and sterilisation • General pathology of bacterial and viral diseases including mechanisms of injury and systemic sepsis • Soft tissue infections including cellulitis, abscesses, necrotising fasciitis and gangrene • Hospital acquired infection and bacterial resistance • Antibiotic stewardship and the judicious use of antimicrobials • Prevention of the transmission 		✓		✓
1.6	Medical Physics - Residents must acquire and demonstrate a knowledge of: <ul style="list-style-type: none"> • Principles of diagnostic and interventional imaging including plain and contrast radiography, ultrasound, CT, MRI, PET and radionuclide imaging • Principles of diathermy, LASER, ultrasonic aspiration • Principles of radiotherapy 		✓		✓
1.7	Medical Statistics - Residents must acquire and demonstrate a knowledge of: <ul style="list-style-type: none"> • Principles of screening • The null hypothesis and common statistical tests used with parametric and non-parametric data 		✓		✓
2	Clinical Skills and Knowledge in Surgical Practice				
2.1	Peri-operative management of patients with concurrent medical conditions				
2.1.1	Pre-operative care - Residents must acquire and demonstrate a knowledge of: <ul style="list-style-type: none"> • Risk factors for surgery and scoring systems including ASA and VTE risk • Antibiotic and VTE prophylaxis guidelines • Principles of ambulatory day surgery including selection and discharge criteria • Ethical principles of, and legislative framework for, capacity and consent • Pre-op optimization, including but not limited to serum glucose control in the diabetic patient, lung function • Nutritional assessment methods and feeding options - Residents must acquire and develop skills in: <ul style="list-style-type: none"> • Safe prescribing of pharmacological agents used for the treatment of chronic concurrent diseases, modified appropriately to the perioperative period • Safe prescribing of prophylactic measures for antibiotic and VTE according to guidelines • Assessing mental capacity for consent taking • Obtaining informed consent for surgery • Assessing and explaining patient anaesthesia risk and fitness for operation, including patients with higher risk such as obese individuals and patients with history of smoking • Communicating with anaesthetic and scrub teams in advance • Planning perioperative nutrition in advance in partnership with the nutrition team • Engaging with multidisciplinary team discussions including those with oncology and interventional radiology 	✓	✓		✓

S/N	Core Competencies	Suggested Curriculum Delivery			
		R	D	C	S
2.1.2	<p>Intra-operative care</p> <ul style="list-style-type: none"> - Residents must acquire and demonstrate a knowledge of: <ul style="list-style-type: none"> • Principles of positioning and pressure area care • Radiation protection • Guidelines for tourniquet use • What to do when something goes wrong • Anaesthetic monitoring techniques - Residents must acquire and develop skills in: <ul style="list-style-type: none"> • Maintenance of communication with theatre team throughout procedure • Safe positioning of the patient on the operating table • Completion of surgical check list (time out and sign out) 	✓	✓		
2.1.3	<p>Post-operative care</p> <ul style="list-style-type: none"> - Residents must acquire and demonstrate a knowledge of: <ul style="list-style-type: none"> • Spectrum of post-operative complications • Guidelines for indications, prescription and management of complications of the transfusion of blood products, including the Massive Transfusion Protocol • Optimization of post-operative wound healing • Peri-operative optimization in patients with concurrent medical conditions, including but not limited to: <ul style="list-style-type: none"> ➢ Blood sugar control in the diabetic patient, including titration of oral-hypoglycaemic agents and insulins ➢ Blood pressure control in the hypertensive patient ➢ Fluid and electrolyte balance in patients with chronic renal failure - Residents must acquire and develop skills in: <ul style="list-style-type: none"> • Assessment of the unwell postoperative patient • Writing an operation note with clear post-operative instructions • Delivery of effective analgesia • Post-operative monitoring and optimisation of fluid & electrolyte balance • Diagnosis and treatment of post-operative complications, including but not limited to: <ul style="list-style-type: none"> ➢ VTE ➢ Post-operative infection and sepsis ➢ Transfusion reactions • Recognition and management of complications in surgical patients with concurrent medical conditions, including but not limited to: <ul style="list-style-type: none"> ➢ Diabetic emergencies including HHNK/DKA and hypoglycaemia ➢ Hypertensive crisis ➢ Cardiovascular, respiratory and metabolic complications in patients with obesity ➢ Patients with history of smoking 	✓	✓		✓

S/N	Core Competencies	Suggested Curriculum Delivery			
		R	D	C	S
2.1.4	<p>Management of the geriatric patient</p> <ul style="list-style-type: none"> - Residents must acquire and demonstrate a knowledge of: <ul style="list-style-type: none"> • Physiological differences in the elderly • Principles of a comprehensive Geriatric Assessment • Perioperative Geriatric care and optimisation • Frailty and falls • The interdependence of social welfare, mental health and physical health • Social and community services available for the step-down care of Geriatric patients • Delirium: <ul style="list-style-type: none"> ➢ Epidemiology, prognosis, causes and clinical features of delirium, with the knowledge that delirium is common in geriatric patients with dementia ➢ Impact of delirium on patient, family and carers - Residents must acquire and develop skills in: <ul style="list-style-type: none"> • History and examination of geriatric patients • Fluid and electrolyte balance in geriatric patients • Assessing mental capacity and obtaining consent for surgery in a geriatric patient • Delirium: <ul style="list-style-type: none"> ➢ Assessment of cognitive impairment seeking to differentiate dementia from delirium ➢ Management of patients with delirium including addressing triggers and using non-pharmacological and pharmacological methods where appropriate ➢ Explanation of delirium to patients and advocates 	✓		✓	✓
2.1.5	<p>Management of the paediatric patient</p> <ul style="list-style-type: none"> - Residents must acquire and demonstrate a knowledge of: <ul style="list-style-type: none"> • Normal physiological parameters at different ages • Principles of vascular access in children • Knowledge of social agencies involved in safeguarding children's welfare • Child protection law and issues of consent in childhood • Types and categories of child maltreatment - Residents must acquire and develop skills in: <ul style="list-style-type: none"> • Recognising limitations of own knowledge and experience and seek early advice from dedicated paediatric teams • Taking a history and examining paediatric surgical patients • Recognising an unwell child • Assessment of respiratory and cardiovascular status in a child • Obtaining consent for operative treatment in a paediatric patient 		✓		✓
2.2	Critical Care				
2.2.1	Residents must acquire and demonstrate a knowledge of clinical and technical skills necessary to contribute to the management of critically unwell patients suffering from traumatic injuries or sepsis	✓		✓	✓
2.2.1.1	<p>Trauma management</p> <ul style="list-style-type: none"> - Residents must acquire and demonstrate a knowledge of: <ul style="list-style-type: none"> • The systematic, prioritised method of trauma management • Scoring systems for assessment of global injury severity 	✓		✓	✓

S/N	Core Competencies	Suggested Curriculum Delivery			
		R	D	C	S
	<ul style="list-style-type: none"> - Residents must acquire and develop skills in: <ul style="list-style-type: none"> • Resuscitation and early management of the patient who has sustained thoracic, head, spinal, abdominal and/or limb injury according to ATLS and APLS guidelines • Chest drain insertion • Obtaining vascular access in patient with trauma • Airway management 				
2.2.1.2	<p>Sepsis management</p> <ul style="list-style-type: none"> - Residents must acquire and demonstrate a knowledge of: <ul style="list-style-type: none"> • A systematic, prioritised method of managing the septic patient • Recommendations of the surviving sepsis campaign including the “Sepsis 6” - Residents must acquire and develop skills in: <ul style="list-style-type: none"> • Resuscitation and early management of the septic patient • Surgical drainage of pus 	✓		✓	✓
2.2.1.3	<p>Intensive care medicine</p> <ul style="list-style-type: none"> - Residents must acquire and demonstrate a knowledge of: <ul style="list-style-type: none"> • Classification of levels of critical care • Principles of organ support including: <ul style="list-style-type: none"> ➢ Invasive and non-invasive monitoring of circulation ➢ Inotropic support ➢ Invasive and non-invasive ventilator support including tracheostomy ➢ Renal support therapy including hemofiltration and haemodialysis - Residents must acquire and develop skills in: <ul style="list-style-type: none"> • Assessment of a patient receiving critical care • Surgical contribution, in discussion with the critical care team, to the management plan of a patient receiving critical care 	✓		✓	✓
2.3	Palliative Care for the Surgical Patient				
2.3.1	<ul style="list-style-type: none"> Residents must acquire and demonstrate a knowledge of: <ul style="list-style-type: none"> • Principles of resuscitation, palliative care • Advanced Care Planning and Lasting Power of Attorney - Residents must acquire and develop skills in: <ul style="list-style-type: none"> • Assessment and control of distress in the dying patient in collaboration with a palliative care team • Assessment of care goals to protect quality of life in terminal illness • Discussion of best interest including resuscitation status and limits of care with patient advocate 		✓		✓
2.4	Organ Donation and Organ Transplant				
2.4.1	<ul style="list-style-type: none"> - Residents must acquire and demonstrate a knowledge of: <ul style="list-style-type: none"> • Legislation for organ donation including HOTA and MTERA • The role of the coroner and the certification of death - Residents must acquire and develop skills in: <ul style="list-style-type: none"> • Diagnosis of death following irreversible cessation of brain-stem function • Discussion of organ donation with family in collaboration with transplant coordinators 		✓		✓

S/N	Core Competencies	Suggested Curriculum Delivery			
		R	D	C	S
2.5	Management of Surgical Patients During Mass Casualty Incidents				
2.5.1	Residents must acquire and demonstrate a knowledge of: <ul style="list-style-type: none"> • The principles of mass casualty management • Triage and resource management in a mass casualty situation • Communication systems in a mass casualty situation • Surgical management principles in a mass casualty situation 		✓		
3	Basic Surgical Skills				
3.1	Basic suturing and surgical skills Residents must acquire and demonstrate a knowledge of: <ul style="list-style-type: none"> • Classification of surgical incisions and wounds • Principles of haemostasis and wound management • Principles underlying incision placement including cosmesis and Langer's lines, vascularity and function • Principles underlying wound closure including suture method, needle types and the physical and biological characteristics of suture material • Principles of suturing, for a variety of tissues including: <ul style="list-style-type: none"> ➢ Skin (skin cover, grafts) ➢ Nerves ➢ Vessels (arteriotomy, anastomosis) ➢ Bone, tendons, muscle ➢ Bowel (hand-sewn and stapled anastomosis, minimally-invasive or robotic methods) • The range, nomenclature and functional design of surgical instruments • Safety requirements for use of sharps, LASER and diathermy - Residents must acquire and develop skills in: <ul style="list-style-type: none"> • Effective hand washing, gloving and gowning • Accurate, effective and safe administration of local anaesthetic • Preparation and maintenance of an aseptic field • Incision of skin and subcutaneous tissue: <ul style="list-style-type: none"> ➢ Ability to use scalpel, cutting diathermy and scissors ➢ Control of superficial bleeding using diathermy and ligation • Closure of skin and subcutaneous tissue: <ul style="list-style-type: none"> ➢ Accurate and tension free apposition of wound edges ➢ Knot tying by hand and instrument selection and placement of tissue retractors ➢ Insertion, fixation and removal of drains • Appropriate selection and use of instruments to handle tissue with minimal trauma • Taking biopsies, safe labelling and completion of request forms • Anticipation of needs of surgeon when assisting • Co-ordination of camera and instrument from a 2-dimensional display during surgical endoscopy • Safe intraoperative use of sharps and diathermy 		✓		✓
4	Communication Skills				
4.1	Communication skills with patient and family - Residents are expected to: <ul style="list-style-type: none"> • Communicate effectively with patients, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds 	✓		✓	✓

S/N	Core Competencies	Suggested Curriculum Delivery			
		R	D	C	S
4.2	Team-Based Practice - Residents are expected to: <ul style="list-style-type: none"> • Communicate effectively with physicians, other health professionals, and health related agencies • Work effectively as a member or leader of a health care team or other professional group • Act in a consultative role to other physicians and health professionals • Maintain comprehensive, timely, and legible medical records • Develop skills in safe handover of patient care 	✓		✓	✓
5	Professionalism, Ethics and Legal aspects of Medical Practice				
5.1	Professionalism, ethics and legal aspects of medical practice - Residents must demonstrate a commitment to carrying out professional responsibilities and an adherence to ethical principles. - Residents must acquire and demonstrate the knowledge and practice of the principles of ethical medical practice, as laid out in the SMC's Ethical Code and Ethical Guidelines (ECEG). - Residents must acquire and demonstrate a knowledge of how to prevent, recognise and manage medical errors, and what constitutes medical negligence. - Residents are expected to demonstrate: <ul style="list-style-type: none"> • Compassion, integrity, and respect for others • Responsiveness to patient needs that supersedes self-interest • Respect for patient privacy and autonomy • Accountability to patients, society and the profession • Sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation 	✓		✓	
6	Practice-Based Learning and Improvement				
6.1	- Residents must acquire and demonstrate the ability to: <ul style="list-style-type: none"> • Use reflection and feedback to evaluate one's own clinical performance, identifying strengths, deficiencies, and limits in one's knowledge and expertise, as part of self-improvement 	✓		✓	
6.2	Evidence-based Practice - Residents must acquire and demonstrate the ability to: <ul style="list-style-type: none"> • Locate, appraise and assimilate evidence from scientific studies (e.g. study design, methods and results) related to patients' health problems • Incorporate the best available clinical evidence from systematic research in diagnostic and therapeutic decision-making, clinical problem-solving and other aspects of evidence-based healthcare in a conscientious and judicious manner • Understand and apply principles of biostatistics in medical research • Practise cost-conscious surgery and medicine 	✓		✓	
7	Systems-Based Practice				
7.1	- Residents must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.		✓		✓

S/N	Core Competencies	Suggested Curriculum Delivery			
		R	D	C	S
7.1.1	<p>Healthcare economics and Value-Based Care</p> <ul style="list-style-type: none"> - Residents must acquire and demonstrate knowledge of: <ul style="list-style-type: none"> • Healthcare financing • National and governmental initiatives for healthcare funding • National and governmental schemes for patients' healthcare financing (including Medifund, Medisave and Medishield) - Residents must acquire and develop skills in: <ul style="list-style-type: none"> • Recognizing the financially-challenged patients and making relevant referrals to seek financial support • Counsel patient on financial options in collaboration with the social workers and/or financial counsellors 		✓		
7.1.2	<p>Appropriate and safe use of diagnostic tests</p> <ul style="list-style-type: none"> - Residents must acquire and demonstrate a knowledge of: <ul style="list-style-type: none"> • Radiological services and imaging modalities available and their corresponding indications • Indications for Interventional Radiology services in relation to indications for surgery • Side effects and risks of various imaging modalities, including X-ray, Image Intensifier, CT, MRI, Ultrasound • Risk benefit analysis in determining the judicious use of diagnostic tests including imaging modalities - Residents must acquire and develop skills in: <ul style="list-style-type: none"> • Counselling patients on the Interventional Radiological alternatives to surgery, if available • Counselling patients on the risks and benefits of various diagnostic tests 		✓		✓
8	<u>Health Promotion</u>				
8.1	<ul style="list-style-type: none"> - Residents must acquire and demonstrate a knowledge of: <ul style="list-style-type: none"> • Damaging health and social issues such as excessive alcohol consumption, obesity, smoking and illicit drugs and the harmful effects they have on health • The connection between mental health and physical health • The importance of health education for promoting self-care for patients • The requirement that doctors protect patients and colleagues from any risk posed by their own health - Residents must acquire and develop skills in: <ul style="list-style-type: none"> • Modification of explanations to match the intellectual, social and cultural background of individual patients • Patient-centred care • Identification and utilisation of opportunities to promote health including positive role modelling 		✓		
8.1.1	<p><u>Obesity</u></p> <p>Residents must acquire and demonstrate a knowledge of:</p> <ul style="list-style-type: none"> • Classification of excess body mass • The health risks posed by obesity including an increased incidence of coronary heart disease, type 2 diabetes, hypertension, stroke, and some major cancers • Social, psychological and environmental factors that underpin obesity • Physiological and metabolic effects of obesity on the surgical patient 		✓		

S/N	Core Competencies	Suggested Curriculum Delivery			
		R	D	C	S
	<ul style="list-style-type: none"> • Available treatments for obesity including diet, exercise, medication and surgery - Residents must acquire and develop skills in: <ul style="list-style-type: none"> • The ability to treat patients who are obese in a supportive and sensitive manner • Provide advice and guidance about weight loss to overweight and obese patients within the context of a multidisciplinary team 				
8.1.2	<p>Smoking</p> <ul style="list-style-type: none"> - Residents must acquire and demonstrate a knowledge of: <ul style="list-style-type: none"> • Physiological effects of smoking • Health risks posed by smoking on the patient and family • What is smoking cessation and how to achieve it • The different stages of behaviour change • The quitting process • The role of pharmacotherapy in smoking cessation • Basic counselling skills to take a smoker through brief and intensive counselling - Residents must acquire and develop skills in: <ul style="list-style-type: none"> • Provide advice and guidance about smoking cessation within the context of a multidisciplinary team 		✓		
8.1.3	<p>Exercise and physical fitness</p> <ul style="list-style-type: none"> - Residents must acquire and demonstrate a knowledge of: <ul style="list-style-type: none"> • Physical inactivity as an independent risk factor for ill health and obesity • Relationship between physical exercise programmes and healthy eating and smoking cessation programmes • Government behaviour change programmes - Residents must acquire and develop skills in: <ul style="list-style-type: none"> • Utilisation of all patient interactions as opportunities for health and fitness promotion with particular reference to the prevention and management of long term chronic conditions such as coronary heart disease, diabetes, hypertension, obesity, cancer, osteoporosis, peripheral vascular disease and depression and the promotion of health and well being • Modification of advice on physical exercise to the specific requirements of individual patients 		✓		