

The Membership Examination of Hong Kong Intercollegiate Board of Surgical College

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Outline Syllabus

1 BASIC SCIENCES

1.1 APPLIED SURGICAL ANATOMY

Development, organs and structures, surface and imaging anatomy of the:

- thorax
- abdomen, pelvis and perineum
- upper limb and breast
- lower limb
- head, neck and spine
- nervous system (central, peripheral and autonomic)

1.2 PHYSIOLOGY

i) General Physiology

- Homeostasis
- Thermoregulation
- Metabolic pathways
- Sepsis and septic shock
- Fluid balance and fluid replacement therapy
- Metabolic abnormalities
- Osteoporosis

ii) System Specific Physiology

- Respiratory system
- Cardiovascular system
- Gastrointestinal system
- Renal system
- Endocrine system
- Central nervous system
- Thyroid and parathyroid
- Glucose homeostasis

- Musculoskeletal
 - Cartilage*
 - Bone*
 - Ligaments & Tendons*
 - Skeletal muscle*
 - Peripheral nerve*
 - Biomechanics*
 - Biomaterials*
 - Kinesiology*
 - Gait*

1.3 PATHOLOGY

i) General Pathology

- Inflammation
- Cellular injury other than by infection
- Wounds and wound healing
- Vascular disorders
- Disorders of growth, differentiation and morphogenesis
- Neoplasia
- Surgical immunology
- Surgical haematology
- Surgical microbiology
- Surgical biochemistry

ii) System Specific Pathology

- Nervous system
- Musculoskeletal system
- Respiratory system
- Breast disorders
- Cardiovascular system
- Endocrine system
- Genito-urinary system
- Gastrointestinal system
- Dermatological diseases
- Lymphoreticular system

2. PRINCIPLES OF SURGERY-IN-GENERAL

2.1 PERIOPERATIVE CARE

i) Assessment of Fitness for Surgery

- Preoperative assessment and risk scoring systems
- Laboratory testing and imaging

ii) Management of Associated Medical Conditions

- Organ specific diseases
 - Issues related to medications
 - General factors
- iii) Preparation for Surgery**
- Informed consent
 - Pre-medication
 - Risk management
 - Principles of Anaesthesia
 - General anaesthesia
 - Local anaesthesia
 - Regional anaesthesia
- iv) Monitoring of the Anaesthetised Patient**
- Non-invasive monitoring
 - Invasive monitoring
- v) Care of the Patient Under Anaesthesia**
- Positioning of the patient in surgery
 - Avoidance of nerve injuries

2.2 POSTOPERATIVE MANAGEMENT AND CRITICAL CARE

- i) Anaesthetic Management**
- Postoperative monitoring
 - Ventilatory support
 - Pain control
 - Intravenous drug delivery
- ii) Metabolic and Nutritional Support**
- Fluid & electrolyte management
 - Nutrition in the surgical patient
- iii) Postoperative Complications**
- General surgical complications
 - Respiratory failure
 - Acute renal failure
 - Systemic inflammatory response syndrome (SIRS)
 - Multiple organ dysfunction syndrome (MODS)

2.3 SURGICAL TECHNIQUE AND TECHNOLOGY

- i) Surgical Wounds**
- Classification of surgical wounds

- Principles of wound management
- Pathophysiology of wound healing
- Scars and contractures

- ii) Surgical Technique**
 - Principles of safe surgery
 - Incisions and wound closure
 - Diathermy, laser, principles of cryosurgery
 - Sutures and ligature materials
 - Basic surgical instruments

- iii) Surgical Procedures**
 - Minor surgical procedures
 - Day care surgery
 - Principles of anastomosis
 - Endoscopic surgery and laparoscopy

- iv) Tourniquets in the Operating Theatre**
 - Indications for tourniquet use
 - Tourniquet application
 - Effects and complications of tourniquets

2.4 MANAGEMENT AND LEGAL ISSUES IN SURGERY

- i) Evidence Based Surgical Practice**
 - Decision making in surgery
 - Statistics
 - Principles of research and clinical trials
 - Critical evaluations of surgical innovations

- ii) Management Aspects of Surgical Practice**
 - Clinical audit
 - Clinical governance
 - Medico-legal aspects of surgery

- iii) Communication Skills**
 - Psychological effects of surgery
 - Communication skills in medicine and surgery
 - Working in teams
 - Breaking bad news
 - Dealing with conflict
 - Management of crises

- iv) Medical Litigation**

- Avoidance and management of errors
- Ethics and medical negligence

2.5 CLINICAL MICROBIOLOGY

i) Surgical Microbiology

- Sources of surgical infection
- Principles of asepsis and antisepsis

ii) Modern Antibiotic Usage

- Commonly used antibiotics
- Selecting the right antibiotic
- Antibiotic resistance

iii) Surgery in Hepatitis and HIV Carriers

- Blood-borne viruses
- Universal precautions
- Surgical precautions
- Immunisation
- Management of sharps injuries

2.6 EMERGENCY MEDICINE AND MANAGEMENT OF TRAUMA

i) Pathophysiology of Trauma

- Shock and cardiovascular physiology
- Metabolic response to injury
- Adult respiratory distress syndrome (ARDS)

ii) Initial Assessment of the Trauma Patient

- Principles of pre-hospital care
- Major incident triage
- Clinical assessment and scoring systems
- Resuscitation after trauma

iii) Management of the Unconscious Patient

- Brain injuries
- Assessment and resuscitation of the comatose patient

iv) Traumatic Wounds

- Principles of management
- Gunshot and blast injuries
- Stab wounds
- Human and animal bites

- v) **Management of Skin Loss**
 - The wound
 - Skin grafts
 - Skin flaps

- vi) **Traumatic Oedema and Compartment Syndrome**
 - Pathogenesis and Physiology
 - Diagnosis and treatment

- vii) **Environmental Emergencies**
 - Hypothermia
 - Heat exhaustion
 - Management of a radiation incident

- viii) **Miscellaneous**
 - Acute loss of vision
 - Red eye
 - Hepatitis B and HIV/AIDS

2.7 PRINCIPLES OF SURGICAL ONCOLOGY

- i) **Epidemiology of Common Cancers**
 - Epidemiology studies and cancer registration
 - Common cancers

- ii) **Screening Programmes**
 - Screening for cancer: breast, cervical, prostate, colorectal and skin

- iii) **Clinico-Pathological Staging of Cancer**
 - Staging and grading cancer
 - Clinical staging
 - Pathological staging

- iv) **Principles of Cancer Treatment**
 - The role of surgery – block dissections
 - Radiotherapy
 - Chemotherapy
 - Hormone therapy
 - Immunotherapy

- v) **Palliative Care**
 - The palliative care team
 - Pain and other symptoms

3 SURGICAL SPECIALTIES

This section lists the topics which basic surgical trainees are expected to know in each of the surgical specialties. In addition, for each specialty, trainees should know the principles of investigations used for that specialty (laboratory tests, imaging modalities and special investigations), and the principles of the main surgical procedures used by that specialty.

3.1 CARDIOTHORACIC SURGERY

- i) Haemodynamic Control**
 - Haemodynamic principles
 - Cardiovascular homeostasis
 - Pharmacological haemodynamic control

- ii) Cardiac Surgery**
 - Surgical disorders of the heart vessels and heart valves
 - Cardio-pulmonary bypass

- iii) Thoracic Trauma**
 - Pathophysiology of thoracic trauma
 - Presentation, assessment and management
 - Specific thoracic injuries

- iv) Thoracotomy and Chest Drainage**
 - Assessment and preparation
 - Indications for thoracotomy
 - Chest drainage and pericardiocentesis

- v) Surgical Disorders of the Lung**
 - Lung cancer
 - Other indications for lung resection

- vi) Complications of Thoracic Operations**
 - General complications
 - Specific complications

- vii) Pneumothorax and Empyema Thoracis**

3.2 GENERAL SURGERY

- i). The Abdomen**

- Abdominal Trauma
 - Penetrating abdominal trauma*
 - Blunt abdominal trauma*
 - Assessment and management of abdominal trauma*
 - Specific organ injuries*
 - Common Abdominal Problems
 - Abdominal pain*
 - Abdominal masses*
 - Abdominal Emergencies
 - Intestinal obstruction*
 - Peritonitis and abdominal and pelvic abscess*
 - Gastrointestinal haemorrhage*
 - Abdominal Hernia
 - Inguinal hernia*
 - Femoral hernia*
 - Incisional hernia*
 - Rare hernias*
 - Intestinal Fistulas
 - Classification of intestinal fistulas*
 - Assessment and management*
 - Gastrointestinal Stomas
 - Formation and management*
 - Other stomas*
 - Gastrostomy*
 - Ileostomy*
 - Colostomy*
 - Surgery of the Spleen
 - Splenic disease and injury*
 - Treatment of splenic disease and injury*
 - Post-splenectomy sepsis*
- ii) Upper Gastrointestinal Surgery**
- Diagnosis of oesophageal disorders
 - Specific oesophageal disorders (including gastro-oesophageal reflux disease, motility disorders, oesophageal carcinoma, oesophageal diverticulum and oesophageal foreign body)
 - Peptic ulcer disease
 - Tumours of the stomach
- iii) Hepatobiliary and Pancreatic Surgery**
- Jaundice
 - Gall stones and gall bladder disease

- Acute pancreatitis
 - Chronic pancreatitis
 - Carcinoma of the pancreas
 - Benign and malignant biliary strictures
 - Portal hypertension and ascites
- iv) Colorectal Surgery**
- Clinical presentation of colorectal and anal disease
 - Surgical disorders of the colon and rectum
 - Ulcerative colitis and Crohn's disease*
 - Colorectal cancer*
 - Diverticular disease*
 - Faecal incontinence*
 - Rectal prolapse*
 - Surgical disorders of the anus and perineum
 - Pruritus ani*
 - Fissure-in-ano*
 - Haemorrhoids*
 - Fistula-in-ano*
 - Anorectal abscess*
 - Carcinoma of the anus*
 - Pilonidal sinus and abscess*
- v) Breast & Endocrine Surgery**
- Common Breast Disorders
 - Breast lumps*
 - Breast pain*
 - Breast cysts*
 - Nipple discharge*
 - Gynaecomastia*
 - Breast Carcinoma
 - Risk factors*
 - Pathology*
 - Diagnosis*
 - Treatment*
 - Breast reconstruction*
 - Surgery of the Thyroid Gland
 - Indications for surgery in thyroid disease*
 - Thyroid cancer (types and management)*
 - Complications of thyroidectomy*
 - Parathyroid Disorders
 - Calcium metabolism*
 - Clinical presentation of hypercalcaemia*
 - Investigation of hyperparathyroidism*

- Management of hyperparathyroidism*
- Adrenal Disorders and Secondary Hypertension
 - Causes of hypertension*
 - Conn's syndrome*
 - Pheochromocytoma*
- Endocrine Disorders of the Pancreas
 - Insulinoma*
 - Gastrinoma*
 - Neuroendocrine tumours*
 - Other rare endocrine tumours*

- vi) Vascular Surgery**
 - Arterial Surgery
 - Peripheral vascular disease and limb ischaemia*
 - Arterial embolism and acute limb ischaemia*
 - Arterial aneurysms*
 - Carotid disease*
 - Renovascular disease*
 - Arterial trauma*
 - Venous Disorders of the Lower Limb
 - Venous insufficiency and varicose veins*
 - Venous ulceration*
 - Deep venous thrombosis and pulmonary embolism*
 - Lymphoedema

- vii) Organ transplantation**
 - Basic principles of transplant immunology
 - Clinical organ transplantation
 - Organ donation and procurement
 - Immunosuppression and prevention of rejection

3.3 OTORHINOLARYNGOLOGY, HEAD & NECK SURGERY

- i) Ear, Nose & Throat Disorders**
 - Inflammatory disorders of the ear, nose and throat
 - Foreign bodies in the ear, nose and throat

- ii) Common Neck Swellings**
 - Congenital and rare swellings
 - Inflammatory swellings
 - Head & neck cancer

iii) Salivary Gland Disorders

- Infections and inflammation of the salivary glands
- Tumours of the salivary glands
- Stones of the salivary glands
- Miscellaneous conditions

iv) Eye Surgery

- Trauma to the eye
- Common eye infections

v) Endoscopy**3.4 ORAL AND MAXILLO-FACIAL SURGERY****i) Maxillo-facial Trauma**

- Classification of facial fractures
- Presentation of maxillo-facial fractures
- Assessment and investigation
- Treatment of facial fractures

ii) Common Conditions of the Face, Mouth & Jaws**iii) Principles of Soft Tissue Repair of Mouth, Face, Head & Neck****3.5 PAEDIATRIC SURGERY****i) Principles of Neonatal & Paediatric Surgery**

- History and physical examination of the neonate and child
- Maintenance of body temperature
- Assessment of respiratory and cardiovascular function
- Metabolic status
- Fluids, electrolytes and the metabolic response
- Vascular access

ii) Correctable Congenital Abnormalities

- Congenital abnormalities of the GI tract
- Congenital heart disease
- Abdominal wall defects
- Diaphragmatic hernia
- Neural tube defects
- Urological abnormalities

iii) Common Paediatric Surgical Disorders

- Pyloric stenosis

- Intussusception
 - Inguinal hernia and hydrocele
 - Undescended testes
 - Torsion of the testes
- iv) Orthopaedic Disorders of Infancy and Childhood**
- Gait disorders
 - Hip problems
 - Developmental dysplasia of hip*
 - Septic arthritis of hip*
 - Transient synovitis*
 - Perthes' disease*
 - Slipped femoral epiphysis*
 - Knee disorders
 - Genu varum*
 - Genu valgum*
 - Foot disorders
 - Talipes equinovarus*

3.6 PLASTIC & RECONSTRUCTIVE SURGERY

- i) Burns**
- Classification and pathophysiology
 - Initial assessment and management
 - Treatment including secondary surgery
 - Burns of special areas (i.e. face, eyes, hands, perineum)
- ii) Soft Tissue Infections**
- iii) Principles of Hand Trauma (tendon, nerve, nail bed)**
- iv) Hand disorders**
- Dupuytren's Disease
 - Carpal Tunnel Syndrome
- v) Benign Skin Lesions**
- vi) Malignant Skin Lesions (Basal Cell Carcinoma, Squamous Cell Carcinoma, Malignant Melanoma)**
- vii) Principles of Skin Cover**
- Split skin grafts
 - Full thickness skin grafts
 - Local flaps

- Distant flaps
- Free transfer flaps

viii) Principles of Microvascular Surgery

ix) Wound Healing

3.7 NEUROSURGERY

i) Neurological Trauma

- Head injuries
- Spinal cord injuries
- Paralytic disorders
- Nerve disorders

ii) Surgical Disorders of the Brain

- Clinical presentation of the intracranial mass
- Tumours of the nervous system
- Epilepsy
- Congenital and developmental problems

iii) Intracranial Haemorrhage (Subarachnoid, Intracerebral, Subdural, extradural and intraventricular)

iv) Brain Stem Death

- Diagnosis and testing for brain stem death
- Principles of organ donation

v) Surgical Aspects of Meningitis

- General features of meningitis
- Surgical considerations

vi) Rehabilitation

- The rehabilitation team
- Pain management
- Rehabilitation

3.8 TRAUMA & ORTHOPAEDIC SURGERY

i) Skeletal Fractures

- Pathophysiology of fracture healing
 - Classification of fractures
 - Principles of management of fractures
 - Complications of fractures

- Management of joint injuries
 - Common fractures and joint injuries
 - o Upper limb*
 - o Lower limb*
 - o Trunk, pelvis and vertebral column*
 - o Spinal fracture and spinal cord injuries*
 - o Fracture in Children*
- ii) Soft Tissue Injuries and Disorders**
- Nature and mechanism of soft tissue injury
 - Management of soft tissue injuries
- iii) Common Disorders of the Extremities**
- Disorders of the hand
 - Disorders of the Upper limb
 - Stenosing tenosynovitis (trigger finger)*
 - De Quervain tenosynovitis*
 - Tennis elbow*
 - Disorders of the Foot
 - Pes planus*
 - Pes cavus*
 - Hallux valgus*
 - Disorders of the Spine
 - Prolapsed intervertebral disc*
 - Spinal stenosis*
 - Spondylolisthesis*
 - Spondyloarthropathy*
- iv) Degenerative and Rheumatoid Arthritis**
- Osteoarthritis
 - Rheumatoid arthritis
 - Other inflammatory conditions
 - Surgical treatment of joint diseases
- v) Infections of Bones and Joints**
- Osteomyelitis
 - Necrotizing fasciitis
 - Other bone infections
- vi) Locomotor pain**
- Low back pain and sciatica
 - Pain in the neck and upper limb
- vii) Bone Tumours and Amputations**

- Primary bone tumours
- Metastatic bone tumours
- Amputations

viii) General

- Imaging techniques
- Neurophysiological investigations

3.9 UROLOGY**i) Urological Trauma**

- Renal, ureteric, bladder, urethral, penile and scrotal trauma

ii) Urinary Tract Infections and Calculi**iii) Haematuria**

- Classification, aetiology and assessment
- Tumours of the kidney, bladder, prostate and testis

iv) Urinary Tract Obstruction

- Urinary retention
- Disorders of the prostate

v) Pain and Swelling in the Scrotum

- Scrotal skin conditions
- Non malignant testicular swellings
- Inflammatory conditions
- Testicular torsion
- Testicular tumours

vi) Chronic Renal Failure

- Dialysis
- Principles of transplantation

vii) Aspects of Pelvic Surgery

- Gynaecological causes of acute abdominal pain
- Pelvic inflammatory disease
- Disorders of urinary continence