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JOHANNESBURG OFFICE
EXAMINATIONS & CREDENTIALS

June 2023

R E G U L A T I O N S

FOR ADMISSION TO THE FELLOWSHIP OF THE COLLEGE OF

PAEDIATRIC SURGEONS OF SOUTH AFRICA

FC Paed Surg(SA)

The examination comprises Primary, Intermediate and Final.

The Primary and Intermediate examinations will remain valid for the entire period that the candidate remains in a numbered training post in an Academic Department.

PRIMARY - Basic Science

INTERMEDIATE i) The principles of surgery in general
ii) The principles of the surgical speciality disciplines

FINAL - The theory and practise of paediatric surgery including operative surgery and the applied basic sciences namely anatomy, physiology and pathology

PRIMARY (Adapted from the College of Surgeons(SA))

1.0 ADMISSION TO THE PRIMARY EXAMINATION

1.1 A candidate for the Primary examination must hold a post-internship qualification to practise medicine which has been registered or is registrable with the Health Professions Council of South Africa

1.2 The General Surgical Primary examination is used for candidates wishing to proceed to other surgical specialities. The rules of the other surgical speciality vary and it is incumbent on prospective candidates to check the appropriate college's regulations before applying for admission to the general surgical primary examination.

1.3 The candidate should have successfully completed the Basic Surgical Skills course prior to applying for the Primary Examination

INTERMEDIATE (Adapted from the College of Surgeons(SA))

2.0 ADMISSION TO THE INTERMEDIATE EXAMINATION

A candidate may be admitted to the Intermediate examination having

2.1 passed the Primary

2.2 completed not less than 12 months of approved training as a registered medical practitioner, in surgery. Training during community service cannot be submitted.

Of the 12 months training called for, not less than 6 months must be spent in general surgery, not less than 3 months must be spent in ICU and not less than 3 months in trauma/emergency surgery.

2.3…/

2.3 **NOTE:**

2.3.1 The Primary and Intermediate examinations may be attempted concurrently with the proviso that if the Primary is failed and the Intermediate passed, no credit will be given for passing the Intermediate which will have to be retaken

2.3.2 The CMSA Senate, through its Examinations and Credentials Committee, will review all applications for admission to the examination and may also review the professional and ethical standing of candidates

FINAL

3.0 ADMISSION TO THE FINAL EXAMINATION

(to be read in conjunction with the Instructions)

A candidate may be admitted to the Final examination having

3.1 passed the Primary and the Intermediate examinations of the College of Surgeons of South Africa, or

passed the Fellowship examination of a College that has reciprocity or an agreement with the College of Paediatric Surgeons of South Africa. Such candidates must apply to the Council of Paediatric Surgeons of South Africa by writing to the President of the Council at least six months before the closing date for entry to the examination. Permission to take the examination will be by majority vote of the sitting Council. It is advisable that such candidates confirm their eligibility to take the Final Fellowship examination of the College of Paediatric Surgeons at the start of their training period.

3.2 produced evidence of having

3.2.1 been qualified to practise for a period of not less than four years (years of internship and community service do NOT to form part of this period)

3.2.2 served a period of not less than 48 months approved training in paediatric surgery. This period may form part of the 4 years called for in 3.2.1 above and is additional to the training called for in paragraph 2.2

3.2.3 Training is valid for a period of three years from the date of completion of their training period in a numbered registrar training post. An affiliation with an academic training department must be maintained during this three-year extension period. A motivation from the HOD of the academic unit will be required for this extension.

3.3 **PORTFOLIO OF LEARNING GUIDELINES – SUBMITTED AT THE TIME OF APPLICATION**

3.3.1 Candidates entering the Examination for the Fellowship of the College of Paediatric Surgeons are required to submit a portfolio of learning with details about operative experience and training in Surgery or any other surgical discipline, gained while the candidate was in a training post approved and registered by the Medical and Dental Board of the Health Professions Council of South Africa, or in a comparable postgraduate training post in any other country. Full details about the training institution(s) or hospital(s), specialist supervision (names, qualifications and addresses of consultants), and the training post (registered number, dates of employment in the post) must be provided. The portfolio must also contain certification by the HOD of the status of the MMed research project of the candidate. The project must be at a minimum stage of being ready for submission for entry to the Final examination.

3.3.2 The list must include all surgical diagnostic and rigid and flexible endoscopic procedures in which the candidate actively participated, either by performing the procedure (Surgeon) or by acting as First or Second Assistant

3.3.3 The Candidate may record and submit the details electronically including a computer database, provided it includes the above particulars, (portfolio of learning is obtainable on the CMSA website).

NAME OF HOSPITAL: ……..…….....

DATE (day, month, year) OF EACH PROCEDURE: …….....

SURNAME, INITIALS AND HOSPITAL NUMBER OF PATIENT: .....…….....

DATE OF BIRTH OR AGE OF PATIENT: ……..……..….....

PROCEDURE (including surgical, endoscopic or diagnostic procedures: .....

…….....

NAME OF PERSON PERFORMING THE PROCEDURE (Surgeon): ….…….....

NAME OF PERSON(S) ASSISTING (First and Second Assistants): …….....

STATUS OF SURGEON AND ASSISTANT(S) AT THE TIME OF THE PROCEDURE (ie Specialist, Registrar, Intern, Medical Student etc):.....

…….....

3.3.4 The data should be presented in detail as outlined above, but should also be consolidated in table form, showing the types of procedures with the total number of each performed by the candidate as Surgeon or Assistants

3.3.5 The Head of the Department as well as all other supervising Specialists named in the submission must sign a written statement to the effect that the information submitted by the candidate is accurate and true in every respect

3.3.6 The portfolio of learning must be submitted three months prior to the written examination in order to reach the Convenor of the particular examination timeously so that the Convenor will be able to send copies to all the Examiners and a decision on compliance and eligibility to enter the examination is taken timeously and communicated to the candidate early. Failure to submit the portfolio of learning or a portfolio that is deemed not to be in compliance with the regulations will result in the candidate not being eligible to take the Examination until the deficiencies are redressed.

4.0 SYLLABUS FOR THE PRIMARY EXAMINATION

4.1 **Primary - Basic Sciences**

- Core knowledge of anatomy, physiology and the principles of pathology and microbiology. This knowledge of the basic sciences is common to all surgical disciplines
- [SEE APPENDIX A FOR GUIDELINES]

5.0 SYLLABUS FOR THE INTERMEDIATE EXAMINATION

5.1 Core knowledge of the principles of surgery in general and the principles of surgical specialty disciplines

5.2 SEE APPENDIX B FOR GUIDELINES – Effective March 2012

6.0 SYLLABUS FOR THE FINAL EXAMINATION

6.1 The theory and practise of general and paediatric surgery (see appendix C) including operative surgery and the applied sciences, viz anatomy, physiology and pathology

6.2 Surgical guidelines, and classified syllabus — see Appendix D

7.0 CONDUCT OF THE PRIMARY EXAMINATION

7.1.1 Two 3-hour papers of MCQs and/or short written questions on the basic sciences. The multiple choice questions may include multiple true false, choose the best option and extended matching questions

7.2 **Marking regulation for the FCS(SA) Primary Examination:**

- None to all the responses/detractors in a MCQ may be correct
- In order to pass the primary examination a candidate must achieve an average of 50% or more for both papers (sub-minimum of 40% for each paper)

8.0 CONDUCT OF THE INTERMEDIATE EXAMINATIONS

8.1 The examination comprises:

Two 3-hour papers consisting of MCQ questions on the principles of surgery in general and of surgical speciality disciplines respectively. The multiple choice questions may include, choose the best option and extended matching questions.

8.2 The performance examination will consist of two paper cases and an OSCE. All questions will be blueprinted.

8.3 **Marking Regulations for the Intermediate examination:**

8.3.1 **The written examination**

For a candidate to pass the multiple-choice component they must achieve greater than or equal to 50% for each MCQ paper. To be invited to the performance examination a candidate must achieve a mark equal to or greater than 50% in MCQ Paper 1 as well as a mark equal to or greater than 50% for MCQ Paper 2.

8.3.2 **The performance examination**

The oral examination will consist of two paper cases and an OSCE.

One Paper case will be centred around the Principles of Surgery in General, and the second around Principles of Surgery and Surgical Specialities. There will be 20 OSCE questions. Ten questions will be based on Principles of Surgery in General, and the second ten will be based on Principles of Surgery and Surgical Specialities

8.3.3 **The overall mark**

A candidate's final mark will be calculated as follows per paper:

Paper 1:

MCQ paper 1	33.3% final mark
Paper case mark	33.3% final mark
OSCE mark	33.3% final mark

Paper 2:

MCQ paper 2	33.3% final mark
Paper case mark	33.3% final mark
OSCE mark	33.3% final mark

9.0 CONDUCT OF THE FINAL EXAMINATION

9.1 The examinations will consist of two parts

- An online written examination on the theory of Paediatric Surgery (Knowledge Assessment)
- An online, interactive examination of clinical, theoretical, and diagnostic knowledge related to the practise of Paediatric Surgery (Performance Assessment)

9.1.1 Conduct of the Knowledge Assessment Examination (Previously Written)

i. Two online written examinations of a maximum of three hours duration each. Additional time for typing is incorporated in the three-hour time limit.

ii. The questions will consist of a combination of single best answer, extended matching questions, very short answer, and short written answer types.

iii. The SPOT Test that was previously administered during the Clinical component of the examination will now form part of the Knowledge Assessment (written) part of the examination. Since a remark can be requested for a written examination, this will allow a timeous request and avoid delays in release of the final results.

iv. No negative marking will apply.

v. An internationally…/

v. An internationally accepted standard setting method, as suggested by the Executive Director of Education will be applied to the Knowledge Assessment Examination. The Angoff method is used most frequently.
vi. A single combined mark for both papers will be awarded.
vii. A minimum combined mark in the Knowledge Assessment Examination, as determined by the standard setting method applied, will be required for entry into the Performance assessment examination.

9.1.2 Conduct of the Performance Assessment Examination (Previously Clinical)

i. Candidates will have to present to a CMSA approved site for this examination.
ii. The examination will be conducted in an online video conferencing format as arranged by the CMSA.
iii. The examination may be conducted over one to three days to accommodate a large number of candidates.
iv. The examination will consist of the following components:

a) Simulated Structured Long Cases
- Two structured, standardised paper based long cases referring to an index pathology in Paediatric Surgery will be assessed.
- The candidate will be presented with the clinical information in a sequential format to simulate a clinical interaction.
- Thirty minutes including examiner discussion time will be allocated to each case.
- History taking, management and interpretation of investigations will be covered in this examination

b) Simulated Structured Short Cases
- Each candidate will have two sessions of 30 minutes each including examiner discussion time for this component of the examination.
- Four structured short cases will be presented in each session.
- A focused discussion on a single clinicopathological entity will be assessed per case eg history taking from a patient with jaundice.

c) Structured Oral Examination
- Each candidate will have 3 oral examinations
- Each examination session will be thirty minutes long to make a total of 90 minutes including examiner discussion time.
- All areas of Paediatric Surgery including but not limited to operative anatomy, physiology, pathology and general management will be covered.

9.2 Mark Allocation per component

i. Passing the Knowledge Assessment examination (previously known as the written examination) with a minimum mark as ascertained by the standard setting method applied, will be a requirement for invitation to the Performance Assessment examination (previously known as the clinical and oral examination).
ii. There will be seven components to the Performance Assessment examination.
iii. The components will be :
1. Long case 1
2. Long case 2
3. Short case 1
4. Short case 2
5. Oral 1
6. Oral 2
7. Oral 3
iv. Each of the components is equally weighted.
v. Each component will be marked out of 100% in 5% increments by each examiner. The final mark will be averaged and rounded off to the nearest 1%. No further rounding off will apply.
vi. A mark of 50% or more will be required to pass a component.

9.3 Criteria for passing (both conditions must be met)

i. An average overall mark of 50% or more for the entire Performance Assessment examination, and
ii. A mark of < 50% in not more than one component of the Performance Assessment examination. The candidate may only fail one of the seven components listed in d(iii) above.

10.0 ADMISSION AS A FELLOW

10.1 Only candidates who have completed at least 48 months of training in a CMSA recognised registrar post may be awarded a fellowship if successful in the examination.

10.2 **Candidates who have written the examination as a prerequisite from the HPCSA for inclusion on the specialist register are not eligible to be awarded a Fellowship but will be sent a letter confirming their success in the examinations**

All other candidates will be asked to sign a declaration as below:

1, the undersigned, ……do solemnly and sincerely declare:

that while a member of the CMSA I will at all times do all within my power to promote the objects of the CMSA and to uphold the dignity of the CMSA and its members

that I will observe the provisions of the Memorandum & Articles of Association, By-laws, Regulations and Code of Ethics of the CMSA as in force from time to time

that I will obey every lawful summons issued by order of the Senate of the said CMSA, having no reasonable excuse to the contrary

and I make this solemn declaration faithfully promising to adhere to its terms

Signed at …….. this ….....…… day of

……. 20 ……

Signature ……

Witness ……
(who must be a Founder, Associate Founder, Fellow, Member, Diplomate or Commissioner of Oaths)

10.3 A two third majority of members of the CMSA Senate present at the relevant meeting shall be necessary for the award to any candidate of a Fellowship

10.4 A Fellow shall be entitled to the appropriate form of certificate under the seal of the CMSA

10.5 In the event of a candidate not being awarded the Fellowship (after having passed the examination) the examination fee shall be refunded in full excluding HPCSA candidates who are not entitled to a Fellowship.

10.6 The first annual subscription is due one year after registration
(statements are rendered annually)

A P P E N D I X A

1.0 AIMS, OBJECTIVES AND SYLLABUS FOR THE PRIMARY EXAMINATION IN GENERAL SURGERY

1.1 The aim of the examination is to ensure that successful candidates are competent to embark on a career in General Surgery or one of its subspecialties. The examination will help refresh existing knowledge and impart new knowledge and competencies to ensure better care of the surgical patient. The competencies required are in the cognitive, psychomotor and affective (interpersonal/attitudinal) domains

1.2 Competence is defined as knowledge, skills and attitudes in:

- medical expertise
- technical expertise
- judgement – clinical decision making
- communication
- collaboration and teamwork
- management and leadership
- health advocacy
- scholarship and teaching
- professionalism.

1.3 Areas of competence that will be assessed in the FCS(SA) Primary examination will include:

- Clinically relevant anatomy and applied embryology
- Appreciation of three dimensional and cross sectional relevant anatomy
- Clinically relevant human physiology
- Pathophysiology in surgical patients
- General pathology principles and mechanisms of disease
- The genetic basis of disease
- Oncological principles in surgery
- Immunology
- Principles of microbiology relevant to general surgical practice
- Asepsis and antisepsis
- Pharmacological principles relevant to surgery
- Pharmacology of drugs commonly used in surgery
- Blood constituents, clotting mechanisms and blood product transfusion principles
- Fluid requirements and fluid management in the surgical patient
- Acid–base problems in the surgical patient
- Applied medical statistics
- Critical appraisal of the literature
- Evidence based literature
- Searching the literature
- Informed consent
- HPCSA regulations pertaining to surgical practice
- Basic clinical skills

d) Basic procedural skills
e) Counselling of patients and relatives
f) Safety in the operating room
g) Principles of audit
h) Principles of patient documentation
i) Principles of continuity of care
j) The content of the Basic Surgical Skills course manual
k) Learning in medicine is a continual process. Although general and specific objectives have been set, any aspect of medicine that is deemed to be surgically relevant may be included in the assessment

i) As a guide, the Specialty of Surgery (General Surgery) covers the following areas:
- Alimentary tract
- The abdomen and its contents
- Breast, skin and soft tissue
- Endocrine system
- Head and neck surgery
- Vascular surgery
- Paediatric surgery
- Trauma surgery/burns
- Surgical critical care
- Surgical oncology

2.0 SPECIFIC/LEARNING OBJECTIVES

2.1 Clinically relevant anatomy and applied embryology:

2.1.1 Detailed knowledge of anatomy is required. Clinically relevant anatomy should be concentrated on. The anatomy of the whole body should be known in some detail. It is expected however that the candidate should concentrate on the anatomy, surface anatomy, applied anatomy and embryology of:
- Those structures commonly affected by disease encountered by the general surgeon
- Those anatomical structures and their anatomical relationships which are important in general surgical operations

2.1.2 Anatomical variations are common and often pose challenges to the practising surgeons. The anatomical variations that impact on presentation of disease and /or surgical exposure should be known in detail, as should the embryological basis of the variation

2.1.3 The embryological origin of organs should be known. Emphasis will be placed on common anatomical variations/abnormalities that have an embryological origin

2.1.4 The following areas of applied gross anatomy should be concentrated on:
- Brain and skull with emphasis on areas affected by trauma and space occupying lesions
- The cranial nerves
- The face
- Bony structures of the sinuses, orbit, jaw
- The tongue and pharynx
- Salivary glands
- The neck
- The chest
- The mediastinum
- The thoracic inlet and outlet, the brachial plexus
- The axilla
- The muscles of the neck and back
- The peripheral vascular system
- The lymphatic system
- The heart
- The diaphragm
- The abdominal wall
- The abdominal contents
- The retroperitoneum
- The pelvis (its contents and foramina, the pelvic floor)
- The pelvic bones
- The anus and continence mechanisms
- The peripheral nervous system
- The autonomic nervous system
- The spine
- The spinal cord and its neuroanatomy
- The cubital fossa

- The popliteal fossa
- The gluteal area
- The perineum
- Female genitalia (internal and external)
- Male genitalia
- The extremities. Emphasis to be placed on vital structures (nerves, blood vessels), major muscle groups, compartments, vital structures in the joints, relationship of vital structures to bones
- The hand, with emphasis on vital structures, function and areas prone to infection

2.2 **Appreciation of three dimensional and cross sectional relevant anatomy:**

2.2.1 Current imaging with CT and MRI is cross sectional, but more and more axial and saggital scanning is being performed. In addition, three dimensional reconstruction is common. The candidate would be expected to be able to identify normal anatomical structures in such images

2.3 **Clinically relevant human physiology:**

2.3.1 Candidates should have detailed knowledge of:

- Homeostasis, thermodynamics, positive and negative feedback
- Fluid and electrolyte and acid-base physiology and pathophysiology
- Body water compartments
- Composition, osmotic activity and oncotic pressure of body fluids
- Water and electrolyte exchange
- Mechanisms of osmoregulation and volume regulation
- Buffer systems and mechanisms of acid-base haemostasis
- The haemopoietic system
- Lung function and respiratory exchange and oxygen transport. Control of respiration and breathing. Ventilatory response to exercise. Measuring lung function. Ventilation perfusion ratios, control of pulmonary circulation
- Oxygen transport:
- Renal function: control systems with respect to microanatomy, autoregulation, regulation of GFR, renal tubular function(in health and disease), the effect of diuretics, the effect of obstruction at various points, bladder function and control (in health and disease)
- Adrenal function
- Function of the GIT in digestion, motility and transit, absorption
- The secretions of the GIT
- Hepatic function
- Nutrition:
  The interrelationship between fat, carbohydrate and protein metabolism and changes with under and over nutrition. The role of trace elements and vitamins in nutrition. The nutritional impact of surgery and injury
- Cardiac function, electrophysiology and circulation
- Physiology of the peripheral vascular system and microvasculature
- Physiology of the splanchnic, hepatic circulation
- Placental and fetal circulation
- Control of blood pressure
- The endothelium
- The extracellular space and lymph systems
- The cardiovascular response to exercise and stress
- The role of Nitric Oxide
- Neurophysiology:
  Cell membrane excitability, intercellular signaling, somatic and autonomic nervous systems, cerebral function, the functional role of the basal ganglia, limbic system, hypothalamus brainstem and reticular activating system, reflex controls, spinal neurophysiology, the cortex (and its role in speech, sensory perception and motor control), the cerebellum (and its role in fine motor coordination), the cranial nerves

- The CSF and blood brain barrier../

- The CSF and blood brain barrier
- Endocrine function (pituitary, thyroid, parathyroid, adrenal medulla and cortex, pancreas, kidney, sex hormones)
- The regulation of body function in response to exercise, trauma, starvation, sepsis and stress of surgery
- Paracrine and autocrine function
- The different physiology of the neonate, child, the pregnant woman and the elderly must be understood

2.4 PATHOPHYSIOLOGY IN SURGICAL PATIENTS

2.4.1 It is expected that the candidate will have a clear understanding of normal human physiology and recognise how this may be altered by pathological processes, surgery or anaesthesia. Correlation between physiological changes and physical signs or symptoms elicited in patients should be clearly understood. For example, there should be a clear understanding of the physiological changes that:

- ensue in a patient following prolonged vomiting or diarrhoea,
- occur in renal function after surgery
- prevail in a patient with a perforated duodenal ulcer
- occur during and after major surgery
- occur with deep obstructive jaundice
- affect fluid balance in the surgical patient

2.4.2 The pathophysiological effects of insult to the neonate, child, the pregnant woman and the aged must be understood

2.4.3 Interpretation of laboratory results in a clinical scenario eg

- Fluid, electrolyte and acid base disturbances and their identification
- Acid base abnormalities
- Haemostasis

2.5 GENERAL PATHOLOGY PRINCIPLES AND MECHANISMS OF DISEASE

2.5.1 Candidates should demonstrate an understanding of the general pathological mechanisms (degenerative, reactive and neoplastic) underlying common disease. This will include knowledge of aetiology, pathogenesis, epidemiology, investigation and natural history. Areas to be concentrated on are:

- General pathological phenomena including cell injury, adaptation and death, inflammation, apoptosis, cell death, degenerations including atherosclerosis, pigmentation and calculus formation, alterations of growth, differentiation and function of cells and of age
- The effects of aging on the body
- Tissue response to injury including the adaptive reactions of the body to injury. This includes an understanding of important morphological manifestations, pathophysiology of important disease states (eg major organ failure either single or combined, shock, sepsis, disseminated intravascular coagulation), biochemical mechanisms and manifestations where these factors are important in the understanding of pathogenesis, natural history
- The processes of wound healing and tissue inflammation (acute and chronic)
- The principles of cellular events and resulting in local and systemic inflammatory responses. This includes knowledge of the common cytokines and other mediators of inflammation
- Common and important issues in systemic pathology are examinable in so far as:
  - (i) a given lesion exemplifies a basic pathological process, eg anaphylaxis as an example of hypersensitivity reactions, myocardial infarction in atherosclerosis, colorectal carcinoma as an example of neoplasia, or
  - (ii) disorders of a given system are likely to be encountered in surgical practice, eg post-operative pneumonia
- Knowledge of laboratory medicine

2.6 THE GENETIC BASIS OF DISEASE (Genetics and Molecular Biology)

2.6.1 Structure of DNA and RNA, the cell cycle, the generation of genetic abnormalities

2.6.2 Mendelian genetics

2.6.3 Cytogenetics including basics of laboratory techniques for detection of cytogenetic abnormalities

2.6.4 Specific conditions are examinable in so far as they illustrate important principles or are common or important disorders

2.7 ONCOLOGICAL PRINCIPLES IN SURGERY

2.7.1 An understanding of Cancer biology is essential. The following specific aspects pertaining to oncology should be known in detail:

- Cells and tissues of origin
- Reproductive, growth (proliferative) patterns and host interaction
- Mechanisms of invasion and metastasis
- Molecular biological, genetic and inherited characteristics
- Geographic racial and cultural (population) factors
- Mechanisms and types of chemical, physical and microbial carcinogenesis
- Distinctive pathological (macroscopic, histological and immunochemical) features which aid diagnosis
- The application of the above to common cancers in children and adults
- Principles of oncological surgery
- Basic mechanisms of action of current common chemotherapeutic agents

2.8 Immunology:

2.8.1 Basic Immunology including:

- non-specific defence mechanisms, the complement system, the major histocompatibility complex
- the cells of the immune system, their functions, their interactions, cell subsets, cell surface markers and receptors structure, function, genetics of secretory products of cells involved in the immune response including immunoglobulins, interleukins, various other factors activation and control of the normal immune response
- Immunity infection including bacteria, viruses, fungi and protozoa
- Abnormal Immunological Responses including hypersensitivity, autoimmune disorders and immunodeficiency disorders
- Diagnostic Immunology including the basic principles (not detailed) of commonly used immunological tests, their applications and their limitations
- Immunology pertaining to blood product transfusion

2.9 Transplantation:

- Define and differentiate autografts, allografts and xenografts
- Understand the role of major histocompatibility complex in clinical transplantation

2.10 PRINCIPLES OF MICROBIOLOGY RELEVANT TO GENERAL SURGICAL PRACTICE

An understanding and knowledge of infectious agents (viruses, bacteria, fungi, protozoa and sub-viral particles eg prions) in surgical disease processes and of the developing microbial resistance to current antimicrobials is essential

- Pathogenesis of infection
- Host defence mechanisms and microbial virulence:
  - The normal microbial flora of the body and its role in health and disease
  - Surgically relevant bacterial, viral, fungal and parasitic infections;
    - infection following surgery, eg wound infection, septicaemia
    - infections with surgical implications, eg peritonitis, anaerobic soft tissue infections, AIDS
  - The principles of antimicrobial agents and their scientific use in the therapy and prevention (prophylaxis) of infection
  - Sterilisation and disinfection
  - Laboratory medicine aspects of infectious diseases, eg principles behind blood culture techniques, interpretation of gram stains, antimicrobial susceptibility techniques

2.11…./

2.11 PRINCIPLES OF PHARMACOLOGY AND THERAPEUTICS IN GENERAL SURGERY

- Pharmacological principles relevant to surgery and Pharmacology of drugs commonly used in surgery
- The following *principles* are to be covered in detail:
- Pharmacodynamics and pharmacokinetics of major drug groups
- The pharmacodynamics includes the mechanism of action of a drug, particularly where it may be important in understanding its use and/or its side-effects, whereas the pharmacokinetics include factors such as bioavailability (particularly to emphasise difference in routes of administration), plasma protein finding, clearance (metabolism if relevant) etc. The clinical application of pharmacodynamics and pharmacokinetics in route of administration, dosage and dosing schedules, the effect of disease states on drugs, the effect of the drug on the patient, and potential clinically relevant drug interactions
- The changes in the neonate, child and elderly that effect pharmacodynamics and pharmacokinetics
- The above principles pertaining to the following drug groups should be emphasised:
  - Pain killers
  - Diuretics
  - Inotropes, vasoconstrictors, vasodilators, anti arrhythmics
  - Immune modulators including steroids and anti-inflammatories
  - Antimicrobials
  - Drugs affecting the GIT eg those affecting gastric acid secretion, gut motility, stool transit time
  - Drugs affecting haemostasis eg Heparin, Warfarin, Fractionated Heparin, Thrombolytics
  - Anaesthetic drugs (Inhalational, oral, and intravenous)
  - Local anaesthetics
  - Drugs affecting glucose metabolism eg insulin, oral hypoglycaemics
  - Cytotoxics, Anti-oestrogens eg Tamoxifen
  - Thyroxin and anti-thyroid drugs

2.12 HAEMATOLOGY AND TRANSFUSION

- The following aspects should be known in detail:
  - The origin and differentiation of haematopoietic cells
  - Anaemias of acute and chronic blood loss. Basic investigations to differentiate various causes of anaemia eg types and mechanisms of haemolysis, anaemias caused by substrate deficiency
  - Mechanisms of haemostasis. Tests of haemostasis and their clinical application
  - Abnormal haemostasis
  - Bleeding disorders, congenital and acquired
  - Disseminated intravascular haemostasis
  - Origin, differentiation and proliferations of white cells particularly lymphomas
  - Blood products, components and substitutes

2.13 ASEPSIS AND ANTISEPSIS

- Blood constituents, clotting mechanisms and blood product transfusion principles
- Fluid requirements and fluid management in the surgical patient

2.14 CRITICAL APPRAISAL OF THE LITERATURE, EVIDENCE BASED MEDICINE AND SEARCHING THE LITERATURE

- With the explosion of available medical literature, the candidate should understand the key concepts of Evidence Based Medicine (EBM), levels of evidence and how to effectively and efficiently search the literature

2.15 LEGAL AND ETHICAL ISSUES

- Candidates should know the ethical and legal principles relating to:
  - Informed consent
  - Confidentiality and access to health records
  - Filling out a death certificate
  - Medico-legal post mortems
  - Obtaining permission for autopsy
  - Withholding resuscitative measures
  - Organ donation
  - Brain death
- HPCSA regulations pertaining to surgical practice including issues of professional misconduct

2.16 APPLIED MEDICAL STATISTICS, BIOSTATISTICS, EPIDEMIOLOGY

- The candidate should:
  - Understand the principles of biostatistics and research design and commonly used statistical tests and terminology as necessary to critically appraise the clinical and experimental surgical literature
  - Understand the principles of biostatistics and epidemiology applicable to the use of diagnostic tests, screening and disease prevention programmes, patterns of disease (eg trauma, cancer), risk assessment, scoring systems (eg physiologic and anatomic scoring of trauma, neurologic function etc), prediction of outcome etc
  - Identify the meaning and appropriate usage of commonly used terms, including sensitivity, specificity, positive predictive value, negative predictive value, false positive, false negative, confidence limits, standard deviation, retrospective, prospective, intention to treat, power, randomised trial, control, blind , double blind ,relative risk reduction, number needed to treat, meta analysis, systematic review
  - Identify types 1 and 2 statistical errors and the factors influencing them
  - Identify the requirements for the appropriate usage of common statistical comparison, including test, chi-square, ANOVA, correlation, regression, non parametric testing"

2.17 THE BASIC SURGICAL SKILLS COURSE

- It is expected that all candidates have successfully completed the Basic Surgical Skills course that is run under the Aegis of the Colleges of Medicine of South Africa under license from the Royal College of Surgeons of England
- The following are examinable:
  - Asepsis and antisepsis
  - Safety in theatre
  - The principles of anastomosis
  - Suture materials and needles
  - The principles of debridement
  - Diathermy principles and safety
  - Basic principles of laparoscopy

2.18 Suggested texts for new FCS(SA) Primary:

- Raferty AT, Delbridge MS.*Basic Science for the MRCS.* Churchill Livingstone, Elsevier Science, 2006. ISBN-13 978-0-443-10109-0
- Raferty AT. *Applied Basic Science for Basic Surgical Training*. Churchill Livingstone, 2000. ISBN 0 443 06143 2
- Winscow TDV, Campbell MJ. *Statistics at Square One 10th Edition.* BMJ Books, 2002. ISBN 10 : 0 72791552 5
- Basic Surgical Skills Manual; Third edition

  The above texts are highly recommended and cover almost the entire syllabus of the FCS(SA) Primary. It is expected, however, that the following texts be used as references for a deeper understanding of the basic sciences
- **Anatomy:**
  - Snell, Richard S. *Clinical Anatomy*. 7th Edition. Lippincott Williams and Wilkins, Philadelphia, 2004
  - McMinn R.M.H., *Last's Anatomy, Regional and Applied*, 9th Ed., 1998 (Reprinted 2003) Churchill Livingstone
  - Abrahams PH, Marks SC, Hutchings RT. *Mc Minns Color Atlas of Human Anatomy.* CV Mosby 2003 ISBN 0723432120
- **Physiology:**
  - Ganong W.F *Review of Medical Physiology*, 21th Ed., 2005, Lange Mc Graw-Hill

    or
  - Guyton, AC, Hall JE. *Text Book of Medical Physiology*, 11th Ed. Elsevier. 2000
- **Pathology:**
  - McPhee SJ, Lingappa, VR, Ganong WF. *Pathophysiology of Disease. An introduction to clinical medicine.*Fourth Edition Lange Medical Books/ McGraw–Hill 2003
  - Really Essential Medical Immunology*: Ivan Roitt & Arthur Rabson*
  - Cotran, Ramzi S. Joint authors/editors: Robbins, Stanley L. Kumar. V, Tucker. C *Robbins pathologic basis of disease.* 3rd ed. Philadelphia: London: Saunders, c1999

JOHANNESBURG
June 2023

A P P E N D I X B

GUIDELINES FOR CANDIDATES ENTERING THE FCS(SA) INTERMEDIATE EXAMINATION

FCS(SA) Intermediate Objectives

Overall objectives

The candidate is required to know and understand the principles of surgery in general and the principles of the major specialities of surgery. It is expected that the candidate will have the theoretical knowledge and practical skills to deal with:

- all aspects pertinent to the resuscitation and emergency treatment of life threatening surgical conditions in both adults and children.
- all aspects of patient care relevant to the peri-operative period, including intensive care support,

General Learning Outcomes

- Demonstrate understanding of the principles and practical application of supportive surgical care including emergency care.
- Demonstrate understanding of the principles and practical application of care related to the other surgical specialities with particular focus on emergency care. These specialities are Orthopaedics, Urology, Plastic Surgery, Cardiothoracic Surgery, Paediatric Surgery, Neurosurgery, Ophthalmology, Otorhinolaryngology and Obstetrics and Gynaecology including emergency care.
- Demonstrate knowledge of relevant clinical anatomy, physiology and pathophysiology behind the general principles and interpretation and application of commonly used diagnostic tests and imaging modalities.
- Demonstrate understanding of applied pathophysiology relevant to peri-operative care of the surgical patient including organ support in critical illness.

FCS(SA) INTERMEDIATE PAPER I: PRINCIPLES OF SURGERY IN GENERAL

General Objectives

The candidates required to know and understand the principles of surgery in general. It is expected that the candidate will have the theoretical knowledge and practical skills to deal with:

- all aspects pertinent to the resuscitation and emergency treatment of life threatening surgical conditions in both adults and children.
- all aspects of patient care relevant to the peri-operative period, including intensive care support.

1.0 A: SUPPORT IN CRITICAL ILLNESS :

1.1 **General objectives**

Understand the anatomical, physiological and pathophysiology principles involved in the practical provision of major organ support for the critically ill surgical patient relating to the following topics**:**

1.2 **Support of oxygenation and ventilation**

Understand the anatomical and practical principles involved in airway management in relation to the following headings.

- Simple measures
- Endo-tracheal intubation
- Intubation of the difficult airway
- Surgical airways

Understand lung physiology and pathophysiology as applicable to mechanical ventilation with particular reference to the following topics.

- Lung functions
- Peri-operative evaluation of lung function
- Lung volumes and capacities
- Problems with the alveolar-capillary interface
- The interpretation of blood gas analysis

Understand the …./

Understand the physiology behind oxygenation in the ventilated patient with particular reference to the following topics

- Hypoxia and hypoxaemia
- DO_2 / VO_2 / SvO_2
- Oxygen consumption in critical illness
- Oxygen therapy / PEEP / CPAP

Understand the principles behind the practical provision of mechanical ventilation under the following headings

- Indications for ventilation
- Non-invasive ventilation
- Modes of ventilation
- Lung protective ventilation
- Alveolar recruitment
- Weaning measures and protocols
- Lung mechanics and monitoring

Understand the mechanism and management of pulmonary aspiration syndromes and infections.
Understand the pathophysiology and management of acute lung injuries under the following headings

- Inflammatory
- Infective
- Ventilator associated

1.3 **Support of the circulation systems**

Understand the classification, patho-physiology, clinical presentation and treatment of shock under the following headings

- Hypo-volaemic / haemorrhagic shock
- Cardiogenic shock (cardiac and extra-cardiac)
- Septic / redistributive shock
- Anaphylactic / allergic shock
- Neurogenic shock and the difference to spinal shock
- Free oxygen radicals and reperfusion injuries
- Lactic acidosis
- Endpoints of resuscitation

  Understand the pharmacology and practical use of cardiovascular drugs in critical illness under the following categories

- Inotropic agents
- Anti dysrhythmic agents
- Vasodilators
- Vasopressors

Understand the pathophysiology and practical principles involved in managing acute cardiac disturbances under the following headings

- ECG interpretation
- Cardiac arrest
- Cardiopulmonary resuscitation
- Defibrillation
- Electric and mechanical support of the failing heart
- Cardiac dysrhythmias. Interpretation of the ECG
- Hypertensive crisis

1.4 **Monitoring Devices**

Understand the principles, application, interpretation, and complications of the following devices used in monitoring patients with critical illness

- Pulse oximetry
- Arterial, central venous and Swan Ganz catheters
- Endotracheal cuff pressure
- Capnography, calorimetry and metabolic monitoring
- Tonometry
- Thrombo-elastography
- Oesophageal Sonar

1.5 **Temperature Control of the Patient**

Understand the mechanisms of thermal loss and the principles and practical application of preventative and restorative treatment measures.

- Hypothermia
- Hyperthermia including malignant hyperpyrexia

1.6 **Inflammatory Syndromes and Organ dysfunction**

Know and understand the definitions, underlying pathophysiology and management of inflammatory syndromes and organ dysfunction under the following headings.

- SIRS Systemic Inflammatory Response Syndrome
- CARS Compensated Anti-inflammatory Response Syndrome
- MARS Mixed Anti-inflammatory Response Syndrome
- MODS Multiple Organ Dysfunction Syndrome
- MOF Multiple Organ Failure
- Scoring systems

1.7 **Intra-abdominal Hypertension**

Understand the pathophysiology and practical management of raised intra-abdominal pressure under the following headings

- Measurement of Intra-abdominal pressure
- Abdominal Compartment Syndrome
- Content containment techniques

1.8 **Transport of the critically ill patient**

Understand the principles and practical aspects of the transfer of critically ill patients.

1.9 **Endocrine and Metabolic aspects of critical illnesses**

Understand the physiological and pathophysiological principles involved in endocrine and metabolic abnormalities and their practical application in the treatment of these conditions.

- Endocrine
  - Glycaemic control
  - Diabetes Insipidus
  - Adreno-cortical Insufficiency
  - Thyroid Storm
  - Adrenergic crisis
- Metabolic
  - Acid Base disturbances
  - Hyperkalaemia
  - Hypercalcaemia

1.10 **Nutritional aspects of critical illnesses**

Understand the physiological and pathophysiology principles involved in the practical provision of nutritional support both enteral and parenteral of the critically ill patient under the following headings

- Nutrient provision
- Access
- Complications

1.11 **Renal Failure**

Understand the physiological and pathophysiological principles involved in the diagnosis and supportive management of renal failure under the following headings

- Acute renal failure
- Myoglobinanaemia and myoglobinuria
- Haemodialysis
- Peritoneal dialysis
- Ultrafiltration

2.0 B: PERI - OPERATIVE CARE:

2.1 **General objective**

Understand the principles involved and their practical application in the provision of perioperative surgical care under the following topics.

2.2 **Co-morbidity risk**

Understand the principles of assessment of general and disease specific co-morbidity risk and the optimisation of patients for procedures or surgery under the following headings.

- Cardiac
- Pulmonary
- Hepatic
- Renal
- Endocrine
- Obesity
- Age
- Medications

2.3 **Abnormalities of homeostasis**

Understand the physiological reasons underlying the principles of assessment and management of abnormalities of homeostasis related to the following

- Metabolic response to injury
- Fluid and electrolyte therapy
- Acid base balance

2.4 **Haemostatic disorders**

Understand the anatomical, physiological and pathophysiological principles involved in haemostasis and their practical application in the treatment of haemostatic disorders.

- Laboratory Investigations
- Component Therapy
- Thrombosis and Thrombo-Embolism
- Deep Venous Thrombosis
- Pulmonary Embolism
- Haemostatic Failure and DIC
- Anticoagulant Therapy
- Thrombolytic Therapy

2.5 **Surgical Nutrition**

Understand the principles of nutritional assessment, the recognition of nutritional deficiency and the practical provision of nutritional support in the surgical patient related to the following

- Assessment of nutritional status.
- Indications for nutritional support.
- Calculation of nutrient requirements.
- Parenteral and enteral nutrition
- Access
- Provision
- Complications
- Metabolic related
- Delivery related

2.6…/

2.6 **Endocrine conditions**

Understand the pathophysiology and the principles of diagnosis and management of endocrine emergency conditions and the management of endocrine conditions in relation to surgery under the following headings.

- Hyper and hypothyroidism
- Hypercalcaemia
- Steroid therapy
- Hypo and hyper adrenal function
- Hypo and hyperglycaemia
- Diabetic keto-acidosis

2.7 **Imaging**

Understand the principles of imaging techniques, their application and interpretation included in the emergency care situation under the following headings.

- Chest radiography
- Ultra sound
- Duplex Doppler
- Computerised axial tomography
- Magnetic resonance imaging
- Isotope scanning

2.8 **Pharmacology**

Understand the pharmacology of commonly used drugs in surgical practice and the principles of their appropriate use.

- Drugs used for sedation and analgesia
- Antibiotics
- Steroids
- NSAIDS

2.9 **Infection and Antimicrobials**

Understand the principles of the prevention and treatment of infection under the following headings

- Asepsis and sterile technique
- Surgical technique
- Prophylactic antibiotics
- Therapeutic antibiotics

2.10 **Blood transfusion**

Understand the principles governing the use of blood and blood products and their practical application under the following headings.

- Blood groups and cross matching.
- Indications for transfusion.
- Transfusion reactions
- Massive transfusion

2.11 **Intra-Operative Care**

Understand the principles involved in the practical and safe application of intra-operative surgical care relating to the following topics

- Aseptic and antiseptic techniques
- Hazards and precautions in operating theatres
- Energy and imaging devices used in theatre.
- Diathermy
- Unipolar
- Monopolar
- Harmonic scalpel
- Laser

2.12…./

2.12 **Post-operative complications**

Understand the mechanisms of postoperative complications and the principles of prevention and management in relation to the following topics.

- Haemorrhage
- Fever
- Post-operative confusion
- Respiratory distress
- Cardiac dysfunction
- Urinary tract complications
- Surgical site infection

FCS(SA) INTERMEDIATE PAPER 2 - PRINCIPLES OF THE SURGICAL SPECIALITIES

General objectives

The candidate is required to know and understand the principles of the major specialities of surgery. It is expected that the candidate will have the theoretical knowledge and practical skills to deal with:

- all aspects pertinent to the resuscitation and emergency treatment of acute surgical conditions in both adults and children
- all aspects of patient care related to the surgical specialities pertinent to the management of the surgical patient in the peri-operative period, including the intensive care unit.

3.0 GENERAL SURGERY

3.1 **Abdominal conditions**

Understand the pathophysiology and the principles of diagnosis and management of abdominal emergency conditions due to

- Intraperitoneal inflammation (localised or generalised)
- Retroperitoneal inflammation
- Obstruction of a hollow organ
- Haemorrhage (intraperitoneal or intraluminal)
- Trauma (blunt or penetrating)
- Obstetric and gynaecological diseases
  - Ectopic pregnancy
  - Pelvic inflammatory disease
  - Ovarian torsion
  - Vaginal bleeding
- Medical conditions simulating acute abdominal emergencies

3.2 **Wound Healing**

Understand the principles of wound healing and the treatment of wounds including:

- Classification and types of wound
- Techniques of excision and debridement
- Wound management and dressings
- Suture materials
- Mechanical staplers
- Closure of incised wounds
- Bites
- Tetanus and gas gangrene prophylaxis

3.3…./

3.3 **Neurosurgery**

Understand the principles of the pathophysiology assessment and emergency management of acute neurosurgical conditions in relation to the following.

- Conscious level assessment (Glasgow Coma Score)
- Coma
- Head injuries
- Raised intracranial pressure
- Prevention of secondary brain injury
- Decompression of extradural haematoma
- Brain Death
- Acute spinal cord injury
- Infection of the central nervous system
- Fluid and electrolyte abnormalities

3.4 **Ear, Nose and Throat Surgery**

Understand the principles of treatment of the following ENT emergency conditions

- Trauma: Penetrating and blunt
  - Pharynx
  - Larynx
  - Trachea
  - Cervical Oesophagus
- Upper airway obstruction
- Ingestion of caustic agents
- Foreign bodies in the upper airway or oesophagus

3.5 **Ophthalmology**

Understand the principles of treatment of the following ocular emergency conditions

- Ocular trauma
- Intra-orbital bleeding
- Peri-orbital infections with threatening blindness

3.6 **Maxillo-Facial Surgery**

Understand the principles of diagnosis and treatment of the following maxilla-facial emergency conditions.

- Facial fractures (blunt and penetrating)
  - Recognition in relation to airway compromise
- Head and neck infections
  - Management
  - Microbiology

3.7 **Orthopaedic Surgery**

Understand the principles of diagnosis, assessment and the practical emergency management of the following common orthopaedic conditions emergency

- Osteomyelitis and acute septic arthritis
- Limb fractures and joint dislocations
  - Classification of fractures and dislocations
  - Splintage and immobilisation
  - Neurovascular deficits
- Hand injuries and infections
- Pelvic fractures

3.8…./

3.8 **Spinal injuries**

Understand the principles of diagnosis, assessment and the practical emergency management of spinal injuries under the following headings

- Mechanism of injury
- Radiological recognition of cervical and thoraco-lumbar
  - Fractures
  - Dislocations
  - Fracture dislocations
  - Assessment of instability and neurological deficits
- Principles of treatment
- The application of Halo and Cone calliper
- The "plegic" patient
  - Neuro-physiology of the spinal cord injury
  - Haemodynamic changes
  - Acute resuscitation
  - Neuro-pathology of the spinal cord
    - Complete / incomplete lesions
    - Anterior cord syndrome
    - Central cord syndrome
    - Prevention of complications

3.9 **Urology**

Understand the principles of diagnosis and management of the following urological emergencies:

- Genito-urinary trauma
- Urinary tract infections
- Scrotal emergencies
- Haematuria
- Acute retention of urine
- Urinary catheter management

3.10 **Cardiothoracic Surgery**

Understand the pathophysiology and the principles of diagnosis and management of the following conditions:

- Trachea and bronchus injury and rupture
- Foreign bodies in the trachea, bronchus and oesophagus
  - Techniques of removal
  - Types of anaesthetic required
- Non-penetrating chest trauma
- Penetrating wounds of the thorax
- Management of pleural collections
  - Simple pneumothorax
  - Open pneumothorax
  - Tension pneumothorax
  - Haemothorax
  - Massive haemothorax
- Tube thoracostomy
- Management of acute broncho pleural fistulae
- Penetrating wounds of the thorax inlet
- Penetrating wounds of the heart
- Cardiac tamponade
- Aorta: dissection and rupture
- Rib fractures: single, multiple and segmental
- Diaphragmatic injury
- Injuries of the oesophagus
  - traumatic
  - spontaneous
  - iatrogenic

- Pleural and pulmonary infection
  - Post-pneumonic empyema
  - Tuberculous empyema
  - Chronic broncho-pleural fistula
  - Lung abscess

3.11 **Vascular Surgery**

Understand the pathophysiology, principles of diagnosis and emergency management of acute vascular emergencies

- Haemorrhage control
- Arterial and venous trauma (penetrating or blunt)
- Acute arterial embolism
- Acute arterial thrombosis
- Complicated aneurysms
- Acute thrombophlebitis
- Deep vein thrombosis
- Compartment syndrome
- Mangled extremity
- Reperfusion syndrome

3.12 **Paediatric Surgery**

Understand the physiology, pathophysiology and principles of the diagnosis and practical management of paediatric patients (neonates and children) in relationship to emergency surgical conditions under the following headings.

- Physiological differences between neonates and children and adults in respect of the following
  - Haematological parameters
  - Respiratory function
  - Cardio-vascular physiology
  - Jaundice
- Peri-operative management of the paediatric patient in respect of the following.
  - Transport of neonates and children
  - Venous access
  - Fluid and electrolyte management
  - Blood and blood product usage
  - Pain management
  - Renal failure
- Assessment and emergency management of the following surgical conditions
  - Blunt and penetrating abdominal and thoracic trauma
  - Strangulated inguinal hernias
  - Oesophageal foreign bodies
  - Burns
- Recognition and institution of appropriate supportive care for the following specific neonatal conditions
  - Oesophageal atresia and oesophago-tracheal fistulae
  - Bochdaleck hernia
  - Exomphalos
  - Intestinal obstruction
  - Anus imperforatium

3.13…/

3.13 **Plastic Surgery**

Understand the principles of plastic surgery and their practical application under the following headings

- Wound and wound healing
  - Pathophysiology
  - Classification and types of wound
  - Techniques of excision and debridement
  - Closure of incised wounds
  - Suture materials
  - Principles of wound cover
    - Split skin grafts
    - Local flaps
    - Free flaps
    - Management of the open wound
    - Dressings and modern aids to wound healing
- Thermal Injury
  - Understand the mechanisms of thermal injury and their management through all phases of treatment under the following headings
    - Mechanisms
      - Thermal: hot / cold
      - Electric: high and low tension
      - Chemical: acid and alkaline
    - Resuscitation
      - Inhalational burns
      - Burns degree and area assessments size assessment
    - Management of the burn wound
    - Rehabilitation
- Soft tissue injury:
  - Understand the pathophysiology of local and systemic effect of soft tissue injury and its treatment under the following headings
    - Compartment syndrome
    - Rhabdomyolysis
    - Reno protective strategies
    - Reperfusion injury
    - Degloving injury

3.14 **Techniques**

Understand the anatomical details and be technically competent to perform the following procedures.

- Airway maintenance
  - Bag mask ventilation
  - Endotracheal intubation
  - Surgical cricothyroidotomy
  - Tracheostomy
- Intra-vascular access
- Tube thoracostomy
- Nasogastric tube placement
- Bladder catheterisation
- Embolectomy
- Limb fasciotomy
- Emergency burr holes

SUGGESTED READING FOR THE FCS(SA) INTERMEDIATE EXAMINATION

In preparation for the FCS(SA) Intermediate examination, the postgraduate student's reading should not be limited to the suggested texts. Much of the information necessary for the examination will be acquired during training on the wards, intensive care and trauma units.

The following texts contain the basic material and approach necessary for both of the FCS(SA) Intermediate papers:

The Handbook of Surgical Intensive Care. Lyerly HK, Gaynor JW, Mosby Yearbook.

The ICU Book. Marino PL. William and Wilkens

Handbook of Trauma for Southern Africa. Nicol & Steyn. Oxford

Oh TE. Intensive Care Manual. 3rd ed. Sydney: Butterworths, 1996
Intensive Care Manual. Oh TE, Butterworth Heineman

Trunkey, Lewis. Current Therapy of Trauma. 2nd ed. BC Dekker, 1999

Schwartz SI, Shires GT. Principles of Surgery. 7th ed. New York; London: McGraw-Hill, Health Professions Division, 1997

Christopher. F. Davis-Christopher Textbook of Surgery: The Biological Basis of Modern Surgical Practice: Sabiston Textbook of Surgery:. 16th ed. Philadelphia; London: WB Saunders, 2000

Principles of Surgical Patient Care 2nd Edition. Mieny CJ, Mennen U, New Africa Education.

Review of Medical Physiology. Ganong WF, Appelton & Lange.

Intensive Care Medicine. Irwin and Rippe
Surgical Intensive Care. Barie FS, Shires GT, Library Congress Cataloging in Publication Data.

ATLS Manual American College of Surgeons 4th Edition

Paediatric WorkBook First Edition Ed. JH Becker
Published Van Schaik Pretoria 2006

JOHANNESBURG
June 2023

A P P E N D I X C

GUIDELINES FOR CANDIDATES ENTERING THE FC PAED SURG(SA) FINAL EXAMINATION

1.0 FORMAT AND CONDUCT OF THE EXAMINATION

The examinations will consist of two parts

- An online written examination on the theory of Paediatric Surgery (Knowledge Assessment)
- An online, interactive examination of clinical, theoretical, and diagnostic knowledge related to the practise of Paediatric Surgery (Performance Assessment)

1.0.1 Conduct of the Knowledge Assessment Examination (Previously Written)

i. Two online written examinations of a maximum of three hours duration each. Additional time for typing is incorporated in the three-hour time limit.

ii. The questions will consist of a combination of single best answer, extended matching questions, very short answer, and short written answer types.

iii. The SPOT Test that was previously administered during the Clinical component of the examination will now form part of the Knowledge Assessment (written) part of the examination. Since a remark can be requested for a written examination, this will allow a timeous request and avoid delays in release of the final results.

iv. No negative marking will apply.

v. An internationally accepted standard setting method, as suggested by the Executive Director of Education will be applied to the Knowledge Assessment Examination. The Angoff method is used most frequently.

vi. A single combined mark for both papers will be awarded.

vii. A minimum combined mark in the Knowledge Assessment Examination, as determined by the standard setting method applied, will be required for entry into the Performance assessment examination.

1.0.2 Conduct of the Performance Assessment Examination (Previously Clinical)

i. Candidates will have to present to a CMSA approved site for this examination.

ii. The examination will be conducted in an online video conferencing format as arranged by the CMSA.

iii. The examination may be conducted over one to three days to accommodate a large number of candidates.

iv. The examination will consist of the following components:

a) Simulated Structured Long Cases
   - Two structured, standardised paper based long cases referring to an index pathology in Paediatric Surgery will be assessed.
   - The candidate will be presented with the clinical information in a sequential format to simulate a clinical interaction.
   - Thirty minutes including examiner discussion time will be allocated to each case.
   - History taking, management and interpretation of investigations will be covered in this examination

b) Simulated Structured Short Cases
   - Each candidate will have two sessions of 30 minutes each including examiner discussion time for this component of the examination.
   - Four structured short cases will be presented in each session.
   - A focused discussion on a single clinicopathological entity will be assessed per case eg history taking from a patient with jaundice.

c) Structured Oral Examination
   - Each candidate will have 3 oral examinations
   - Each examination session will be thirty minutes long to make a total of 90 minutes including examiner discussion time.
   - All areas of Paediatric Surgery including but not limited to operative anatomy, physiology, pathology and general management will be covered.

1.1.../

1.1 Mark Allocation per component

i. Passing the Knowledge Assessment examination (previously known as the written examination) with a minimum mark as ascertained by the standard setting method applied, will be a requirement for invitation to the Performance Assessment examination (previously known as the clinical and oral examination).

ii. There will be seven components to the Performance Assessment examination.

iii. The components will be :

1. Long case 1
2. Long case 2
3. Short case 1
4. Short case 2
5. Oral 1
6. Oral 2
7. Oral 3

iv. Each of the components is equally weighted.

v. Each component will be marked out of 100% in 5% increments by each examiner. The final mark will be averaged and rounded off to the nearest 1%. No further rounding off will apply.

vi. A mark of 50% or greater will be required to pass a component.

1.2 Criteria for passing (both conditions must be met)

i. An average overall mark of 50% or more for the entire Performance Assessment examination, and

ii. A mark of < 50% in not more than one component of the Performance Assessment examination. The candidate may only fail one of the seven components listed in d(iii) above.

1.3 **Portfolio of Learning.**

Submission of the Portfolio of Learning in an electronic format to the CMSA is required 3 months before the written examination.

- Should the examiners deem the candidate's experience to be inadequate for practice in Paediatric Surgery, entry to the examination will be withheld until the deficiencies have been corrected.

2.0 Scope of the Examination

2.1 **The following will be tested**

2.1.1 Knowledge of Basic Relevant:
- physiology/anatomy/embryology
- biochemistry/pathology

2.1.2 Knowledge of prenatal management of paediatric surgical diseases

2.1.3 Investigation and surgical management of congenital malformations and surgical pathology related to:
- the gastrointestinal tract
- the genito-urinary system
- the central and peripheral nervous system
- the respiratory system
- the head, neck and face
- the skin and musculoskeletal system
- the lympho reticular and immunological systems

2.1.4 Management of benign and malignant tumours in children

2.1.5 Management of the infant or child subject to trauma:
- head injury
- skin and soft tissue (including thermal injury)
- visceral
- non -accidental injury

2.1.6 General principles of:
- Orthopaedic Surgery
- Thoracic Surgery
- Maxillofacial Surgery
- Neurosurgery
- Plastic surgery

2.1.7 Communication
- Ethics and Consent
- Interpretation/evaluation of surgically relevant medical literature

3.0 SYLLABUS

3.1 Due to the diversity of paediatric surgical practice, local needs, demographic factors and the needs of the country, educational objects will be:
- **Primary** are considered mandatory and basic to the practice of general paediatric surgery (CORE knowledge)
- **Secondary** determined by local requirements

3.2 To attain both primary and secondary objects the knowledge required will include, where appropriate embryology, relevant basic sciences (anatomy, physiology, pathology), the natural history of the disease, diagnosis, management, and outcome

4.0 PRIMARY OBJECTIVES/EDUCATIONAL PROGRAMMES:

4.1 **Candidates should demonstrate knowledge of and the capacity to manage patients, in relation to the following:**

4.1.1 Principles of pre and perinatal management of paediatric surgical disease:

4.1.2 Pathophysiology and surgery of the newborn, infant and child:

4.2 Surgeons, in collaboration with other health care professionals care for newborns, infants and children. They must therefore demonstrate knowledge of and have the capacity to manage these patients based on an understanding of the differing patterns of surgical disease, their natural histories and responses to treatment

A P P E N D I X D

GUIDELINES FOR CANDIDATES PREPARING TO ENTER THE FC PAED SURG(SA) EXAMINATION

1.0 TRAINING TO INCLUDE GUIDANCE AND INSTRUCTION IN:

1.1 Ethical considerations in paediatric surgery

1.2 Transportation of patients

1.3 Trauma

1.4 Burns

1.5 Head and neck surgery

1.6 Non-cardiac thoracic surgery

1.7 **Abdomen:** gastro intestinal, hepatobiliary, pancreatic, splenic and abdominal wall conditions

1.8 Genito-urinary tract conditions

1.9 Inguino-scrotal region and intersex anomalies

1.10 **Oncology:** The principles of management and the role of surgery in malignant diseases

1.11 Pertinent gynaecologic, skin and subcutaneous tissues, endocrine anomalies and conditions

1.12 Solid organ transplantation

2.0 SECONDARY OBJECTIVES:

2.1 **A less detailed knowledge, with emphasis on clinical features, and principles of treatment pertaining to the following disciplines:**

- Orthopaedics
- Neurosurgery
- Cardio-thoracic surgery
- Plastic surgery

3.0 SKILLS OBJECTIVES:

3.1 Paediatric surgical registrars are expected to perform independently, the full spectrum of operative interventions. The role played by an authenticated record has been emphasised

3.2 **Operative experience:**
The basic minimal requirements have not been defined and will need regular review. Reviews (logbook) will be an essential component in this process. Operative experience will be recognised as a process of increasing surgical exposure and responsibility from pre- and postoperative management and assisting at surgery to personal operative responsibility with minimum supervision, in the final year of clinical study

3.3 **Minimal case exposure – numbers given are indicative targets:**

- Neonatal 150
- GIT 200
- Urology 100
- Thoracic 50
- Oncology 50
- Trauma 100
- General 100

3.4 **Additional Skills:**

3.4.1 ***Endoscopy:***

3.4.1.1 *The trainee should be familiar with the indications, techniques and complications of:*

- Laryngoscopy, bronchoscopy
- Oesophagoscopy/gastroscopy/duodenoscopy
- Thorascopy
- Proctosigmoidoscopy/colonoscopy

3.4.2 ***Laparoscopic Surgery:***

- Principles, indications and techniques of minimal invasive surgery

3.4.3 ***Other procedures:***

3.4.3.1 The trainer should be familiar with the indication, techniques and complication of:

- Central line insertion (temporary and long-terms), implantable ports
- Tracheotomy
- Peritoneal dialysis

4.0 PERSONAL DEVELOPMENT:

4.1 Communication and management skills incorporating the development of research orientated practice and practice audit are additional essential components of the training programmes

4.2 Trainees are expected to demonstrate regular attendance and participation in clinical discussions, ward rounds, journal club, morbidity and mortality meetings, radiology meetings, oncology meetings, ICU ward rounds and conferences

4.3 **These endeavours must recorded in the logbook**

4.4 **Dissertation:**

It is expected that the candidate will write a short paper on research work, or clinical case material. The standard of this paper should equal a successful article in a peer review journal. The research related to this dissertation may form part of the MMed of the candidate. At the time of entry to the examination, the dissertation must be ready for submission for marking. This must be certified by the HOD in the accompanying letter during application for entry to the examination.

5.0 LITERATURE RECOMMENDED:

5.1 **Textbooks : Latest editions**

- Holcomb, Murphy. Ashcraft's *Pediatric Surgery,*
- Coran, Adzick, Krummel, Laberge, Shamberger, Caldamone. *Pediatric Surgery.*
- Mattei. *Fundamentals of Pediatric Surgery*
- Puri, *Newborn Surgery*
- Puri, Hollwarth. *Pediatric Surgery*
- Carachi, Grosfeld, *The* Surg*ery of Childhood Tumours.*
- Spitz, Coran, *Operative Paediatric Surgery.*
- Ziegler, Azizkhan. *Operative Pediatric Surgery*
- Docimo. The Kelalis-King-Belman Textbook of Clinical Pediatric Urology
- Bax, Georgeson, Rothenberg, Valla, Yeung. Endoscopic Surgery in infants and children
- Moore, Persaud. *The Developing Human: Clinically Oriented Embryology*

5.2 **Journals:**

- *Journal of Pediatric Surgery*
- *Pediatric Surgery International*
- *European Journal of Pediatric Surgery*
- *Seminars in Pediatric Surgery*
- *Journal of Pediatric Urology*

JOHANNESBURG
June 2023