

**December 2022****THE COLLEGE OF SURGEONS OF SOUTH AFRICA****R E G U L A T I O N S<sup>1</sup>****FOR ADMISSION TO THE EXAMINATION FOR THE**  
**POST-SPECIALISATION****SUB-SPECIALTY CERTIFICATE****IN****TRAUMA SURGERY****Cert Trauma Surgery(SA)****INTRODUCTION**

Trauma surgery encompasses a range of conditions and procedures that are at present in many instances adequately covered by the current general surgical training curriculum, and many of these conditions can be managed quite adequately by the well trained general surgeon. It is therefore accepted that the general surgeon who has had an appropriate exposure to trauma surgery as part of the general training can adequately manage procedures such as uncomplicated blunt and penetrating injury.

However, a substantial number of conditions and therapeutic modalities in trauma surgery require highly specialised knowledge and training in order to achieve satisfactory patient outcomes. Training and certification in the sub-specialty discipline of Trauma Surgery addresses the need for these more specialised skills in the diagnosis and management of all trauma conditions, and focuses particularly on achieving improved outcomes in these aspects of trauma disease where less than optimum management may result in high peri-operative mortality and morbidity.

This is particularly important in the management of multi-system trauma injury, and in the specialised critical care of the trauma patient.

**1.0 ELIGIBILITY TO TAKE THE EXAMINATION**

In order to be eligible to enter this examination, the candidate:-

- 1.1 Must comply with the requirements for registration as a medical practitioner, as prescribed by the Medical, Dental and supplementary Health Services Act.
- 1.2 Must be registered as a specialist General Surgeon.
- 1.3 The applicant should hold a current certification in Advanced Trauma Life Support (ATLS®).
- 1.4 The applicant must show evidence of successful completion of a Definitive Surgical Trauma Care (DSTC®) Course.
- 1.5 The applicant must show evidence of successful completion of a course in Focussed Abdominal Sonar for Trauma (FAST), prior to entry for the examination.

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<sup>1</sup> Only general editing changes made to June 2015 Regulations.

- 1.6 The applicant must show evidence of successful completion of a Hospital Major Incident Medical Management and Support (HMIMMS) Course prior to entry for the examination.
- 1.7 The applicant must submit the prescribed Portfolio, filled in and up to date, and certified by the head(s) of the Department(s)/Division(s)/unit(s) in which the candidate trained.
- 1.8 The applicant must provide a written report from the Head(s) of the institution(s) in which he or she trained. The report must show proof of completion of at least 18 months of training and which then allows the College to admit the candidate to the examination.

## **2.0 TRAINING PERIOD**

- 2.1 The training should extend over a minimum period of two years,
  - 2.1.1 This training shall occur in Trauma Units and Critical Care Units, recognised and accredited for Trauma Surgery and Critical Care subspecialist training by the HPCSA.
  - 2.1.2 Training shall be under the supervision of a specialist surgeon, registered as a sub-specialist Trauma Surgeon with the Health Professions Council of South Africa
  - 2.1.3 Although the programme is to be a minimum of 24 months duration, as part of this time requirement, a period of 9 months must be in an accredited Intensive Care Unit.
  - 2.1.4 The training period shall not include more than one interruption.
  - 2.1.5 Training is valid for a period of three years from the date of completion in a numbered subspecialty training post after completing their training. Candidates who do not successfully complete the subspecialty examination within 3 year period must apply with motivation to the College of Surgeons.

## **3.0 ACCREDITED UNITS**

- 3.1 Units will be accredited by the Health Professions Council of South Africa for the training of trauma surgeons. This accreditation will require:
  - 3.1.1 Verification and accreditation as a Level 1 Trauma Unit.
  - 3.1.2 The unit should have a significant trauma surgical caseload. A structured academic programme including multidisciplinary meetings with units and departments which impact on Trauma Surgery, such as Cardiothoracic, diagnostic and interventional Radiology, Intensive Care, and Anaesthesiology is essential.
  - 3.1.3 The institution within which the unit resides should have sufficient staff and equipment to manage the full spectrum of trauma surgical conditions. This must include radiological services capable of good pre-operative diagnostic studies as well as high quality angiography, computerised scanning and ultrasonography facilities.

## **4.0 CURRICULUM / SYLLABUS**

- 4.1 The curriculum / syllabus appears in Appendix A and B, below.

## **5.0 EVALUATION OF COMPETENCE**

The College of Surgeons is constantly reviewing assessment methods to ensure the validity and reliability for their examinations.<sup>2</sup>

- 5.1 In order to be supported for registration in the sub-speciality of Trauma Surgery, each candidate will be required to have completed, and will be required to submit:
  - 5.1.1 A Portfolio recording operative and diagnostic procedures, stating the degree of supervision for each case. The Portfolio will need to be verified by the Head of the Unit on a quarterly basis.
  - 5.1.2 A curriculum vitae.
  - 5.1.3 Certification by the Head of Department or Departments, in which the training was completed, confirming satisfactory completion of training and achievement of the requisite level of technical and operative skills, prior to admission to the exit examination.

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<sup>2</sup> Statement of assessment systems used.

- 5.2 Candidates must successfully pass an exit examination consisting of:
- 5.2.1 A multiple choice written paper of three hour duration
  - 5.2.2 For admission to the oral examinations, a minimum of 50% must be attained in the written paper.
  - 5.2.3 The oral examinations will consist of the following components:
    - 5.2.3.1 Two 45 minute oral viva evaluations of the candidate's knowledge of trauma and burns surgery, trauma critical care, and disaster medicine, conducted by two sets of two examiners.
    - 5.2.3.2 Two clinical paper cases (one critical care case and one surgical case) each of 45 minutes duration, conducted by two sets of two examiners per paper case.
    - 5.2.3.3 To pass the oral examination each oral component (Overall Viva mark and Overall Clinical paper case mark) must be passed with a minimum mark of 50%. Failure of ONE of the oral components (Overall Viva mark and Overall Clinical paper case mark) results in failure of the examination.
    - 5.2.3.4 The final examination mark will be calculated as a percentage, where the written mark, overall viva mark (both viva's marks added together and divided by two), overall clinical paper case mark (both clinical paper case marks added together and divided by two) contribute a third of the final examination mark.

NOTE: A maximum of one examiner may be drawn from the unit in which the candidate has completed his or her training. Another examiner from the same unit can be an observer if so required.

- 5.3 The examinations will include all pertinent aspects of applied anatomy, trauma physiology, haemodynamics, trauma pathology, ultrasonography and non-invasive trauma diagnosis, angiography and trauma radiology, and any aspects of trauma surgery that might be encountered in the day-to-day practice of trauma surgery, including a knowledge of paediatric surgery, radiological interpretation, burns and disaster management. A curriculum / syllabus is appended for guidance of both candidates and examiners. (Appendix A), together with guidelines for both candidates and examiners (Appendix B).
- 5.4 The CMSA will conduct these examinations, with the individual examiners being appointed by the College of Surgeons of South Africa.
- 5.5 Carry over of written examination  
A candidate who has been invited to the clinical examination and fails the oral aspect of the examination, shall be allowed to re-do ONLY THE ORAL ASPECT AT THE NEXT EXAMINATION (without rewriting the written aspect of the examination)

The carry-over of the written examination is allowed only once ie for the next examination only. Should the candidate fail the oral examination again, then the candidate must re-write the full examination at their next attempt.

Written examination carry-over applies with immediate effect according to the Colleges of Medicine of South Africa Senate meeting held on the 26 October 2017.

**A P P E N D I X A**

<b>CURRICULUM / SYLLABUS</b>	
<i>Training in General Surgery</i>	<i>Subspecialty in Trauma Surgery</i>
<p><b>Expected basic science and knowledge</b>  <b>The anatomy and physiology relevant to each operation or procedure</b></p>	
<p>Abdominal trauma                      Bowel injury                      Burns                      Diaphragm rupture                      Flail chest/tamponade                      Head injuries                      Haemo/pneumothorax                      Liver injury                      Pelvic fractures                      Prophylaxis for asplenia                      Pancreatic injury                      Renal injury &amp; conservation                      Skin grafts                      Splenectomy                      Suprapubiccystotomy                      Urethral injury</p>	<p>Arterial injuries                      Burr holes*                      Management of major burns                      Cardiac injuries                      Complex injuries                      Facial fractures                      Limb injuries                      Military : Penetrating missile injuries                      Osteoplastic flaps                      Pelvic floor injuries                      Pericardiocentesis                      Rectal injuries                      Renal injuries                      Thoracotomy/sternotomy                      Z plasty – skin flaps</p>
	<p><b>Critical Care</b></p> <p>Principles of intensive care management of trauma patients                      Principles of intensive care management of patients with major burns</p>
	<p><b>Organisation Aspects</b></p> <p>Trauma Systems                      Regional approach to trauma                      Principals of disaster management                      Triage: Major accidents                      Military: Battle triage                      Field hospitals                      Spinal injuries                      CT/MRI interpretation                      Multiple/Critical injuries</p>

**APPENDIX B****GUIDELINES FOR CANDIDATES AND EXAMINERS****1.0 GENERAL CHARACTERISTICS**

Trauma care is a specialised area of surgery dealing with critically injured and ill patients.

- 1.1 The certificate programme in trauma care must provide the educational resources appropriate for the development of proficiency in managing critically injured patients and for supervising trauma services and surgical critical care units. The training programme must be an integral part of and must be administratively attached to, an accredited core programme in general surgery with a volume of trauma patients and a trauma care organisation that meets the guidelines for a level 1 Trauma Centre.
- 1.2 Graduate training in trauma care shall be of at least 24 months duration. The training will be accomplished after satisfactory completion of an approved graduate educational programme in General Surgery.

**2.0 DURATION AND SCOPE OF TRAINING**

- 2.1 The training period must be devoted exclusively to educational activities related to the care of critically injured patients and to the administration of trauma services and of surgical critical care units.
- 2.2 The training period must include both adult and paediatric trauma surgical care.
- 2.3 Surgical care of trauma patients must include primary educational activities on a Trauma Service and in intensive care units located in an institution that has been approved by the Health Professions Council of South Africa, for General Surgery with a core general surgery or paediatric surgery registrar programme. This core programme should provide a trauma experience which will remain at or above 50 index trauma cases per annum, defined as a patient, with major torso or vascular injuries requiring laparotomy, thoracotomy or vascular repair by the general surgery trauma service or care in the ICU by that service for more than 48 hours. Training may include assignments to a cardiac/thoracic unit, a burn unit, a surgical nutrition unit, a neurosurgical unit, or other trauma related rotations.
- 2.4 The training period shall not include more than one interruption.
- 2.5 Although the programme is to be a minimum of 24 months duration, as part of this time requirement, a period of 12 months must be in an Intensive Care Unit fulfilling the requirements of the HPCSA.

**3.0 OBJECTIVES**

- 3.1 Because the completion of an accredited surgical registrar training programme should qualify the surgeon to care for the basic problems of critically ill and injured surgical patients, training offered by the trauma care certificate must allow the trainee to acquire an advanced level of skill in management of critically injured patients.
- 3.2 Such an advanced level of skill may be obtained from the management of the following:
  - 3.2.1 Surgical and non-surgical therapy of injured patients
  - 3.2.2 Preoperative and postoperative care of injured patients who require critical care
  - 3.2.3 Patients of all age groups, particularly those with critical injuries complicated by chronic cardiac, respiratory, renal or metabolic dysfunction
- 3.3 In addition, this advanced level of skill will include:
  - 3.3.1 The use of advanced technology and instrumentation to monitor the physiologic status of trauma patients of all ages
  - 3.3.2 Knowledge of organisational and administrative aspects of a trauma care system
  - 3.3.3 Activities that foster development of skills in teaching and in research related to trauma and critical care
  - 3.3.4 Ethical, economic, and legal issues as they pertain to trauma care

- 3.4 In addition, it is expected that individuals completing training in trauma care will be able to do the following:
- 3.4.1 Organise and direct a trauma service. This includes the ability to appoint, train, and supervise, specialised personnel, establish policies and procedures for management of trauma patients and administration of the service, and co-ordinate the activities of the service with other administrative units
  - 3.4.2 Teach the special body of knowledge required for the comprehensive management of the trauma patient
  - 3.4.3 Develop research in the various areas of trauma care such as prevention, acute care, and rehabilitation

#### **4.0 ORGANISATION OF THE STAFF**

- 4.1 Training for the Certificate in Trauma Surgery must be under the supervision of a specialist surgeon, registered as a Sub-specialist Trauma Surgeon with the Health Professions Council of South Africa (Trauma Programme Director)
- 4.2 The Trauma Programme Director and surgical teaching staff must have unrestricted privileges regarding the admission, treatment, and discharge of their own patients on the surgical and/or paediatric critical care units.
- 4.3 The Director shall have administrative responsibility for the Certificate in Trauma Surgery and shall be responsible for all subspecialty trainees and teaching staff of the programme and shall determine their duties.
- 4.4 The trauma service teaching staff must be specifically qualified and involved in care of the injured patients and must provide the programme director with regular evaluations of the trainee(s).
- 4.5 The trauma service teaching staff must have real and demonstrated interest in teaching and set an example for trainees by documented scholarly pursuits, including:
  - participation in their own continuing surgical education
  - participation in regional and national surgical scientific societies
  - presentation and publication of scientific studies
  - demonstration of an active interest in research as it pertains to trauma and/or critical care problems
- 4.6 The teaching staff in surgery, the surgical specialities, and anaesthesia may all be involved in the care of trauma patients within the critical care unit. To enhance the educational opportunities for all trainees a collegial relationship must thus exist between the surgical director of the critical care unit and the Certificate in Trauma Surgery teaching staff. Overall responsibility for care of the critically ill trauma patient will remain with the responsible surgeon.

#### **5.0 CLINICAL AND EDUCATIONAL FACILITIES AND RESOURCES**

- 5.1 The Trauma service must function as a unit which has a sufficient number of knowledgeable personnel and the necessary institutional support to care for injured patients.
- 5.2 Personnel should include specifically trained nurses and technicians who are skilled in trauma care.
- 5.3 A critical care unit must be located in a designated area or unit within the hospital, constructed and designed specifically for the care of critically ill/injured patients.
- 5.4 Objectives of a Certificate in Trauma Surgery can best be achieved when the programme is based within an institution which has approved training programmes in the surgical specialities and in disciplines that particularly relate to surgery, such as internal medicine, radiology, pathology and anaesthesiology.
- 5.5 An adequate hospital or university library must be readily available to provide access to information for patient care of scholarly pursuits.
- 5.6 Conveniently located and adequate space for conferences and study are essential.
- 5.7 The record-keeping and quality assurance programmes must comply with the Trauma Society of South Africa criteria for a Level I Trauma Centre (See Appendix B)

## 6.0 THE EDUCATIONAL PROGRAMME

### 6.1 Curriculum Overview

The programme must provide the opportunity for trainees to learn in depth the following aspects of medicine and surgery, specifically pertaining to trauma care:

- 6.1.1 Co-ordination, evaluation and supervision of a trauma care system, including pre-hospital care and transport
- 6.1.2 Evaluation, resuscitation and surgical or non-surgical management of critically injured patients of all ages
- 6.1.3 Physiology, pathophysiology, diagnosis, and therapy of disorders of the cardiovascular, respiratory, gastrointestinal, genitourinary, neurologic, endocrine, musculoskeletal and the immune systems
- 6.1.4 Metabolic, nutritional, and endocrine effects of critical illness, including shock, sepsis and multiple organ failure
- 6.1.5 Haematological and coagulation disorders
- 6.1.6 Thermal, electrical and radiation injury
- 6.1.7 Monitoring and medical instrumentation
- 6.1.8 Pharmacokinetics and dynamics of drug metabolism and excretion
- 6.1.9 Biostatistics and design of experience
- 6.1.10 Managing the substance and drug abusing trauma patient
- 6.1.11 Managing victims of drowning and suffocation
- 6.1.12 Disaster management, mass casualty situations, and disaster medicine.
- 6.1.13 Angio-intervention and radiological assessment of vascular injuries
- 6.1.14 Rehabilitation of the trauma patient

### 6.2 Critical Care Skills

For the comprehensive care of the trauma patient, the trainee must have the opportunity to become proficient and demonstrate proficiency in critical care skills that include the following:

#### 6.2.1 *Neurologic:*

- The performance of complete neurologic examination;
- use and interpretation of intracranial pressure monitoring techniques;
- evaluation of cerebral function, perfusion, and metabolism, assessment of CNS viability

#### 6.2.2 *Respiratory:*

- The use of intubation and maintenance of the airway including tracheostomy, and management of endotracheal tubes;
- endoscopic techniques of the tracheobronchial tree;
- techniques for weaning from mechanical ventilation;
- suction techniques;
- use of bronchodilators and humidifiers;
- chest physiotherapy;
- monitoring airway and intrathoracic pressures;
- interpretation of sputum cultures;
- performance of bedside pulmonary function tests;
- application of appropriate oxygen therapy;
- management of pneumothorax;
- insertion of chest tubes;
- use of the various mechanical ventilators and other devices to support gas exchange; and
- interpretation of blood gases;
- interpretation of ventilator graphic displays

#### 6.2.3 *Circulatory:*

- Open or closed cardiac resuscitation;
- invasive monitoring techniques using peripheral and central arterial and venous catheters and lines;
- non-invasive monitoring including cardiac computer monitoring;
- computations of cardiac output and of systemic and pulmonary vascular resistance;
- monitoring and interpretation of electrocardiography;
- use of infusion pumps and vasoactive agents in the management of critical illnesses;
- application and regulation of cardiac assist devices and use of non-invasive blood flow monitoring devices, such as Doppler ultrasound, to assess cardiovascular functions

**6.3 Suggested Reading**

- Current Therapy of Trauma and Critical Care. Asensio J and Trunkey DD (2008) Mosby.Philadelphia
- Definitive Surgical Trauma Care Manual: Boffard KD 3<sup>rd</sup> Ed. (2011) Hodder. London
- Oxford Handbook of Trauma: Nicol A and Steyn E (2010) Oxford University Press, South Africa
- Penetrating trauma: A Practical guide on operative technique and peri-operative management: Velmahos G, Degiannis E, and Doll D (2011) Springer, Berlin
- Resources for Optimal Care of the Injured: American College of Surgeons (2006) American College of Surgeons, Chicago
- The Trauma Manual: Trauma and Acute Care Surgery: Peitzman A, Rhodes M, Schwab C W, Yealy DM and Fabian T 4<sup>th</sup> Ed. (2013) Lippincott, Williams and Wilkins. Philadelphia
- Trauma. Mattox K, Moore E E, and Feliciano D. 7<sup>th</sup> Ed. (2013) McGraw Hill,
- The ICU Book: Marino P L and Sutin KM. 3<sup>rd</sup> Ed.(2007) Lippincott, Willams and Wilkins.Philadelphia
- Oh's Intensive Care Manual: Bersten A, and Soni N. 6<sup>th</sup> Ed. (2009) Butterworth Heinemann Elsevier. Philadelphia.