

# **ROYAL AUSTRALASIAN COLLEGE OF DENTAL SURGEONS**

## **BST SYLLABUS FOR MCQ AND CLINICAL EXAMINATION**

The Examination is designed to assess the candidate's knowledge, understanding and application of the sciences basic to the practice of surgery. The syllabus incorporates all topics relevant to the care of the surgical patient and basic Oral and Maxillofacial Surgery.

### **A. GENERAL SYLLABUS FOR BST**

#### **1. Anatomy**

The candidate should demonstrate knowledge, understanding and application of anatomy particularly in the areas of:

- the genesis and implications of physical signs
- investigative procedures – radiology, organ imaging and endoscopy eg. Identification of structure on radiographs or CT scans
- the basis of surgical decision making
- the principles of surgical access eg. submandibular gland removal
- the principles of operative procedures
- the genesis of operative complications eg. the recurrent laryngeal nerve in subtotal thyroidectomy, the facial nerve in parotidectomy
- the principles underlying rehabilitation eg. the healing processes in bone or peripheral nerve
- the basic mechanisms of structure and function eg. the organization of the muscle spindle, the ultrastructure of the renal glomerulus.

#### **2. Physiology**

The candidate should demonstrate an understanding of:

- aspects of human physiology applicable to all surgical specialties
- how normal physiology may be altered by pathological processes, surgery or anaesthesia
- the correlation between physiological change and physical signs or symptoms elicited in patients including, for example, physiological changes that:
  - ensue a patient following prolonged periods of vomiting or diarrhoea
  - occur in renal function after surgery, or
  - prevail in a patient with, for example, oral cancer.
- the physiological response to acute trauma or surgery
- metabolism and nutrition following surgery
- respiratory compromise or dysfunction, perioperative and post-operative
- endocrine physiology as it pertains to surgery, eg. insulin dependent diabetes mellitus in relation to surgery and infection
- physiology of pain

### **3. Pathology**

The candidate should demonstrate knowledge and understanding of the principles of Pathology particularly as applied to:

- the general pathological mechanisms (degenerative, reactive and neoplastic) underlying common disease, including:
  - aetiology, pathogenesis, epidemiology, investigation and natural history
  - how these may be modified by the appropriate use of therapeutic agents; and
  - molecular biological, genetic and statistical aspects together with basic clinical decision analysis.
- Common and important issues in systemic pathology so far as:
  - A given lesion exemplifies a basic pathological process, eg. anaphylaxis is an example of hypersensitivity reactions; myocardial infarction in arteriosclerosis; colorectal carcinoma as an example of neoplasia,
  - Disorders of a given system which are likely to be encountered in surgical practice, eg. post-operative pneumonia.
- Laboratory medicine so as to make the optimum use of diagnostic services. Technical minutiae are not required.

The candidate should be able to identify:

- The more common pathological processes from photographs of gross specimens and
- The histopathological features of basic processes from photomicrographs

### **4. Immunology**

The candidate should demonstrate knowledge and understanding of:

- Basic immunology including:
  - Non-specific defense 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 system
- 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.

### **5. Genetics and Molecular Biology**

The candidate should demonstrate knowledge and understanding of:

- Structure of DNA and RNA, the cell cycle, the generation of genetic and chromosomal abnormalities
- Principles of autosomal dominant and recessive conditions
- Specific conditions in so far as they illustrate important principles or are common or important disorders

## **6. Neoplasia**

The candidate should demonstrate knowledge and understanding of neoplasia with specific detailed emphasis upon:

- Its cells and tissues of origin and components
- Reproductive, growth (proliferative) patterns and host interactions
- Mechanisms of invasion and metastasis
- Molecular biological, genetic and inherited characteristics
- The molecular basis of the pathogenesis of carcinoma, including oral cancer
- 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

## **7. General Pathological Phenomena and Tissue Response to Injury**

This part of the syllabus concentrates on the understanding of factors in the aetiology, pathogenesis, epidemiology, aspects of investigation and natural history of common diseases.

The candidate should demonstrate knowledge and understanding of:

- Factors in the aetiology, pathogenesis, epidemiology, aspects of investigation and natural history of common diseases.
- Factors common to basic mechanisms of disease recognising passive, degenerative, reactive and neoplastic phenomena.
- General pathological phenomena include cell injury, adaptation and death, degenerations including atherosclerosis, pigmentation and calculus formation, alterations of growth, differentiation and function of cells and of age.
- Tissue response to injury includes the adaptive reactions of the body to injury.
- Important morphological manifestations and 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 diagnosis and treatment.

## **8. Basic Principles in the Management of the Trauma Patient**

The candidate should be able to:

- Accurately describe and identify the metabolic response to trauma
  - Neuro endocrine responses
  - Inflammatory mediators
  - Clinical implications
- Explain the healing responses of traumatic injuries including injuries
  - Soft tissues, bone and cartilage
  - The response of peripheral nerves to injury
- Manage patients experiencing shock (EMST)
  - Classification
  - Clinical manifestations of shock

- Pathological changes of shock
- Irreversible shock
- Therapy
- Common pitfalls in the treatment of shock
- Order and supervise an appropriate nutritional regime following trauma
  - Consequences of malnutrition
  - Nutritional assessment and requirements
  - Metabolic response to starvation and trauma
  - Enteral and parenteral nutrition
- List the most significant components of emergency and intensive care of the traumatised patient (EMST)
  - Pre-hospital care
  - Primary assessment and resuscitation
  - Secondary survey and diagnosis
  - Physical examination
  - Neurologic re-evaluation
  - Diagnostic testing
  - Blood and Urine tests
  - Radiology
  - Operative priorities
  - Intensive care priorities

### **Systematic Evaluation of the Traumatised patient**

- Obtain an emergency airway if needed
  - Systematic approach to airway management
  - Endotracheal intubation, tracheostomy, cricothyroidotomy
  - Prolonged artificial airway
- Carry out a Neurological evaluation and management of the trauma patient
  - Initial Assessment
  - Detailed management
  - Grading the severity of injury (G.C.S)
  - Diagnostic studies of head injury
  - Special problems in head injury
  - Spinal cord injury
- Identify the salient features of the management of non penetrating chest trauma
- Examine and assess abdominal trauma and indicate its management
- Assess urological injuries
- Assess and prioritise the management of the poly trauma patient

## **9. Microbiology (Infection and Antibiotics)**

The candidate should demonstrate knowledge and understanding of:

- The microbial flora of the body and its role in disease
- Pathogenesis of infection - host defense mechanisms and microbial virulence
- Surgically relevant bacterial, viral, fungal and parasitic infections;

- 1) infection following surgery, eg. wound infection, septicaemia, urinary tract, pneumonia and nosocomial infections
  - 2) infections with surgical implications, eg. peritonitis, anaerobic soft tissue infections, necrotizing fasciitis HIV, facial space infections and Ludwig's angina
- 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

## **10. Pharmacology and Therapeutics**

This topic involves a consideration of major therapeutic areas and major drug groups. Candidates should be able to apply basic pharmacological principles of pharmacodynamics and pharmacokinetics, and understand such information as set out in a mini Pharmacopoeia. 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 binding, clearance (metabolism if relevant) etc. An understanding of drugs is expected in relation to disease topics, not as isolated entities.

The candidate should demonstrate knowledge and understanding of the pharmacodynamics and pharmacokinetics related to drugs associated with the following systems:

- Cardiovascular and Renal
- Respiratory
- Endocrine
- Gastrointestinal Tract
- Central Nervous System
- Ophthalmological
- Haemopoietic
- Oncology/Immuno-Suppression, Transplantation
- Analgesics

Candidates should demonstrate knowledge and understanding of:

### **Antibiotics**

- possible drug interactions, clearance (liver and renal failure, probenecid), and bioavailability eg. Tetracyclines and absorption
- Addition of special cases eg. neonates, paediatric, pregnancy, ageing

### **Haematology and Transfusion**

- The origin and differentiation of haematopoietic cells
- Anaemias of acute and chronic blood loss
- Types and mechanisms of haemolysis
- Anaemias caused by substrate deficiency
- Bleeding disorders
- Origin differentiation and proliferations of white cells particularly lymphomas

## **Statistics**

- Statistical analysis of data including the principles of commonly used parametric and non parametric statistical tests
- Clinical decision making
- Principles of population statistics
- Design and interpretation of clinical trials

## **B. ORAL AND MAXILLOFACIAL SURGERY SYLLABUS FOR BST**

The issues and areas relevant to the care of the surgical patient and basic Oral and Maxillofacial Surgery which are part of the Basic Surgical Training syllabus are outlined in the Oral and Maxillofacial Surgery Curriculum.

Candidates should be able to:

### **Anatomy and Embryology of the Head and Neck**

- Demonstrate knowledge of and explain in detail the anatomy and embryology of the head and neck region

### **Radiology and Nuclear Medicine**

- Demonstrate knowledge of the various imaging modalities and their clinical application, and to describe the normal radiological appearance of the maxillofacial region and associated areas

### **Dentoalveolar Surgery**

- Diagnose and assess of basic dento-alveolar surgery cases involving erupted and impacted teeth
- Describe, and be able to perform, basic dento-alveolar surgery and demonstrate thorough knowledge of surgical risk and informed consent relating to these procedures
- Identify normal microflora of the maxillofacial region and describe the common microflora of odontogenic infections, skin, pharyngeal and sinus infections
- Describe the anatomy of the fascial spaces and the spread of infection, and explain the surgical management of such infections
- Discuss the management of the medically compromised patient, including extremes of age and liaise with the relevant medical specialists in the management of patients undergoing oral and maxillofacial surgery

### **Oral and Maxillofacial Preprosthetic Surgery and Implants**

- Discuss the principles of bone induction and the biology of grafting, including the principles of osteoinduction, osteoconduction and transplantation

### **Pathology of the Maxillofacial Surgery Region**

- Take a history and perform a thorough head and neck examination of the head and neck for pathological conditions
- Describe the processes towards making a diagnosis of lesions and knowledge of the investigations and the basic principles of management
- Describe the classifications of head and neck pathology and the histopathological features of common maxillofacial pathologies

### **Oral Mucosal Diseases**

- Describe the structure and function of normal oral mucosa and facial tissues
- Demonstrate a thorough knowledge, and describe the biologic basis, history, progression, prognosis and management of the common oral mucosal conditions

### **Facial Pain**

- Take a history of a patient presenting with facial pain and complete a detailed head and neck examination with an emphasis on neurology
- Describe the theories and the neurophysiology of pain
- Describe the pharmacology of the agents used in the management of facial pain

### **Disorders of the TM Joint and Masticatory Apparatus**

- Describe the anatomy, histology and physiology of the temporomandibular joint apparatus
- Undertake a history and examination of a patient with a temporomandibular joint disorder, and demonstrate knowledge of the investigations for TMJ disorders
- Discuss the pathophysiology and non-surgical management of jaw joint disorders and internal derangement
- Demonstrate knowledge of the techniques of relocation of the jaw joint

### **Maxillary Sinus Disease**

- Describe the detailed anatomy and physiology of the nose and paranasal air sinuses, and the inflammatory diseases of the maxillary sinus
- Demonstrate knowledge of the differential diagnosis of sinus disease, appropriate investigations and interpret imaging of the maxillary sinus
- Assess the risk to the maxillary sinus in dento-alveolar surgery and discuss the diagnosis and management of oro-nasal communications
- Describe the role of pharmacology in the management of sinus disease and surgery

### **Oral and Maxillofacial Trauma**

- Describe, and perform, an examination of a facial trauma patient
- Demonstrate knowledge of the signs and symptoms of facial injuries, and the radiological investigations in the assessment of oral and maxillofacial injuries
- Describe the general principles of management of dento-alveolar and facial injuries including bony and soft tissue injuries
- Manage dentoalveolar injuries

### **Orthognathic Surgery**

- Describe the physiology and biomechanics of the jaws and masticatory system
- Describe developmental and acquired deformities of the maxillofacial region
- Discuss the general principles of the management of dento-facial deformities and describe the biological basis for orthognathic surgery
- Perform the peri-operative care of the orthognathic surgery patient

### **Reconstructive Maxillofacial Surgery**

- Describe the anatomy, types and clinical indications of the soft and hard tissue grafts commonly used in the maxillofacial region
- Describe the repair of oro-antral, oro-nasal and oro-cutaneous fistula
- Describe the principles and materials for fixation in reconstructive surgery

**Maxillofacial Oncology**

- Describe the molecular basis of the pathogenesis of oral malignancy
- Describe the concepts of premalignant lesions and conditions
- Perform clinical ward management of patients with oral malignancy, and have an understanding of the dental management and the potential complications including osteoradionecrosis
- Discuss follow-up care of patients with oral malignancy

**Maxillofacial Prosthetics and Technology**

- Describe the construction of surgical appliances such as splints and obturators