

Syllabus for the  
Bicollegiate, Tripartite Specialty Examination in  
Cardiothoracic Surgery

The College of Surgeons of Hong Kong  
The Academy of Medicine of Singapore  
The Royal College of Surgeons of Edinburgh

## INTRODUCTION

The examination has five parts - clinical examinations in cardiac and thoracic surgery, each of one hour, and vivas in cardiac surgery, thoracic surgery and applied physiology and critical care, each of 30 minutes.

In the clinicals, the candidates will be expected to take a brief but concise history from patients and to elicit relevant signs. They may be asked for a programme of investigations, the results of which are usually available. Diagnosis will be discussed, with aspects of pre, intra- and post-operative treatment.

In the vivas the candidates may be examined on any aspect of the Specialty and they will be expected to discuss the topics on the basis of their own experience and with reference to the current literature. Candidates should understand audit and the analysis of scientific data.

The examination pass standard is aimed at the level of knowledge expected of a day one consultant cardiothoracic surgeon in his day-to-day practice. The curriculum is a guide to the range of subject matter which falls within the scope of the examination but it is not a complete list of possible topics.

# CRITICAL CARE AND APPLIED PHYSIOLOGY

## Physiology

Myocardial cellular physiology  
Haemodynamics, physiology and measurement  
Electrophysiology including conduction disorders  
Cardiopulmonary bypass and hypothermia  
Haemostatic mechanisms  
Pulmonary physiology: ventilation and its control, gas exchange  
Assisted controlled ventilation  
Acid base balance  
Upper GI tract: neural and humoral control, digestive physiology  
Nutritional support  
Renal function: dialysis  
Thyroid and hepatic function  
Metabolic response to trauma and to operation  
Fetal and neo-natal circulation

## Anatomy

Gross and micro-anatomy of:  
Heart, pericardium and great vessels  
Peripheral vascular system: CABG conduits  
Tracheo-bronchial tree and lungs  
Mediastinal structures  
Upper GI tract and upper abdomen  
Chest wall and diaphragm  
Neck

## Pathology

Inflammation and wound healing  
Atheroma, medial necrosis, arteritis  
Myocardial infarction and its complications  
Endocarditis  
Pericarditis  
Broncho-pulmonary infections, cystic fibrosis  
ARDS  
Emphysema, pulmonary fibrosis  
Pulmonary manifestations of systemic disease  
Oesophagitis, columnar-lined oesophagus, stricture  
Oesophageal Motility disorders  
Benign and Malignant tumours of:  
Heart and pericardium, trachea, bronchus, pulmonary parenchyma, pleura and chest wall, mediastinum, thyroid

## Pharmacology

Drugs used in the treatment of hypertension, heart failure and angina  
Anti-arrhythmic agents  
Haemostatic agents  
Anti-platelet, anticoagulant and thrombolytic agents  
Immunosuppressants  
Bronchodilators  
Analgesics  
Anaesthetic agents: local and general  
Antibiotics

## Microbiology

Organisms involved in cardio-respiratory infection

Antibiotic usage and prophylaxis

Antisepsis

## Investigations

The candidates will be expected to know the indications for and the interpretation of the commonly used tests.

Routine haematology and biochemistry

Hepatic, renal and thyroid function

Immunological function

Radiology including contrast, CT, MRI and angiography

Pulmonary and cardiac isotope studies

Electrocardiograms including exercise stress ECG

Echocardiograms including 2D, Doppler and TOE

Cardiac catheter data

Pulmonary function tests including blood gasses

# CARDIAC SURGERY

Management of paediatric and adult cardio-pulmonary bypass.

Principles of cardiac surgical intensive care:

- monitoring

- nursing care

- sedation

- treatment of system failure

Mechanical support: balloon counterpulsation, ventricular assist,

ECMO

Pacemakers

Blood transfusion and blood products in cardiac surgery

Clinical management of shock, pulmonary embolism, cardiac arrest

Cardiac trauma

Sternotomy disruption

Rehabilitation

## Ischaemic Heart Disease

Diagnosis, investigation and assessment

Operative treatment

Results of surgery - angina recurrence / graft patency / survival

Management of associated conditions: VSD, MI, LV aneurysm

Management of risk factors

Role of PTC A and non-operative treatment

## Valvular Heart Disease

Diagnosis, investigation and assessment

Operative treatment: replacement, repair

Choice of prosthesis

Results

## Surgery of the Great Vessels

Trauma: penetrating injury, rupture

Aortic dissection

Aneurysms of thoracic aorta, head vessels, subclavian artery

Cerebral and spinal cord protection

Use of bypass techniques

## Pericardium

Constructive pericarditis

Pericardial effusion

Pericardial tamponade

## Congenital Heart Disease

The candidates will be expected to know the clinical features of the commonly occurring congenital abnormalities and the basic surgical principles used in their treatment. They will be expected to be able to discuss the timing of surgery and the indications for palliation versus total correction of the complex abnormalities.

Morphology, classification, indications for surgery, techniques and results in-

- ASD

- VSD

- Fallot's Tetralogy

- Transposition of the great vessels

- Single ventricle

- Hypoplastic left heart syndrome

- Valve replacement - valvotomy

- Patent ductus arteriosus

- Coarctation of the aorta

## Surgery for Heart Failure

- Cardiomyoplasty

- Indications for heart transplantation

- Organ retrieval and preservation techniques

- Methods of cardiac and pulmonary transplantation

- Post-operative drug management, surveillance and results

# THORACIC SURGERY

Respiratory and upper GI endoscopy: diagnostic and therapeutic  
Mediastinoscopy and mediastinotomy  
Video-assisted techniques for diagnosis and therapy

## Lung

Congenital lesions: lobar emphysema, sequestration  
Trauma: penetrating and blunt  
Bronchial carcinoma including adjuvant and non-operative management  
Other primary tumours of trachea and lung  
Surgery of intra-pulmonary secondaries  
Broncho-pulmonary sepsis: bronchiectasis, lung abscess  
Surgery of mycobacterial, fungal and hydatid infections  
Surgery for end-stage lung disease

## Pleura

Trauma  
Pneumothorax  
Investigation and management of pleural effusion  
Empyema thoracis  
Mesothelioma

## Chest Wall & Diaphragm

Congenital lesions: diaphragmatic hernia, pectus deformity, cervical rib  
Trauma: fracture, flail segment, rupture diaphragm  
Tumours of chest wall skeleton  
Reconstruction of chest wall

## Mediastinum

Tumours and cysts  
Surgical and anaesthetic management of myasthenia gravis  
Retrosternal goitre