Final FRCA Syllabus

**Obstetrics**

Physiological changes of pregnancy

Anaesthesia in early pregnancy

Antenatal assessment of the pregnant woman

Medical diseases complicating pregnancy

Pain relief in labour

Anaesthesia for operative obstetrics

Emergencies in obstetrics

Maternal morbidity and mortality

Neonatal resuscitation

**ENT**

Preoperative assessment, particularly prediction of a difficult intubation. Management of patients of all ages to include patients with:

- stridor
- intubation difficulties
- sleep apnoea
- concomitant diseases

Local techniques and surface analgesia

Acute ENT emergencies (e.g. bleeding tonsils, croup, epigiotitis, foreign bodies)

Laryngoscopy and bronchoscopy

Knowledge of special tubes, gags and equipment for microlaryngoscopy, bronchoscopy, laser surgery (e.g. Venturi devices, ventilating bronchoscope and fibre-optic bronchoscopy)

Middle ear surgery including hypotensive techniques Major head and neck surgery

Emergency airway management including tracheostomy

Postoperative management

Dental/ Maxillofacial

Preoperative assessment
Day case/inpatient requirements
Resuscitation facilities
Dental chair anaesthesia
Paediatric anaesthesia
Sedative, anaesthetic and analgesic techniques for dental extractions
Assessment and management of the difficult airway including fibreoptic intubation
Anaesthesia for maxillofacial surgery including the perioperative management of the fractured jaw and other major facial injuries
Postoperative management for all patients undergoing dental or maxillofacial procedures

**Orthopaedic**

Preoperative assessment with particular reference to the problems of children, the elderly and the patient with rheumatoid arthritis
Emergency anaesthesia for fractures
Routine anaesthesia for joint replacement surgery, arthroscopy, fractured bones, dislocations and tendon repair
Procedures under tourniquet
Anaesthesia for spinal surgery
Regional blocks
Perioperative analgesia
Prevention, diagnosis and management of fat emboli, deep vein thrombosis and pulmonary emboli

**Trauma**

Management of head injury, spinal injury and multiple trauma with major blood loss
Major incident management, triage and anaesthesia in situations outside the hospital
Transfer of the traumatized patient
Management of the burned patient
Vascular
Resuscitation and management of major vascular accidents
Management of the patient with atherosclerotic disease
Management of the patient for major vascular surgery
Postoperative management
Postoperative analgesia
Anaesthesia for non-cardiac surgery in patients with cardiac disease

**Ophthalmic**

Preoperative assessment with particular reference to patients with underlying disease
Strabismus, cataract and detached retina surgery
Penetrating eye injury
Control of intraocular pressure
Anatomy relevant to local anaesthetic blocks
Peribulbar and retrobulbar techniques of local anaesthesia
Postoperative care

**Paediatric**

Preoperative assessment and psychological preparation for surgery
Anaesthetic management of children for major elective and emergency surgery
The anaesthetic implications of major congenital anomalies including congenital heart disease
Management of recovery.
Management of postoperative pain in children
Management of acute airway obstruction including croup and epiglottitis

**Day stay**

Selection criteria and preoperative evaluation
Instructions to patients
Regional analgesia
General anaesthesia
Appropriate drugs
Recovery assessment
Postoperative analgesia
Diagnostic Imaging - Anaesthesia and Sedation
Preanaesthetic preparation
Techniques appropriate for adults and children for CT scanning
MR imaging and angiography
Post-investigation care

**Regional, cardiac, thoracic and neurosurgical**

**Regional**

Basic sciences applied to regional anaesthesia: anatomy, physiology and pharmacology
Principles and practice of spinal and extradural anaesthesia, intravenous regional anaesthesia and nerve blocks
Recognition and management of adverse effects

In addition, candidates will be assessed on their understanding of principles in the following areas:

**Cardiac Anaesthesia**

Preoperative assessment and management of patients with cardiac disease
Anaesthesia for cardiovascular imaging Pacemakers
Non-invasive and invasive vascular and non-vascular monitoring appropriate to the cardiovascular system
Anaesthesia for cardiac surgery
Principles of cardiopulmonary bypass and cardiac surgery
Postoperative management

**Thoracic Anaesthesia**

Preoperative lung function tests
Local and general anaesthesia for bronchoscopy to include techniques of ventilation
Familiarity with fibreoptic bronchoscopic techniques for airway management and diagnostic procedures
Techniques of one-lung anaesthesia to include single and double lumen endobronchial tubes
Principles of thoracic anaesthesia to include management of pneumothorax
Principles of underwater seals on chest drains
Tracheostomy and other techniques of emergency airway management

**Neurosurgical Anaesthesia**
Preoperative assessment and management of patients with neurological disease
Anaesthesia for imaging relevant to the CNS
Principles of anaesthesia for craniotomy, to include vascular disease, cerebral
tumours and posterior fossa lesions
Perioperative management of interventional neuroradiological procedures
Anaesthesia for spinal column surgery
Principles of immediate postoperative management
Neurological monitoring
**Neonatal and other specialised areas**

**Neonatal Anaesthesia**

Preoperative assessment
Recognition of common congenital anomalies requiring surgical correction at birth
and their anaesthetic implications (including oesophageal atresia, diaphragmatic
hernia, exomphalos, intestinal obstruction)
Principles of anaesthetic management in the neonate undergoing major surgery
Congenital pyloric stenosis
Postoperative pain management
Transport of the critically ill neonate
Transplantation
Principles and complications of immunosuppression
Specific anaesthetic problems associated with renal transplantation
Anaesthetic management of patients with transplanted organs

**Other specialised areas**

Anaesthesia for:

Electro-convulsive therapy (ECT)
Radiotherapy
Minimal access surgery
Plastic surgery
Burns
Perioperative management of a patient with sleep apnoea

**Applied anatomy and physiology**

**APPLIED ANATOMY**

Candidates should be able to demonstrate a good understanding of human anatomy
relevant to the practice of anaesthesia. The syllabus for the Primary FRCA
examination is considered core knowledge. For the Final FRCA examination,
application of this knowledge to clinical practice will be explored. This will include the
knowledge of anatomy as demonstrated by endoscopic and imaging techniques.

**APPLIED PHYSIOLOGY**

Candidates are expected to be able to apply the basic knowledge of human
physiology necessary to pass the Primary FRCA examination to the clinical practice of
anaesthesia and intensive care medicine.
While all branches of physiology are of importance, it is recognised that clinical relevance dictates the topics selected for the examination.

**Haematological**
- Anaemia
- Polycythaemia
- Immunity and allergy
- Inflammation
- Blood groups
- Alternative oxygen carrying solutions
- Abnormalities of coagulation and haemostasis
- Abnormal haemoglobins
  - sickle cell disease
  - thalassaemia

**Muscle Function**
- Muscle contracture and malignant hyperthermia
- Disturbances in neuromuscular transmission
- Myopathies

**Cardiovascular**
- Abnormal electrocardiogram and arrhythmias
- Cardiomyopathy and abnormal ventricular function
- Heart failure
- Hypovolaemia and shock
- Ischaemic heart disease
- Valvular defects
- Hypertension
- Common congenital heart defects
- Kidney and Body Fluids
- Disturbances of fluid balance, oedema and dehydration
- Management of acid-base abnormalities
- Assessment of renal function
- Renal failure and its management
- Diuresis
- Plasma electrolyte disturbances
- Liver
- Hepatic failure
- Jaundice

**Respiration**
- Disorders of respiratory mechanics, gas exchange and gas transport
- Disorders of the pulmonary circulation
- Respiratory failure and ventilatory support
- Effects of changes in ambient pressure

**Nervous System**
- Consciousness and sleep
- Depth of anaesthesia
- Consequences of spinal cord injury and deafferentation
- Monitoring of spinal cord function under general anaesthesia
- Mechanisms of pain; somatic, visceral, neuropathic
- Control of cerebral circulation, intracranial and intraocular pressures
- Disorders of the autonomic nervous system

**Gastrointestinal Tract**
Nausea and vomiting
Oesophageal reflux
Obstruction
Swallowing disorders
The mucosal barrier
Metabolism and Body Temperature
Hormonal and metabolic response to trauma
Hyperthermia and hypothermia
Starvation/obesity
Endocrinology
Endocrine diseases of significance in anaesthesia
Obstetrics and Paediatrics
Principles of neonatal physiology
Effects of prematurity
Development in infancy and childhood
Physiology of normal and abnormal pregnancy

Applied Clinical Pharmacology

This section requires a wider knowledge of drugs than in the Primary FRCA examination. For drugs used in anaesthesia and intensive care medicine, candidates will also be expected to be aware of new drugs which are undergoing evaluation and whose human application has been reported in the mainstream anaesthetic journals.

There will be emphasis on the practical application of pharmacological and pharmacokinetic knowledge, and upon an appreciation of the hazards and limitation of individual techniques.

General therapeutics.

Pharmacological management of:

Heart failure, coronary insufficiency and arrhythmias
Hypertension, including hypertension in pregnancy
Acute and chronic respiratory diseases
Hepatic and renal failure
Gastrointestinal disorders including modification of gastric contents
Musculo-skeletal problems such as rheumatoid and osteoarthritis
Myasthenia and muscle diseases
Pituitary, adrenal and thyroid dysfunction
Depression, anxiety states and schizophrenia
Epilepsy
Bacterial, fungal and viral infections
Malignant disease
Adverse reactions:
Types of reactions
The yellow card system
Regulation of drug licensing

Application of pharmacological principles to the practical management of anaesthesia:
Premedication:
The use of anxiolytics, sedatives and antisialogogues. Pro-kinetic and anti-emetic
drugs. H2and proton pump antagonists
Inhalational anaesthesia:
Control of alveolar tension during induction and recovery
Control of anaesthetic depth and prevention of awareness
Management of sedation techniques
Intravenous anaesthesia:
Methods for achieving specified plasma concentrations. Bolus, infusion, and profiled administration
Management of neuromuscular blockade:
Techniques for the use and reversal of muscle relaxants
Management of abnormal responses
Regional anaesthesia:
Choice of agent and technique. Additives
Systemic effects. Avoidance of toxicity

Application of pharmacological principles to the control of acute pain (including intraoperative analgesia and postoperative pain management) and chronic pain:

Opioid and non-opioid drugs
Opioid infusions
Patient-controlled analgesia
Regional techniques
Inhalational techniques
Other drugs used to manage chronic pain - antidepressants, anticonvulsants, antiarrythmics, etc.
Management of severe pain and associated symptoms in terminal care
Non-pharmacological methods (e.g. T.E.N.S., acupuncture)

Application of pharmacological principles to neurosurgery and management of head injuries:

Effect of drugs on cerebral blood flow
Control of intracranial pressure
Control of convulsions
Management of cerebral ischaemia

Pharmacological control of myocardial function, vascular resistance, heart rate and blood pressure
Anticoagulant and thrombolytic therapies. Management of coagulopathies
Pharmacological control of blood sugar
Pharmacological problems in cardiopulmonary bypass. Cardioplegia Therapeutic problems associated with organ transplantation: heart, lung, liver, kidney
Management of malignant hyperthermia
Pharmacological considerations in cardiopulmonary resuscitation, major trauma and exsanguination Pharmacological control of severe infections
Pharmacological treatment of severe asthma
Effects of renal or hepatic impairment on drug disposition

The Statistical Basis of Clinical Trial Management
Candidates will be expected to understand the statistical fundamentals upon which most clinical research is based. They may be asked to suggest suitable approaches to test problems, or to comment on experimental results. They will not be asked to perform detailed calculations or individual statistical tests.

Data collection and analysis:
- simple aspects of study design
- defining outcome measures and the uncertainty of measuring them

Application to clinical practice:
- distinguishing statistical from clinical significance
- understanding the limits of clinical trials

- the basics of systematic review and its pitfalls

Study design.
- defining a clinical research question
- understanding bias
- controls, placebos, randomization, blinding exclusion criteria
- statistical issues, especially sample size
- ethical issues

**Clinical Measurement**

The Final examination assumes knowledge of the Primary FRCA examination syllabus, with the addition of more sophisticated measurements. There is an emphasis on clinical applications of clinical measurement, such as indications, practical techniques and interpretation of acquired data. Candidates will be expected to understand the sources of error and the limitations of individual measurements.

Assessment of respiratory function
- Assessment of cardiac function, including echocardiography
- The electroencephalograph (EEG) and evoked potentials
- The electromyograph (EMG) and measurement of nerve conduction
- Principles and practice of in vitro blood-gas measurements.
- Interpretation of biochemical data
- Interpretation and errors of dynamic pressure measurements including systemic, pulmonary arterial and venous pressures, intracranial, intrathoracic and intra-abdominal pressures
- Methods of measurement of cardiac output and derived indices; limitations and interpretation

Principles of imaging techniques including CT, MRI and ultrasound. Doppler effect
- Interpretation and errors of capnography, oximetry and ventilatory gas analysis

**ITU, transport of the critically ill, nutrition and trauma**

**INTENSIVE CARE MEDICINE**

Candidates should have a good understanding of the diagnosis and management of the critically ill patient and should be skilled in resuscitation to an advanced
standard. An understanding of the particular problems associated with the critically ill child (excluding neonates) will be expected. All candidates should be familiar with the monitoring and life support equipment used in the treatment of critically ill patients. Candidates must be able to demonstrate their knowledge of practical invasive procedures, with an understanding of the principles and hazards involved. Interpretation of data from such procedures.

An awareness of the importance of communication skills and interpersonal relationships will be expected.

**Transport of the Critically Ill**

Infection and Multiple Organ Failure
Sepsis and endotoxaemia
Nosocomial infections
Assessment and management of oxygen delivery
Antibiotics and immunotherapy
Reperfusion injury and antioxidants

Cardiovascular System to include
Pathophysiology and management of cardiogenic and hypovolaemic shock
Pulmonary embolism
Investigation and management of cardiac failure
Investigation and management of arrhythmias
Respiratory System to include
Airway care
Ventilators and modes of pulmonary ventilation
Management of acute and chronic respiratory failure

Nervous System to include
Central nervous system infection
Acute polyneuropathy
Traumatic and non-traumatic coma
Encephalopathies
Cerebral ischaemia
Status epilepticus
Brain stem death

Renal, Electrolyte and Metabolic Disorders to include
Diagnosis, prevention and management of acute renal failure
Fluid, electrolyte and acid-base disorders
Body temperature

Haematological Disorders to include
Coagulopathies
Immunocompromised patients

Gastrointestinal Disorders
Acute liver failure - diagnosis and management
Acute pancreatitis
Gut ischaemia
Gastrointestinal ulceration and bleeding
Translocation and absorption disorders
**Nutrition**

Requirements for enteral and parenteral nutrition

Analgesia, Anxiolysis and Sedation

**Trauma**

Management of multiple injuries
Near-drowning
Burns and smoke inhalation

Management of Acute Poisoning

Organ Donation

Scoring Systems and Audit

Ethics

**Pain Management**

A detailed knowledge of the control of acute pain in the context of postoperative and post-traumatic conditions will be expected, as will an understanding of the principles of chronic pain management in the pain clinic setting.

Anatomy, physiology, pharmacology and basic psychology relevant to pain management

Assessment and measurement of acute pain - including special problems with children, the elderly, and patients who are unconscious or in intensive care

Assessment of patients with chronic pain and pain in patients with cancer

Use of medication for pain management; conventional analgesics and adjuvant analgesics; side effects; problems of drug dependency and addiction

The role of and indications for neural blockade:

- peripheral nerve, plexus, epidural and subarachnoid blocks, techniques of sympathetic blockade, neurolytic agents and procedures, implanted catheters and pumps for drug delivery

Stimulation produced analgesia including transcutaneous techniques and acupuncture

Other treatment modalities; physical therapy, surgery, psychological approaches, rehabilitation approaches, pain management programmes

Symptom control in terminal illness

The organisation of pain management services

Principles and ethics of pain research

**Anaesthesia**

Trainees will be expected to demonstrate knowledge consistent with post-Primary FRCA examination training under the following headings:
Anaesthetic equipment

Preoperative assessment

Pre-medication

Pre-, per- and postoperative management of anaesthesia

Anaesthesia for patients with coexisting disease including diabetes and cardiovascular disorders

Anaesthesia for particular disciplines - obstetric, ENT, dental/ maxillofacial, orthopaedic, trauma, vascular, ophthalmic, paediatric, day stay, neuroradiology (anaesthesia and sedation)

Regional anaesthesia

Audit and quality control

Ethics, relevant legislation and the duty of care, consent, and information given to patients before anaesthesia