Short Answer Questions in Anaesthesia

Short Answer Questions in Anaesthesia

An approach to written (and oral) answers

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- What are the problems of monitoring patients in the magnetic resonance imaging unit?
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- What are the pathophysiological insults which exacerbate the primary brain injury following head trauma? How can these effects be minimised?
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- Describe the diagnosis and immediate assessment of a patient with smoke inhalation injury.
- Outline the key points in the management of a patient with massive haemorrhage.

- What is the physiological response to the rapid loss of 1 litre of blood in the adult?
- Explain, with examples, the mechanisms by which a pneumothorax may occur.
- List the important causes of pneumothorax. What are the diagnostic features and what is the immediate management?
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- Describe the anatomy of the femoral nerve relevant for the performance of a femoral nerve block. What is a 'three-in-one block' and for what may it be used?
- Describe, with reference to the anatomical landmarks, the different approaches which are used commonly for local anaesthetic block of the sciatic nerve. Why is this block performed?
- Describe how the main nerves which innervate the upper limb are formed from the brachial plexus. List the common approaches to local anaesthetic block of the plexus together with the main indications for their use.
- Describe the anatomy of the internal jugular vein. List the complications of cannulation of this vessel and outline how each may be avoided.
- Prior to subarachnoid or extradural block what landmarks are guides to the vertebral level? What are the main determinants of block height following subarachnoid injection of local anaesthetic solution?
- Describe the anatomy of the sacrum. What are the clinical differences between sacral extradural (caudal) block in adults and in children?
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- Describe how you would perform an interscalene block. What are the main indications and advantages? What are its disadvantages and specific complications?
- A patient requires open reduction and internal fixation (ORIF) of fractured radius and ulna, but refuses general anaesthesia. Compare the local anaesthetic blocks that might be considered suitable for this procedure.
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- A patient with a history of depression requires a hemicolectomy for likely carcinoma. He is taking a monoamine oxidase inhibitor (MAOI). What is your anaesthetic management?
- Describe the advantages and disadvantages of nitrous oxide in modern anaesthetic practice.
- Give an account of the mechanisms of action of nitrous oxide. Explain why it is a potentially toxic agent.
- What drugs are used to treat hypotension caused by subarachnoid block? What factors influence your choice of agent in this situation?
- Compare the pharmacology of atropine, hyoscine and glycopyrrolate. Outline their main uses in anaesthetic practice.
- Outline the pathways which mediate nausea and vomiting. Which groups of patients are particularly at risk in the perioperative period? Where do the commonly used anti-emetic drugs exert their actions?

- Describe the effects of magnesium sulphate. What are its uses in the acutely ill?
- Describe the pharmacology of propofol.
- Describe the pharmacology of ketamine.
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- How can jugular venous bulb oxygen saturation be measured? What is the purpose of this investigation? What factors cause it to increase or decrease?
- Explain the basic principles of surgical diathermy. What are its potential problems?
- Outline ways of measuring humidity and evaluate the methods by which gases can be humidified in clinical practice. Why is this important?
- Describe the features of a modern anaesthetic machine that contribute to the safety of a patient undergoing general anaesthesia.
- Classify the common types of hypoxia. What are the features of an anaesthetic machine which are designed to minimise the risk of delivering hypoxic gas mixtures?
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- How do you confirm that a double-lumen endobronchial tube has been placed correctly? Outline the possible complications associated with this procedure.
- What physiological changes are associated with one-lung anaesthesia? Describe the management of a patient in this situation who becomes hypoxic.

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Preface

The syllabus for the Final FRCA is wide, and it is tested in different ways: by multiple choice questions, by orals in anaesthesia and clinical science, and by written short answer questions. The aim of this book is to give you some insight into the short answer section and some guidance as to how best you might succeed. The introduction explains the paper and offers advice about technique, and the 180 questions that follow comprise topics that are typical of those that might appear. Each title is followed by a short preamble which is intended to establish the relevance of the subject that is being asked, and by a specimen introduction to the answer. It is not intended that you necessarily should reproduce these introductions in your own papers, but they are included as examples of ways in which answers could begin. There follows the body of the text which is presented mainly in the form of bulleted lists accompanied by supporting information and explanation, a format whose purpose is to make the significant details clear and accessible. At the end of each topic a section entitled 'Marking points' attempts to reinforce the objective of the question and to clarify any particular aspects that may be important for a pass.

Although the questions are structured as if for a written answer, it is worth emphasising that many of the subjects could appear in a slightly different form in one or other part of the oral examination. It is for this reason that many of the topics include substantially more detail than would be needed to pass a written question, but enough to allow you to give a reasonable account of yourself in the vivas.

This is not a textbook of anaesthesia but an exam-orientated guide. Yet it would be disappointing were the practice of clinical anaesthesia to bear no relation whatever to the examination syllabus. So although the questions in this book are constructed primarily for the convenience of examination candidates, I would hope also that they comprise a succinct summary of information, albeit unreferenced, that would be of interest to other practising clinicians.

I had always wondered why the authors of medical textbooks, however modest, paid tribute to the forbearance of their families. Now we know!

Simon Bricker
2002

Preface to the 1st Edition

The guidelines provided in this book include the main elements of each answer in note form. These answer notes are composed of simple and basic knowledge in the field of anaesthesia.

They do, however, introduce the reader to methods and systems of answering, which would enable any examination candidate to encapsulate the relevant material in the brief time available in a short answer question exam. It is also worth noting that the same questions could be asked in a *viva voce* examination. It would be immensely helpful to any candidate to have ready-organised answers in mind, in the style of the ones in this book. Such an organised approach would impress any examiner.

Reading this book is about learning the skills of succinct, accurate and comprehensive communication. This is a fundamental skill of medical practice, which is usually learned by copying the talents of senior colleagues. This 'apprenticeship' method has stood the test of time for the medical profession for many centuries.

It is hoped that those who read this book will find answering examination questions easier as a result. This is very worthwhile for you, the reader. If it also improves communication between doctors (and others), then it will have exceeded its primary purpose and achieved something important for our profession.

G.B. Rushman
1997

Abbreviations

(A-a)DO_2	Alveolar-arterial oxygen difference
ACE	Angiotensin converting enzyme
ACT	Activated clotting time
ACTH	Adrenocorticotrophic hormone
AF	Atrial Fibrillation
APPT	Activated partial thromboplastin time
ARDS	Adult respiratory distress syndrome
ASD	Atrial septal defect
ATP	Adenosine triphosphate
AV	Atrio-ventricular
A-V	Arterio-venous
BMI	Body mass index
BP	Blood pressure
BT	Bleeding time
CBF	Cerebral blood flow
CEPOD	Confidential enquiry into peri-operative deaths
CFAM	Cerebral function analysing monitor
$CMRO_2$	Cerebral metabolic rate for oxygen
CN	Cyanide
CNS	Central nervous system
CO	Cardiac output, or Carbon Monoxide
CO_2	Carbon Dioxide
COPD	Chronic obstructive pulmonary disease
CPAP	Continuous positive airways pressure
CPP	Cerebral perfusion pressure
CRF	Chronic renal failure
C-spine	Cervical spine
CT	Computerised tomography
CTG	Cardiotocogram
CVP	Central venous pressure
CVA	Cerebrovascular accident
CVS	Cardiovascular system
CXR	Chest X-ray
DBP	Diastolic blood pressure
DC	Direct current
DIC	Disseminated intravascular coagulation
DVT	Deep venous thrombosis
ECF	Extracellular fluid
ECG	Electrocardiogram
EEG	Electroencephalogram
EMG	Electromyogram
$ETCO_2$	End-tidal carbon dioxide
ETT	Endotracheal tube
FBC	Full blood count
FEV_1	Forced expiratory volume in 1 second
F_1O_2	Inspired fraction of oxygen
FRC	Functional residual capacity
FVC	Forced vital capacity
GA	General anaesthesia
GFR	Glomerular filtration rate
HPA	Hypothalamo-pituitary-adrenal
HR	Heart rate
HDU	High dependency unit
IABP	Intra-arterial blood pressure
ICP	Intracranial pressure
IHD	Ischaemic heart disease
IOP	Intraocular pressure
IPPV	Intermittent positive pressure ventilation
ITU	Intensive Care Unit
kPA	Kilopascal
LMA	Laryngeal mask airway
LOR	Loss of Resistance
LVEDP	Left ventricular end-diastolic pressure

LVEDV	Left ventricular end-diastolic volume
LVH	Left ventricular hypertrophy
MAC	Minimum alveolar concentration
MAO	Monoamine oxidase
MAP	Mean arterial pressure
MCV	Mean corpuscular volume
$MgSO_4$	Magnesium sulphate
MI	Myocardial infraction
MR	Magnetic
MRI	Magnetic resonance imaging
NG	Naso-gastric
NIBP	Non-invasive blood pressure
N_2O	Nitrous oxide
NSAID	Non-steroidal anti-inflammatory drug
O_2	Oxygen
OHDC	Oxygen-haemoglobin dissociation curve
ORIF	Open reduction and internal fixation
PA	Pulmonary artery
P_aCO_2	Partial pressure of arterial carbon dioxide
P_aO_2	Partial pressure of arterial Oxygen
PAOP	Pulmonary artery occlusion pressure
PCA	Patient controlled analgesia
PCEA	Patient controlled epidural analgesia
PCOP	Pulmonary capillary occlusion pressure
PCWP	Pulmonary capillary wedge pressure
PCV	Packed cell volume
PDA	Patent ducts arteriosus
PDPH	Post-dural puncture headache
PE	Pulmonary embolus
PEEP	Positive end-expiratory pressure
PICU	Paediatric intensive care unit
PIH	Pregnancy-induced hypertension
PONV	Post-operative nausea and vomiting
PORM	Post-operative respiratory morbidity
PPF	Plasma protein fraction
PT	Prothrombin time
PVR	Pulmonary vascular resistance
RBF	Renal blood flow
RSI	Rapid sequence induction
RUQ	Right upper quadrant
RVH	Right ventricular hypertrophy
SA	Sino-atrial
SAB	Subarachnoid block
SAG-M	Saline, Adenine, Glucose-Mannitol
SBP	Systolic blood pressure
SGB	Stellate ganglion block
SpO_2	Oxygen saturation (plethysmographic)
SVR	Systemic vascular resistance
SVT	Supra-ventricular tachycardia
TAH	Total abdominal hysterectomy
TAPVD	Total anomalous pulmonary venous drainage
TENS	Transcutaneous electrical nerve stimulation
TURP	Trans-urethral resection of prostate
URTI	Upper respiratory tract infection
VR	Venous Return
VSD	Ventricular septal defect
VT	Ventricular