SELF ASSESSMENT - Answers to MCQ

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1.

a. **F** - it takes about 2 hours for clear fluids to empty from the stomach

b. **T**

c. **F** - milk thickens when mixed with gastric juice and should be regarded as a solid

d. **T**

e. **F** - aspiration of as little as 30-40 mls can result in lung damage

2.

a. **T** - (see below)

b. **F** - current recommendations are that supplementary steroids are only needed if the patient is on a dose of 10mg prednisolone (or more)/ day

c. **T**

d. **F** - 10mg prednisolone is equivalent to 1.5 mg dexamethasone

e. **F** - a dose of 25mg hydrocortisone on induction is considered sufficient

Prednisolone 10mg is equivalent to:

- Dexamethasone 1.5mg
- Hydrocortisone 40mg
- Methylprednisolone 8mg
- Betamethasone 1.5mg
- Cortisone acetate 50mg

3.

a. **F** - whilst severe aortic stenosis can present with chest pain, breathlessness and syncope, it can also be entirely asymptomatic (and may present for the first time with sudden death).

b. **T**

Degree of severity of aortic stenosis	**Gradient across aortic valve**
Mild	< 40mmHg
Moderate	40-80 mmHg
Severe	>80 mmHg

c. **F** - a spinal anaesthetic leads to a sympathetic block leading to a fall in blood pressure. This is clearly something to be avoided in patients with a relatively fixed cardiac output.

d. **F** - the loudness of the murmur bears no relation to the severity of the aortic stenosis. In fact, in very severe stenosis the murmur is often very quiet (due to falling cardiac output).

e. **F** - Metaraminol (or similar) would be first choice as it does not cause a tachycardia (and thus avoids stressing the heart any further).

4.

a. **F** - TURP is often done under a spinal anaesthetic. This avoids the risk of a general anaesthetic in an often frail population. It also enables TUR syndrome to be picked up earlier (through regular conversation with the patient).

b. **T**

c. **F** - Hyponatraemia should not be corrected at a rate faster than 1mmol/L/hour

d. **T**

e. **F** - most patients are elderly and often have significant co-morbidity. A minimum of FBC/ U&E/ G&S and an ECG is recommended.

5.

a. **F** - Suxamethonium is the only depolarising muscle relaxant in clinical use

b. **T**

c. **F** - Suxamethonium causes an increase in potassium of 0.5mmol/Litre. This is of little significance in most individuals. However caution must be exercised in patients with a pre-existing hyperkalaemia e.g. burns patients, patients with renal failure.

d. **F** - Suxamethonium may cause bradycardia in children. This may be prevented with atropine or glycopyrolate.

e. **F** - 4-5% of the population have this atypical gene

6.

a. **F** - Hypocalcaemia is a risk factor as it predisposes to neuromuscular irritability

b. **T**

c. **T** - Gaseous induction leads to a lighter plane of anaesthesia than IV induction, and therefore means laryngospasm is more likely

d. **T** - There is an increased chance of a soiled airway following a tonsillectomy and laryngospasm is thus more likely.

e. **F** - This is not a particularly stimulating operation. If it was associated with an anal stretch then this would predispose to laryngospasm. (Intense surgical stimulus = Increased risk of laryngospasm)

7.

a. **T**

b. **F** - Full thickness burns destroy the nerves and are therefore painless

c. **F** - There is no evidence that routine administration of antibiotics influences outcome

d. **F** - Parkland formula = 2-4mls fluid per % burn per kg of weight

e. **T** - Intubation is likely to become more and more difficult as airway swelling occurs

8.

a. **T** - Raynaud's disease leads to vasospasm of the blood vessels in the fingers. A tourniquet is going to compound the problem and increase the risk of tissue necrosis.

b. **T** - the tourniquet pressure would be too high

c. **F** - A Bier's block is often safer than a general anaesthetic in the elderly

d. **T** - A Bier's block may provoke further tissue damage

e. **F** - A Bier's block is likely to be safer than a GA

9.

a. **T** - We have a much higher threshold for transfusing blood products these days because of the risks of viral transmission.

b. **F** - the dose is 10-15 mls/kg (This will lead to an increase in coagulation levels of about 15%)

c. **T**

d. **F** - A cross-match can be done within 20 minutes

e. **T**

10.

a. **F** - T he spinal cord ends at L1-L2

b. **T** - this is to ensure that the injection is given at a level lower than the spinal cord

c. **F** - Most clinicians would consider this to be a relative contraindication (due to possible technical difficulty).

d. **F** - Heavy bupivicaine will give a higher block as a result of increased spread of the hyperbaric solution in the intrathecal space.

e. **T**

11.

a. **T** - In the head- down position there is reduced lung compliance and functional residual capacity

b. **T** - In the prone position, access to the airway is extremely limited and the patient should therefore be intubated (preferably with an armoured ET tube).

c. **F** - In the head-up position there is reduced venous return and therefore decreased cardiac output and BP.

d. **F** - The head should be turned towards the abducted arm to prevent stretch of the brachial plexus

e. **T**

12.

a. **F** - the correct formula is: (age + 4) multiplied by 2

b. **T**

Weight of child	**Size of LMA**
5-10 kg	1.5
10-20 kg	2.0
20-30 kg	2.5
30-50 kg	3.0

c. **F** - the correct formula is: age/2 + 12

d. **F** - the recommended dose in children is 2mg/kg due to their increased volume of distribution

e. **T**

13.

a. **T**

b. **T** - an INR > 1.5 is a contraindication to administering an epidural

c. **F** - A minimum of 12 hours should be left between giving a low molecular weight heparin and inserting/removing an epidural. This will minimise the chance of bleeding

d. **T** - back pain/ nerve root pain and neurological symptoms should therefore always be taken very seriously

e. **F** - Most clinicians would consider this to be an **ABSOLUTE** contraindication

14.

a. **F** - patient's are usually hypotensive as a result of peripheral vasodilatation

b. **T**

c. **F** - the patient may have abdominal pain and diarrhoea (not constipation)

d. **T**

e. **F** - the patient may be flushed or have an urticarial rash or erythema (not vasculitis)

15.

a. **T** - early signs of local anaesthetic toxicity include dizziness, light-headedness and drowsiness

b. **F** - an early sign of local anaesthetic toxicity is circum-oral numbness (as a result of the numerous nerve endings in this region)

c. **T**

d. **F** - Seizures should be treated with conventional anti-convulsants e.g. diazepam, lorazepam, thiopentone

e. **T**

16.

a. **T** - Anaesthetists can be trained to perform percutaneous tracheostomy relatively simply

b. **F** - A percutaneous tracheostomy can be performed under local anaesthetic and sedation

c. **F**

d. **F** - A 3% infection rate is quoted for percutaneous tracheostomy (versus 30% for a surgical procedure)

e. **T** - A percutaneous tracheostomy results in a stoma being formed between the tracheal rings. This does not normally lead to blood vessel damage.

17.

a. **T** - this leads to a blunted response to cardiovascular stress

b. **F** - there is a reduction in both FEV1 and VC

c. **F** - FRC remains about the same regardless of age

d. **T**

e. **F** - Autonomic dysfunction is more common in the elderly. This means that a labile BP and arrhythmias are more likely

18.

a. **T**

b. **T** - this is a low-resistance circuit. The expiratory limb exceeds the child's tidal volume, and thus prevents entrainment of room air

c. **T**

d. **F** - unruffled tubes are advised until the child reaches puberty. This is because the tracheal tube tends to lie at the level of the cricoid ring. This is particularly susceptible to oedema in children and an inflatable cuff is therefore avoided.

e. **T**

19.

a. **F** - it is less toxic. The D-isomer of bupivicaine has a higher potential for cardiotoxicity. Thus if the L-isomer is used in isolation it will be safer

b. **T**

c. **T**

d. **F** - The maximum recommended dose is 2mg/kg

e. **T**

20.

a. **F** - A GCS equal or less than 8 is an indication for intubation

b. **T** - 20% of patients will have a grade 3 view of the larynx

c. **T** - A full stomach must always be assumed and therefore a rapid-sequence induction performed

d. **F** - the landmark is the 2nd inter-costal space in the mid-clavicular line

e. **F** - Trauma patients should always be resuscitated using the A, B, C approach (airway, breathing, circulation) i.e. problems with the airway and breathing should be attended to before moving on to look at the circulation

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Answer to Clinical Dilemma

- **Hypovolaemia**. The blood-loss is difficult to assess because most of the blood is swallowed. Children are also able to compensate well following blood loss. Signs of significant hypovolaemia include agitation, depressed conscious level, tachycardia, prolonged capillary refill time (> 2 seconds), pale mucus membranes, cool peripheries and weak peripheral or central pulses. Hypotension is a late and often sudden sign of decompensation. If hypotension it is not rapidly reversed, death may ensue very quickly.
- **Residual effect of the last anaesthetic**. Depressed conscious level from volatile agents and/or opioid analgesics. Minor degree of subglottic oedema from the endotracheal tube.
- **Potentially difficult airway**. Postoperative oedema and bleeding can make it difficult to visualise the larynx.
- **Full stomach**. There is a significant amount of blood in the stomach.

Anaesthetic Management

- **Preoperatively**. Resuscitate the child (crystalloid, colloid and/or blood, depending on haemoglobin level and availability). Cross match blood if necessary. Prepare the usual equipment and monitoring. Ensure that large bore suction is readily available. Check the previous anaesthetic chart for details of the intubation. Prepare the same size ETT and have two smaller sizes of ETT available. (For an 8 year old a size 6, 5.5 and 5). A senior anaesthetist and ENT surgeon should be available during induction.
- **Induction**. There are two options. The classical teaching is an inhalational induction with halothane or sevoflurane in the left lateral position. Potential problems are hypotension in the hypovolaemic patient and laryngospasm. Many anaesthetists are not familiar with this technique and this in itself may prove a disadvantage. Most anaesthetists use a conventional, intravenous rapid sequence induction. The principles are pre-oxygenation, use of short acting induction agents (i.e. thiopentone, etomidate, ketamine), muscle relaxation with fast onset and rapid recovery (suxamethonium) and cricoid pressure. Choose the technique YOU are most familiar with. A failed intubation plan must be prepared.
- During surgery empty the stomach with a large bore oro-gastric tube. Remove the tube. The patient should be extubated awake in the lateral position.
- Postoperatively there is a risk of further re-bleeding and the patient therefore needs to be closely monitored.