Hot Topics for the Final FRCA written

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Learning objectives

- What are Hot Topics?
- How do we find them?
- General exam principles
- Specific topics
  - Possible new topics
  - Questions previously poorly answered

What are “Hot Topics”?

- Hot topics
  - Recent
  - Controversial(?)
  - Related to recent publications e.g.:
    - RCoA
    - AAGBI
    - SALG
    - NICE
    - National Audit Projects
      - NAP4 (twice) and NAP5 came up in 2016 SAQ
      - NELA 2nd report July 2016; RCoA bulletin September 2016
      - SNAP-1 report BJA December 2016
  - Questions poorly answered in previous exams

How do we find them?

- Relevant guidelines
- BJAEd / CEACCP
- NAP reports
- Past SAQs and Chairman's reports
  - RCoA website
  - Few "model answers" but there are some: September 2014 and September 2013

Caveat

- Preparation for the Final FRCA written involves *a lot* of bookwork
- Learning the “Hot Topics” may help with a small proportion of the questions but is no substitute for breadth and depth of knowledge
- “Exam Chestnuts” still appear repeatedly
- Attempting to second guess the examiners is a foolish strategy!

Recent SAQ pass rates

September 2016	75.25%
March 2016	62.65%
September 2015	49.50%
March 2015	45.30%
September 2014	30.32%
March 2014	60.32%
September 2013	78.14%
March 2013	67.36%
September 2012	51.9%
March 2012	58.33%

General SAQ principles

(examples on later slides)

- READ THE QUESTION
- Read it again
- All parts of the question are important; none are superfluous or misleading
- Some parts are underlined to avoid confusion
- Look at the weighting
- Be specific
- Do not underestimate the sciences
- Do not underestimate “non-medical” answers
- Write legibly
- Use bullet points / tables

The SAQs

- Questions submitted to the exam board must fit on 1 side A4 paper in size 12 font including question, reference to syllabus and model answer
- 6 questions from mandatory units
- 6 questions from “general duties” including advanced sciences; a maximum of one of these can be from the optional units
  - There will be some overlap of course

Question distribution

- There will *always* be one question on:
  - Cardiothoracics
  - Neuro
  - ICM
  - Paediatrics
  - Obstetrics
  - Pain
- If sitting the SAQ prior to undertaking these units, it is advisable to do some focused reading / theatre time
  - e.g. heparin for CPB March 2015, cardioplegia Sept 2014, tamponade Sept 2013, secondary brain injury March 2015, posterior fossa surgery Sept 2013
  - This is at least partly why the Final FRCA deadline is now halfway through ST5 (for those starting ST3 from August 2016)

READ THE QUESTION

- September 2015
  - A 25 year old woman who is 37 weeks pregnant and known to have pre-eclampsia is admitted to your labour ward with a blood pressure of 160/110mmHg on several readings
    a) What is the definition of pre-eclampsia (1 mark) and which related symptoms should pregnant women be told to report immediately? (2 marks)
    b) How should this patient be managed following admission to your labour ward? (12 marks)
    c) What changes would you make to your usual general anaesthetic technique for a pregnant woman, if this woman needed a general anaesthetic for caesarean section? (5 marks)

READ THE QUESTION

- March 2015
  - A 5 year old boy with Autistic Spectrum Disorder (ASD) is listed for dental extractions as a day case
    a) What constitutes ASD (1 mark) and what are the key clinical features? (6 marks)
    b) List the important issues when providing anaesthesia for dental extractions in children. (6 marks)
    c) Give the specific problems of providing anaesthesia for children with ASD and outline possible solutions. (7 marks)

READ THE QUESTION

- March 2015
  - You are asked to review a woman in the antenatal clinic. She is 30 weeks pregnant and a Jehovah's Witness. She requires an elective caesarean section at 39 weeks due to a low-lying placenta and a fibroid uterus.
    a) What specific issues should be discussed with this patient based on the history outlined above? (10 marks)
    b) Give the advantages and disadvantages of using intra-operative cell salvage during caesarean section. (10 marks)

READ THE QUESTION

- March 2015
  - An 80 year old patient is to undergo 2nd stage revision of a total hip arthroscopy for treated deep joint infection.
- September 2014
  - A 27 year old woman presents for acute appendicectomy – she is 22 weeks pregnant.
- September 2013
  - What are the indications for arterial cannulation?
- March 2013
  - Describe the anatomy of the coeliac plexus.

Be specific

- What measures may reduce the risk of development of VAP? – September 2015 (not just "use a care bundle")
- Why might pain control become inadequate in a 25 year old man who has suffered traumatic BKA – March 2015 (not just "development of neuropathic pain")
- What are potential problems with airway management in a child with Down's? – September 2016 (not just "difficult airway")

Do not underestimate the sciences

- Particularly neuroanatomy
  - List five nerves that can be blocked at ankle level for foot surgery (5 marks) – September 2014
  - Describe the immediate relations of the right vagus nerve in the neck at C6 (15%) and thorax at T4 (15%) – March 2014
  - Which specific nerves must be blocked to achieve effective local anaesthesia for shoulder surgery (30%) - March 2013 *and* September 2015
  - Describe the innervation of the anterior abdominal wall (20%) – September 2012
- Also equipment

Do not underestimate "non-medical" answers

- A 5 year old patient presents for myringotomy and grommet insertion as a day case…why would it be inappropriate to cancel…? - March 2014 (emotional, financial, parents taking time off work etc.)
- Which human factors contribute to IV drug administration errors…? - March 2014
- List the advantages and disadvantages of providing anaesthesia in the CCU – Sept 2013 (answers criticised for not mentioning checklists)
- You have anaesthetised a 5 year old boy…you think may indicate child abuse – March 2016 (poor knowledge of child protection)

Awareness during GA caesarean section and use of propofol

- Lucas & Yentis Anaesthesia 70(4) 2015
- Obstetric practice over-represented in NAP5
- Risk factors for awareness:
  - Emergencies
  - RSIs
  - Obesity
  - Use of thiopentone
  - Use of neuromuscular blockers
  - Difficult airway

- A question on awareness was asked in March 2016 SAQ

Awareness during GA caesarean section and use of propofol

Thiopentone	Propofol
Advantages Well known to anaesthetists Cardiostable Definitive end point More known about fetal effects Similar onset time to suxamethonium Longer offset time	**Advantages** Familiar to “newer” anaesthetists Reduces risk of thio / antibiotic swap Cheaper than thio Increasing experience No convincing evidence of worse neonatal outcomes
Disadvantages Has to be mixed Unreliable supply Risk if extravasated / IA Contraindications	**Disadvantages** Not licensed in UK for CS Cardiodepressant Wider dose range esp in young / anxious Longer onset time

Anaesthesia and driving

- Bulletin of the RCoA September 2015
- New drug driving legislation March 2015
  - 16 named drugs including various benzodiazepines, ketamine (20µ/ml blood) and morphine (80µ/ml)
- Guidance for health professionals issued by DOT July 2014
  - Legislation now provides a legal defence if taking as prescribed and not impaired
- Current RCoA advice is not to drive for 24hrs

Uses of tranexamic acid

- CEACCP February 2015
- Antifibrinolytic used in prevention and treatment of bleeding in primary and secondary care
- Synthetic lysine derivative binding to plasminogen preventing plasmin formation
  - Reduces fibrinolysis (which may become upregulated after trauma, shock etc.)
  - Reduces inflammation (plasmin activates monocytes, neutrophils, complement)
  - *May* improve platelet function

Uses of tranexamic acid

- 1-1.5g BD-TDS PO / 0.5-1g TDS IV
- 1g followed by 1g/8hrs in trauma

- Adverse effects
  - Traditionally used with caution due to thrombo-embolic concerns; recent studies do not support this but caution in those with risks
  - Implicated in seizures (no know mechanism); probably should use with caution in neuro / epilepsy

Indications for tranexamic acid

- Chronic
  - Menorrhagia
  - Hereditary angioneurotic oedema
- Trauma
  - Civilian (CRASH2): 1.5% mortality reduction
  - Military (MATTERs II): 6.5-13.7% mortality reduction (more in those requiring massive transfusion and more severely injured)
- GI bleeding
  - Probable mortality benefit (Cochrane review 2014)
- Reversal of drug induced bleeding
  - Has been used to reduce blood loss caused by tPA, antiplatelets and new oral anticoagulants

Tranexamic acid for surgery

- Oral surgery with coagulation disorders
  - Can be given as mouthwash
- Cardiac
  - Reduces blood loss and may reduce postoperative inflammatory response
- Orthopaedics
  - Reduces blood loss and transfusion after major joint arthroplasty and spinal surgery
- Liver
  - Associated with tPA up-regulation but more evidence required for routine use (Cochrane)
- ENT
  - Reduces blood loss in adenotonsillectomy; no evidence in epistaxis
- Neuro
  - Not currently recommended but evidence may become clearer
- Urology
  - Concerns of clot retention remain but can be considered

Fire safety

- SALG June 2013 / CEACCP April 2015
- Fire in Bath ICU 2011
- 10,662 fires in NHS facilities 1994-2005 costing estimated £14.6M
- Burns, smoke inhalation and injuries occurring during evacuation
- Triad: oxidising agent, ignition source, fuel

Oxidising agents

- Oxygen (N_2O, NO, H_2O_2)
- Prevention of oxygen rich areas
  - Closed breathing systems
  - Prevent formation of O_2 rich pockets e.g. under drapes; isolate surgical site from O_2 supply
  - Decreasing FiO_2 if near surgical site
- Cylinder safety
  - Set up cylinder away from patient
  - Use appropriately designed cylinder holder
  - Avoid placing cylinder on bed
    - Use extra care when no other option

Ignition sources

- Defibrillators, diathermy, LASER, drills etc.
- Static electricity
- Electrical equipment
  - Regular maintenance, withdrawal of suspect devices, PAT

Fuel

- Antiseptic preparations
  - Allow drying time, prevent pooling
- Moistening of swabs, body hair etc.
- Removal of rubbish
- Linen, drapes etc.

In the event of fire…

- Fire fighting
  - Alarms, sprinklers, extinguishers
- Staff training
- Evacuation
  - Facility design
  - Those in immediate danger, ambulant patients then others
  - It may not be possible to evacuate some patients (e.g. on ECMO) and they may need to be left
- Power failure, requirement to turn off gas supplies
  - Batteries, cylinders, Ambu bag

Arterial lines and safety

- What are the indications for arterial cannulation? - September 2013
  - Measurement
    - BP, CO, ABG & other bloods
  - Diagnostic
    - Angiography
  - Therapeutic
    - Thrombolysis, stenting, EVAR, ECMO, RRT
  - Not just for measurement at the radial artery!

Risk of hypoglycaemia

- NPSA alert July 2008 & AAGBI guideline September 2014
- Dextrose contamination of arterial sample has led to excessive / unnecessary insulin therapy and hypoglycaemic brain injury
  - Only 0.03ml 5% dextrose in 1ml blood will increase the levels
  - Dextrose contamination occurs even if 5X dead space removed (3X is recommended)

Recommendations

- Only 0.9% saline flush (+/-heparin) and should be checked during each nursing shift
- Arterial lines clearly identifiable
- Fluid for flush stored separately and only fluids in regular used stored in clinical area
- Pressurising bag should not obscure label
- “Closed” sampling systems used
- Record trends in glucose and respond to unusual results
- Monitor for signs hypoglycaemia
- Training, policies and incident reporting

Consent

- Montgomery *vs.* Lanarkshire Health Board 2015
- GMC “Hot Topic” consent 2015
- AAGBI: Consent for anaesthesia 2017
- GMC consent guidelines now enshrined in law
- Change of focus from “reasonable doctor” to “reasonable patient”
- Exceptions
  - If the patient does not want to know the risks
  - If the doctor considers that disclosure of risk would be seriously detrimental to the patient’s health
  - In an emergency or the patient is unable to make a decision

Anticoagulants, blood transfusion etc.

- Antiplatelet agent SAQ March 2013
  - After launch of prasugrel & ticagrelor
- Traumatic haemorrhage SAQ March 2016
  - AAGBI guidance 2016
  - RCOG guidance 2015
  - ASA guidance 2015
- Part of SAQ on point of care testing in context of heparin & CPB March 2015 (but not in other contexts)
- No SAQ on DOACs or pre-op anaemia yet

DOACs

- Apixiban
  - Direct factor Xa inhibitor
  - Omit 24-48hr before neuraxial block; next dose 6hrs after block / catheter removal
  - Antidote in phase 3 study

- Rivaroxaban
  - Direct factor Xa inhibitor
  - Omit 18hr (prophylaxis) / 48hr (treatment) before neuraxial block; next dose 6hrs after block / catheter removal
  - Antidote in development but not approved by FDA

DOACs

- Dabigatran
  - Direct thrombin inhibitor
  - Omit 48-96hr before neuraxial block (dependant on creatinine clearance); next dose 6hrs after block / catheter removal
  - Antidote: Idarucizumab (Praxbind)

- BJA December 2013 (supplement)
- AAGBI / OAA / RA-UK guidance November 2103

Fibrinogen

- Factor 1, converted to fibrinogen by thrombin
- Measure during major haemorrhage; replace with cryoprecipitate if $<1.5 gl^{-1}$ ($<2 gl^{-1}$ in obs)
- Tranexamic acid as above
- Fibrinogen concentrate currently licensed for congenital deficiencies (but seems to be a lot of interest at present)

Patient Safety Alerts

- NHS Improvement (prev. NPSA / NRLS)
- MRHA
  - Preventing oxygen tubing connection to air flowmeters – October 2016
  - Restricted use of open systems for injectable medications – September 2016
  - Risk of using different airway humidification devices simultaneously – December 2015

Poorly answered SAQs

- September 2014
  - Cardioplegia – CEACCP June 2009
  - Ultrasound – AAGBI core topics 2012
  - Myotonic dystrophy – CEACCP August 2011

- March 2014
  - Propofol TCI – BJAEd Feb 2016 / CEACCP June 2004

Poorly answered SAQs

- March 2013
  - Low flow anaesthesia and circle systems – CEACCP Feb 2008 / AAGBI checking anaesthetic equipment June 2012
  - Coeliac plexus – CEACCP June 2010 / April 2015
  - Transplanted heart - BJA CEPD reviews 2002(3)

- September 2012
  - Endoscopic thoracic sympathectomy – CEACCP April 2009
  - Primary hyperparathyroidism – CEACCP April 2007
  - Enteral nutrition - CEACCP December 2007 / ASPEN guidelines 2015 / BSG guidelines 2003

Poorly answered SAQ topics that are *probably* too recent to come up this time

- September 2016
  - Oral hypoglycaemic agents – CEACCP December 2011 (?new agents since then)
  - Guillain Barré – CEACCP April 2003 & August 2011
- March 2016
  - Intrathecal opioids – CEACCP June 2008

Poorly answered SAQ topics that are *probably* too recent to come up this time

- September 2015
  - Pre-eclampsia – Anaesthesia 2012 67(9)
- March 2015
  - Autistic spectrum disorder - CEACCP Aug 2013
  - Critical illness weakness – CEACCP April 2012
  - Chronic liver disease – CEACCP February 2010
  - Secondary brain injury – BJA 2007 99(1) / CEACCP Dec 2013
  - ECT – CEACCP December 2010