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 2\textsuperscript{nd} 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
    - And now some new ones on RCoA website 2017
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

<table>
<thead>
<tr>
<th>Month</th>
<th>Pass Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>March 2019</td>
<td>66.3%</td>
</tr>
<tr>
<td>September 2018</td>
<td>44%</td>
</tr>
<tr>
<td>March 2018</td>
<td>72.29%</td>
</tr>
<tr>
<td>September 2017</td>
<td>68.81%</td>
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<tr>
<td>March 2017</td>
<td>50.66%</td>
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<tr>
<td>September 2016</td>
<td>75.25%</td>
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<tr>
<td>March 2016</td>
<td>62.65%</td>
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<tr>
<td>September 2015</td>
<td>49.50%</td>
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<tr>
<td>March 2015</td>
<td>45.30%</td>
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<tr>
<td>September 2014</td>
<td>30.32%</td>
</tr>
<tr>
<td>March 2014</td>
<td>60.32%</td>
</tr>
<tr>
<td>September 2013</td>
<td>78.14%</td>
</tr>
<tr>
<td>March 2013</td>
<td>67.36%</td>
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Changes to the Final FRCA

• SAQs will be replaced with “constructed response questions”
  – Live September 2019 (this will be a hybrid: half SAQ, half CRQ); random selection of which parts of curriculum will have which question type
  – All CRQ from March 2020
  – Pilot CRQs at FRCA master course January and July 2018 and released on website August 2018
  – Example question books have now appeared
Changes to the Final FRCA

• SOE from December 2018 (will be no results on the day)
• SOE 1 (am)
  – Clinical short case 1 [6.5 mins] and science question 1 (anatomy) [6.5 mins] ; clinical short case 2 and science question 2 (physiology) [6.5 mins]
  – Move floors [8 mins]
  – Clinical short case 3 [6.5 mins] and science question 3 (pharmacology) [6.5 mins] ; clinical short case 4 and science question 4 (clinical measurement) [6.5 mins]

• SOE 2 (pm)
  – Clinical long case: preoperative [6.5 mins] and intraoperative [6.5 mins] (10 mins preparation as previously)
  – Clinical short case 6 [6.5 mins]
  – Clinical short case 6 [6.5 mins]

• Sample short questions on college website
Changes to the FRCA

• The college would like to make the Final FRCA progression point end of ST5
  – Resisted so far by GMC hence mid-ST4
• Similarly, make Primary FRCA progression point end of third year ?CT3/ST3
• This is coming in the new curriculum from 2021

• Will probably come with new curriculum which may be outcome-based and not necessarily time-based
  – “entrustable professional activity”
• No news on this yet
General SAQ/CRQ 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 for SAQs
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 – new curriculum should mitigate against this
  – 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)
    • Cardiac question March 2017 (OPCAB) well answered ?related
    • Cardiac questions September 2017 and March 2018 included equipment and less well answered!
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)
- 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)
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 2\textsuperscript{nd} 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.
    • This question came up again March 2019

• 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
  – What are the borders of the fascia iliaca compartment and what nerves are you attempting to block? – March 2017
  – 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
  – Physical principles of USS again September 2017
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.)
  – Similar question September 2017

- 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)

- Inadvertent wrong side block and never events – March 2017 (CEACCP Oct 2014)
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

<table>
<thead>
<tr>
<th>Thiopentone</th>
<th>Propofol</th>
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<tbody>
<tr>
<td><strong>Advantages</strong></td>
<td><strong>Advantages</strong></td>
</tr>
<tr>
<td>Well known to anaesthetists</td>
<td>Familiar to “newer” anaesthetists</td>
</tr>
<tr>
<td>Cardiostable</td>
<td>Reduces risk of thio / antibiotic swap</td>
</tr>
<tr>
<td>Definitive end point</td>
<td>Cheaper than thio</td>
</tr>
<tr>
<td>More known about fetal effects</td>
<td>Increasing experience</td>
</tr>
<tr>
<td>Similar onset time to suxamethonium</td>
<td>No convincing evidence of worse neonatal outcomes</td>
</tr>
<tr>
<td>Longer offset time</td>
<td></td>
</tr>
<tr>
<td><strong>Disadvantages</strong></td>
<td><strong>Disadvantages</strong></td>
</tr>
<tr>
<td>Has to be mixed</td>
<td>Not licensed in UK for CS</td>
</tr>
<tr>
<td>Unreliable supply</td>
<td>Cardiodepressant</td>
</tr>
<tr>
<td>Risk if extravasated / IA</td>
<td>Wider dose range esp in young / anxious</td>
</tr>
<tr>
<td>Contraindications</td>
<td>Longer onset time</td>
</tr>
</tbody>
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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$_2$O, NO, H$_2$O$_2$)
• 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
- BJAEd May 2018
- 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
  - Pre-op anaemia came up March 2017
DOACs

• Apixiban
  – Direct factor Xa inhibitor
  – Omit 24-48hr before neuraxial block; next dose 6hrs after block / catheter removal
  – Antidote (“Andexxa”) recently approved by FDA - ?available in UK

• Rivaroxaban
  – Direct factor Xa inhibitor
  – Omit 18hr (prophylaxis) / 48hr (treatment) before neuraxial block; next dose 6hrs after block / catheter removal
  – Antidote as above
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)
• BJAEd September 2018
• AAGBI / OAA / RA-UK guidance November 2013
Fibrinogen

• Factor 1, converted to fibrinogen by thrombin

• Measure during major haemorrhage; replace with cryoprecipitate if $<1.5\text{g}\text{l}^{-1}$ ($<2\text{g}\text{l}^{-1}$ in obs)

• Tranexamic acid as above

• Fibrinogen concentrate currently licensed for congenital deficiencies (but seems to be a lot of interest at present)
High flow nasal oxygen

- BJAEd February 2017
- Multiple studies in last 2 years
- OAA / DAS guidelines
- Not new
- Various devices: Optiflow, Vapotherm etc.
- Well tolerated by patients
- Uses:
  - Neonatal RDS
  - ICM
  - Theatre oxygenation, difficult airways
  - Weaning including postop
High flow nasal oxygen - physiology

• High FiO$_2$ – approaching 1.0
• Reduces heat and moisture loss from airway
• CO$_2$ washout reduces anatomical deadspace and therefore work of breathing
• CPAP up to around 5cmH$_2$O
• Denitrogenation and apnoeic oxygenation
  – Extends intubation time
    • Beware awareness and hypercapnoea
Preoperative hypertension

• AAGBI / BHS guideline March 2016
• Summary
  – GPs should refer patients for surgery with BP <160/100mmHg
  – Secondary care should accept referrals documenting BP controlled to <160/100mmHg and need not recheck in preop assessment
  – If no documented normotension and BP<180/110mmHg in preop clinic, proceed to surgery
Fatigue

• AAGBI Oct 2014, CEACCP Feb 14
  – Lots of resources on new AAGBI website
• Anaesthesia September 2017
• BJA July 2017
• New contract
• RCN, RCM
Patient Safety Alerts

• NHS Improvement (prev. NPSA / NRLS)
• MRHA

  – Inappropriate placement of pulse oximeter probes – December 2018
  – Intravenous administration of solid organ perfusion fluids?? – April 2018
  – Flushing lines / cannulae – April 2018
  – NRFit – August 2017
  – 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
Recent guidance

• NICE
  – Surgical site infections - April 2019
  – Pancreatitis - September 2018
    • SAQ March 2016

• AAGBI
  – Day case surgery - April 2019
  – Perioperative care of people with dementia – Feb 2019
    • Sample CRQ on RCoA website
  – TIVA – September 2018
    • SAQ March 2018 which was well answered
  – Cell salvage - September 2018
    • Poorly answered as part of an obstetric preassessment SAQ March 2016
Poorly answered SAQs

• September 2016
  – Oral hypoglycaemic agents – BJAEd June 2017
  – Guillain Barré – CEACCP April 2003 & August 2011
    • Came up again September 2018

• March 2016
  – Intrathecal opioids – CEACCP June 2008
Poorly answered SAQs

• September 2015
  – Pre-eclampsia – Anaesthesia 2012 67(9), BJAEd Jan 2016
    • Came up again March 2018

• March 2015
  – Autistic spectrum disorder - CEACCP Aug 2013
  – Critical illness weakness – CEACCP April 2012
  – Chronic liver disease – CEACCP February 2010
  – ECT – CEACCP December 2010
Poorly answered SAQs

• September 2014
  – Cardioplegia – CEACCP June 2009
  – Ultrasound – AAGBI core topics 2012
    • Came up again September 2017
  – Myotonic dystrophy – CEACCP August 2011

• March 2014
  – Propofol TCI – BJAEd Feb 2016 / CEACCP June 2004
    • Came up again March 2018
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
    • Came up again March 2019
Poorly answered SAQ topics that are probably too recent to come up this time

• March 2017
  – Anaesthesia for ex-prem infant – CEACCP June 2009, J neonatal surgery Jan 2012
  – USS guided FIB for #NOF - BJAEd Nov 2016 (non – specific USS), neuraxiom.com, nysora.com etc.
Poorly answered SAQ topics that are *probably* too recent to come up this time

• September 2017
  – Splenectomy – BJAEd June 2017
  – CPET – BJA March 2018
  – Intrauterine fetal death – OAA 2012; RCOG 2010
    • Removed as lack of clarity and will be reused; has come up before in 2012

• March 2018
  – Implantable cardiac devices – BJAEd Nov 2016
  – Delerium – ESA guidance 2017 (post-op); ICS 2006 (review due); NICE 2010
  – Phaeochromocytoma – BJAEd May 2016
Poorly answered SAQ topics that are *probably* too recent to come up this time

- **March 2019**
  - Squint surgery – CEACCP Feb 2008
  - Phantom limb pain – BJAEd March 2016
    - SAQ on this poorly answered in March 2015 too
  - Pregnant lady with appendicitis – CEACCP August 2012
  - Refeeding syndrome - BJAEd March 2019

- **September 2018**
  - Penetrating eye injury – BJAEd July 2017 & CEACCP June 2008 (H Murgatroyd!)
  - MRI - CEACCP June 2012; AAGBI guidance February 2019
  - VAP - BJAEd June 2016 (Gunasekera & Gratrix!)