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
      - NAP5 in March 2020 CRQ
      - NAP 6 March 2019
      - 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 CRQs, SAQs and Chairman’s reports
  - RCoA website
    - No old CRQs published now
The Hottest Topic of All??!!

£26 from the college – a bargain!
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 pass rates

<table>
<thead>
<tr>
<th></th>
<th>Test Type</th>
<th>Pass Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>March 2020</strong></td>
<td>CRQ</td>
<td>83%</td>
</tr>
<tr>
<td><strong>September 2019</strong></td>
<td>CRQ / SAQ hybrid</td>
<td>80%</td>
</tr>
<tr>
<td><strong>March 2019</strong></td>
<td>SAQ</td>
<td>66.3%</td>
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<tr>
<td><strong>September 2018</strong></td>
<td>SAQ</td>
<td>44%</td>
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<tr>
<td><strong>March 2018</strong></td>
<td>SAQ</td>
<td>72.29%</td>
</tr>
<tr>
<td><strong>September 2017</strong></td>
<td>SAQ</td>
<td>68.81%</td>
</tr>
<tr>
<td><strong>March 2017</strong></td>
<td>SAQ</td>
<td>50.66%</td>
</tr>
<tr>
<td><strong>September 2016</strong></td>
<td>SAQ</td>
<td>75.25%</td>
</tr>
<tr>
<td><strong>March 2016</strong></td>
<td>SAQ</td>
<td>62.65%</td>
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<tr>
<td><strong>September 2015</strong></td>
<td>SAQ</td>
<td>49.50%</td>
</tr>
<tr>
<td><strong>March 2015</strong></td>
<td>SAQ</td>
<td>45.30%</td>
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<td><strong>September 2014</strong></td>
<td>SAQ</td>
<td>30.32%</td>
</tr>
<tr>
<td><strong>March 2014</strong></td>
<td>SAQ</td>
<td>60.32%</td>
</tr>
<tr>
<td><strong>September 2013</strong></td>
<td>SAQ</td>
<td>78.14%</td>
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Changes to the FRCA

• The college has wanted to make the Final FRCA progression point end of ST5 for a long time
  – Problems encountered with candidates who haven't been exposed to relevant specialties
  – Resisted so far by GMC hence mid-ST5
  – Maybe explains increased pass rate??
• Will move to end of ST5 with new curriculum
• Similarly primary to end CT3
Changes to the Final FRCA

• SAQs have now been replaced with CRQs: “constructed response questions”
  – Sample CRQs released at FRCA master course January and July 2018 and released on website from August 2018
  – Example question books have now appeared

• MCQs are gradually being replaced with SBAs and there will be no MCQs by 2023
Changes to the Final FRCA
(this may change again with covid)

• SOE from December 2018 (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
General CRQ principles

• **READ THE QUESTION**
• Read it again
• All parts of the question are important; none are superfluous or misleading
• Look at the weighting
• Be specific
• Do not underestimate the sciences
• Do not underestimate “non-medical” answers
• Write legibly
• Don’t include lots of answers in the hope they will be counted
• Don’t be surprised if e.g. a diagram is asked for
Question distribution

• There will always be one CRQ on:
  – Cardiothoracics
  – Neuro
  – ICM
  – Paediatrics
  – Obstetrics
  – Pain

• If sitting the exam prior to undertaking these units, it is advisable to do some focused reading / theatre time – new curriculum should mitigate against this
  – 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!
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 & September 2019 (CEACCP Oct 2014; SALG reports)
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 but there is confusion since one of the isoflurane manufacturers recommended not driving for 4 days – Association and BADS 2019
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 thromboembolic concerns; recent studies do not support this but caution in those with risks
  – Implicated in seizures (no known 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
  – Mortality benefit previously thought (Cochrane review 2014) but recent RCT showed no benefit and increased venous thrombosis (Lancet June 2020)

• 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) Ongoing trials
- ENT
  - Reduces blood loss in adenotonsillectomy; probably prevents recurrence of epistaxis
- Neuro
  - Initially not recommended as above but CRASH 3 supposes use in TBI (Lancet Oct 2019)
- Urology
  - Concerns of clot retention remain but seems to reduce blood loss and transfusion requirement
Fire safety

• SALG June 2013 / CEACCP April 2015 / ASA March 2019
• 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
• Moistenng 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

• Common component primary OSCE station
• 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
Paediatric ingestion button batteries

• NPSA December 2019
• Healthcare Safety Investigation Branch report June 2019
  – Recommendations for RCPCH & RCEM to develop guidance
  – Manufacturers to reduce access to batteries
• Anaesthesiology March 2020 – 3,500 cases per year (US)
• Lithium worse than zinc
• MCQ in CEACCP related to acquired TOF in 2006!
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 and September 2019
DOACs

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

• 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)
• BJAEEd 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 $<1.5\text{g/l}^{-1}$ ($<2\text{g/l}^{-1}$ 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
- NPSA April 2020 on disconnection during transfer
High flow nasal oxygen - physiology

- High FiO₂ – approaching 1.0
- Reduces heat and moisture loss from airway
- CO₂ washout reduces anatomical deadspace and therefore work of breathing
- CPAP up to around 5cmH₂O
- 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 and wellbeing

- AAGBI Oct 2014, CEACCP Feb 14
  - Lots of resources on new Association website
- Anaesthesia September 2017
- BJA July 2017
- 2016 trainee contract
- RCN, RCM
- Lots of Covid related stuff now
  - Association guidance recently
- Association guidance on suicide among anaesthetists *(Anaesthesia Nov 2019)*
- NICE guidance on suicide prevention Sept 2019
Patient Safety Alerts

- These are now called National Patient Safety Alerts again - NHS Improvement (prev. NPSA / NRLS)
- MRHA
  - Blood control safety cannula and needle thoracostomy for tension pneumothorax – April 2020
  - Depleted batteries in IO injectors – November 2019
  - 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
Anaesthetic technique and outcome after oncological surgery

- BJAEd January 2019
- Perioperative stress induces immunosuppression plus medications in perioperative period cause epigenetic changes which may be long-lasting
- Inhaled vs TIVA - *In vitro* and *in vivo* studies:
  - Inhalational agents promote hypoxia-inducible factors and insulin-like growth factor
  - Propofol reduces HIF-1α
  - Surgery reduces natural killer cells and cytotoxic T lymphocytes and alters T-helper1 to T-helper 2 ratio – Inhalational agents make this worse
  - Clinical outcomes (retrospective) appeared to show reduced recurrence and decreased mortality with TIVA
Anaesthetic technique and outcome after oncological surgery

• Local anaesthetics
  – Reduce stress response and may have immunomodulatory response
  – Reduce anaesthesia / opioid requirement

• Opioids
  – Some lab evidence but has been contradictory

• Steroids
  – Concerns about immunosuppression but no clear evidence benefit / harm]

• NSAIDS
  – Probable benefit in reducing development and recurrence (but lots of other reasons to avoid of course)
Anaesthetic technique and outcome after oncological surgery

• More recent RTCs have shown improved survival or no difference with TIVA vs inhalational; meta-analysis suggests TIVA better

• IV lidocaine may potentially reduce recurrence risk (associated with decreased biomarker expression) – there is some limited trial evidence to support this; others found no difference
Opioid crisis

- Reported in late 2018 / early 2019 that opioids now kill more Americans than the automobile
- BJA special issue June 2019
- Issues with tolerance etc.
- Chronic pain
- Role of drug companies??
Recent guidance
Association of Anaesthetists

• Neurological monitoring associated with obstetric neuraxial block – March 2020
• Management of glucocorticoids during the peri-operative period for patients with adrenal insufficiency – Feb 2020
• Infection prevention and control - January 2020
• Safe transfer of the brain-injured patient: trauma and stroke – Dec 2019
• Controlled drugs in peri-operative care – September 2019
• Day case surgery - April 2019
• Perioperative care of people with dementia – Feb 2019
  – Sample CRQ on RCoA website with CRQ on anaesthesia for the elderly March 2020
• 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
Recent guidance
NICE

• Joint replacement (primary): hip, knee and shoulder – June 2020

• AAAs – March 2020 (includes a 60 page summary on anaesthesia!)

• Surgical site infections - April 2019

• Pancreatitis - September 2018
  • SAQ March 2016
Poorly answered CRQs/SAQs

• March 2020
  – Cardiac output measurement - BJA CEPD review Feb 2003 & CEACCP Feb 2012
    • Included request for a diagram
  – Anticoagulation for CBP – CEACCP Dec 2007

• September 2019
  – Myasthenia gravis - CEACCP June 2011
  – Amniotic fluid embolism – BJAEd August 2018
  – Perioperative anaemia – BJAEd Jan 2017
Poorly answered SAQs

• 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!)
Poorly answered SAQs

• 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 SAQs

• 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 SAQs

• September 2016
  – Oral hypoglycaemic agents – BJAEd June 2017
    • Came up again September 2019
  – Guillain Barré – CEACCP April 2003 & August 2011
    • Came up again September 2018

• March 2016
  – Intrathecal opioids – CEACCP June 2008
    • Came up again September 2019
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