

How to Pass the Primary on your First Attempt

There is plenty written on how difficult the ANZCA primary exam is. It is difficult for a few reasons:

1. **There is a lot to study** – there are over 300 learning objectives covering physiology, pharmacology, anatomy, equipment and statistics.
2. **The examiners mark to a high standard** – each short answer question and viva is marked out of 5. To score a 3 (pass mark), you have to demonstrate that you clearly understand all the concepts related to that question. If you provide all the correct facts related to the question but do not show you understand the underlying principles, you may only get a 2 (borderline). Getting a 4 is uncommon and a 5 is basically impossible. This means that if you feel you answered a question well, you've probably just passed it. If you feel it did not go well, it's anywhere from a 0 to 2. You need to answer just about every question well to get invited to a viva and then pass the exam.
3. **There isn't much time to answer each question** - Ten minutes per written question and 5 minutes per viva. That means you need to know the material very well and you need to practice a lot. There is very little time for thinking.
4. **The exam is a psychological challenge** - Every candidate invests heavily in the exam, both in terms of time and money. There is a lot of pressure to do well. Getting through that anxiety can be difficult and for some it is the difference between passing and failing.

I have written this document as a roadmap to performing well on the primary. It is a collection of everything I wish I knew when I started studying.

There are a myriad of ways to approach the exam and it takes time to find a method that works well for you. My hope is that the information in this document will help you more quickly identify study techniques that are efficient and effective. Good luck on your journey.

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How to Prepare for your Study

Get advice from as many sources as possible before you plan your study

- **Ask everyone who has passed** - trainees who have recently passed, new consultants, old consultants, etc.
- **Ask trainees who are currently preparing for the exam for resources they are using**
- **Read online prep documents**
 - 'A Primer for the Primary FANZCA examination' by Mark Reeves – can be found online and contains information on the format of the exam and a helpful list of how to fail the exam (ie. things to avoid doing). There is also a list of all the learning objectives listed by topic – there is information on how important those LO's are and what resources to use to cover them. This document was written in 2018.
 - **NOTE:** *The list of LO's and helpful resources has been updated and integrated into Mak95*
 - Life in the Fast Lane has a 'How to Pass' page that is quite informative
 - Ketamine Nightmares has a 'Prizewinner's Perspective' that contains a wealth of information

Make a Plan

- Mak95 has a 'Study Plan' function that allows you to fill in your exam's date and it will create a plan for you, divided by topics
- I created my own study plan on an excel sheet – I used Mak95's function but altered it slightly based on events that I knew would interrupt my study (eg. Family weddings, Christmas, etc.)
- Aim to study for about 2 hours per workday and 6-8 hours per weekend day – this is difficult to do given we have shifts that are constantly changing and partners/families who need our attention too. Try to plan your days ahead.
- Taking time off study

You need to study most days but there will be days when you feel too fatigued to do anything. It's okay to take those days off. It is up to you whether you want to schedule days off or take them when you feel you need them.

My study journey was 18 months long. For the first 12 months, I decided to take every Friday night off to spend with my partner. There were a few weekends in the year that I took off for mini holidays. In the last 6 months, I took few days off and I hardly saw my friends.

Resources I found Helpful

Mak95

- Can be found on mak95.com
- Needs to be downloaded. Costs \$138.00 at the time of writing and is worth every dollar
- Most trainees use this as it gathers almost every useful resource and puts it in one place. It helps greatly with organization and with keeping track of your study.

Textbooks

- Basically mandatory:
 - **'Essential pharmacology for the ANZCA Primary Exam'** by Vesselin Petkov (To get a hard-copy you need to email Dr Petkov at vanves99@gmail.com)
 - **West's Respiratory Physiology** – read it cover to cover. It will not get you through every respiratory related question but it's a good intro to the topic and it's a quick read. Supplement the gaps with Nunn's and with other trainee's notes.
 - **'The Physiology Viva: Questions and Answers'** book by Kerry Brandis
Instructions on how to order it can be found on his website:
<https://www.anaesthesiamcq.com/vivabook.php>
 - **'Drugs in Anaesthesia and Intensive Care'** by Scarth and Smith – small pocketbook that contains detailed information on most drugs used in anaesthesia. Drugs are arranged in alphabetical order and neatly structured into physicochemical, pharmacokinetic and pharmacodynamic subheadings. Very useful when creating your own flashcards.
- Textbooks I used frequently:
 - 'Principles of Physiology for the Anaesthetist' by Power and Kam
 - 'Pharmacology and Physiology for Anesthesia' by Hemmings and Egan
 - 'The Physics, Clinical Measurement and Equipment of Anaesthetic Practice for the FRCA' by Magee and Tooley
 - 'Vander's Renal Physiology' by Eaton and Pooler
 - 'Dr Podcast Scripts for the Primary FRCA'
- Textbooks that are a good reference when you need more detailed information:
 - Miller's Anaesthesia
 - Nunn's Applied Respiratory Physiology
 - Stoelting's Pharmacology and Physiology in Anesthetic Practice
 - 'Cardiovascular Physiology' by Wier and Pappano
 - Guyton and Hall 'Textbook of Medical Physiology'
 - Rang and Dale's Pharmacology

Other trainee's notes

- Model answers for past SAQ's:
 - Amanda Diaz
 - Propofol dreams
 - Ketamine nightmares
- LO based – there are many floating around. Not something I used much.
 - Adam Hollingworth notes – can be accessed from <https://anzcaprimarynotes.com/>
 - There is a Study Aids section of the website that is very useful – particularly the 'Definitions' and 'Diagram or Die' documents

Apps I found helpful:

- Adobe scanning app
 - I handwrite my notes, so it was useful to scan them onto my smart device
 - The app allows you to organize your notes neatly and the search function makes it easy to find information quickly.
 - This app is free and has a cloud function so you can find your notes on a number of different devices.
 - It is useful to have smart devices that are compatible with stylers so that you can edit notes on your device easily. The Adobe app does allow such editing.
 - It is best to scan your notes as you write them and revise them often
- Anki
 - You can get past MCQs with proposed answers from various sources (I found the bank from CICM wrecks to be helpful)
 - I found it helpful to run through these questions when I had free time but was too lazy to go through any other study
 - You can also use it to create your own notes and utilize their spaced repetition techniques to study (too complicated for me)

Websites I found helpful:

- Youtube – very useful when you cannot find an answer anywhere else
- BJA education
- Life in the Fast Lane
- Deranged Physiology

Podcasts I found helpful

- Dr Podcast – You can purchase it online or source it from one of your colleagues (Dr Podcast will remind you regularly that this is illegal)
- Anaesthesia Coffee break – an excellent podcast by 2 anaesthetists in Melbourne aimed at Primary candidates. There are great explanations on various topics, useful performance tips and practice vivas that give you a sense of what the real deal is like.

Note: The 'Recommended Reading' section of the Ketamine Nightmares website gives good advice on how to use many of these resources.

How to approach the exam

There are two main ways to approach the exam:

- Primarily go through learning objectives and cover some past exam questions
- Primarily go through past exam questions and cover learning objectives not touched on by the past exam questions (my preferred technique)

If you just go through learning objectives and do not practice past exam questions, you will fail. If you just do past exam questions and do not cover the learning objectives, you will likely fail.

How I approached the exam

I broke up my study into 2 stages:

Stage 1: Note Writing

- a. Systematically went through past SAQs, topic by topic and wrote detailed notes
 - i. Was primarily guided by model SAQs from Ketamine Nightmares, Amanda Diaz, Propofol Dreams
 - ii. If I wasn't satisfied, I would look up textbooks or search online for answers
 - iii. When I was done going through the SAQs for a topic (eg. CVS physiology), I would go through the list of LO's to identify any that had not been covered by past SAQs

TIP: A good way to find potential SAQ questions not yet asked in the written is to look up past viva opening questions (either on Mak95 or via exam reports).

- b. Pharmacology flashcards
 - i. Used mainly 'Scarth and Smith' and 'Petkovs'. Supplemented with Stoelting's, Rang and Dale and google (some useful information in LIFTL and Drugbank online)
 - ii. Useful to create some additional flashcards that compare the pharmacokinetic data of core drugs

TIP: See the examples cards at the end of this document

- c. MCQs
 - i. Good to do regularly
 - ii. Lots of questions can be found on Mak95 but few of these will be repeated
 - iii. After each exam, documents of remembered MCQs are produced by students and passed around – many of these questions tend to be repeated. Ask around for these questions.

- d. Diagram book – I drew out all the graphs from the Diagram or Die document. I supplemented this with additional graphs that I thought were important.

Stage 2: Practice and Revision

- a. In the 3 months leading up to the exam, I wrote out SAQs in 10 minutes – then went back to my model answers to see how I performed. About once a week, I would sit down and complete an entire 15 question exam paper to build my stamina.

TIP: If there is an examiner in your department (or a helpful and knowledgeable anaesthetist), get them to mark some of your attempts so you can get an idea of how you are performing

- b. In the month leading up to the exam,
 - i. I practiced drawing out important graphs multiple times to improve my drawing speed
 - ii. I went through my pharmacology flashcards and rote learned as much as I could
 - iii. I continued to do MCQs regularly – especially from recent exam papers

Pre-VIVA study:

- a. I took 1 week off and went on a mini-holiday
- b. When I came back, I practiced as often as I could with as many people as I could
 - i. There are remembered vivas always floating around
 - ii. Ask consultants and other trainees in your department to viva you whenever there is a free moment
- c. I went through the past examiner's reports and looked at the viva opening questions
 - i. I took note of topics I was unfamiliar with so that I could fill in the gaps
- d. I went through my pharmacology flashcards again
- e. I practiced drawing out important graphs often

TIP: After every practice viva, it is important to go over the viva again in your own time and ensure you can answer every question. If it is repeated in your actual viva, you want your performance to be better than your practice run at it.

Example Flashcards

Single medication

Ketamine	
Type & structure - Phencyclidine derivative 2 optical isomers	Pharmacokinetics
S(+) - better analgesia, rapid metabolism, less emergence phenomena	A - 0.8A 25%, 1M 90%, 1M 50%
R(-) - better bronchodilator	D - V_d 3.4/L/kg, pKa 7.5, 1% un-ionised 45%, PPB 25%
Preservation - CCS, racemic mixture or S(+) enantiomer long-acting ketamine HCl + 0.1mg/kg Benzhexamine chloride (preservative)	$t_{1/2}$ keto 0.5mins, $t_{1/2}$ ac 11mins, $t_{1/2}$ β 2hrs M - Hepatic CYP3A4 to norketamine (30% potency - active) E - Renally cleared, Cl 17ml/kg/min
Route of administration - IV/IM/PO/IN/PR/Epidural	Pharmacodynamics
Doses - IV induction - 0.5-2mg/kg - onset 30sec, Dose 5-10mg	CNS - Dissociative anaesthesia, amnesia, analgesia \uparrow CBF, \uparrow $\dot{V}O_2$, \uparrow ICP, \uparrow IOP Involuntary movements \uparrow tone, emergence phenomena
IM - 5mg/kg - onset 1-5mins, Dose 10-20mg	Resp - Prolonged reflexes, \uparrow secretions, Bronchodilation, maintain response to hypoxaemia
IV Analgesia 0.1-0.5mg/kg bolus	CNS - Direct net ionotropy, \uparrow SNS activity
USES: GA, sedation, Analgesia, Bronchodilation	GI - PONV, \uparrow secretion
MOA: Non-competitive inhibitor @ NMDA receptor \hookrightarrow use-dependent binding Effects on NACHs & opioid receptors (N & K)	Misc - \uparrow uterine tone, paradox

TIP: Don't forget gases (incl. oxygen) – compare their physicochemical properties

Comparing pharmacokinetics

Local Anaesthetic Pharmacokinetics		
Lignocaine	Bupivacaine	Ropivacaine
A - IV, regional, epidural, S-C neuraxial	A - Regional, S-C, epidural, neuraxial	A - Regional, S-C, epidural
max dose 3mg/kg (plain), 7mg/kg (cardiac)	max dose 2mg/kg	max dose 3mg/kg
D - V_d 0.1-5L/kg, PPB 75%, pKa 7.9	D - V_d < 1L/kg, PPB 95%, pKa 8.1 (15% un-ionised)	D - V_d < 1L/kg, PPB 95%, pKa 8.1
M - Hepatic - active metabolites (artempramine) \hookrightarrow meq X, Hydroxyxylidone	M - Hepatic	M - Hepatic CYP1A2, 3A4 HER 0.4
High HER	E - Renal $t_{1/2}$ β 2-5hrs	E - Renal $t_{1/2}$ β 2hrs
toxic plasma conc: > 75 μ g/ml CE: CNS = 1:7	toxic plasma conc > 3 μ g/ml CE: CNS = 1:3	toxic plasma conc > 4 μ g/ml CE: CNS = 1:5

What to do if you fail

As I mentioned in page 1, this is a difficult exam!

If you have failed on your attempt, just know that you are not the first and you will not be the last person to do so. There are many consultants in every department who have failed at least once. You won't notice. Most of these consultants will be great at their jobs. They just stumbled along the way to getting their fellowship.

I am no expert, but I think that there are 2 main reasons one will fail this exam:

1. *Inadequate knowledge*
2. *Anxiety affecting performance*

How do you fix it?

Inadequate knowledge

- This is usually due to ineffective study or a lack of time spent in preparing for the exam
- Spend some time evaluating your study technique
 - Did you cover every SAQ and every LO?
 - Did you get enough detail down when making your notes?
 - Did you spend enough time revising your notes and practicing in real time?
- Compare your study technique to others
 - Talk to your colleagues and mentors
 - Form a study group so that you can gauge your performance to that of others
- Give yourself enough time to prepare well for your next attempt
 - Following a failed attempt, you need time to rest, time to go over everything you already covered, time to cover all the things you didn't go over before the last sitting and time to revise and practice so that you are at your peak exam readiness.
 - If you think you can do all this to a good enough standard before the next sitting, then go ahead and aim for that sitting
 - Otherwise, consider skipping one sitting to give yourself enough time
TIP: Speak to your SOT first about your options so that you do not run out the clock on your training (eg. part-time training or interrupted training may be an option)

Anxiety affecting performance

- This may require professional help
- Talk to trusted colleagues and mentors to get tips
- Practice answering questions as much as you can (improving knowledge can reduce anxiety)
- Consider involving a performance psychologist (preferably one who has worked with ANZCA trainees before)