THE FINAL ADDITION TO YOUR ARSENAL

HOW TO 2ND YEAR

TASMANIAN UNIVERSITY MEDICAL STUDENTS' SOCIETY

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You've made it to 2nd Year!

Things just got a whole lot more real – there's no lying this is arguably the most draining and challenging year of Med School. You may be asking yourself, how is this possible; what more could they possibly give us! How could Med School get any more difficult than it already was!? Now don't let the naivety get the best of you on this one!

Now whilst we do say Second Year is hard, it's not impossible, there have been thousands of students that have walked the same path that you're about to venture on (including us!) and we did make it through. All it takes to crack 2nd Year is a good plan, some good resources, and consistency – a mixture of these three ingredients and you're unstoppable! And this is where this guide comes in – we hope this guide can be your best friend and that final weapon in your arsenal to take on this mammoth year. We sincerely hope that the following pages can help you craft a roadmap to navigate your way, and can be used as a checklist as you work your way through the year. Studded with loads of tips and tricks, must know points, handy resources that worked for us – this is our gift to you and we hope you love flicking through these pages just as much as we loved writing it!

Finally, don't let Second Year scare you, whilst it may be gruelling, it is also an extremely engaging year. You will finally be learning proper Systems based anatomy and pathology. By the end of the year you'll finally be able to pick up a blood test and know exactly what they're talking about and, hey, maybe you'll make a couple of diagnoses yourself. Get keen, this is the first year towards actually feeling like you're going to be a Doctor, so really take the chance to enjoy it!

Best of luck!

- TUMSS

xoxo

TASMANIAN UNIVERSITY MEDICAL STUDENTS' SOCIETY (TUMSS)

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Anatomy

High Yield Information (Diagrams, Mnemonics etc.)

- *Resp:* - VAN: Vein, Artery, Nerve; intercostal neurovasculature order (between internal and innermost intercostals)

Things to Emphasise in Learning

CVS:

- Contents, relationships, borders, neurovasculature, lymphatics and subdivisions of the mediastinum
- Layers of the pericardium
- Surface anatomy of the heart (i.e. auscultation sites)
- Chambers of the heart and the differences between each (i.e. structures, histology)
- Heart valves
- Coronary vessels (especially identifying them on angiogram)
- Heart tube folding & embryology
- Common congenital cardiac abnormalities and their impacts

Resp:

- Thoracic wall layers, muscles & neurovasculature
- Joints of the thoracic cage
- The difference between true ribs, false ribs and floating ribs
- Muscles used during stages of respiration
- Breast/thoracic wall lymphatic drainage
- Changes in histology throughout respiratory tract
- Paranasal sinuses
- Larynx (especially muscles, cartilage and innervation)
- Vestibular folds and vocal folds
- Cartilages; epiglottis and thyroid etc
- Relationship of trachea to other organs (identify on CT etc.)
- Tracheal bifurcation level at T4/5
- Lung hilum anatomy
- Pleural divisions; cervical, costal, mediastinal and diaphragmatic

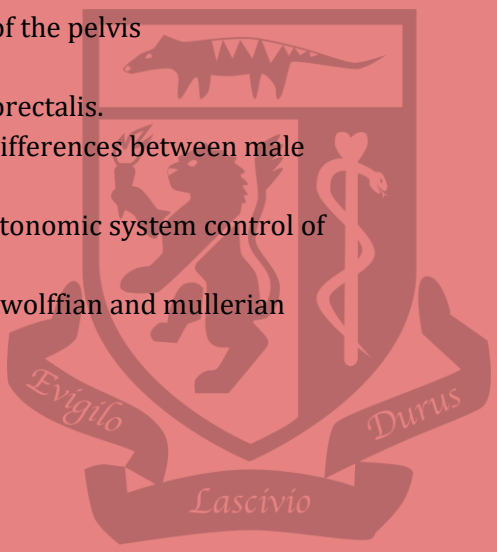
- Lung development
- Surface anatomy of lobes of L and R lungs for auscultation
- Common congenital respiratory abnormalities

GIT:

- Muscles of mastication, functions and innervation
- Muscles of the tongue & innervation (motor, gustatory, general sensation)
- Innervation of salivary glands
- Pharynx innervation
- Muscles controlling the soft palate
- Muscles of the abdominal wall
- Development of inguinal canal (and direct vs indirect inguinal hernias)
- Anatomical relationships of the inguinal canal and the various structures that run through it in males and females,
- Know the neurovasculature of the foregut, midgut and hindgut
- Know the anatomical relationships between the appendix, cecum and ileo-cecal junction.
- Hepatic portal system including portal-caval anastomoses
- Porta hepatis of the liver
- Gallbladder duct system → draining with pancreas
- Embryology helps with learning anatomy: know the origins of omphalocele as well.

UROGEN:

- Location and anatomical relationships of both kidneys. Know location of hilum of kidney.
- Renal blood supply
- Blood supply to the adrenal glands; sup, mid and inferior arteries
- Branches of the lumbar plexus
- Lymphatic drainage of the pelvis
- The prostate and relating organs
- Branches of the internal iliac artery
- Arterial supply of rectum
- Ligaments of the ovaries
- The difference between true, obstetric and diagonal conjugates of the pelvis
- Branches of the sacral plexus
- Muscles of the pelvic floor including the specific function of puborectalis.
- Perineal pouches (deep and superficial and their contents plus differences between male and female)** comes up in multiple exams
- The difference between erection and emission in terms of the autonomic system control of male genitalia (point and shoot is a good mnemonic)
- Embryology: errors in development of the cloaca, allantoic duct, wolffian and mullerian ducts



Resources:

- Netter's is the best atlas
- Thieme's atlas
- Essential anatomy app: anatomy in 3D
- Anne Marie-Williams' notes - she puts up very helpful notes that contain dot point info for all exams. Also comes with some cool diagrams that you can have a go at drawing yourself for practice.

Tips

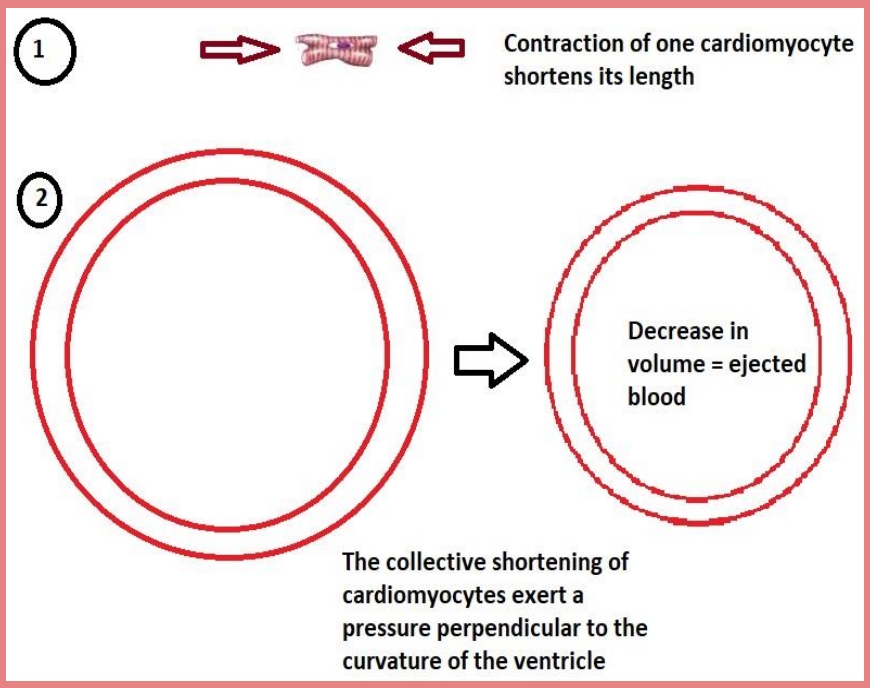
- Drawing diagrams from memory (not copying Netters as you go) is especially helpful. These are examinable anyways.
- Learn the blood supply by tracing out the pathway of RBCs from the left ventricle to right atrium. This is examinable (e.g. list the pathway of a RBC from LV to RV as it supplies the stomach)
- Draw the foregut, midgut and hindgut on separate pages then outline the arteries and their course (especially helpful for foregut: liver/stomach/pancreatic blood supply). This will help visual recall in the exam.
- Draw a succinct image of the perineal pouches as shown in Anne's notes.
- Imaging: Radiopedia at https://radiopaedia.org/

Physiology

High Yield Information (Diagrams, Mnemonics etc.)

CVS:

- *Lots of students find afterload a difficult concept to understand as compared to preload and contractility.* Explanation: ventricular ejection of blood occurs when ventricular pressures exceed the pressure of blood in the aorta. This intraventricular pressure stretches the ventricular wall. Also, while contraction of one cardiomyocyte shortens its length, collectively, it creates tension along the ventricular wall. This then can apply a force perpendicular to the curvature of the sphere (i.e. pressure), which when sufficient, allows for ejection of blood.



Drawing: contraction of the heart in 2 phases (isovolaemic contraction and ejection)

- Perfusion of the cardiac muscle occurs during diastole and is very minimal during systole. Contraction of the cardiac muscle compresses the vasculature which impedes on perfusion.

GI:

- Gastric emptying: upper part of stomach serves as a storage function by reflexive distension and does not participate in gastric emptying. Peristalsis begins in the mid stomach and travels towards the gastroduodenal junction, pushing food material as it goes. If food is too large, it gets crushed at/near the pyloric sphincter and is pushed backwards (retropulsion); if it is already liquid chyme, it is squirted into the duodenum.

- GIT colic (pain with paroxysmal attacks) is the result of acute distention and stretching of the bowel and is registered as pain. Examples: pain in bowel obstruction with proximal distention, distention of appendix in acute appendicitis.

Renal:

- Erythropoietin. The renal system receives 20% of cardiac output, which makes it a good 'sensor' of systemic oxygen saturation levels (kidneys produce erythropoietin)
- How is urine concentration regulated. The renal medulla receives only 10% of blood flow, making the interstitium hyperosmotic as solutes are allowed to accumulate. Water is removed out of urine in tubules into the interstitium as a result, thereby concentrating urine. Therefore, the amount of water removed can be regulated by increasing the degree of hyperosmolarity in the medulla - achieved by active removal of urea and NaCl. The removal of urea is regulated by ADH,

Things to Emphasise in Learning

CVS:

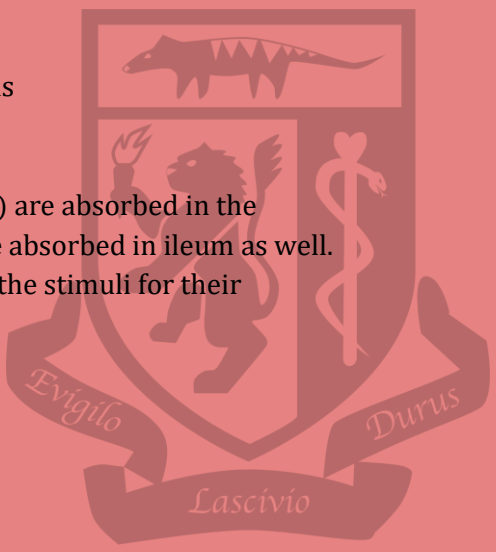
- Regulation of blood pressure. How the local increase in blood flow (e.g. activating only extensors of left arm) can influence cardiac output. Such local autoregulation is applicable throughout the body including the renal system (CAM 202)
- Know the Frank-Starling law on the heart and how it influences cardiac output. This includes a thorough understanding of the PV loops and Wigger's diagram.

Resp:

- Understand concept related to work of breathing
- Understand and know how to draw the oxygen-haemoglobin dissociation curve

GIT:

- Know well the regulation of gastric acid and enzymatic secretions
- The hormonal and neural/reflexive control on gastric emptying
- Digestion and absorption of macro- and micronutrients
    - Know that iron, folate, vitamin B12 (with intrinsic factor) are absorbed in the duodenum, jejenum and ileum respectively. Bile salts are absorbed in ileum as well.
- Know the major endocrine hormones well, including where and the stimuli for their secretion, and their effects



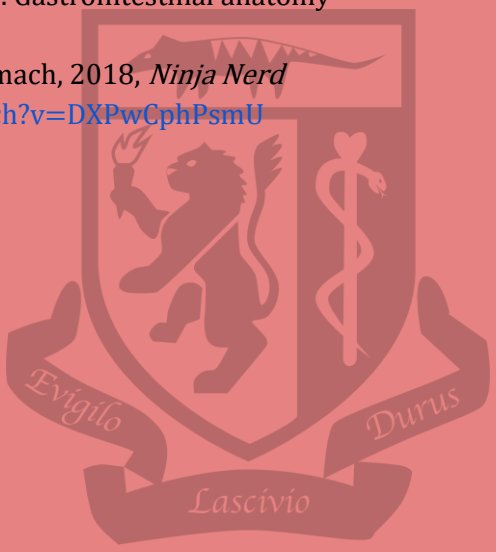
- The underlying mechanisms for intestinal peristalsis and the factors that increase/decrease motility
    - Note that this is subject to lots of research and there are still lots of uncertainties. Therefore, don't have to know too detailed for examination purposes
- Know where the myenteric and submucosal plexi are and what they do
- Regulation of passage of contents through the ileocaecal sphincter
- The types of motility in the oesophagus, stomach, small and large intestines
- Defaecation
- Visceral and sensory pain

Renal

- Formation of ultrafiltrate in Bowman's capsule
- Factors influencing GFR
- Glucose as an example of tubular maximum-limited reabsorption and its clinical implications (in diabetes)
- Gradient-limited transport
- Renal handling of Na throughout the nephron
- Renal handling of H_2O throughout the nephron and the counter-current mechanism including the role of vasa recta and urea cycle
- Be very comfortable with the RAAS system
- Regulation of blood pressure in acute and long-term situations. And what happens when there is sudden increase or decrease in BP
- Regulation of potassium involving extrarenal (mainly skeletal muscle) and renal systems
- Glucosuria generally occurs at plasma [glucose] = 12 mmol/L

Resources

- ECG for right and left bundle branch block: Bundle Branch Block, Animation, 2016, *Alila Medical Media*, YouTube, available at: https://www.youtube.com/watch?v=fmBUkmdDPA4
- Very good for renal physiology: Eaton, D.C., 2009. Vander's renal physiology. McGraw-Hill Medical.
- Very good for GI physiology: Reinus, J.F. and Simon, D. eds., 2014. Gastrointestinal anatomy and physiology: the essentials. John Wiley & Sons.
- GI motility: Gastrointestinal | GI Motility of the Esophagus & Stomach, 2018, *Ninja Nerd Science*, YouTube, available at: https://www.youtube.com/watch?v=DXPwCphPsmU

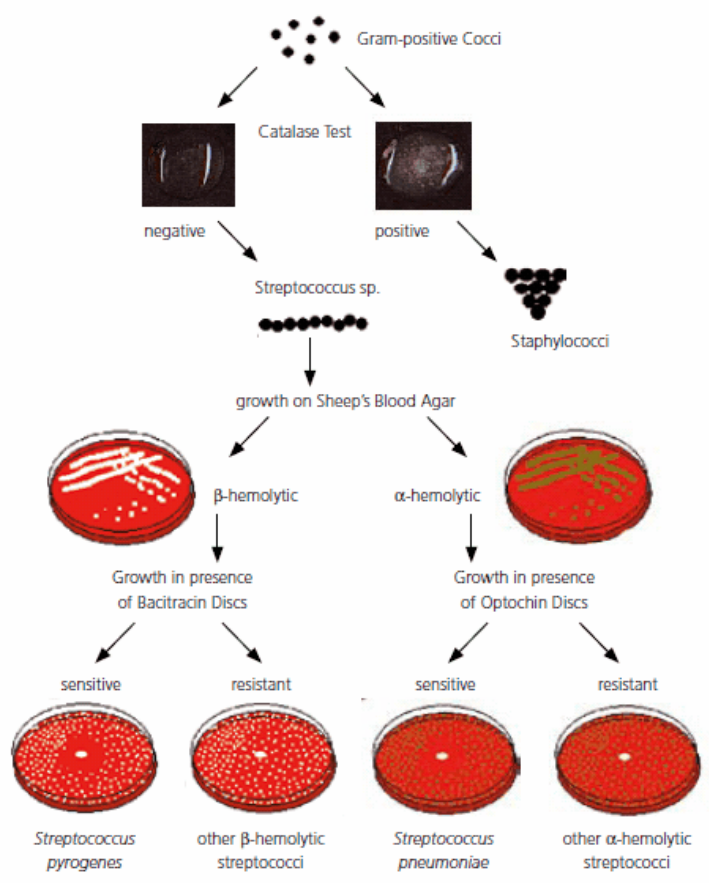


Tips

- For GI physiology, imagine what the GIT does to food as it moves through the the GIT from mouth to oropharynx, oesophagus, stomach, small and large intestines, rectum and anal canal (last two technically a component of the large intestine). Then do the same for consumption of food for each macronutrient and what happens to it as it is digested and moving through the GIT
- If you think you understand a topic well, apply it to a clinical scenario, this can help you identify gaps in your knowledge.

Microbiology

High yield Information



Things to Emphasise in Learning

- Infective endocarditis
  - Predisposing factors
  - Necessary for an infective endocarditis is: endocardial surface damage, non bacterial vegetations, colonisation of these vegetations
  - Most common organisms involved
  - Clinical features; osler's nodes, splinter haemorrhages, palate petechiae
  - Modified Duke criteria for diagnosis

- *Sepsis*
  - qSOFA
  - Origins of infection
  - Septic Shock and how we classify that
- *URTI*
  - Common URTI viruses
  - Common URTI bacteria
  - The clinical manifestations of specific types of viral pharyngitis, eg: herpes pharyngitis presents as cervical adenopathy, oral ulceration, swollen, tender and erythematous gingiva and pharyngeal exudate. Mark likes presenting a set of signs and symptoms and asks which virus is causative.
- *LRTI*
  - Memorise CORB, CURB-65; familiarise yourself with SMART-COP for pneumonia severity
- *TB*
- *H.pylori:*
  - Diagnosis of H.Pylori associated gastritis through urease breath test and stool antigen
- *GIT microbio*
  - Know the common causes of traveller's diarrhoea
- *Hepatitis*: Investigations and interpretation of lab reports for hepatitis. For instance, how can you tell if a person has got an active Hep B infection, or has gained immunity to it ? So know the parameters involved in various disease states.

  Understand that Hep A and Hep E are fecal oral transmission whereas B,C,D are sexually transmitted.
- *Diarrhoea*
- *UTI:* Common pathogens causing UTI's such as E. Coli.
- *STI*: series of 3 lectures
  - Learn syphilis well, every year Mark asks about it.

Know basic investigations to perform to make a diagnosis of an STI. These include first pass urine sample, cervical swab, ano-rectal swab, pharyngeal swab etc.

Resources

- Mark's lectures are basically everything you could possibly need, if you know them well, a textbook is fairly futile

Tips

- Important: I did not learn this until a week before the exam and it cost me lots of time. Mark cannot expect you, until third year, to recall the specific antibiotics used to treat bacterial infections. It is useful to learn for future practice but unnecessary for examination purposes.
- Turning Mark's slides into a single or double page spreadsheet/table is useful as it allows a much more succinct and structured layout. For example, a table for the types of upper respiratory tract infections (listed in rows) whereby the columns are sectioned by epidemiology, pathogenesis, clinical features and diagnosis/treatment.
- Microbiology is all about rote learning. It is easy to get bogged down in the specifics, but make sure you spend effective time learning tell-tale features of a presentation and then which pathogens are most likely to have caused this.
- If you have the time, knowing the word origins of the bacteria/virus can be helpful in remembering their functions (e.g. *haemophilus influenzae* = haemophilus implies that it requires special growth agar such as chocolate agar, which is RBC products)
- Mark will have certain words in bold in his lecture slides; these are the most important things to take from each lecture and often turn up in exam questions.
- In the applied exam you will get pictures of different conditions, these pictures will always come from Mark's lectures. Be able to link picture to condition.
- Often in lectures, Mark may have defined ranges such as "Respiratory rate ≥ 22". In exams, he quite often uses figures that are exactly at that value, testing you on whether you remember is it $\geq$ or $>$.

Pharmacology

Mechanism of action = MOA

High Yield Information (Diagrams, Mnemonics etc.)

Initial management of a suspected myocardial infarct (MI)

- MONA = Morphine/Fentanyl + Oxygen** + GTN + dual Antiplatelet therapy*
- Or MONASH - Morphine/Fentanyl + Oxygen** + GTN + dual Antiplatelet therapy* + Statins + Heparin (eg enoxaparin)

Long term management of MI

- SAAB = Statin + Aspirin* + ACE-inhibitor + Beta-Blocker

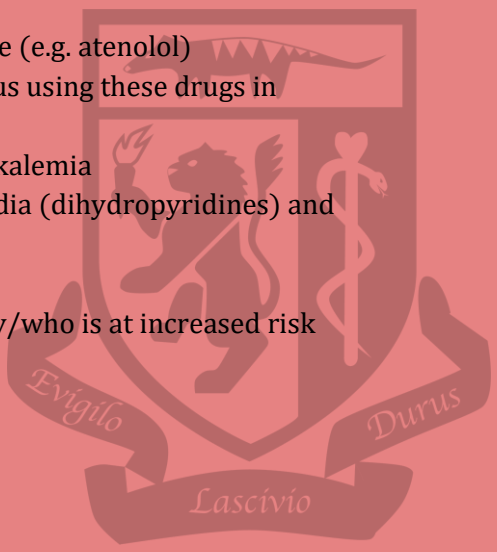
*Dual antiplatelet therapy needed = Aspirin plus a P2Y12 inhibitor

** If 02 stats <93%

Things to Emphasise in Learning

Semester 1

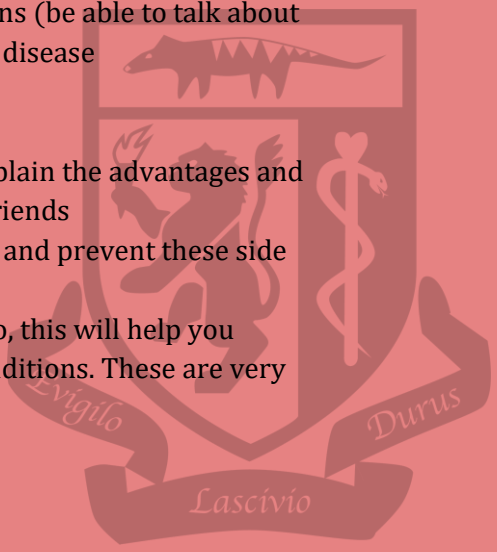
- Know your receptor classes and what happens when they are exposed to an agonist vs an antagonist.
- The RAAS system and what happens when this pathway is blocked
- *ACEI cause dry cough*
- A lot of classes of drugs will have drugs ending in a particular suffix (e.g. ARBs end in "sartan", like Candesartan).
- Know which beta blockers non-selective vs more cardio-selective (e.g. atenolol)
- Side effects and contraindications of beta blockers (eg be cautious using these drugs in people with COPD and diabetes)
- Know which antihypertensives can cause hyperkalemia vs hypokalemia
- Know why some calcium channel blockers cause reflex tachycardia (dihydropyridines) and others do not.
- Torsades de pointes as a side effect of some drugs
- Digoxin has a narrow therapeutic window, know signs of toxicity/who is at increased risk
- Adenosine causes a short-lived feeling of "impending doom"



- The "window for coronary blood flow" and how changes to influence angina
- MOA of GTN
- Know about nitrate tolerance. Also be wary of using them with erectile dysfunction drugs as the combination can cause severe hypotension.
- MOA of Ivabradine
- Statins can cause rhabdomyolysis. Know which statins can be taken anytime and which are taken at night.
- Statin therapy following acute coronary syndrome reduces morbidity and mortality, irrespective of lipid levels.
- Understand the coagulation cascade and at what point drugs interfere with this cascade
- MOA of warfarin, that initially the patient will be in a hyper-coagulable state, that it has a lot of drug interactions and why monitoring INR is important
- Know Asthma and COPD medications, and their MOA's - be able to teach someone how to use these medications (especially drugs like Salbutamol, Salmeterol, Ipratropium, Prednisolone etc)
- If Asthma prevention medications are indicated, a ICS must be included
- Understand corticosteroids, their MOA and major side effects

Semester 2

- Understand diabetes medications, eg Insulin, metformin, gliclazide, sitagliptin, rosiglitazone - be able to compare MOAs, risk of weight gain, risk of hypoglycemia.
- Understanding the MOA of different antiemetics will help you remember their indications
- Understand the step-up and step-down approach of managing IBD and the pros and cons of each.
- Know first line treatments for IBD.
- MOA of 5-aminosalicylates, Mercaptopurine, Methotrexate, Vedolizumab
- MOA of PPIs and why it is so effective compared to other gastric reflux medications
- Treatment of H.pylori induced ulcers requires "Triple Therapy" (esomeprazole, amoxicillin, clarithromycin for 7 days)
- Bulk-forming laxatives need to be taken with sufficient fluids
- Non pharmacological management of constipation
- MOA of disulfiram
- Excessive use of ethanol and its acute and long term complications (be able to talk about this in OSCEs) including clinical manifestations of alcoholic liver disease
- Know why ACEIs and ARBs are preferable in CKD
- Know the mechanism of the triple whammy
- No matter what your specialty, you will need to know how to explain the advantages and disadvantages of different contraceptives either to patients, or friends
- Know the side effects of the OCP and various mechanisms to try and prevent these side effects from occurring.
- Know the pathophysiology of Diabetes Mellitus type one and two, this will help you understand the MOA of the various drugs used to treat these conditions. These are very



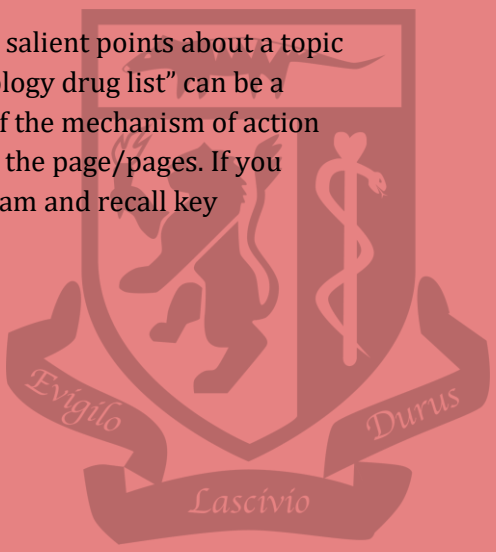
commonly used drugs, as diabetes is everywhere. Know which ones come with the risk of hypoglycemia and why that is so dangerous. The better you learn these drugs now, the less work you will have in your senior years! Happy studying!

Resources

- Bonnie's lectures: this is the best place to start
- Australian Medical Handbook (AMH): the gold here is information about drug interactions, precautions, practice points and comparative information about drugs within the same drug class. This site will also give you general information about drugs, their mechanism of action and side effects.
- Therapeutic Guidelines (eTG): pharmacotherapeutic knowledge often takes a back seat this year, however, if you want the inside scope go to the eTG for up to date evidence-based recommendations.
- The Pharmaceutical Benefits Scheme (PBS) website: If you ever want to know if a medication is subsidised by the Australian Government. This can be more useful for later years.
- UpToDate: log in via the UTAS database. This site is excellent for reading more about drug efficacy and role in clinical settings.
- NPS MedicineWise
- Textbooks = Bryant and Knights - Pharmacology for Health Professionals

Tips

- MOA questions are the most popular questions for SAQ.
- Work on your logbook regularly, don't leave it to the last minute.
- Understanding the underlying physiology and pathophysiology of the condition you are treating can really help to pin down the mechanism of action and side effects of a drug.
- Flash cards: a lot of pharmacology does boil down to memorisation flash cards can help with this
- Although it is important to have a good understanding of side effect profiles, the most important side effects to remember, for this year, are the most common ones and the most serious ones, eg statins can cause rhabdomyolysis.
- Summarisation: before an exam it is important to bring the most salient points about a topic to the forefront of your mind. The "CAM201/ CAM202 Pharmacology drug list" can be a great tool to use last minute, especially if you write a summary of the mechanism of action and a few important side effects next to each drug class listed on the page/pages. If you stare at this page enough you might be able to visualise it mid exam and recall key information.



Histology

High Yield Information (Diagrams, Mnemonics etc.)/Things to Emphasise in Learning

Cardio:

Understand the basic three layers of the heart. (epi-myo-endo)

Know that Purkinje fibres are really modified cardiomyocytes optimised for signal conduction.

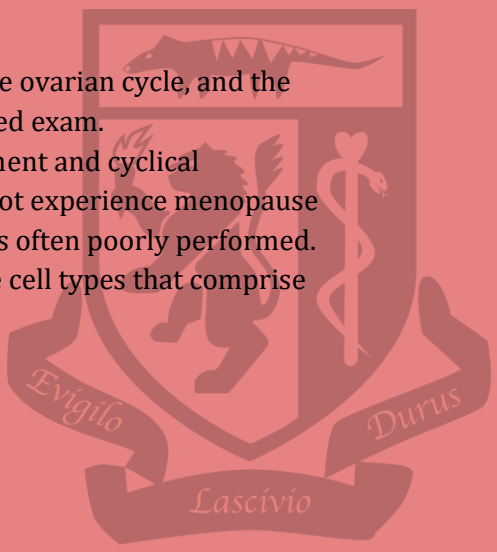
Although he doesn't go over this in his lecture, please understand the histology of blood vessels as he goes over this in his practical.

GIT

- Jamie loves GIT junctions! There are 4 and know how to differentiate one from another
- Understand how a hepatic lobule works and the mechanics of blood flow vs bile flow.
- Know protection mechanisms of the duodenum from the acidic chyme from the stomach.
- Know how to distinguish the 3 regions of the small intestine from one another histologically.
- Understand the histological difference between the various regions of the stomach.
- Know the histological differences between the major salivary glands.
- Know various lingual papillae and which ones have taste buds on them.
- Understand the function of Von Ebner's glands and the associated papillae.
-

Urogenital

- Please know how the menstrual cycle in women is affected by the ovarian cycle, and the various hormones at different stages. This comes up in the applied exam.
- For the ovarian cycle, understand the concepts of initial recruitment and cyclical recruitment. Then explain why a woman being on the OCP will not experience menopause at an earlier stage. Jamie often puts this question on exams and is often poorly performed.
- Please understand the meaning of a uriniferous tubule and some cell types that comprise the uriniferous tubule. Qn comes up in the applied exam.



- Know how to differentiate between different cell types in male testes and the locations they are found. For example, rete testis has cuboidal epithelium with microvilli.
- Know the concept of the blood-testis barrier and the cells that make up the barrier, and why it's so important that this barrier be maintained.

Resources:

Jamie Chapman's online videos. Highly recommended to attend his sessions that he conducts via Twitch.

Junequira's Basic Histology is also a good resource, but can contain a bit more detail than necessary.

Tips

There's a lot of histology in CAM202. While they don't really come up much in exams (except for the applied exam), it is recommended to get a general idea of the cell structures found in the GIT and urogenital tract. This will help a lot with understanding pathology later on. Apart from that, pay attention to some key concepts he brings up, like the hormones' role in the menstrual cycle, role of cells in acid secretion in the stomach, protection mechanisms for the duodenum from acid and so on.

Pathology

High Yield Information (Diagrams, Mnemonics etc.)

- Pathological Sieve like "VINDICATE" or "VITAMIN CDEF"

  Example (VITAMIN CDEF)

  - Vascular
  - Infectious/Inflammatory
  - Trauma
  - Autoimmune
  - Medications/Metabolic (electrolytes)
  - Idiopathic/Iatrogenic
  - Neoplastic
  - Congenital
  - Degenerative/Developmental
  - Endocrine
  - Functional/Psychogenic

- Acute ischemic limb = 6P's
  - Pale
  - Painful
  - Pulselessness
  - Paralysis
  - Paraesthesia
  - Perishingly cold

- Risk factors for gallstones: 5F's
  - Fat
  - Female
  - Fair (more common in Caucasians)
  - Fertile (premenopausal)
  - Forty or above (age)
  - Causes of acute pancreatitis: I GET SMASHED
  - Idiopathic/Infection/Ischaemic
  - Gallstones
  - Ethanol
  - Trauma
  - Steroids/surgery

- Mumps/malnutrition/mechanical obstruction/metabolic
- Autoimmune : Vasculitis
- Scorpion sting
- Hyperlipidaemia/hypercalcaemia/hereditary/hyperparathyroidism/hypermagnesemia
- ERCP
- Drugs : Isoniazid, Thiazides, Azathioprine, Valproic Acid, Estrogen

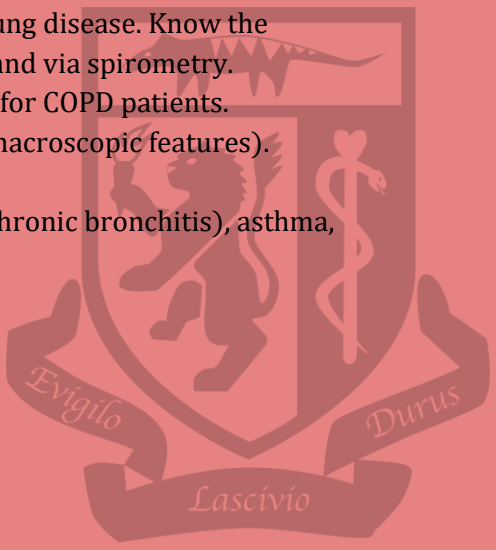
Things to Emphasise in Learning

CVS

- Know the blood supply of the heart and how to read an ECG at secondary year level. You will get ECG questions. Eg be able to interpret an ECG with an anterior STEMI, knowing that it correlates to occlusion of the LAD (left anterior descending artery) and what this means clinically.
- Understand acute coronary syndromes.
- Risk factors, pathology, clinical manifestations and complications of an MI.
- Atherosclerosis including risk factors, micro and macroscopic features, complications.
- Understand heart murmurs
- Understand how to interpret troponin levels
- Rheumatic fever and Jones criteria
- Infective endocarditis, know common organisms, risk factors, clinical features, Duke Criteria
- Have a very good understanding of etiologies of heart failure, the pathology and clinical manifestation. This is important from a pathology perspective, but also physiology and OSCEs.
- Virchow's Triad - three factors involved in the initiation of thrombosis.
- Know the risk factors for thrombus formation
- Some popular exam topics include: atherosclerosis, aortic aneurysm/dissection, coarctation of aorta, congenital bicuspid aortic valve, AAA, PE, shock, endocarditis.

Resp

- Understand the difference between obstructive and restrictive lung disease. Know the major pathological differences, how to tell them apart clinically and via spirometry.
- Understand what is meant by "Blue Bloaters" and "Pink Puffers" for COPD patients.
- Be able to compare asthma and COPD (eg pathogenesis, micro/macroscopic features).
- Classification system for lung cancer
- Some popular exam topics include: COPD (inc emphysema and chronic bronchitis), asthma, bronchiolitis, idiopathic pulmonary fibrosis, pneumonia …



GIT

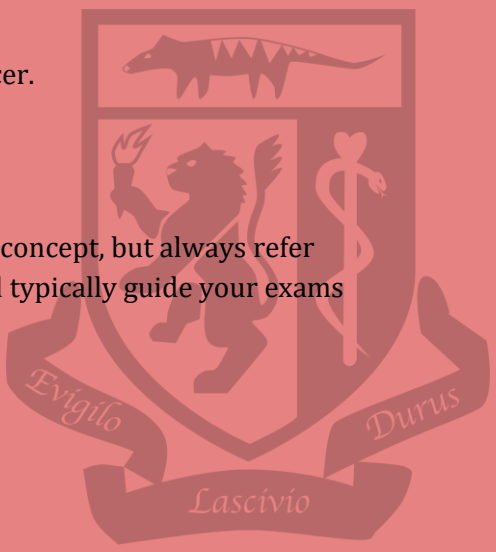
- Understand liver function tests as they come up a lot in exams. Be able to distinguish between a cholestatic pathology and a hepatocyte injury pathology.
- Understand the etiology of liver cirrhosis and clinical manifestations of chronic liver disease.
- Understand the clinical consequences of portal HTN
- Know how to distinguish crohn's and ulcerative colitis micro and macroscopically. Understand the complications of these conditions.
- Understand progression of GORD to adenocarcinoma, including microscopic changes
- Understand the genetic mutations which lead to familial colorectal cancers / polyps
- Understand the complications of Alcoholic liver disease
- Be able to interpret hepatitis serology results
- Some popular exam topics include: crohn's disease / ulcerative colitis, coeliac disease, ischemic/obstructed bowel, GORD + Barrett's oesophagus, acute appendicitis, pancreatitis, hepatitis, PUD, gastritis, cholelithiasis, acute cystitis, polyps / tumours of the intestines, gastric adenocarcinoma …

Urogenital:

- Know the causes of Acute Kidney Injury (AKI) and the classification of AKI into pre-renal, renal and post-renal causes. It is helpful to then list potential etiologies based on this classification.
- It's helpful to think of kidney disease from a mechanistic viewpoint. Just think about a sieve being damaged and you'll have the basis for nephrotic syndrome, diabetic nephropathy, autoimmune nephropathies etc. Anything that damages the sieve or the filtration barrier will therefore cause pathologies.
- Know renal function tests. These can give you clues as to which part of the kidney is affected.
- Know the difference between nephrotic and nephritic syndromes and the common causes of these syndromes in children and adults.
- Please understand the interplay between heart failure and kidney failure.
- Know renal compensation for systolic heart failure.
- Understand the causes of cervical cancer including HPV 16,18.
- Know the current screening protocols for detecting cervical cancer.

Resources

- YouTube: These videos can be helpful to get your head around a concept, but always refer back to what you have been taught at uni as this information will typically guide your exams in secondary year.



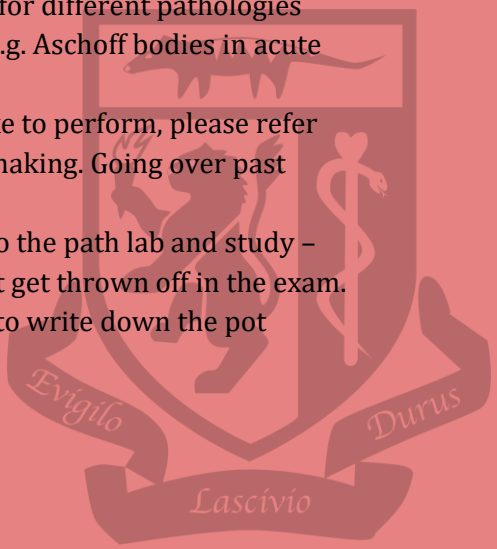
    - Osmosis: Short videos which can be helpful to get your head around causes, symptoms, diagnosis, treatment, and pathology of different conditions. Some videos require a membership, which can be expensive.
    - Armando Hasudungan: short-mid length videos, with a lot of drawings for those visual learners out there.
    - Dr Najeeb: His videos are long, and some require a membership, but excellent source for those tricky concepts (e.g. ECG's, Nephrotic/Nephritic syndromes etc). Has pathology (especially renal and cardiac) as well as physiology lectures. Often has sales on membership.
    - Khan Academy
- Notes
    - Dr Roslyn's Notes: These are a great summary of Robbins & Cotran: Pathological Basis of Disease. These notes can be confusing as a stand-alone source, often reading Robbins textbook can clarify any confusing points in these highly summarised notes.
- Practise exam questions
- Pay the R.A Museum of Pathology a visit a few days before the exam to reinforce the image of the pots and quickly run through the pathologies.

Tips

Organise pathologies you encounter based on: aetiology (including risk factors) → pathogenesis → macroscopic and microscopic morphology → clinical signs and symptoms → required investigations → treatment (if necessary).

Understanding pathology might require you to brush up on the foundational subjects such as microbiology, cell biology, genetics, histology and physiology. If you are finding pathology difficult to understand initially, try and review your foundations and therefore build up your knowledge.

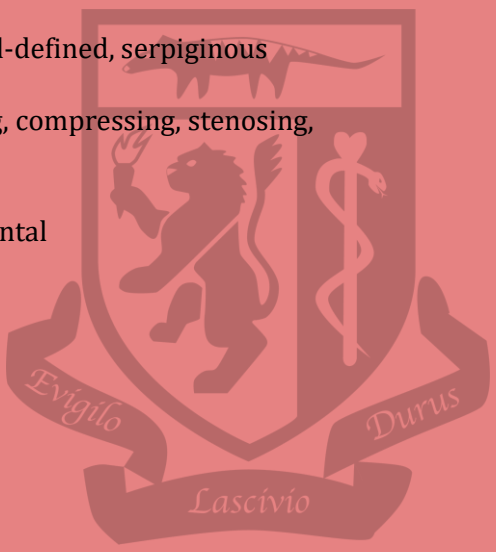
- There is a lot of pathology to learn. Start early and learn in layers. You do not need to know every single detail so do not get overwhelmed. Learn the bigger picture of each pathology and then zoom in with each re-read. There is enough to learn right before the exams, so having a summary of pathology is really useful (even if it's just Dr Roslyn's notes) in the week/weeks before the exams.
- Written exam: if you are pressed for time, remember key words for different pathologies because these are the words that will pop up in MCQ questions e.g. Aschoff bodies in acute rheumatic fever.
- Case Based exams: when discussing investigations you would like to perform, please refer back to your knowledge of pathologies to inform your decision making. Going over past CBLs will also help with the case based exams.
- Applied exam: Use the Path-CD (can access this online) or go into the path lab and study – this helps you get familiar with the 3D appearance, so you do not get thrown off in the exam. The pots in these exams are based on your practicals so it helps to write down the pot numbers and learn the pathology of these pots.



- OSCEs: I find going back to your pathology and basic sciences to be useful in an OSCE situation. For instance, you may be asked the signs of left heart failure in an physical examination OSCE. Understand the mechanism/ pathogenesis of left heart failure to then elaborate on the various signs. This will help score you points and show the examiner you are thinking well rather than simply memorising a list of possible signs.

Approach to answering Pot specimen questions:

1. Identify the organ
    a. "This is a heart"
2. Identify the pathology present
    a. "Overall, the heart is enlarged and there is hypertrophy of the left ventricle. The aortic valve is thickened and deformed with nodules, as a result the aortic valve orifice is narrowed"
3. Describe any lesions seen
    a. Size – dimensions "4 x 3 x 2 cm"
    b. Shape – examples: ulcer, mass, nodule, polypoid, stellate, fusiform, villous
    c. Surface
        i. Colour – tan, pale tan, white, brown, orange, black
            1. "examples – black could mean anthracosis, orange could be adipose tissue
        ii. Contour – smooth, nodular, granular, friable
        iii. Characteristics - homogenous, heterogenous, necrosis, haemorrhage, ulceration
    d. Margins – examples: well-circumscribed, irregular, ill-defined, serpiginous
    e. Modifiers – examples: infiltrating, eroding, ulcerating, compressing, stenosing, perforated, hypertrophied
    f. Distribution – examples: focal, patchy, diffuse, segmental
4. Make a diagnosis of the likely process



a. "The features suggest aortic stenosis with secondary left ventricular hypertrophy"

If in doubt as to how to approach the pot from first principles, relying on Ross's notes and her teachings from the practicals would be a good place to start. If you are able to recognise the pot and therefore the pathology, then the rest of the questions for the pot should be easy to answer from memory. Majority of the time the pots will NOT be curveballs and they should be pretty familiar to you.

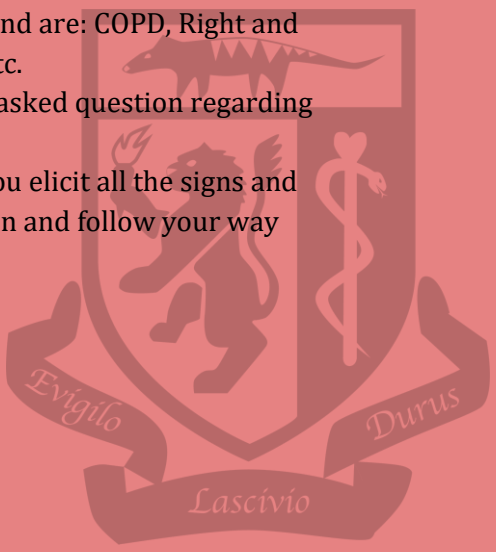
Approach to OSCEs

OSCEs in Year 2 are not necessarily overwhelming, but contribute around 10% of your CAM202 score. They try to ease you into the OSCE environment initially, by giving you practice around exam time and plenty of opportunities to practice history taking and physical examinations.
Remember, OSCEs are mostly about practice. So try and get as much practice as you can with your friends, study group, family etc.

Some useful tips are:

1. History taking:
   . Try and stick to the time limit as much as you can. Practice well before hand and know your proformas by heart.
   . In your 2 minutes reading time, underline key points in the question stem and jot down your proforma according to whatever history is being asked.
   . Don't forget your soft skills like being empathetic and active listening.
   . Pursue the history of presenting complaint rigorously so that you elucidate all the necessary information. If the actor tells you something vague, make sure you ask enough questions to get the detail required.
   . In your 1 minute summary at the end, they look for the salient features in the history provided. So about your history, state the key positive findings and key negative findings. Keep it simple.

2. Physical Examination :
   In this station, you will need to do a physical examination till a certain point in a proforma
   Again practice thoroughly.
   Stick to time limit.
   Remember your proformas.
   At the end of the examination, the examiner will ask two questions relating to signs and symptoms of various diseases. Some common ones to keep in mind are: COPD, Right and Left heart failure, Asthma, Inflammatory Bowel Disease, GORD etc.
   The second question might be an extension from the previously asked question regarding an infectious flare up of COPD for example.
   To answer questions, follow a structured format that will help you elicit all the signs and symptoms. For instance, with COPD, start from general inspection and follow your way down the proforma. This way, you won't miss important bits.



3. Integrated Case Discussion:
   Brushing up on your pathology will really help with this station, since you will be able to put together the signs and symptoms really easily to arrive at a diagnosis.
   Review your CBLs beforehand as it will pretty much be one of the CBL cases.
   Please don't miss important investigations as you work up a patient. For instance, with a young female presenting with right iliac fossa pain, a key differential would be ectopic pregnancy and you should keep this in mind when ordering investigations. So don't miss your b-hCG test in your investigations list.

4. Communication Skills:
   Possible stations include a drug and alcohol history or motivational interviewing or providing information.
   With motivational interviewing, it is helpful to first determine the stage at which the actor is in to contemplate a change in their lifestyle. Sometimes they want to change, sometimes they're too caught up to think otherwise. Anyways, you gotta keep it empathetic and just say key words like "i understand that it's hard for you to change…" "take it one step at a time…"
   Asking the patient to recite back to you the key information you have provided, is a good way to judge patient understanding towards the end of your discussion.
   Know your drug and alcohol proforma by heart and know the three stages for lifestyle modification.
   Ending your discussion by handing out brochures for patient information is a very good way to impress the markers and increase global score.

Good Luck!