

"List" = 1-3 words

"State" = short statement/ phrase/ clause

UNIVERSITY HOSPITAL, GEELONG  
FELLOWSHIP WRITTEN EXAMINATION

WEEK 2– TRIAL SHORT ANSWER QUESTIONS Suggested answers  
**PLEASE LET TOM KNOW OF ANY ERRORS/ OTHER OPTIONS FOR ANSWERS**  
**Please do not simply change this document - it is not the master copy !**

### Question 1 (18 marks) 9 minutes

A 72 year old woman presents with tearing chest pain suggestive of dissection of her aorta.

- a. State three (3) pros for the utility of chest Xray in this presentation. (3 marks)  
**NB: Focus Pros/cons on clinical relevance- not cheap/ easy (rapid may be ok but usually better alternatives)**
  - **May show finding highly suggestive of TAD- eg double lumen sign**
  - **May show alternative diagnosis (eg pneumomediastinum)**
  - **May be performed bedside (avoids transferring unstable patient)**
  
- b. State three (3) cons for the utility of chest Xray in this presentation. (3 marks)
  - **Poor sensitivity- ~ 60% screening test only, cannot be used to rule out TAD, high false –ve**
  - **Poor specificity – widened mediastinum on AP or supine, high false +ve**
  - **Doesn't define extent/type of TAD**
  - **May delay formal Ix**
  
- c. List six (6) Chest Xray findings that support the diagnosis of thoracic Aortic dissection. (6 marks)  
*NB: although "normal" in ~ 15%- this does not "support the diagnosis"*
  - **Widened mediastinum (56-63%)**
  - **abnormal aortic contour (48%)**
  - **aortic knuckle double calcium sign >5mm (14%)**
  - **pleural effusion (L>R)**
  - **tracheal shift**
  - **left apical cap**
  - **deviated NGT**
  
- d. State six (6) key issues in the management of a patient with proven thoracic Aortic dissection. (6 marks)
  - **Analgesia e.g. titrated IV morphine will help with BP control**
  - **Establish Rx aims/ limitations**
  - **Definitive treatment is urgent to minimise morbidity and mortality**
  - **Blood pressure control (endpoints BP 100-120mmHg and HR 60-80 /min)**
    - **BBlocker first (e.g. labetalol 10mg aliquots IV q10mins)**
    - **vasodilator if necessary subsequently eg GTN**
  - **Involving ascending/ arch - Stanford A- Refer cardiothoracics- Surgical emergency- consideration for Sx/ endovascular management**
  - **Descending- Stanford B- surgical discussion- usually medical management**
  - **Complications:**
    - **hypotensive- urgent surgical review**
      - *(DDx- blood loss, haemopericardium with tamponade, valve dysfunction, L Ventricular dysfunction)*
  - **Avoid pericardiocentesis & inotropes**

## Question 2 (13 marks) 6 minutes

A 4 year old male presents to ED after having inserted a peanut into his nostril. The child is extremely distressed and will require chemical sedation for removal. The child weighs 20 kg.

a. List your choice of preferred medication, route of administration and dose/s. (3 marks)

NB:

- *IM preferable- IV Ok but child is distressed, IV will be more distressing & is unnecessary*
- *As child is distressed, need a dose that is going to be sedating, not just analgesic*
- *May specify a repeat dose depending on response*
- *If repeat dose not specified, dose must be adequate to cause sedation*
- *Any nasal administration is CI*
- *Ketamine: Low dose < 60 with no repeat specified is not adequate*

Medication (1 mark)	Route of administration (1 mark)	Dose/s (1 mark)
Ketamine	IM	Initial range 3-7 mg acceptable = 60- 140 mg Subsequent to max 10 mg/kg  (analgesia 2-4 mg/kg sedation 5-10 mg/kg)
Midazolam	IM	0.1- 0.2 mg/kg 2- 5 (max) mg  (0.1-0.2 mg/kg to max 5mg/adult)

b. Other than sedation, list 4 possible complications of your preferred medication choice.(4 marks)

Ketamine	Midazolam
Vomiting ~ 15% Airway hypersalivation Transient laryngospasm, stridor (esp. if URTI) Resp. depression/ Transient apnoea/ desaturation Agitation/ hallucination/ crying Nightmares Emergence (uncommon in children)	Resp. depression/ Transient apnoea/ desaturation Hypotension Hyper stimulation

c. List five (5) indications for ENT removal of this nasal foreign body as opposed to removal in the Emergency Department. (5 marks)

- **Parental request**
- **Failure of ED removal**
- **Child not fasted**
- **Delayed presentation- nasal passage associated with ++ Swelling**
- **Significant epistaxis prior**
- **Prior nasal surgery and high lodged FB**
- **Congenital anatomical abnormality**
- **Likely to be technically difficult e.g. posterior position**
- **Resource limitations e.g. staff or space unavailability for procedural sedation**

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### Question 3 (11 marks) 6 minutes

- a. State the definition of priapism. (1 mark)
- **prolonged penile erection** (*exact time duration is not universally agreed and ∴ not required*)
  - **unrelated to ongoing sexual stimulation**
  - **unrelieved by ejaculation**

A 35 year old male presents to ED with priapism

- b. List five (5) likely causes of priapism in this man. (5 marks)

*NB: keep it "likely" for a man this age*

- **Low flow:**
  - **Idiopathic**
  - **Medications:**
    - **Sildenafil** (*Viagra*)
    - **Intracavernosum agents** (*eg papverine*)
    - **AntiHT** (*CCB, α antagonists*)
    - **Antipsychotics** (*chlorpromazine/ clozapine*)
    - **Antidepressants** (**SSRI**)
    - **Anticonvulsants** (*Na valproate*)
    - **Warfarin**
    - **Hormones** (*testosterone*)
    - **Maxolon**
    - **Omperazole**
  - **Recreational drugs** (**heroin, cocaine**)
  - **Leukaemia/ Thalassemia/ SCA**
  - **Malaria**
  - **Amyloidosis, gout**
  - **High spinal lesion**
  - **(Spider- black widow)**
- **High flow:**
  - **Trauma**
    - **fistula formation**
    - **SC trauma**

- c. List two (2) simple steps that may help to resolve the priapism in this patient. (2 marks)

- **Micturition**
- **Exercise**
- **Ice topically**

- d. List two (2) medications that may be used to resolve the priapism in this patient. (2 marks)

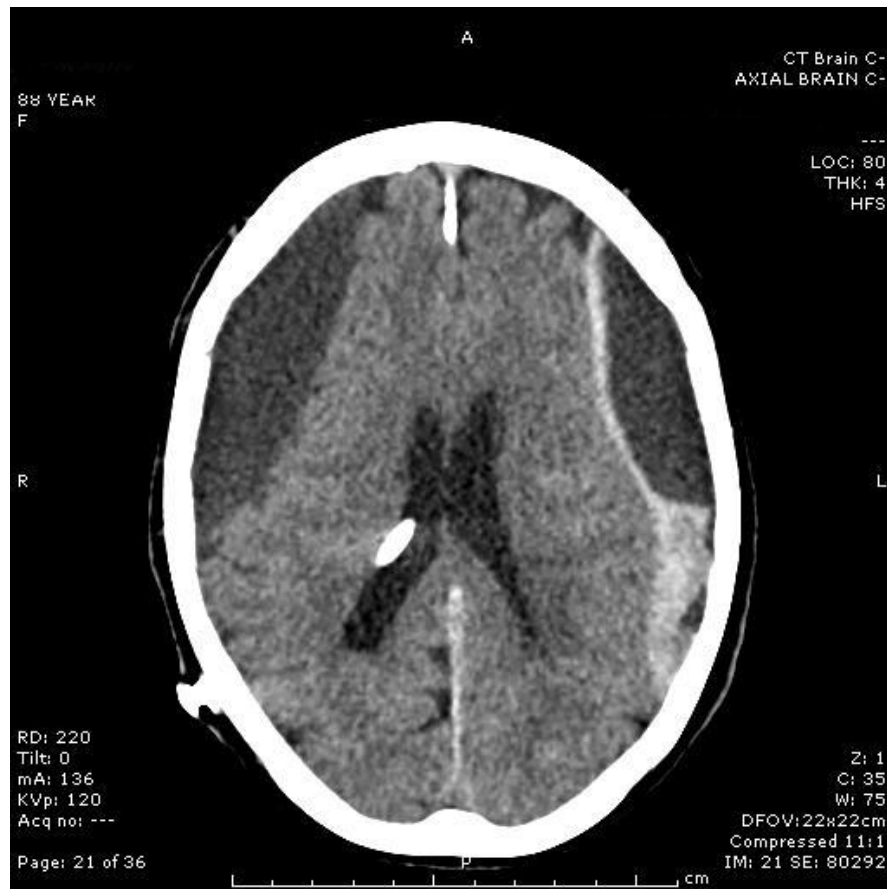
- **Oral pseudoephedrine**
- **Intracavernosum injection of metaraminol/ phenylephrine**
- **Treat reversible cause- chemo for leukaemia**

- e. State one (1) key procedure for this patient in the emergency department if the above steps fail to resolve the priapism. (1 mark)

- **Aspiration of corpus cavernosum under LA ( 20-30 ml to max 300ml over 15 min)**

## Question 4 (12 marks) 6 minutes

An 88 year old female presents following a fall.



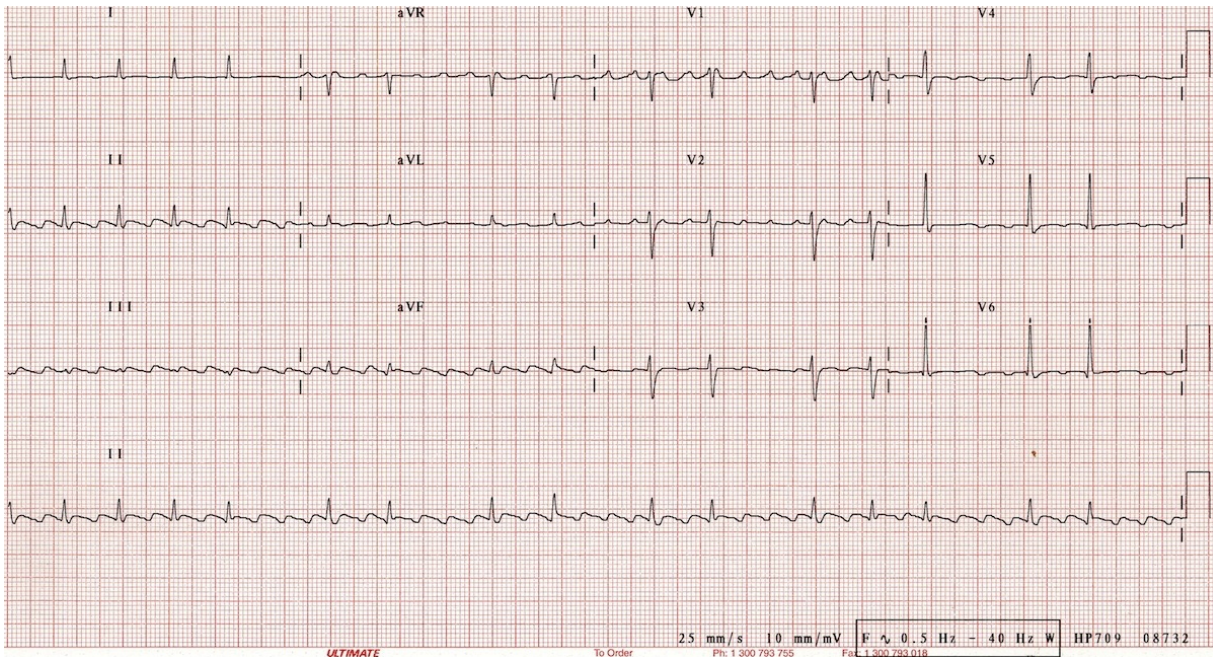
- a. State six (6) abnormal findings shown in this scan. (6 marks)
- **R Chronic SDH 10 x 2.5 cm- hypodense (> 2/52 old)**
  - **L A on Chr SDH 11 x 3 cm hyperdense and hypodense**
  - **(Signs of raised intracranial pressure):**
    - **Midline shift 3-4 mm to R**
    - **Loss of grey/white matter differentiation**
    - **L lateral ventricle effacement**
    - **Sulcal effacement**
  - **R External ventricular drain into R lateral ventricle**

The patient is confirmed to be a hostel resident. She is independently mobile with mild dementia. She is unable to provide an opinion about her care.

- b. State six (6) factors that would lead you to pursue active management for this patient. (6 marks)
- **Lack of significant comorbidities**
  - **Good premonitory quality of life**
  - **Warfarin use- will need reversal**
  - **Confirmed Hx of physical abuse**
  - **Advanced care directives- for all care**
  - **Medical Power of Attorney request**
  - **Advice from hospital Medical Superintendent**

## Question 5 (14 marks) 6 minutes

A 38 year old male collapses while exercising. He spontaneously recovers during transport by ambulance. His ECG is shown.



- State three (3) abnormalities shown on this ECG. (3 marks)
  - Rate - Ventricular 75-130, atrial rate 300bpm**
  - Rhythm - Atrial flutter with variable block 2:1, 3:1**
  - T wave flattening V5- V6**
- State your disposition. (2 marks)
  - Monitored bed (1) under cardiology (1)**
- State four (4) points of justification for your chosen disposition. (4 marks)
  - Syncope suggests haemodynamically significant arrhythmia**
  - Unless non cardiac precipitant for Aflutter is present**
  - Rate/rhythm control**
  - Facilitate semi urgent ECHO prior to discharge (probably)**
  - +/- angio**

The patient wishes to discharge against advice soon after the ECG is taken.

- List five (5) questions that must be answered for this patient to be legally allowed to discharge himself against medical advice. (5 marks)

*NB: a duty of care exists- so "Is there a duty of care?" is not an answer*

  - Is assessment complete?**
  - Why does he want to leave?**
  - Is the patient capable, competent (Capacity assessment see wk1 & Dunn page 273-4) of refusing treatment?**
  - Can someone else legally determine consent?**
  - What is the risk of DAMA?**
  - What is the risk of the patient of restraint?**

## Question 6 (12 marks) 6 minutes

A previously well 48 year old female presents to ED with acute urinary retention and loss of perineal sensation.

- a. List three (3) likely differential diagnoses. For each diagnosis, state how you would confirm each diagnosis. (6 marks)

Diagnosis (3 marks)	Method of confirmation of diagnosis (3 marks)
Spinal cord injury- haematoma	<ul style="list-style-type: none"> <li>• CT Spine</li> <li>• MRI spinal cord</li> </ul>
Spinal cord infection <ul style="list-style-type: none"> <li>• epidural abscess</li> <li>• transverse myelitis</li> <li>• discitis</li> </ul>	<ul style="list-style-type: none"> <li>• CT Spine</li> <li>• MRI spinal cord</li> </ul>
Cancer <ul style="list-style-type: none"> <li>• Epidural metastasis</li> <li>• Primary pelvic tumour</li> </ul>	<ul style="list-style-type: none"> <li>• CT Spine</li> </ul>
Systemic disease <ul style="list-style-type: none"> <li>• MS</li> <li>• GBS</li> </ul>	<ul style="list-style-type: none"> <li>• MRI B &amp; Spine</li> <li>• Clinical</li> <li>• LP for GBS</li> </ul>
Spinal artery thrombosis	<ul style="list-style-type: none"> <li>• CT Spine</li> </ul>
<i>Less likely (given previously well):</i> <ul style="list-style-type: none"> <li>• Progressive neurological disease</li> <li>• Diabetic neuropathy</li> </ul>	

- b. List six (6) key features that you would seek on history. (6 marks)

- **HOPC**
  - Back pain- progression of symptoms
  - Trauma- mechanism
  - Infective symptoms
  - IVDU
  - Embolic symptoms
  - MS symptoms- esp. eye pain
  - Recent spinal anaesthesia- eg delivery
- **FHx**
  - MS/ other diseases as listed
- **Smoking**
- **Systems**
  - Symptoms of metastasis

## Question 7 (11 marks) 6 minutes

A 29 year old female is brought in by a friend after being found in an agitated state. She refuses all assessment except for an arterial blood gas and electrolytes on room air as displayed below.

			Reference range
pH	7.31		(7.35-7.45)
PCO <sub>2</sub>	30	mmHg	(35-45)
PO <sub>2</sub>	104	mmHg	(75-100)
HCO <sub>3</sub> <sup>-</sup>	18.5	mmol/L	(22-33)
BE	-4.8		(-3.0-+3.0)
Saturation	99%		(95-98%)
FIO <sub>2</sub>	0.21		
Na <sup>+</sup>	141	mmol/L	(135-145)
K <sup>+</sup>	8.4	mmol/L	(3.2-4.5)
Ca <sup>2+</sup>	1.21	mmol/L	(1.15-1.35)
Cl <sup>-</sup>	113	mmol/L	(100-110)

- a. Provide two (2) calculations to help you to interpret these results. (2 marks)

Derived value 1: **AG- AG = 9.5= Normal anion gap metabolic acidosis**

Derived value 2: **Expected pCO<sub>2</sub> = 36 = respiratory alkalosis**

**Simple metabolic acidosis:**  $PCO_2 = 1.5 \times HCO_3^- + 8$   
Lower limit of compensation  $PCO_2 = 10$   
Or  $PCO_2 =$  last two numbers of the pH between 7.4 and 7.1

- combination of ↓ HCO<sub>3</sub><sup>-</sup> & ↓ pCO<sub>2</sub> occurs in metabolic acidosis & respiratory alkalosis  
if only one disorder is present it is usually easy to determine which is occurring  
→ Hx usually strongly suggests disorder  
→ Net pH change usually indicates the disorder if only single 1° disorder  
→ ↑ anion gap or ↑ Cl<sup>-</sup> define the 2 major causes of metabolic acidosis  
(AG > 20 highly suggestive, > 30 definite for metabolic acidosis)
- Common situation is ↓ HCO<sub>3</sub><sup>-</sup> & ↓ pCO<sub>2</sub>, but pCO<sub>2</sub> is > than predicted by expected compensation  
∴ metabolic acidosis and associated respiratory acidosis 2° to hypoventilation eg. severe DKA, severe sepsis, coexisting respiratory disease, arrest, collapse & IC pathology

Her friend confirms that she has been depressed lately and has access to her parents and grandparents medications. She was witnessed to ingest a box of tablets 4 hours ago.

- b. Assuming a sole ingestant, state the most likely toxic agent involved? (1 mark)
- Digoxin toxicity-** by far most likely
  - Possible:**
    - Spironolactone OD**
    - Aspirin OD (hypokalaemia not hyperkalaemia)**
- c. What is your risk assessment for this patient based on these blood results? Provide one (1) justification for your assessment. (2 marks)
- Risk assessment: Potentially life-threatening**
  - Justification: severe hyperkalaemia associated with significant dig toxicity (K > 5.5 100% death without urgent intervention)**
- d. List five (5) medications that you may use to stabilise this patient (not to include medications for rapid sequence induction). Include starting doses for each medication. (5 marks)
- Digibind (5 if HD stable - 10 if HD unstable - 20 ampules if cardiac arrest)**
  - NAHCO<sub>3</sub> 100 ml 8.4% IV bolus**
  - Insulin 10 U & 50 ml 50% Dextrose**
  - Atropine if AV block - 600mcg IV to max 1.8mg until HR > 60**
  - Lignocaine if Ventricular arrhythmias- 100mg IV over 2/60**

## Question 8 (12 marks) 6 minutes

- a. State four (4) key features of the Australasian triage scale. (4 marks)
- **Required because most departments do not have the capacity to treat all patients immediately**
  - **All patients must be triaged on arrival by trained RN/MO**
  - **Triaged to one of 5 categories**
  - **Triage categories based on time to medical review**
  - **Guidelines exist to allow standardisation of triaging between individuals**
  - **Categories are a measurement of urgency**
  - **Triage process continues and retriage may occur at any stage in response to change in illness**
  - **Waiting times should be monitored continuously so that even non urgent should not wait > 2/24**
- b. State four (4) problems associated with the process of triage, in general. (4 marks)
- **Inter-observer variability**
  - **Institution variability**
    - **Smaller EDs allocate a higher priority per same acuity**
  - **Regional variability**
    - **Funding according to ATS 1-3 waiting times only have increased 4-5**
  - **Minimal information often available**
  - **Lack of privacy for assessment**
  - **Time load**
    - **Multiple patients**
    - **Lack of time for assessment**
    - **Documentation requirements**
    - **Delay to treatment**
  - **Conflict between pts and staff perception of urgency**
  - **Lack of evidence to support impact on patient outcomes**
  - **Funding allocation based on triage allocation**
- c. State four (4) problems associated with the process of triage of the poisoned patient. (4 marks)
- **Minimal information may be available from psychiatric pt**
  - **Lack of privacy for assessment/ may be reluctant to divulge details**
  - **Presentation soon after potentially lethal OD may appear reasonably well**
  - **Appropriate triage score is very difficult without knowledge of toxicopharmacology of agent ingested**
  - **Knowledge too detailed for triage RN- need medical input**

This resource is produced for the use of University Hospital, Geelong Emergency staff for preparation for the Emergency Medicine Fellowship written exam. All care has been taken to ensure accurate and up to date content. Please contact me with any suggestions, concerns or questions.

**Dr Tom Reade** (Staff Specialist, University Hospital, Geelong Emergency Department)

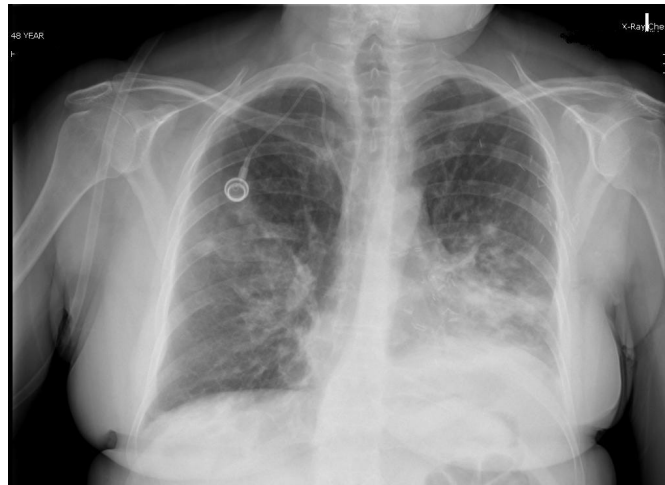
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## Question 9 (18 marks) 9 minutes

A 48 year old female presents to ED with shortness of breath. This xray is taken soon after arrival.



- i) State six (6) abnormal findings on this CXR. (6 marks)
- **LLL opacification**
  - **Decreased volume L lung/ raised L hemidiaphragm**
  - **Asymmetrical breast shadows**
  - **L axillary clips**
  - **L hilar regions clips**
  - **R IJ CVC/ portocath SVC**

The patient has a temperature of 39°C.

- ii) List five (5) factors that would determine your antibiotic choice. (5 marks)
- Patient:
    - **Neutropaenia/ immunocompromise**
    - **Allergies**
  - Disease factors:
    - **Previous cultures and sensitivities**
    - **Local pathogens & resistance patterns**
    - **Community versus hospital acquired** (may infer HA given active CVC and therefore active Rx)
    - **Severity disease e.g. PO vs IV**
  - Hospital factors:
    - **Local protocols and antibiotic guidelines**

The patient requests to have a “Do Not Resuscitate” order.

- iii) State six (6) issues in relation to this request. (6 marks)
- **Ideally should be in conjunction with Rx team**
  - **Pt autonomy**
  - **Prior End of Life Choice documentation**
  - **Pt competence in general, but esp given intercurrent illness ? competency**
  - **Patient perception and understanding**
  - **Take time for consideration**
  - **Confidentiality**
  - **Confirm facts of illness i.e. potentially reversible condition**
  - **Current disease state e.g. mets, long term prognosis, disease burden**
  - **Document request**