

"List" = 1-3 words

"State" = short statement/ phrase/ clause

UNIVERSITY HOSPITAL, GEELONG
FELLOWSHIP WRITTEN EXAMINATION

WEEK 6– TRIAL SHORT ANSWER QUESTIONS Suggested answers

PLEASE LET TOM KNOW OF ANY ERRORS/ OTHER OPTIONS FOR ANSWERS

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Question 1 (20 marks) 9 minutes

A 69 year old female presents to ED with 24 hours of fever. You suspect a community acquired pneumonia.

a. State the four (4) components of the "CORB" scale for assessment of pneumonia severity. (4 marks)

- C = acute confusion
- O = oxygen saturation 90% or less
- R = respiratory rate 30 breaths or more per minute
- B = systolic blood pressure less than 90 mm Hg or diastolic blood pressure 60 mm Hg or less

NB: numbers to remember are 30, 60, 90

b. State the eight (8) components of the "SMART-COP" scale for assessment of pneumonia severity.(8 marks)

- S = systolic BP < 90 mmHg
- M = multilobar involvement
- A = albumin < 35 g/L
- R = respiratory rate \geq 25 bpm
- T = tachycardia \geq 125 bpm
- C = confusion
- O = oxygen sats \leq 93% or PaO₂ \leq 70 mmHg or Pa O₂/FiO₂ \leq 333 (only 1 variable req for 1 mark)
- P = pH < 7.35

c. What is the role of these scoring systems for the Emergency Department patient? State four (4) points in your answer. (4 marks)

- Assess severity of illness in CAP in Adults (1 mark)
- Aid to clinical judgement/ Aid memoire (1 mark)
- Should not be used in isolation to make clinical decisions (1 mark)
- Any of below for 1 mark:
 - intensive respiratory support
 - vasopressor support
- provide information about the patient's risk of mortality
- use the most abnormal results within the first 24 hours of the patient's hospital stay

A chest xray is performed and reveals lobar pneumonia.

d. State one (1) point of significance of the abnormalities for each of the variables listed, for this patient. (4 marks)

Haemoglobin	63	gm/L	115 - 160
WCC	0.60	x 10 ⁹ /L	4 - 11
Platelets	8	x 10 ⁹ /L	150 - 400
Red cell count	1.99	x 10 ¹² /L	3.80 – 5.80
Haematocrit	0.18		0.37 – 0.47
Mean Cell Volume	92	fL	80 - 100
Neutrophils	0.38	x 10 ⁹ /L	2.0 – 7.5

Variable	Severity / significance for this patient
Hb	Severe anaemia- Effect on oxygen carrying capacity Will require BT
WCC	Severe/ profound deficiency- Effect on ability to fight infection
Hct	Adequate Low- will generally parallel Hb (EGDT recommends > 30 in septic shock)
Neut	Severe/ profound/ critical neutropaenia Will effect antibiotic choice Urgent, broad spectrum antibiotics Increased mortality

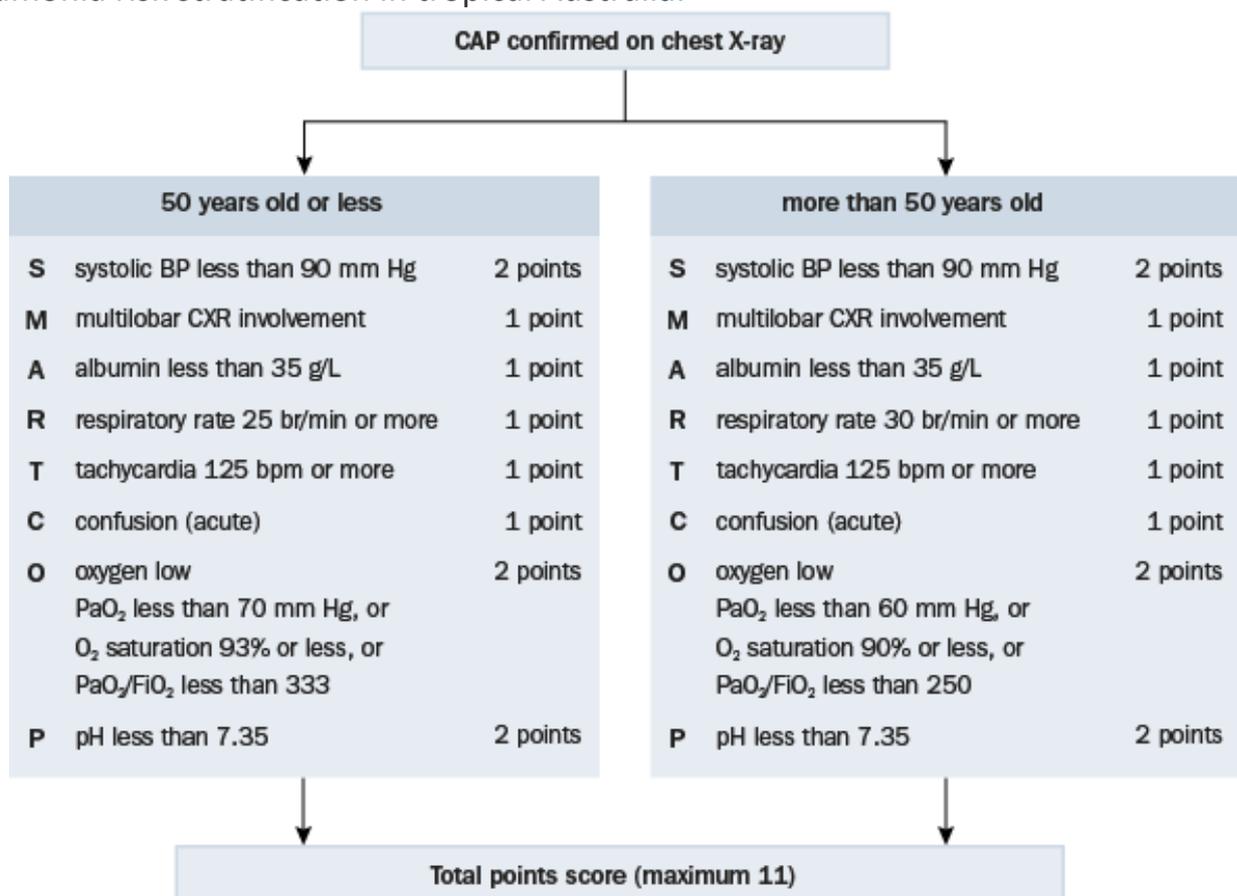
In the ACAPS cohort, the accuracy of CORB for predicting the need for IRVS (two features of CORB present) was:

- sensitivity = 81%
- specificity = 68%
- PPV = 18%
- NPV = 98%
- area under the ROC curve = 0.74

SMART-COP is the preferred tool because it is more accurate and has been studied more extensively.

CORB is a simple alternative that does not require invasive testing.

SMART-COP can be modified for use by primary care physicians, and is appropriate for pneumonia risk stratification in tropical Australia.



Interpretation of SMART-COP score

0 to 2 points low risk of needing IRVS

3 to 4 points moderate risk (1 in 8) of needing IRVS

5 to 6 points high risk (1 in 3) of needing IRVS

7 or more points very high risk (2 in 3) of needing IRVS

Severe CAP = a SMART-COP score of 5 or more points

In the Australian Community-Acquired Pneumonia Study (ACAPS) cohort, the accuracy for predicting patients who required IRVS (a SMART-COP score of 3 or more points) was:

sensitivity = 92%

specificity = 62%

positive predictive value (PPV) = 22%

negative predictive value (NPV) = 99%

area under the receiver operating characteristic (ROC) curve = 0.87.

Question 2 (18 marks) 9 minutes

A 62 year old male is injured in a high speed motor vehicle crash. He is transferred to your regional trauma centre after having been treated at a peripheral hospital.



a. State six (6) abnormal findings shown in this xray. (6 marks)

- **L subcutaneous emphysema- REQUIRED**
- **L hemithorax patchy opacification- REQUIRED**
- **L ICC (apically directed)- REQUIRED**
- **Pneumomediastinum**
- **ETT too high**
- **NGT tube advanced too far**
- **# L 3rd rib**
- **L hemidiaphragm indistinct**
- **Widened mediastinum**
- **Aortic knuckle indistinct**

Following primary and secondary survey, his injuries appear to be restricted to the chest. His blood pressure, taken soon after this xray is performed, is noted to be 70 and pulse rate is 160.

b. List six (6) likely causes for these vital signs. (6 marks)

NB: each explanation must be an explanation for shock- ie. PTX not ok- need Tension PTX

- **Tension PTX**
- **Cardiac contusion**
- **Cardiac tamponade**
- **Tension pneumomediastinum**
- **Massive Haemothorax**
- **Haemorrhagic shock- concealed or external source chest**
- **Aortic transection**
- **Anaphylaxis eg sedatives/ analgesics/ RSI drugs/ Abs**

The patient arrests soon after this xray is performed.

c. What temperature range would you aim for in the ongoing management of this patient? (1 mark)

NB: main teaching point here is that (although an arrest) in trauma, hypothermia is associated with a worse outcome.

Also a "range" is asked for so a single temperature answer is not acceptable

- **36.5-38 °C (values within this range are acceptable)**

d. State five (5) points of justification for your choice of this range. (5 marks)

- **Hypothermia < 32°C has close to 100% mortality in trauma** (absolute values not required to get this mark)
- **Active temperature control and prevention of fevers post arrest supported as neuroprotective**
- **Deleterious effect of hypothermia in trauma:**
 - **Impaired platelet function**
 - **Reduced cardiac contractility**
 - **Shivering increases O₂ consumption**
 - **Colder the pt, the more susceptible to administered hypothermia**

Question 3 (14 marks) 6 minutes

A 38 year old female presents to the Emergency Department with left sided abdominal pain.



- a. State four (4) abnormal findings shown in this image. (4 marks)
- **Gallstone- approx 1cm**
 - **L intrarenal calculi ~ 6 mm**
 - **L perinephric stranding**
 - **L Hydronephrosis suggesting a distal stone (Left ureter dilated proximally to the level of lower pole of kidney)**

NB: No pericholecystic fluid or GB wall thickening

- b. List three (3) further key investigations that you would perform in this case. State one (1) justification for your choice. (6 marks)

Investigation	Justification	
U+E	Impairment in renal function will alter Mx- indication for JJ stent/ lithotripsy	Required
Plain KUB	Opaque stone may be tracked in future with plain KUB (vs requiring CT KUB) Radiolucent stone likely to be urate stone- expulsion may be accelerated by the addition of Ural	Required
Se Uric acid	Potential underlying cause for calculi	
Se C/M/P	Potential underlying cause for calculi	
MSU	Ix possibility of obstructed infected stone	
(RUQ Abdo US) (FBE) (LFT/ Lipase)	Define GS and assess for complications Ix possibility of obstructed infected stone- IV Abs and urgent Urology RV Complications of GS	

- c. State four (4) medical factors that would influence your disposition for this patient. (4 marks)
- **Related to calculi- admit if:**
 - **Size of unseen calculi > 5-6 mm & ∴ unlikely to pass**
 - **Pain requiring ongoing IV analgesia**
 - **Acute renal failure**
 - **Associated urinary sepsis**
 - **Ultrasound suggestion of completely obstructed kidney**
 - **Consider SSU if available and just ongoing pain with small calculi**
 - **If discharged review based on:**
 - **Frequency of pain associated with renal calculi - if frequent → urology**
 - **Symptoms of biliary colic → gen Sx review if frequent episodes/ pt request**

Additional question: Social factors

- **Patient choice**
- **Access to medical care if deteriorates**
- **Social supports**
- **Private health insurance status- if requires admission may request transfer**
- **Time of day**

Question 4 (12 marks) 6 minutes

A 5 year old boy sustains an isolated injury to his lip.



- a. List four (4) factors that would influence your choice of location of closure (in theatre vs in the Emergency Department). (4 marks)
- **Parent preference**
 - **Dept factors:** availability resus bay/ staff
 - **Time of day**
 - **Pt factors:**
 - **Presence of thru + thru injury**
 - **fasting status**
 - **neurodevelopment problems**
 - **high anaesthetic risk**
 - **Availability of plastics services at institution and theatre**

The wound is to be repaired in the ED.

- b. State your choice of local anaesthesia. (1 mark)
- **Topical amethocaine/lignocaine/adrenaline / TAC- or topical equivalent (EMLA not for open wounds)**
- c. State two (2) reasons to justify your choice of local anaesthesia. (2 marks)
- **Less distortion of tissue/skin**
 - **Able to be applied prior to GA to allow more rapid suture**
 - **adrenaline will reduce blood supplying highly vascular area aiding in optimal surgical field**
- d. State your choice of suture material. (1 mark)
- **Vicryl/ Vicryl rapide 5/0 or 6/0 (multi-filament braided)**
- e. State two (2) reasons to justify choice of suture material. (2 marks)
- **equivalent cosmetic results as for non absorbable suture**
 - **Absorbable- doesn't require physical removal**
- f. State your choice of sedation. (1 mark)
- NB: Variety of options reasonable (not N₂O₂)**
- **IM Ketamine**
 - **IV ketamine**
 - **IV fentanyl/midaz**
- g. State two (2) reasons to justify your choice of sedation. (2 marks)
- **Pt immobility important**
 - **Airway reflexes preserved therefore less need for advanced airway management**
 - **Negates need for distressing and time consuming process of IV**
 - **Equal safety profile to IV**
 - **Short post observation period required**
 - **Low ADR profile**

Current Concepts

EVALUATION AND MANAGEMENT OF TRAUMATIC LACERATIONS

ADAM J. SINGER, M.D., JUDY E. HOLLANDER, M.D., AND JAMES V. QUINN, M.D.

EACH year in the United States, more than 12 million traumatic wounds are treated in emergency departments. When non-emergency or elective incisions are included, approximately 90 million skin-suturing procedures are performed each year. Traumatic lacerations occur most often in young men, typically on the face, scalp, and hands. More than 50 percent of all lacerations are caused by blunt injury that produces shear forces, and most others by sharp objects, such as metal, glass, and wood. Only a minority of wounds are caused by mammalian or nonmammalian bites.

The ultimate goals of wound management are to avoid infection and achieve a functional and cosmetically acceptable scar. Although death from traumatic wounds is rare, their improper management may lead to wound infection as well as unsightly and dysfunctional scars. The identification of host and environmental factors that increase the likelihood of a poor outcome, as well as the appropriate preparation and timely, meticulous closure of wounds, will help achieve these goals.

EVALUATION OF PATIENTS

Proper wound management begins with a thorough history of the patient. Particular attention should be paid to the factors that can affect wound healing adversely. Host factors such as extreme older and younger age, diabetes mellitus, chronic renal failure, obesity, malnutrition, and the use of immunosuppressive medications, such as corticosteroids and chemotherapeutic agents, all increase the risk of infection and can impair wound healing. Healing may also be impaired in inherited and acquired connective-tissue disorders, such as the Ehlers-Danlos syndrome, Marfan's syndrome, osteogenesis imper-

fecta, and protein and vitamin C deficiencies. The tendency of the patient to form keloids should be ascertained, because this may result in a poor scar. Keloids extend beyond the boundaries of the original injury and are largely determined by genetic or racial predisposition. Conversely, hypertrophic scars, which remain within the boundaries of the original injury, usually result from a tissue deficiency or from the fact that the wounds are not parallel to the lines of minimal skin tension.

Anatomical variation in regional blood flow and skin flora also play a part in determining the likelihood of infection. Wounds located on the highly vascularized face or scalp are less likely to be infected than wounds in less vascularized areas. The location of the wound also contributes to the cosmetic appearance of the scar by affecting static and dynamic skin tensions. Thus, lacerations over joints, which are subject to large dynamic skin tensions, are prone to the development of wider scars, as are wounds that run perpendicular to the lines of minimal skin tension.

Although most wounds are caused by shear forces, compressive forces cause more devitalization of tissue, and therefore crush wounds are more susceptible to infection. Finally, whether the patient is allergic to local anesthetics, latex, or antibiotics should be determined. All patients should have their tetanus status assessed and should be immunized in accordance with the recommendations of the Centers for Disease Control and Prevention (Table 1).

EXAMINATION OF THE WOUND

Adherence to sterile techniques is recommended, although studies supporting this practice are lacking. The wound should be examined meticulously in all cases. Proper lighting and control of bleeding are required to identify foreign bodies and any injury to vital structures (such as nerves and tendons). Wounds over joints and tendons should be put through a full range of motion, since their position during the injury may differ from their position during the examination. A detailed neurovascular examination should be performed and documented before anesthesia and closure. Perfusion should be assessed by palpation of pulses and capillary refill distal to the injury. Motor and sensory evaluation should be based on a thorough understanding of the regional anatomy and should include a functional assessment of all muscles traversing the injured area. Two-point discrimination (the ability to discriminate one from two stimuli) should be assessed in injuries involving the hands or fingers.

A common mistake is the failure to identify and recognize the need for surgical exploration in the operating room. Patients with proved or suspected involvement of joints, nerves, or flexor tendons may be better served by repair in the operating room.

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HomeFor Health Professionals/Starship Clinical Guidelines/Lacerations and Wound Closure



Starship Clinical Guidelines developed by clinicians at Starship Children's Health

Lacerations and Wound Closure

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• Assessment
• Wound Irrigation
• Local Anaesthesia
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• Management of Specific Types of Wound
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• Dressings and Splints
• Other Treatment
• Information for Families

Related Documents

- Local anaesthetic for minor procedures
Tetanus Prophylaxis

Introduction

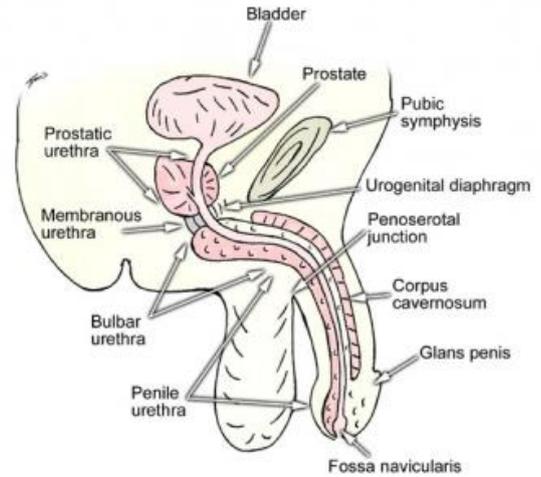
- Minor lacerations are extremely common in childhood.
• There are a variety of management options which need to balance distress to the child with functional and cosmetic results.
• Many wounds can be managed without suturing.
• Best results are achieved in children who are cooperative and not frightened.
• It is important to maintain a child friendly environment. Involve caregivers, play specialists and nursing staff.
• Local anaesthesia and/or sedation may be necessary for the management of some lacerations in the ED.
• If adequate management cannot be achieved in the ED, then referral to an inpatient service for general anaesthesia may be required.

Assessment

Consider the following:

Question 5 (12 marks) 6 minutes

A 24 year old man was after a fall astride, from his skateboard.



- State the diagnosis suggested by this image. (1 marks)
 - Bulbous urethral disruption (also stretching of bulbous urethra)**
- List three (3) examination features that may have predicted this injury. (3 marks)
 - Blood at ext meatus**
 - Scrotal/ perineal bruising**
 - High riding prostate (2% of cases!)**

- State the injury associated with each grade for this injury. (5 marks)

Grade 1: Contusion

Grade 2: Stretch injury

Grade 3: Partial disruption

Grade 4: Complete disruption < 2cm separation

Grade 5: Complete disruption > 2cm separation

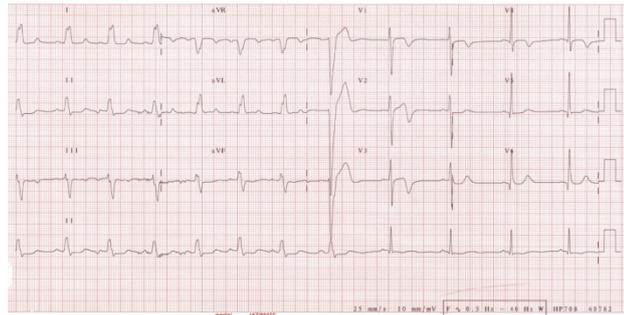
- State three (3) examination findings that are able to be used to exclude urethral injury in the setting of a penetrating mechanism of injury. (3 marks)
 - No blood at ext meatus**
 - Normal spontaneous micturition**
 - No RBC on urinalysis**

Normal retrograde urethrogram. Pericatheter retrograde urethrogram is negative for urethral trauma and shows continuous filling of contrast material through the extent of the urethra and into the bladder without extravasation.	Type I urethral injury with minimal stretching and slight luminal irregularity of the posterior urethra. No extravasation of contrast material is present.	Less common type II urethral disruption. Extravasation of contrast material (solid arrow) from the posterior urethra is seen superior to an intact urogenital diaphragm (dashed arrow).	Type III urethral tear at the urogenital diaphragm (solid arrow) and a type IV urethral disruption at the bladder neck (dashed arrow).	Type V urethral injury with extravasation of contrast material from the distal bulbous urethra

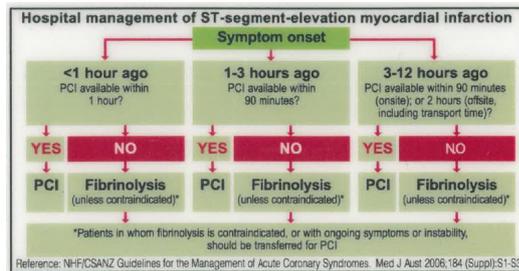
NB: Injury grading for abdominal organs is generally graded 1-5- review pancreatic/ bowel/ renal/ bladder/ ureteric grading systems (these will not be covered in this program, but are worth reviewing)

Question 6 (12 marks) 6 minutes

A 40 year old male self presents to your Emergency Department which is located in a regional centre, with no cardiology facilities on site. The nearest Cardiology service is 90 minutes away by road. He has a history of chest pain for the last 30 minutes. His observations are: BP 140/ 60mmHg RR 18bpm Oxygen saturation 98% Room air His ECG taken on arrival (with pain) is shown.



- a. State two (2) abnormalities shown on this ECG. (2 marks)
- **Intermittent LBBB**
 - **Biphasic T waves V2-3, inverted V4**
 - **(LAD)**
- b. What is the significance of these findings? State two (2) points of significance. (2 marks)
- **New/ intermittent LBBB in the setting of pain → indication for urgency reperfusion Rx**
 - **High mortality if not Rx in this way**
 - **Wellens type pattern suggestive of proximal LAD imminent/intermittent occlusion**
- c. Assuming no contraindications and no further complications of his condition, list four (4) medications that you would use for this patient. Provide doses. (4 marks)
- NB: as the pt has presented < 1/24 & PCI is not available for 90 min he should be thrombolysed*



Medication	Dose	
Aspirin	300mg	Required
Clopidogrel Or Prasugrel Or Ticagrelor	300mg 90 180mg	Required
Alteplase Or Reteplase Or Tenecteplase	15mg IV bolus then IV infusion 10mg then 10mg 30 min later Wt based dosage	Required
Enoxaparin Or Heparin	30mg IV then 30 min later 1 mg/kg sc to 100 mg 60 Units/kg up to 4000 IU then IV infusion	Required
Morphine		
GTN		

- Clinical trials have indicated that there is a small benefit of PCI over fibrinolytic therapy. Patient outcomes are adversely affected by delays in reperfusion and therefore fibrinolysis should be rapidly initiated unless there is prompt access to PCI.
- The benefit of PCI over fibrinolysis is greater as the time between symptom onset and presentation increases.
- Australian guideline recommend that PCI should be performed within:
 - 60 minutes for patients presenting within the first hour of symptom onset
 - 90 minutes for patients presenting between 1 and 3 hours after symptom onset
 - 90 to 120 minutes for patients presenting between 3 and 12 hours.
- If these targets cannot be reached, fibrinolysis should be given within 30 minutes of arrival in hospital.
- In patients presenting longer than 12 hours after the onset of symptoms, myocardial infarction may already be complete, but reperfusion should be considered if there are signs of:
 - continuing ischaemia (persistent pain)
 - viable myocardium (preservation of R waves in infarct-related ECG leads)
 - major complications (eg cardiogenic shock).

Question 7 (12 marks) 6 minutes

A 52 year old male presents to ED with recent onset of non traumatic, macroscopic haematuria.

a. List five (5) likely differential diagnoses for this presentation. (5 marks)

NB: NON TRAUMATIC specified in stem

- **Haemorrhagic cystitis**
- **Cancer:**
 - **RCC**
 - **TCC**
 - **Prostate Ca**
- **Renal calculi**
- **PCKD- haemorrhage into a cyst**
- **Post operative eg post TURP**
- **Glomerulonephritis**
- **Idiopathic (Throw it in if you got nothing else!)**

b. Other than true haematuria, list four (4) causes of dark brown urine. (4 marks)

- **Food- Fava beans, Rhubarb, Aloe, food colour**
- **Medications- antimalarial, senna, LDopa, Fe supplements**
- **UTI**
- **Rhabdomyolysis**
- **Extreme exercise- myoglobinuria**

c. List three (3) causes of red cell urinary casts. (3 marks)

- **Acute GN**
- **SLE**
- **Endocarditis**

Question 8 (11 marks) 6 minutes

A 24 year old female presents to ED with 2 weeks of painful isolated lower leg lesions.



- a. What is the most likely diagnosis of this rash? (1 mark)
- **Erythema nodosum**
- b. List six (6) likely causes for this rash. (6 marks)
- **OCP**
 - **Streptococcal**
 - **Mycoplasma symptoms**
 - **Sulphonamides**
 - **IBD**
 - **Sarcoidosis**
 - **Lymphoma**
 - **Pregnancy**
 - **TB**
 - **Salmonella**
 - **Campylobacter**
 - **Fungal infections**
 - **Idiopathic (~ 50%)**
- c. List four (4) investigations that you would perform if the cause is not evident on clinical assessment. (4 marks)
- NB: Biopsy not required*
- **Throat culture/ ASOT/ antiDNase B**
 - **Stool m,c+s (salmonella, campylobacter)**
 - **TB- mantoux or quantaferon gold**
 - **CXR- hilar LN can occur in EN or suggestive of sarcoidosis**
 - **BHCG**

Question 9 (11 marks) 6 minutes

An 83 year old male presents to Emergency Department with abdominal pain.



- a. State two abnormalities shown in this Xray. (2 marks)
- **Large sigmoid volvulus:**
 - **“Coffee bean” sign**
 - **marked dilatation of Large bowel**
 - **lacking in haustral markings with apex RUQ and pointing to LLQ**
 - **No Gas in rectum**
- b. List four (4) risk factors for the development of this condition. (4 marks)
- **Chronic constipation**
 - **Laxative overuse**
 - **Institutionalised immobile**
 - **Previous abdominal surgery**
- c. List three (3) potential complications of this condition. (3 marks)
- **Ischaemic gut**
 - **Perforation**
 - **Death (20-25%)**
- d. List the two corrective treatments required for this condition. (2 marks)
- **Rectal tube decompression**
 - **Surgical intervention/ resection is usually required**