"List" = 1-3 words
"State"= short statement/ phrase/ clause

UNIVERSITY HOSPITAL, GEELONG
FELLOWSHIP WRITTEN EXAMINATION
WEEK 8– TRIAL SHORT ANSWER QUESTIONS 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 (22 marks) 9 minutes

a. Complete the table below, listing the clinical and biochemical features of the phases of acute paracetamol poisoning.

NB: Don't get hung up on marking structure- learn the table.

Phase of poisoning	Time frame (1 mark for each)	Clinical features	Biochemical features
Phase 1	**< 24 hrs**	• **asymptomatic** • **nausea/vomiting** • **anorexia** • **malaise**	• **Paracetamol level raised** • **LFT normal (↑ AST in severe poisoning)** • **INR normal** (3 marks)
Phase 2	**1-3 days**	• **RUQ tenderness** • **nausea/vomiting** (2 marks)	• **Transaminases to 15,000- 20,000** (peak 48-72 hrs) • **INR ↑** • **Bilirubin ↑** • **U+E +/- ↑** • **Paracetamol level normalises** (3 marks)
Phase 3	**3-4 days**	• **Jaundice** • **↓ GCS/ encephalopathy** • **MSOF** • **+/- death** (2 marks)	• **INR↑** • **Bilirubin ↑** • **Metabolic acidosis/ Lactate ↑** • **U+E ↑** (3 marks)
Phase 4	**4 days - 2 weeks**	• **Death or** • **Recovery** (1 mark)	**If survival, normalisation of:** • **INR** • **Transaminases** • **Bilirubin** • **acidosis** • **U+E** (3 marks)

Question 2 (22 marks) 9 minutes
NB: See MJA Guidelines on following page

a. List five (5) conditions that must be met to allow the paracetamol nomogram to be utilised. (5 marks)
- **Time of ingestion known**
- **Time between 4-24 hours post ingestion**
- **Single ingestion**
- **Standard release paracetamol**
- **> 16 years of age**

b. State the accepted threshold dose for paracetamol induced hepatic injury. (1 mark)
- **> 200 mg/kg or >10g (which ever is less)**

c. State the accepted biochemical definition for paracetamol induced hepatic injury. (1 mark)
- **ALT or AST > 1000**

A 26 year old presents following a stated paracetamol overdose. Provide your investigative and specific treatment strategy for each of the circumstances listed below. Utilise either a list or flow chart in your answer.

d. 20 standard release tablets taken 5 hours ago, 10 taken 4 hours ago and 10 taken 2 hours ago. (4 marks)
- **Time anchoring strategy- use first time intake- "worst case strategy" (assume entire dose was taken at 5 hours)**
- **Measure paracetamol level**
- **If below nomogram treatment line → no further Ix or Rx**
- **If above nomogram treatment line → complete NAC 20 hours**

NB: AC not indicated

Ie. Rx as 1-8 hour scenario, assume ALL paracetamol taken at earliest time (with staggered dose anchor the time to the first ingestion). Later doses will lead to overestimation of risk as paracetamol rapidly absorbed. (5 marks)

e. 30 slow release tablets taken 3 hours ago. (6 marks)
- **Give charcoal if awake and cooperative** (up to 4/24 in SR)
- **Start NAC**
- **Measure paracetamol level at 4/24 & 8/24**
- **If both levels below nomogram treatment line & decreasing → no further Ix or Rx**
- **If either above nomogram treatment line → complete NAC 20 hours**
- **If NAC continued →@ 18/24 repeat ALT & Paracetamol → continue NAC if ALT> 50 or Paracetamol > 66µmol/L**

NB: the kinetics of SR preparations have not been defined. Studies show a potential for slow absorption (!) and thus a delayed peak.
If <200mg/kg use paracetamol levels at least at 4/24 and repeat 4/24 later.

f. 200 standard release tablets taken 4 hours ago. (5 marks)
- **Measure paracetamol level immediately**
- **If below nomogram treatment line → no further Ix or Rx**
- **If above nomogram treatment line → complete double dose NAC 20 hours**
- **If NAC continued →@ 18/24 repeat ALT & Paracetamol → continue NAC if ALT> 50 or Paracetamol > 66µmol/L**
- **Consult toxicologist**

Additional Q:

30 standard release tablets taken an unknown time ago. (5 marks)
- **Commence NAC (Rx as > 8/24 hr strategy)**
- **Measure paracetamol level & ALT immediately**
- **If paracetamol undetectable and ALT < 50 U/L - cease NAC**
- **If paracetamol detectable or ALT > 50 U/L – continue NAC for 20 hours**
  Recheck ALT and end of NAC and continue NAC until ALT < 50 U/L

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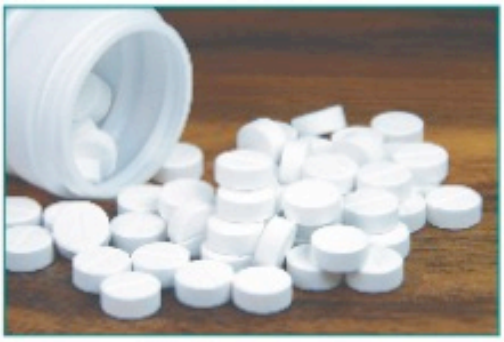
Summary statement: new guidelines for the management of paracetamol poisoning in Australia and New Zealand

A large proportion of accidental paediatric exposures and deliberate self-poisoning incidents involve paracetamol; it is the leading pharmaceutical agent responsible for calls to Poisons Information Centres in Australia and New Zealand. Management of paracetamol poisoning has altered since the previous guidelines were published in 2008, so that they do not reflect current practice by clinical toxicologists. The key changes from the previous guidelines concern the indications for administration of activated charcoal; the management of patients taking large or massive overdoses; modified-release and supratherapeutic ingestions; and paediatric liquid paracetamol ingestion.



Main recommendations

The management of patients with paracetamol overdose is usually straightforward. Acute deliberate self-poisoning, accidental paediatric exposure and inadvertent repeated supratherapeutic ingestions all require specific approaches to risk assessment and management.

Each initially involves a risk assessment (Box 1). The key factors to consider in paracetamol poisoning are the ingested dose and serum paracetamol concentration (early), or clinical and laboratory features suggesting liver damage (late). Serum paracetamol concentration should be used to assess the need for acetylcysteine administration in all patients presenting with deliberate self-poisoning with paracetamol, regardless of the stated dose. The management of acute paracetamol exposure with known time of ingestion is summarised in a management flow chart (Box 2) and the management of supratherapeutic ingestion is shown in Box 3.

It is important to note that the paracetamol treatment nomogram has not changed, and that the acetylcysteine regimen remains the same as in the previous guidelines.

Changes in management

Gastric decontamination

It was previously recommended that activated charcoal be administered within 1 hour of paracetamol ingestion. The current guideline advises that 50 g activated charcoal should be administered to a cooperative, awake adult within 2 hours of ingestion of a toxic dose of immediate-release paracetamol, and within 4 hours of modified-release paracetamol ingestion (Box 2).

For immediate-release paracetamol overdoses of greater than 30 g, activated charcoal should be administered up to 4 hours after ingestion. For massive modified-release paracetamol overdoses, absorption may continue until 24 hours after ingestion, and patients may still benefit from activated charcoal treatment after more than 4 hours.

Modified-release paracetamol

As per the previous guideline, acetylcysteine treatment should be started immediately if more than 200 mg/kg or 10 g (whichever is lower) has been ingested. Two assessments of serum paracetamol concentration 4 hours apart are required, the first at least 4 hours after ingestion.

The recommendation about when to discontinue acetylcysteine infusion has changed. Serial paracetamol concentrations, measured 4 hours apart, must be below the nomogram line and decreasing. Further, near the completion of acetylcysteine infusion (ie, 2 hours before completion of infusion), serum alanine aminotransferase (ALT) and paracetamol concentrations should be measured. Acetylcysteine infusion should be continued if the ALT level is increasing (greater than 50 U/L) or the paracetamol concentration is greater than 10 mg/L (66 µmol/L).

Large or massive paracetamol overdoses

Patients who ingest large or massive doses of paracetamol were not discussed in previous versions of the guidelines. Most patients ingest less than 30 g of paracetamol, with only a small percentage of overdoses having a paracetamol concentration greater than double the nomogram line. Those who ingest greater doses may have decreased paracetamol clearance and increased risk of hepatotoxicity despite treatment, and may benefit from modifying the standard paracetamol management. Patients considered at high risk of hepatotoxicity are those with high initial paracetamol concentrations.

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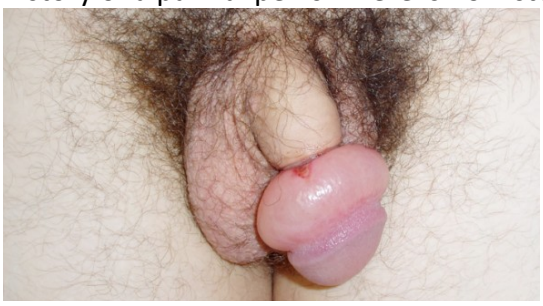
Question 3 (13 marks) 6 minutes

A 26 year old man presents with a history of a painful penis. There is no history of trauma.



a. State the diagnosis. (1 mark)
   - **Paraphimosis**

b. List the steps utilised in the Dundee-Perth technique of specific treatment for this problem. (4 marks)
   - **Dorsal penile block- bupivacaine 0.25% 2mg/kg**
   - **Creation of multiple puncture holes in the oedematous foreskin with sterile needle**
   - **Compression of foreskin releases enables release of oedema fluid**
   - **Allows reduction**

c. State five (5) steps for an alternative technique (other than the Dundee-Perth technique) in the specific treatment of this problem (after appropriate analgesia is provided). (5 marks)
   - **Hold penis with gauze**
   - **Grip proximal to glans**
   - **Gentle reassure to swollen area glans**
   - **Maintain firm distal traction on foreskin**
   - **Sustained traction required - several minutes**
   - **If fails, consult surgical registrar immediately**

The patient represents 1 month later with balanitis.

d. List three (3) steps in the management of this problem. (3 marks)
   - **Topical 1% lignocaine**
   - **Topical 1% HC**
   - **+/- Topical anti fungal cream** *(Candida infection may be responsible in some infants. It is usually associated with more generalised napkin candidiasis and the presence of satellite lesions. Topical anti yeast creams (eg nystatin, clotrimazole, miconazole) will be helpful*.
   - **Warm baths with retraction of foreskin if possible**
   - **If recurrent- referral to urologist for consideration of circumcision**

Additional Q:

List two analgesic medications that you would utilise for this patient. (2 marks)
- **IV narcotics +/- midazolam** *(Nitrous a lesser option)*
- **Topical lignocaine gel- liberally applied to entire foreskin and glans**
- *(Penile block- not usually required unless Dundee- Perth technique)*

NB: Not direct injection of LA as this ↑ swelling

Question 4 (13 marks) 6 minutes

a. List the four (4) elements that are required to allow a request of disclosure of medical information by a third party. (4 marks)

Should be in writing
Should specify the part of the record that is to be disclosed
Should be signed by the patient (ie consent given)
Signature should be witnessed (to ensure not signed under duress
(Patient consent does not need to be provided if a statuary obligation to disclose exists)

b. List four (4) circumstances under which medical information may be disclosed to a third party without a patients' consent. (4 marks)

- Statuary obligation to disclose exists:
  - **Notifiable disease**
  - **Venereal disease**
  - **Registration of birth or death**
  - **Coroners cases**
  - **NAI in children**
  - **Firearms legislation**
    - Duty to inform officer in charge of their jurisdiction if they believe a person has an illness, disability or deficiency that is likely to make a possession of a firearm by the person unsafe
- **Impaired health provider**
- **Life threatening assault**
- **Disclosure in court**
- **Significant public risk**
- **(Domestic violence in NT)**

c. State what is meant by the term "competence". (1 mark)

- **Legal process distinguishing patients who are legally entitled to consent or refuse treatment/engage in decision making, from those who are not**
- **Determination of mental capacity that legally entitles to consent or refuse Rx**
- **A legal term that can be defined as being "duly qualified: having sufficient, capacity, ability or authority"**

d. List the four (4) elements that are required to establish competency. (4 marks)

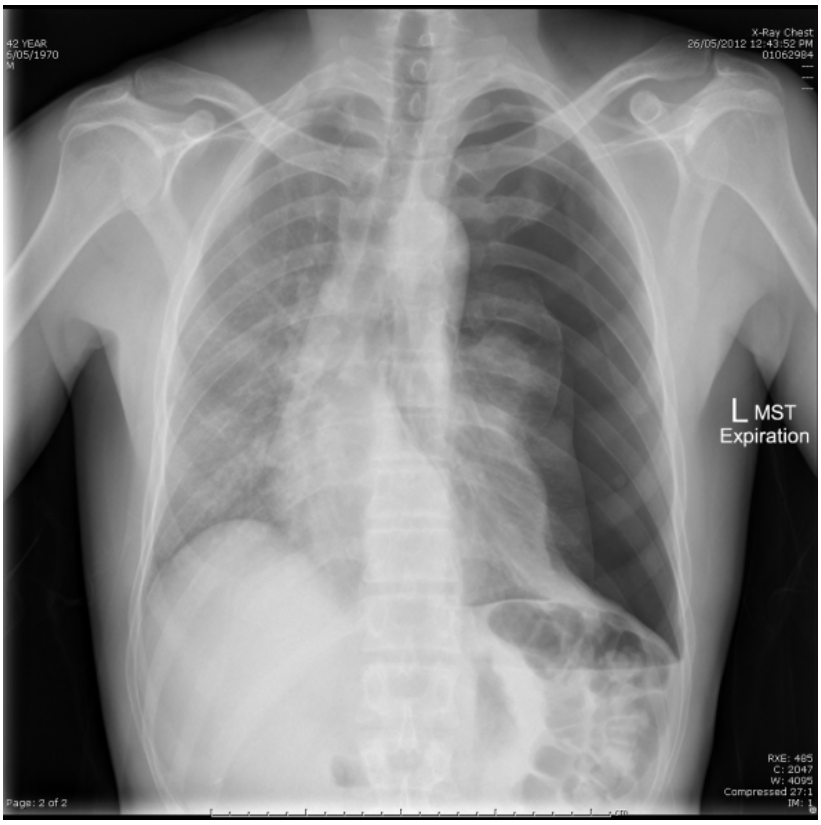
- **maintain & communicate <u>choice</u>**
- **<u>understand</u> relevant information**
- **<u>appreciate</u> the situation and its consequences**
- **<u>manipulate</u> the information in a rational way**

<u>Background:</u>

- ***Capacity*** is a functional term that refers to the mental or cognitive ability to understand the nature and effects of one's acts
- Determination of ***mental capacity*** is a legal process that distinguishes those who are legally entitled to consent/ refuse treatment from those who are not
- ***Competence*** is a legal term that can be defined as being "duly qualified: having sufficient capacity, ability or authority"
  - assessments of competency can only ultimately be determined by the Court
  - in practice health professionals are required to perform a functional test of competence to examine the ability of the particular patient to consent to the specific treatment being offered
- Capacity and competence are often used interchangeably
- Patient features that are required to establish that a patient is competent to give consent.
- **Age > 18 (14-17 variable)**
- **Cognitive capacity to understand:**
  - **The medical condition**
  - **The options for treatment**
  - **What is recommended**
  - **The potential adverse outcomes**
  - **The likelihood of these**
  - **(usually MMSE > 20)**
- Patient able to:
  - **Accept information as reality**
  - **Retain information provided**
  - **Paraphrase information/ Explain the possible consequences**
  - **Indicate the major factors in their decision and the importance attached to them**

Question 5 (11 marks) 6 minutes

A previously well 23 year old is brought to your ED acutely short of breath after developing left sided chest pain.



a. State five (5) abnormalities shown on this xray. (5 marks)
   - **L complete PTX**
   - **L meniscal sign- haemothorax**
   - **5mm L lower zone coin lesion (likely external chest wall ? Nipple/ chest wall lesion)**
   - **Features of radiological tension:**
     - **Mediastinum shift to R**
     - **Depressed L hemidiaphragm in expiration**
     - *(3rd feature of radiological tension is rib splaying- not clearly seen here)*

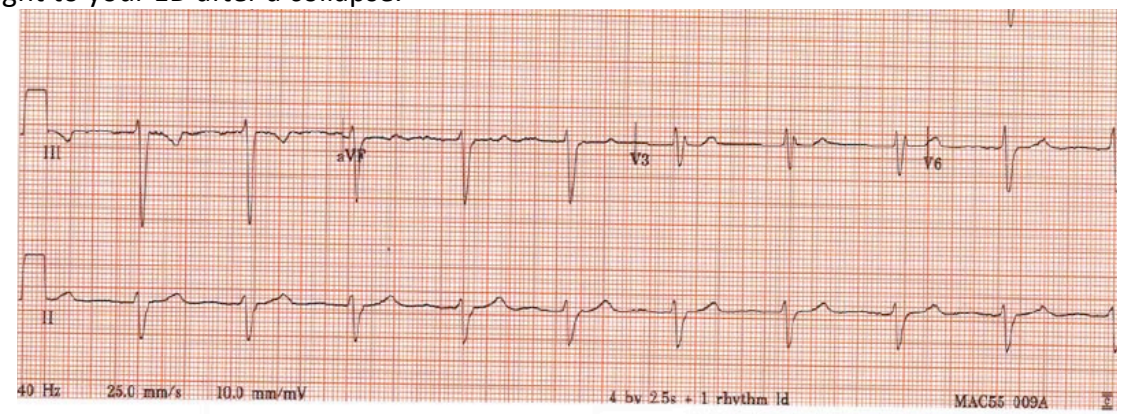
b. List three (3) key steps in your treatment of this patient. State one (1) justification for each step. (6 marks)

	Treatment step	Justification
1.	**Needle decompression**	**Indicated urgently as signs of radiological tension** **Life threatening without urgent decompression**
2.	**Formal ICC**	**Required following initial decompression as risk of subsequent tension remains if needle decompression only**
	UWSD	**Monitor for:** ○ **ongoing leak with bubbles** ○ **correct placement with swing** ○

NB: Suction use is somewhat controversial- general recommendation is not until > 48 hrs leak
Oxygen Ok but not as good as above

Question 6 (12 marks) 6 minutes

A 72 year old woman is brought to your ED after a collapse.



a. State three (3) abnormalities shown on this ECG. (3 marks)
   - **LAD**
   - **RBBB**
   - **1 degree HB**

b. State two (2) significant implications of these findings. (2 marks)
   - **Trifascicular block - 1 mark**
   - **Likely bradycardia/ CHB as cause of collapse**

The patient has not sustained an obvious injury on primary and secondary survey.

c. List four (4) historical features are of key importance to obtain early in this patient? (4 marks)
   - **Onset with associated symptoms of palpitations/ chest pain/ warning**
   - **Prior collapses**
   - **Prior cardiology review- discussions re PPM/ refusal**
   - **-ve chronotropic drugs** *(BB, CCB, digoxin)*
   - **Anticoagulants**
   - **And any of:**
   - **Hx to suggests an occult injury- headache/ headstrike/ abdo pain**
   - **Limitations of care**
   - **NOK/ social arrangements** *(not as good as other options- not as relevant initially)*

d. Based on this presentation and ECG, state your disposition for this patient (assuming no other influential history). (2 marks)
   - **Monitored bed**
   - **Cardiology**

e. List one (1) justification for this decision. (1 mark)
   - **For cardiac investigations and insertion PPM if no readily reversible cause is found**

Question 7 (11 marks) 6 minutes

A 34 year old woman presents to your ED with a history of abdominal pain, vomiting and diarrhoea for 2 weeks. Examination reveals dehydration and generalised abdominal tenderness.

		Reference Range
FIO_2	0.21	
pH	7.21	(7.35-7.41)
pCO_2	31 mm/Hg	(33-47)
pO_2	83 mm/Hg	(85-110)
Bicarb	12 mmol/L	(21-27)
Base excess	-14	(-3 - +3)
Na^+	135 mmol/L	(134-146)
K^+	2.8 mmol/L	(3.5-4.5)
Cl^-	111 mmol/L	(95-105)
Creat	0.57 mmol/L	(0.04 – 0.10)
Urea	84 mmol/L	(3-8)
Gluc	7.2 mmol/L	(3.5-5.5)

a. Provide three (3) calculations to help you to interpret these results. (3 marks)

Derived value 1:
- **Anion gap 12**

Derived value 2:
- **Delta gap 0**

Derived value 3:
- **Expected PC02 26**

Derived value 4:
- **Expected K+ 6.0**

b. Using the scenario and the derived values, state the primary acid/base abnormality/s. (1 mark)
- **Moderate NAGMA**

c. Using the scenario and the derived values, state the secondary acid/base abnormality/s. (1 mark)
- **Mild Respiratory acidosis**

State a unifying explanation for these results. She is provided with analgesic and antiemetic. (3 marks)
- **GI loss with vomiting dehydration leading to pre-renal renal failure**
- **Possible aspiration leading to low O2 sats and respiratory acidosis**
- **tiring leading to respiratory acidosis**
- **respiratory muscle paralysis secondary to marked ↓K^+**

She is provided with analgesic and antiemetic.

a. List three (3) key specific treatment or supportive care for this condition. (3 marks)
- **Iv fluids-** 2L bolus NS if evidence shock, then normal saline titrated to MAP > 65mmHg, HR < 100, CRT < 2 secs, normal mentation
- **K^+ replacement-** 10mmol/30-60mins with 2 hourly VBG to guide ongoing need
- **O2**
- **Renal replacement therapy**

Question 8 (13 marks) 6 minutes

A patient presents with atrial fibrillation.

a. List six (6) patient factors that would lead you to choose a rhythm control strategy. (6 marks)
   - **Clear onset within 48 hours of lone AF**
   - **AF secondary to treated/corrected precipitant**
   - **HD unstable**
   - **Associated cardiac failure**
   - **Already therapeutically anticoagulated**
   - **Significantly symptomatic- i.e. unacceptable arrhythmia related symptoms**
   - **Young < 65yo**
   - **Comorbidities**
   - **Patient preference**
   - **Unlikely to revert spontaneously (previous failure requiring eventual DCR)**

Rate-control strategy Preferred initial option for:	Rhythm-control strategy Preferred initial option for:
• older people (>65)	• younger people (<65)
• people with coronary artery disease	• people with unacceptable arrhythmia-related symptoms
• people with contraindications to anti-arrhythmic drugs	• people presenting for the first time with lone AF
• those unsuitable for cardioversion	• AF secondary to a treated/corrected precipitant
• people without congestive heart failure	• people with congestive heart failure

You select electrical cardioversion as the treatment of choice.

b. List your initial defibrillator settings. (3 marks)
   - **100-150J**
   - **DC**
   - **Synchronised**

   NB: Higher energy levels recommended to minimise total energy delivery (cf multiple small escalating energy levels)

c. State four (4) key pieces of information that you would provide to the patient prior to electrical cardioversion. (4 marks)
   - **Explain procedure**
     - **Sedation – drugs used and risks eg aspiration, allergy**
     - **Shock and risks – failure (~ 10%), shock into malignant rhythm**
   - **Warn of possible recurrence – early or late**
   - **Alternatives to treatment**
     - **Spontaneous reversion**
     - **Chemical reversion**
     - **Elective reversion as outpatient**
     - **Rate control approach**
   - **Recovery time post reversion**
     - **Home post period of observation**
     - **will be discharged on anti platelet or anticoagulant depending on CHADS2VA**
     - **Cardiology follow up for ongoing Mx and Ix e.g. ECHO**

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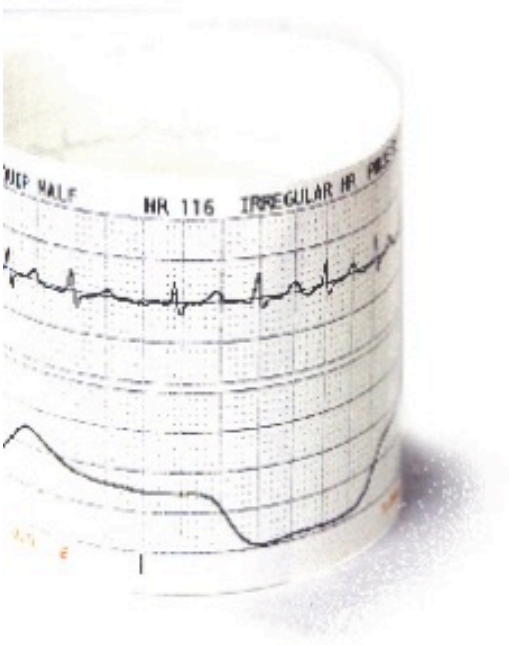

Australian Government
National Health and Medical Research Council

RATE OR RHYTHM CONTROL FOR RECURRENT ATRIAL FIBRILLATION

A summary of best available evidence and information on current clinical practice

Emergency Care
Evidence in Practice Series 2008

National Institute of Clinical Studies
Emergency Care
Community of Practice

About this brochure

This brochure was developed for clinicians by the NHMRC's National Institute of Clinical Studies Emergency Care Community of Practice. It aims to highlight best available evidence to inform best practice and identify potential opportunities to improve the quality of care. The content of this brochure is based on published information available at March 2007. For information on how we developed the content of this brochure, see **www.nhmrc.gov.au/nics** and follow the links to Emergency Care Community of Practice.

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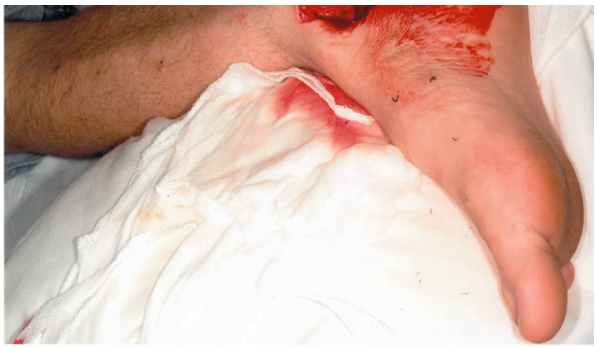
Question 9 (14 marks) 6 minutes

A 25 year old male presents to ED with an injury to his right ankle after a fall from a ladder. He has no other injuries. He has not received any prehospital analgesia. He had a pie and a Big M 30 minutes ago.



a. List five (5) key management steps for this patient in the first 20 minutes of your care. State one (1) detail for each step. (10 marks)

NB: Not fasted

	Management Step	Details
1.	**Analgesia**	**IN fentanyl 100mcg or IM Ketamine if no IV initially** **IV Morphine- 5mg immediately then titrate to pain/BP/RR/GCS**
2.	**Sedation**	**IV midazolam 2 mg titrated aliquots**
3.	**Reduction**	**Longitudinal traction, varus force** **Xray following**
4.	**Splint**	**Back slab + U slab** **Non adherent dressing over wound**
5.	**Antibiotics + ADT**	**Cephazolin 1g IV** **ADT 0.5ml IM**
	Refer ortho **(Not as essential in first 20 min)**	**For definitive washout**

b. List four (4) acute complications that would require urgent surgical intervention. (4 marks)

- **Ischaemic foot**- *injury or kinking ant or post tibial artery or doornails pedis*
- **Inability to disimpact/reduce fracture**
- **Neuropraxia**
- **Compartment syndrome**
- **Uncontrolled haemorrhage**
- **Grossly contaminated** *(doesn't appear so)*

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