

Illawarra Shoalhaven Local Health District Emergency Medicine Fellowship Program



Topic-Based Quiz: Qs and As

ENVENOMATION

Candidate Instructions

- Duration = 30min
- Props are included within the examination booklets
- Allocated marks for each question are shown
- Each mark is of equal weight
- There is no negative marking
- Write answers CLEARLY, and cross out any errors
- Answer within space provided
- Do not begin until instructed
- You may take examination book home with you



Good Luck!

Acknowledgement: Thank you to the trainees who have written these SAQs with the hope of making their colleagues sweat, but ultimately gain more exposure to exam practice

Question 1

You are working in a rural hospital in North Queensland and the ambulance bring in a 19 year old man with a suspected jellyfish envenomation.

What 2 jellyfish have life-threatening envenomation? (2 marks)

1: _____

2: _____

Compare and contrast them in terms of their clinical features (4 marks)

	1: _____	2: _____
Timing of pain		
Location of pain		
Skin changes		
Cardiac arrest?		

He has been stung by this jellyfish



What is the name of this jellyfish? (1 mark)

Topic-Based SAQ Quiz: Envenomation

Discuss the components of management relevant to this envenomation (4 marks)

Question 2

You are working in Bowral Emergency Department, approximately 1 hour southwest of Sydney. A 30 year old man with no significant history has rushed into triage stating he has been bitten by a large black spider in his bed. He is agitated and in significant distress.

He shows you what he believes to be the bite mark on his left leg (see below):



His observations are as follows:

HR 131
BP 198/110
T 37
GCS 15

What is pressure immobilisation bandage (PIB) and how is it applied (2 marks)

Topic-Based SAQ Quiz: Envenomation

In your initial assessment, what factors would discriminate FWS envenomation from that of a red-back envenomation (4 marks)

Funnel Web Spider	Redback Spider

You are concerned that he has been bitten by a Funnel-Web Spider (FWS). What are the clinical manifestations of FWS envenomation that would lead you to consider antivenom (4 marks)

The patient's condition rapidly deteriorates and he arrests. In addition to standard ALS cardiac arrest protocol, outline what additional measures you would employ in this resuscitation (2 marks).

Where appropriate detail dosage and route of administration.

Question 3

You are doing a locum shift in a tertiary hospital in Brisbane. Jon, a 22 year old man has been brought in by ambulance after a witnessed snake bite onto his right ankle while walking bare-feet in Brisbane Forest Park about 20 minutes ago. The young man describes the snake to be broad and short. A pressure immobilisation bandage has been applied.

You suspect Death Adder envenoming. List 4 early signs of envenomation that may be present in this patient (2 marks).

Death Adder, tiger snake and taipan may all cause similar early signs of neurotoxicity. State features that may be used to differentiate between Death Adder envenoming and the other two – tiger snake and taipan (2 marks).

State and justify the investigations that you would perform to aid you with the diagnosis or management of this patient (6 marks).

Topic-Based SAQ Quiz: Envenomation

Outline your management priorities for a patient with suspected severe death adder envenomation (4marks).

Question 4

A 45 year old man presents to the ED after experiencing intense pain underneath his left foot while walking in shallow salt water offshore at a tropical island.

His vital signs are:

GCS 15

HR 56

BP: 100/67

RR 15

O2 sat 98% room air



Above is a clinical photograph of his left foot. Describe your findings. (2 marks)

What is the most likely diagnosis? (1 mark)

Topic-Based SAQ Quiz: Envenomation

What investigations would you order for this man? (1 marks)

After 20 mins he still complains of severe pain on his foot and his vital signs are:

BP: 87/56

HR: 50

T: 37

Outline your management of this man? (4 marks)

Question 5

A 25-year-old man presents to the Emergency Department following snake bite while hiking. He is confident that he saw a brown snake. An effective pressure-immobilisation bandage had been applied by the paramedics prior to transfer to ED.

List 5 signs or symptoms of brown snake envenoming (5 marks)

You are concerned that this patient may develop VICC – Venom-induced consumptive coagulopathy.

What is the definition of complete VICC (3 marks)

Tiger snake and brown snake envenomation may be indistinguishable, early in the course. What signs would you potentially find in tiger snake which may not be present in brown snake envenomation (2 marks)

ANSWERS

Question 1

What 2 jellyfish have life-threatening envenomation? (2 marks)

1: Box Jellyfish / Chironex

2: Irukandji

Compare and contrast them in terms of their clinical features (4 marks)

	1: Box Jellyfish	2: Irukandji
Timing of pain	Immediate	Delayed 15-30min or so
Location of pain	At site of sting	Generalised / trunk
Skin changes	Characteristic laddering lesion	None
Cardiac arrest?	Early	None

He has been stung by this jellyfish



What is the name of this jellyfish? (1 mark)

Irukandji

Topic-Based SAQ Quiz: Envenomation

Discuss the components of management relevant to this envenomation (4 marks)

Prehospital:

- Apply vinegar / no PBI

Hospital:

- Analgesia – fentanyl aliquots titrated to pain
 - If refractory: MgSO₄ controversial / PCA / ketamine
- Control hypertension if refractory to opioid (GTN infusion), aim systolic BP <160
- Admit to HDU setting / seek and treat complications such as MI/APO

Question 2

What is pressure immobilisation bandage (PIB) and how is it applied (2 marks)

- PBI is used to restrict flow of lymphatics and thus central distribution of snake, FWS, blue ring octopus and cone shell venom.
- A 10-15cm elasticised bandage is applied in a distal -> proximal direction with as much pressure as would be applied to an ankle sprain.
- The wound should not be cleaned.

In your initial assessment, what factors would discriminate FWS envenomation from that of a red-back envenomation (4 marks)

Funnel Web Spider

- Significant pain
- Often large fang marks
- Immediate onset symptoms
- No swelling nor erythema
- Systemic onset usually < 30 min, always < 2 hours

Red Back

- Not immediately painful
- Mild erythema and occasional bite mark
- Sweating and piloerection with 60min
- Pain usually radiates proximally to become regional
- Associated with mild HTN and tachycardia; systemic features of nausea, vomiting and dysphoria

You are concerned that he has been bitten by a Funnel-Web Spider (FWS). What are the clinical manifestations of FWS envenomation that would lead you to consider antivenom (4 marks)

Answer would need to include appreciation of systems involved and critical observations/examination findings:

- General – **agitation**, vomiting, headache and abdominal pain

Topic-Based SAQ Quiz: Envenomation

- Autonomic – sweating, salivation, piloerection and lacrimation
- Cardiovascular – **hypertension**, tachycardia, **hypotension**, bradycardia and **pulmonary oedema**
- Neurological – muscular fasciculation, oral paraesthesia, muscle spasm and **coma**.

The patient's condition rapidly deteriorates and he arrests. In addition to standard ALS cardiac arrest protocol, outline what additional measures you would employ in this resuscitation (2 marks).

Where appropriate detail dosage and route of administration.

- Undiluted CSL FWS antivenom, administered as a rapid IV push
 - All immediately available funnel-web antivenom (at least 4 ampoules) should be given.
- Atropine may help decrease secretions until antivenom can be administered.

Question 3

You suspect Death Adder envenoming. List 4 early signs of envenomation that may be present in this patient (2 marks).

Neurotoxicity

- Diplopia, ptosis, blurring of vision, dysphagia

Death Adder, tiger snake and taipan may all cause similar early signs of neurotoxicity. State features that may be used to differentiate between signs of Death Adder envenoming and the other two – tiger snake and taipan (2 marks).

- Death Adder envenomation causes progressive symmetrical descending flaccid paralysis which is usually apparent within 6 hours. NOT associated with myotoxicity/renal failure/VICC.
- Neurotoxicity is apparent in taipan and tiger envenoming usually in 1-2 hours. Associated with VICC and myotoxicity

State and justify the investigations that you would perform to aid you with the diagnosis or management of this patient (6 marks).

- Routine snakebite blood investigations – FBC, EUC, Coagulation profile, D-dimer, CK.
 - Provides evidence on presence of VICC, myotoxicity, renal failure, MAHA
 - All these would be normal in Death Adder envenomation
- Spirometry or peak flow meter measurement
 - Helps to monitor respiratory muscle strength and respiratory function; reflects progression to generalised paralysis
- Snake venom detection kit
 - Used to determine the correct monovalent antivenom if 1/more snake types could be responsible for the observed clinical features
 - But do not delay antivenom administration while awaiting the result

Topic-Based SAQ Quiz: Envenomation

Outline your management priorities for a patient with suspected severe death adder envenomation (4marks).

- Resuscitation – Airway and Breathing: Ensure patent airway and provide oxygen therapy to aim SaO₂ >95%; need to intubate and mechanically ventilate patient if he developed respiratory failure with descending flaccid paralysis
- Circulation: IV fluid normal saline 10-20ml/kg bolus if pt was hypotensive
- Antivenom – CSL monovalent Death Adder Antivenom 1 ampoule in 500ml normal saline to infuse over 20 minutes
- Admit to critical care unit for observation / monitor signs of anaphylaxis

Question 4

Above is a clinical photograph of his left foot. Describe your findings. (2 marks)

- Multiple small puncture wounds, no active bleeding surrounded by bruising
- ? retained FBs
- Mild local swelling / erythema

What is the most likely diagnosis? (1 mark)

Stonefish envenomation

What investigations would you order for this man? (1 marks)

- Ultrasound or Xray to evaluate for retained FB
- US likely better (Allows localisation for removal)

After 20 mins he still complains of severe pain on his foot and his vital signs are:

BP: 87/56

HR: 50

T: 37

Outline your management of this man? (4 marks)

1L crystalloid bolus

Hot water immersion: 40o for 20min – both feet

Analgesia: Oral Paracetamol / Oxycodone

Intravenous morphine / fentanyl

Topic-Based SAQ Quiz: Envenomation

Tibial nerve block

Antivenom: 1 ampoule for every 2 spine punctures

Wound considerations:

Washout / FB removal

ADT

Consider prophylactic antibiotics

Question 5

List 5 signs or symptoms of brown snake envenoming (5 marks)

Bleeding gums, persistent haemorrhage at venesection/IV cannulation site – VICC

Headache, nausea, vomiting, abdo pain – non-specific

Syncope/collapse/pre-syncope/hypotension

(any 5 but must have signs of bleeding)

You are concerned that this patient may develop VICC – Venom-induced consumptive coagulopathy.

What is the definition of complete VICC (3 marks)

Elevated INR >3

Undetectable fibrinogen

Elevated D-dimer

Tiger snake and brown snake envenomation may be indistinguishable, early in the course. What signs would you potentially find in tiger snake which may not be present in brown snake envenomation (2 marks)

Evidence of significant neurotoxicity and myotoxicity may develop in tiger snake envenoming.

Myotoxicity does not occur in brown snake envenoming and significant neurotoxicity is rare