

Monash Health Fellowship examination OSCE

SUBJECT AND CURRICULUM REFERENCE:

Transcutaneous Pacing

- Medical Expertise
- Teamwork and Collaboration
- Prioritisation and Decision Making
- Leadership

Length: 20 minutes

CLINICAL SCENARIO STEM:

Presenting complaint:

A 70yo woman had an unconscious collapse at the shopping centre approximately one hour ago. She felt light headed prior to this but she did not have any chest pain.

She was brought to ED by ambulance. Pre hospital treatment consists of 600mcg of atropine x2 and an adrenaline infusion for treatment of : GCS13 HR 38 and BP 80/50.

Her ECG shows CHB.

Upon arrival to ED her vitals are: GCS 14 HR 35 and BP 90/50 O2sats 98% RA RR 18 despite high rates of adrenaline infusion.

The registrar treating the patient is junior and the Emergency Physician (candidate) is called in to assist.

After the candidate is briefed, the patient immediately deteriorates further: GCS13 HR30 and BP 70/40 O2sats 96% RA RR 18

All pharmacological treatments administered such as atropine , adrenaline, isoprenaline have minimal affect.

Transcutaneous pacing improves output.

INSTRUCTIONS:

Room Set Up

High Fidelity Mannequin

1 18G IV cannula insitu

IV N/Saline running

IV adrenaline running at 15ml/hr

Patient in hospital gown

Covered with two blankets

Author: Anastasia Sfakiotaki

Version 1.0 January 2015

ECG – complete heart block

Oxygen saturation monitoring

O2 mask and nasal prongs

Non invasive BP monitoring

Resus trolley

Defibrillator/ Pacer

Defibrillation/ Pacing pads

Drugs available for sedation and treatment:

- Ketamine 200mg in 2ml
- Propofol 200mg in 20ml
- Midazolam 5mg in 5ml, 5mg in 1ml, 15mg in 3ml, 50mg in 10ml
- Fentanyl 100 micrograms in 2ml, 500 micrograms in 10ml
- Metaraminol 10mg in 1ml
- Adrenaline 1mg in 1ml, 1mg in 10ml
- Atropine minijet, 600 micrograms in 1ml
- 1mg Adrenaline 1:1000
- 1mg Adrenaline 1:10000
- 1mg Adrenaline Minijet
- Isoprenaline
- N/saline bags 100ml/ 200ml/ 500ml/ 1lit

Console Instructions:

Initial obs: GCS14 HR35 and BP 90/50 O2sats 98% RA RR 18

Once handover is completed, Sue becomes confused GCE 13 – E3V4M5.

Treatment of CHB

Atropine 600mcg to 2mg increase HR to 40 with no change in BP

Adrenaline boluses of 20-50mcg no change in HR or BP or with increasing Adrenaline or Isoprenaline infusion

With application of external pacemaker increase HR to 80 and provide electrical capture with subsequent increase in BP to 120/70

If not sedated prior to commencing pacing, groan loudly and complain about pain from electrical pacing

Candidate

The scenario is in the Resuscitation Room. There is a high fidelity mannequin that will respond as a live patient.

You have an assistant who is a competent nurse, but requires instruction. The registrar is junior.

All medications and equipment required are available to you.

PLEASE NOTE: You are not required to intubate the mannequin.

Role players

1. Junior Registrar:

You are a junior registrar with limited knowledge in transcutaneous pacing. You will follow the candidate's instructions promptly, efficiently and competently. You will not prompt him with regards to patient management. You will alert him to significant deterioration in the patient's condition.

As soon as the ED Physician enters the room you give him/her the following information:

"This is a 70yo woman. Her name is Sue Smith.

(Give him/her the ECG.)

She had an unconscious collapse at the shopping centre approximately one hour ago. She felt light headed prior to this but she did not have any chest pain.

She was brought to ED by ambulance. Pre hospital treatment consists of 600mcg of atropine x2 and an adrenaline infusion at 15ml/hr for treatment of: GCS13 HR 38 and BP 80/50.

Upon arrival to ED her vitals are: GCS14 HR35 and BP 90/50 O2sats 98% RA RR 18."

2. Nurse:

You are experienced ED nurses. You will follow the candidate's instructions promptly, efficiently and competently. You will not prompt him with regards to patient management. You will alert him to significant deterioration in the patient's condition.

Examiner:

This scenario requires a high fidelity mannequin, defibrillator/pacer, resuscitation drugs and a competent nurse and a junior registrar to assist the candidate.

The candidate is not expected to intubate the patient.

After the candidate is briefed, the patient immediately deteriorates further: GCS13 HR30 and BP 70/40 O2sats 96% RA RR 18

Author: Anastasia Sfakiotaki

Version 1.0 January 2015

Assessment criteria

- *Recognises that the ECG shows CHB and patient is unstable*
- *Informs the patient*
- *Minimises discomfort by:*
 - proper anterior pad placement
 - uses the minimum current necessary to ensure electrical capture.
 - Sedation with a short-acting agent, such as midazolam, an intravenous analgesia with an opiate, or both should be considered.
 - Sedation to improve tolerance of transcutaneous pacing.
- *Considers agents that will provide the most cardiovascular stability*
- *Pad application*
 - Prepare chest wall
 - Remove clothing and jewellery from chest area
 - Ensure skin is dry
 - If hair prevents good pad contact with the skin, shave the area before applying pads.
 - Places electrode pads on patient's chest:
 - Anterior-lateral placement position or Anterior-posterior placement position
 - Uses a rolling motion to avoid forming air pockets at the interface between the skin and pads
 - Connects the pacing electrode pads to the defibrillator.
- *Transcutaneous Pacing*
 - *Turns the defibrillator / monitor ON*
 - *Turns Pacer ON*
 - *Selects Pacing Mode: Demand Mode (Synchronous Pacing):*
 - *Set the Pacer Rate: Select rate 80-100bpm*
 - Establish Electrical Capture
 - The current should initially be set to zero milliamperes (mA).
 - The current (output) is increased in 10-mA increments until Electrical Capture is achieved.
 - Once electrical capture is established assesses the patients carotid or femoral pulse to confirm Mechanical Capture
 - Checks the patients blood pressure. If low, increases the heart rate
 - Observes the patient for signs of improved circulation once pulse is established:
 - ✓ Improved skin colour and warmth
 - ✓ Improved mentation
 - ✓ The patient may require increased sedation as the conscious level improves

- Preparations should be made for placement of transvenous pacing once TCP is established