Curriculum links for the Gloucester Training Day 10/6/20

Time management and decision making- CC4,

Prioritization of patient safety in clinical practice - CC7,

Communication with colleagues and cooperation - CC15

Environmental emergencies -HAP11

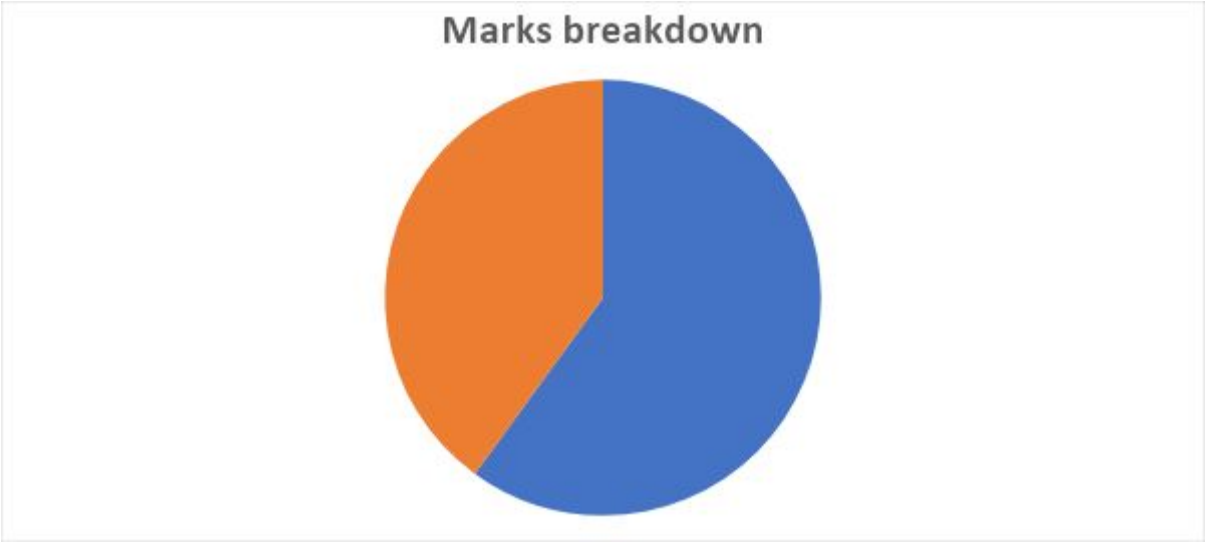
Major Incident Management – HAP 20

Below are a number of example FRCEM final SAQs and OSCE stations which relate to the topics we are covering in the training day. These are not officially set questions and may have gaps in them but should enable you to test your knowledge if you are preparing for exams.

MAJOR INCIDENT

OSCE:

A major incident has been declared via the phone. Talk through with your nurse in charge what actions you must take now.



Mark sheet

Preparation	MARKS
Wash Hands	
Introduction - name, rank.	
Establish Nurse in charge name and experience	
Methane – checks information	
My call sign/name &Major incident declared / standby	
Exact location	
Type of incident (chemical, bomb, burns etc)	
Hazards	
Access and egress routes	
Number and severity of casualties	
Emergency services present and required	
Go over first actions needed	
Call cascade /call for help	
Start Log	
Allocation of staff internal and external	
Tabard and action cards	
You will be silver medical commander until relieved	
Clearing current ED patients where possible	
Establish triage	
Look at capacity and options for increasing this	
allocate someone to contact staff at home ensuring this doesn't leave later shifts short	
Close	
Check both have understanding of immediate actions to undertake	

SAQ:

Question 1

a. What is a major incident
b. Describe the principle of triage 'Sieve and Sort' and where each would be applied
c. Describe the different levels of command in a major incident and broadly what this role entails

ANSWERS

What is a major incident?

A **major incident** can be defined as any emergency that requires the implementation of special arrangements by one or more of the Emergency Services, the NHS or local Authority for: The initial treatment, rescue and transport of a large number of casualties.

Describe the principle of triage 'Sieve and Sort' and where each would be applied

Triage Sieve and *Triage Sort* methods:

The **Triage Sieve** is the first tool to be applied, either at the incident itself, but it may also occur at the receiving point at the hospital.

It is necessarily a "blunt tool" that can be performed in a standardised way when re-triage can occur further down the line.

From a practical perspective – due to the weight of the decisions being made – it is best performed by a senior clinician or (most likely) an ED consultant.

The **Triage Sort** is standardised and evidence based. It refines the identification of those requiring interventions and occurs following further assessment of the physiological status of the patient.

Scores are applied based on Respiratory Rate, Systolic BP, and GCS. The total score then gives the patient a triage status of Priority 1, 2 or 3. This may differ from the original status via the *Triage Sieve. Triage Sort* requires slightly more time to apply and therefore occurs further along in the process where there is likely to be fewer patients and more staff.

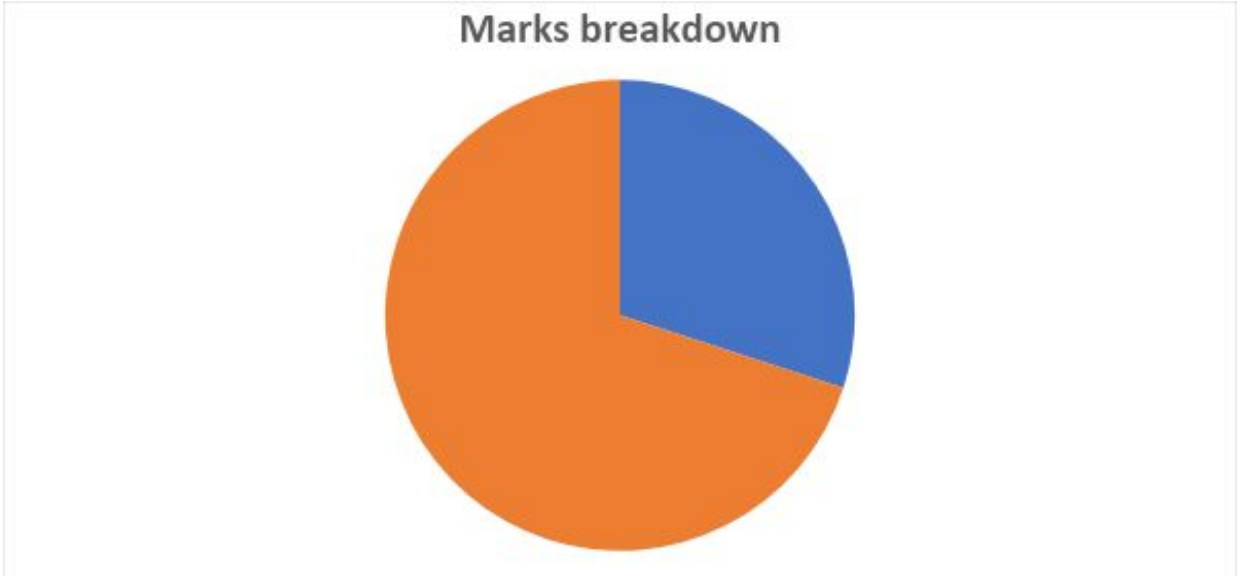
Describe the different levels of command in a major incident and broadly what this role entails

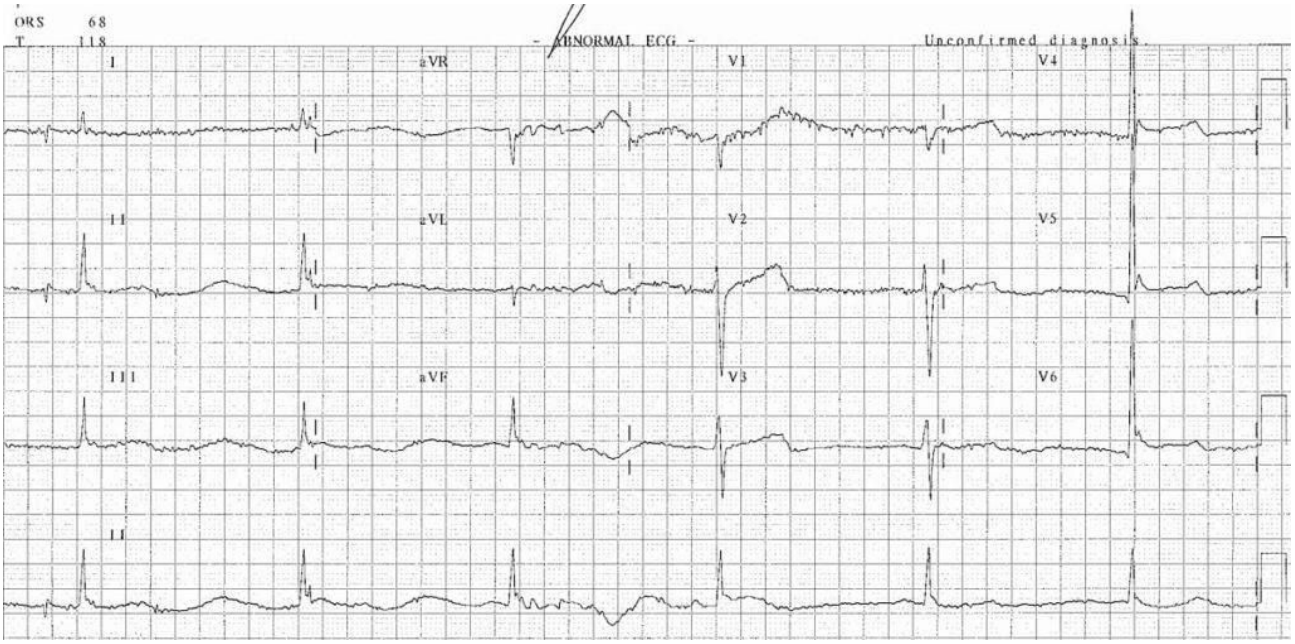
- **Strategic** – this is at Chief Executive and Trust board level. The strategic team – as there is only one within the trust – has the ability to approve release of funds for equipment and supplies; they also work with other regional agencies to oversee the impact of the incident on the wider community. Also known as the **gold** level.
- **Tactical** – these teams oversee and coordinate teams providing patient care. They maintain an overview of the situation within the hospital and can make decisions about allocation of resources. They liaise with tactical teams in other services to share information. This level is also known as the **silver** level.
- **Operational** – at this level, front-line teams may be involved in direct patient care – for example treatment teams in the ED or theatres – or in providing essential resources to allow this to happen – for example sterile supplies departments and laboratory services. This is the **bronze** level.

Environmental /wilderness medicine

OSCE

Teach your medical student about ECG changes seen in Hypothermia. An ECG of a hypothermic patient is provided





ECG TEACHING MARK SHEET

Preparation	Marks (shaded are pass/fail)
Wash Hands	
Introduction - name, and title	
Students, name and level	
Learning needs and knowledge level	
Outline what you are going to teach	
Indications for ECG in hypothermia	
Offer further resources via email	
Ensure patient is comfortable/safe (they are being seen by consultant)	
Prepare Equipment	
Paper speed 25mm/s	
1mm = 0.1mV	
ECG interpretation	
Refresher on different intervals (student confirms basic knowledge)	
Refresher on basic Physiology SA - Atria - AVN - Bundle of His - L&R Bundles - Vent	
P waves	
PR	
QRS	
ST segment	
T – waves	
II,III,aVF - RCA Inferior. Ant V2-V4, Lat I, aVL, V5, V6. Septal V1-2	
ECG in hypothermia	
Corect interpretation -points out/describes some of the following findings in hypothermia : ● Bradyarrhythmias ● Osborne Waves (= J waves) ● Prolonged PR, QRS and QT intervals ● Shivering artefact ● Ventricular ectopics ● Cardiac arrest due to VT, VF or asystole	
Clinical correlation	
Need for repeat if dynamic ECG	
Student Practice / Response	
Short summary	
Any questions?	
E-mail you some online learning resources	
Around the department this week another case do it together?	

SAQ

QUESTION 2

A 24y old male is brought into the ED. He is agitated and looks flushed. His friend says that the have been running for the last 4 hours as they are training for the marathon.

His temperature is 42 degrees c.

a. WHAT ARE YOUR DIFFERENTIAL DIAGNOSES?
b. THERE IS NO HISTORY OF DRUG USE OR MEDICAL CONDITION. WHAT IS THE LIKELY DIAGNOSIS?
c. WHAT SYSTEMS MAY BE INVOLVED IN THIS CONDITION AND HOW?
d. OUTLINE YOUR MANAGEMENT
e. WHAT RATE SHOULD COOLONG BE PERFORMED AND AT WHAT TEMPERATURE SHOULD YOU STOP?
f. NAME 3 DRUGS THAT PRECIPITATE NEUROLEPTIC MALIGNANT SYNDROME.
g. NAME 2 DRUGS THAT PRECIPITATE MALIGNANT HYPERPYREXIA

QUESTION 3

A 23Y OLD HAS BEEN BROUGHT IN BY LAS , HE WAS FOUND NEXT TO A HIGH VOLTAGE RAILWAY WIRES

a. WHAT 4 CHARACTERISTICS OF THE ELECTRICITY WILL INCREASE THE LIKELIHOOD OF SEVERE INJURY?
b. WHICH 6 CLINICAL FEATURES WILL YOU LOOK FOR?
c. WHICH PATIENTS WITH ELECTRICAL INJURIES CAN YOU DISCHARGE?

Answers

Question 2

WHAT ARE YOUR DIFFERENTIAL DIAGNOSES?

- HEAT STROKE
- Drug toxicity
- Drug withdrawal syndrome
- Serotonin syndrome
- Neuroleptic malignant syndrome
- Sepsis
- CNS infection
- Endocrine disorders
  - Thyroid storm
  - Phaeochromocytoma

THERE IS NO HISTORY OF DRUG USE OR MEDICAL CONDITION. WHAT IS THE LIKELY DIAGNOSIS?

EXERTIONAL HEAT STROKE

=systemic inflammatory response with core temperature greater than 40.6°C

+altered mental status

+organ dysfunction

»may culminate in MOF and Cardiac arrest

WHAT SYSTEMS MAY BE INVOLVED IN THIS CONDITION AND HOW?

CNS —oedema and petechial haemorrhages cause focal/generalised damage.

Muscle injury releases enzymes, myoglobin, urate, K^+, PO_4^{3-}

Liver —cell injury releases liver enzymes. Jaundice commonly develops after 24 h.

Kidneys —ARF from hypovolaemia, muscle breakdown products, DIC, acidosis.

Blood —DIC, thrombocytopenia, leucocytosis.

Metabolic ↑ or ↓ K^+, metabolic acidosis, respiratory alkalosis, hypoglycaemia.

OUTLINE YOUR MANAGEMENT

- REMOVE ALL CLOTHING & FROM HOT ENVIRONMENT
  - Secure the airway (intubation and IPPV may be needed) and give high FiO_2.
- Cooling techniques depend upon facilities available and the clinical state of the patient. Do not give 'antipyretics' such as aspirin/paracetamol. Evaporative cooling is the most efficient and applicable treatment. Spray the naked patient with tepid tap water and blow air over the body with fans. Ice-packs can be applied to the axillae, groins, neck and scalp (but avoid prolonged contact). Consider cold gastric or peritoneal lavage, or cardiopulmonary bypass if these techniques fail.
- IV Fluids—give 50 mL 50% dextrose IV if BMG < 3 mmol/litre. Severe hypovolaemia is uncommon. If hypotension persists despite ↓ T°, give IV 0.9% saline (1–1.5 litres over 1–2 h). Avoid overloading circulation with risk of pulmonary/cerebral oedema. CVP/Swan-Ganz monitoring may be needed. CVP may be initially ↑ due to peripheral vasoconstriction.
- Insert a urinary catheter. If myoglobinuria is present, aim for ↑ urine output and consider giving IV bicarbonate and/or mannitol.
- If fits occur, give IV diazepam—but beware respiratory depression.

WHAT RATE SHOULD COOLONG BE PERFORMED AND AT WHAT TEMPERATURE SHOULD YOU STOP?

Aim for cooling rate at least 0.1°C/min.

When core T°< 39°C stop active cooling as hypothermia may develop

NAME 3 DRUGS THAT PRECIPITATE NEUROLEPTIC MALIGNANT SYNDROME.

- haloperidol,
- thioridazine,
- chlorpromazine
- Olanzapine.
- Risperidone.
- Paliperidone.
- Aripiprazole.
- Ziprasidone.
- Amisulpride.
- Quetiapine

NAME 2 DRUGS THAT PRECIPITATE MALIGNANT HYPERPYREXIA

- Suxamethonium
- Halothane
- KETAMINE
- ENFLURANE
- PHENCYCLIDINE
- CYCLOPROPANE

QUESTION 3

WHAT 4 CHARACTERISTICS OF THE ELECTRICITY WILL INCREASE THE LIKELIHOOD OF SEVERE INJURY?

- AC rather than DC
- High voltage
- Prolonged duration of contact
- Wet skin
- Large area of contact

WHICH 6 CLINICAL FEATURES WILL YOU LOOK FOR?

- BURNS & ENTRY /EXIT POINTS
- MYONECROSIS & DEVELOPMENT OF RHABDOMYOLYSIS
- ARRHYTHMIAS
- NEUROLOGICAL DEFICITS eg coma, seizures, peripheral neuropathy
- Ophthalmic injuries
- Traumatic Injuries from
  - fall/ being thrown from source
  - Tetanic muscular contraction
- Compartments syndrome

WHICH PATIENTS WITH ELECTRICAL INJURIES CAN YOU DISCHARGE?

- Asymptomatic patients with
- No burns
- Low voltage/ domestic electrical injury
- No arrhythmias
- Normal ECG
- No myoglobinuria or evidence of rhabdhomyolysis

Toxicology/Envenomation

QUESTION4

A group of young men have arrived in the early hours of the morning concerned that 1 of them has started to vomit and have profuse watery diarrhoea after ingesting some mushrooms.

a. Name 4 questions you would you like to ask in the history? (4 mark)

b. Why is 1 question the most important? (1 mark)

c. One of his friends took the patients phone and he had taken a picture which is below. What kind of mushroom is this? (1 mark)

d. What additional source would you contact? (1 mark)

e. What 2 baseline blood tests would you do? (2 marks)

f. What are the complications of this type of mushroom poisoning? (2 marks)

g. What is the mortality for this type of poisoning? (1 mark)

Question 5

After the first young man is admitted, a number of his friends then book in very concerned about the mushrooms that they may have eaten.

They have brought pictures and 1 is below.

a. What type of mushroom is this? (1 mark)

b. What symptoms would it give? (2 marks)

c. What advice would you give regarding its toxicity? (1 mark)

d. What could precipitate poisoning? (1 mark)

e. Who would be more likely to present with poisoning (1mark)

QUESTION 6

A 17 year old boy is brought in by his teacher after being bitting while on a hike in Bedfordshire. 1 of the group (obvious less caring) has taken a picture on his camera phone

The patient is complaining of severe pain in his left ankle, which is spreading upwards.

When you look you see 2 small puncture marks, 1cm apart, on the lateral aspect of his left ankle but it is difficult because of the amount of swelling.

The swelling has occurred over 2 hours and is spreading up to the lateral aspect of the knee.

He then developes

Abdominal pain and drops his blood pressure.

a. What species of snake has bitten him and why is that a concern? (2 marks)

b. What percentage of bites have systemic features and what is this phenomenon called (2 marks)

c. what other symptoms or signs may occur (2 marks)

d. what is your immediate management (4 marks)

e. what would be your criteria for use of antivenom (4 marks)

ANSWERS

Question 4

a. Name 4 questions you would you like to ask in the history? (4 mark)

1. What time was the ingestion?
2. Was more than 1 variety eaten? – as poisonous & edible often grow together
3. Was the mushroom cooked? – as some toxins are inactivated by heat
4. Whether alcohol was taken? – some have disulfiram like effects

b. Why is 1 question the most important? (1 mark)

Mushrooms that cause symptoms within 6 hours are unlikely to cause serious toxicity.

Amanita phalloides causes symptoms after a latent period of 6-12 hours

Symptoms;

Fatigue

Headache

Dizziness

Cold sweat

Hallucinations

Vomiting

Sharp abdominal pains

Jaundice

Diarrhoea

Blurred vision

c. One of his friends took the patients phone and he had taken a picture which is below. What kind of mushroom is this? (1 mark)

Amanita phalloides – death cap mushroom

d. What additional source would you contact? (1 mark)

Poisons information centre

e. What 2 baseline blood tests would you do? (2 marks)

UEs & LFTs

f. What are the complications of this type of mushroom poisoning? (2 marks)

Poisoning causes renal & hepatic failure days later after apparent recovery

g. What is the mortality for this type of poisoning? (1 mark)

5-20%

Question5

After the first young man is admitted, a number of his friends then book in very concerned about the mushrooms that they may have eaten.

They have brought pictures and 1 is below.

a. What type of mushroom is this? (1 mark)

amanita muscaria

b. What symptoms would it give? (2 marks)

Vomiting

Nausea

Hallucinations

Blurred vision

c. What advice would you give regarding its toxicity? (1 mark)

Not likely to be toxic especially if symptoms onset in 6 of ingestion.

Symptoms may take 10 hours to resolve

d. What could precipitate poisoning? (1 mark)

Trauma

e. Who would be more likely to present with poisoning (1mark)

Children

QUESTION 6

A 17 year old boy is brought in by his teacher after being bitting while on a hike in Bedfordshire. 1 of the group (obvious less caring) has taken a picture on his camera phone

The patient is complaining of severe pain in his left ankle, which is spreading upwards.

When you look you see 2 small puncture marks, 1cm apart, on the lateral aspect of his left ankle but it is difficult because of the amount of swelling.

The swelling has occurred over 2 hours and is spreading up to the lateral aspect of the knee.

He then developes

Abdominal pain and drops his blood pressure.

a. What species of snake has bitten him and why is that a concern? (2 marks)

European Adder (grey/brown with V-shaped marking behind head and dark

Zig-zag down the back)

Only native poisonous snake in UK

b. What percentage of bites have systemic features and what is this phenomenon called (2 marks)

50% bites result in envenomation

c. what other symptoms or signs may occur (2 marks)

vomiting

abdominal pain

diarrhoea

hypotension

compartment syndrome

anaphylaxtic reaction

d. what is your immediate management (4 marks)

rest & bandage – slow lymphatic flow

clean wound

tetanus

co-amoxiclav

IVI

Treat anaphylaxsis as per guidelines

e. what would be your criteria for use of antivenom (4 marks)

persistent hypotension

WCC >20

ECG changes or elevated cardiac enzymes

Massive limb swelling especially within 2 hours

Spontaneous haemorrhage