**Dip IMC Single Best Answer**

**1, Which of these is an immediate dispatch criteria (London HEMS)**

a, Shooting

**b, Ejected from vehicle**

c, Drowning

d, Hanging

e, Explosion

The list of immediate dispatch criteria is relatively short and includes fall from >2 stories/20 feet; “One under”; amputation proximal to wrists and ankles; ejected from vehicle; death of occupant of same vehicle; trapped under vehicle (not motorcycle) and a request from other EMS. The other criteria don’t mean that HEMS wont be dispatched, merely that the call will be interrogated prior/during dispatch.

**2, If first on the scene of an incident**

A, The practitioner’s vehicle should be at least 100 metres back from the incident

B, The front wheels should be left in the straight ahead position

**C, Keys should be left in the vehicle with the engine running**

D, Someone should stay with the vehicle if at all possible

E, The fire service will usually be in charge of parking at the scene.

If you arrive first on scene at an incident you immediately become the officer in charge of the scene. The first priority is to ensure your own safety and that of others nearby. Your vehicle should be parked 50 metres from the incident (100m is too far!). The car should be left with lights on and the engine running (to prevent the battery going flat). The wheels should be turned away from the incident, in case it was hit it would not run into the scene. Police are in charge of the parking and fire responsible for safety of the scene.

**3, Suitable personal protective equipment (PPE) for a prehospital provider does not include**

A, Ear protection

B, Helmet

C, Safety boots

**D, Head torch**

E, Eye protection

A head torch isn’t part of PPE, although often carried by PHEM practitioners.

**4, High visibility clothing should**

A, Be used at any pre hospital incident

**B, Incorporate a minimum of 0.80m2 of fluorescent material**

C, Incorporate a minimum of 0.50m2 of retro reflective material

D, Be at least Class 4 from European standard EN471

E, Include fluorescent gloves

High visibility clothing isn’t necessary at all incidents (although should be worn at RTCs and industrial incidents). Gloves tend not to be fluorescent and not always worn. If there are two answers that are similar in content one of them is usually correct. The European standard is EN471, but Class 3 (sneaky) – where there are two parts to a question both have to be correct for the answer to be true.

**5, Which of these is not part of the SCREAMER mnemonic?**

A, S – Safety

B, C – Communicate

C, R – Read the wreckage

**D, E - Environment**

E, A – Assess the casualties

The SCREAMER mnemonic is relatively difficult to remember as the initials don’t obviously lead into the phrase. It is used for scene assessment.

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| --- | --- | --- | --- | --- | --- | --- | --- |
| S | C | R | E | A | M | E | R |
| **S**afety | **C**ommunicate | **R**ead the wreckage | **E**veryone accounted for? | **A**ssess the casualties | **M**ethod of Extrication | **E**vacuation route | **R**ight facility |

**6, Regarding the change in physiology at altitude (>5500m)**

A, Oxygen sats are the same as at sea level

B, Heart rate decreases

C, Haemoglobin concentration decreases.

**D, Depth of breathing increases.**

E, Exercise tolerance increases.

At altitude (>5500M) oxygen sats will fall to about 80%, and the heart rate and depth of breathing increase. This all means that exercise tolerance decreases. As the oxygen concentration decreases haemoglobin concentration will increase to compensate.

**7, Treatment for the prophylaxis of Acute Mountain Sickness include**

A, Nifedipine SR

**B, Acetazolamide**

C, Dexamethasome

D, Ofloxacin eye drops

E, Quinine

The key here is the question says *prophylaxis*. Nifedipine, dexamethasone and ofloxacin are all treatments for AMS.

**8, Which of the following statements about High Altitude Pulmonary Oedema (HAPE) is least correct?**

A, It is correlated with sleeping height

**B, It has an incidence of 10% at >2000m**

C, It is caused by pulmonary hypertension secondary to hypoxia.

D, It should be suspected if shortness of breath occurs at rest or when lying down.

E, Symptoms and signs include, cough and crackles on the chest auscultation with a mild pyrexia.

HAPE occurs in 2% of those at >4000m (2000m really isn’t that high!). Everybody who climb at height will get short of breath, but if this is disproportionate or occurs at rest this should be assumed to be abnormal. Hypoxia causes pulmonary vasoconstriction which in turn causes pulmonary hypertension. Alveolar haemorrhage can lead to haemoptysis and crackles will develop a pulmonary transuadative leak occurs.

**9, Treatment of High Altitude Cerebral Oedema (HACE) includes**

A, Continue the ascent

**B, Use of a portable hyperbaric chamber**

C, High dose prednisolone

D, A period of rest before continuing the ascent.

E, Prophylactic antibiotics to prevent secondary infection.

If a climber gets any form of AMS they should immediately descend if possible. They should not then reascend. Dexamethasone is the steroid of choice and acts by blocking vascular endothelial growth factor.

**10, Regarding Cold Injury**

A, Hypothermia is defined as temperature <33oC

B, GCS is prognostic of outcome

**C, In hypothermia an ECG may show slow AF and J waves**

D, Damage from frostnip is usually permanent

E, Cold injury is not preventable.

Hypothermia is a temperature less than 35oC; mild 32-35oC; moderate 29-32oC; severe <29oC. Frostnip is the lease severe form of hypothermia and is reversible. GCS is not prognostic and severely hypothermic unconscious patients may have a good outcome. Appropriate preparation and clothing can prevent cold injury.

**11, Which of these statements about heat illness is most correct?**

A, Heat exhaustion occurs at temperatures of over 39oC

B, During heat cramps sweating is decreased.

C, Ice packs in the groin, axillae and neck are more effective than evaporative cooling.

**D, Heat stroke can lead to multi organ failure**

E, Heat stroke has a mortality of less than 10%

Heat illness begins with heat cramps, progresses to heat exhaustion (>38oC) and when CNS dysfunction occurs becomes heat stroke (>40.5oC). Heat stroke can lead to multiorgan failure. Evaporative methods are more effective than ice packs. The mortality of heat stroke is 10-70% depending on background.

**12, Following a snake bite**

**A, Neostigmine can be used in the treatment of some snake bites**

B, Envenomation is almost certain

C, The patient should move as quickly as possible to get to a medical facility

D, Antivenom is easily available for most snake bites

E, Identification of the snake is unnecessary.

If bitten by a snake envenomation is by no means certain. If envenomated the patient should be kept still to avoid the venom from spreading. Compression bandaging may be used to aid with this too. Antivenom is specific to the snake and so identification is important. Antivenom is expensive and not always easily available. Neostigmine can counter some of the neuromuscular blocking effects effects of the venom.

**13, The following are all positive predictors of survival following submersion except**

**A, Prolonged submersion**

B, Young age

C, Low core body temperature on rescue

D, Early ROSC

E, No aspiration

The shorter the submersion the higher the chance of survival. Less than 10 minutes is the most positive. Low core body temperature (from cold water) is protective (although Immersion syndrome from sudden cold causing cardiac arrhythmia is possible). No aspiration, in the 10% with dry drowning, is more likely to survive than “wet drowning”.

**14, Regarding the definitions of submersion and drowning**

A, Near Drowning = Initial survival for 12 hours after submersion

B, Immersion syndrome = Syncope from cardiac dysrhythmia following submersion at >5oC

**C, Dry drowning = hypoxaemia due to laryngospasm and loss of an airway**

D, Wet drowning is less common than dry drowning

E, Post immersion/secondary drowning = Death up to one week after a near drowning.

Drowning is death within 24 hours of submersion, near drowning is initial survival for at least 24 hours. Post immersion drowning is death after near drowning, that usually occurs in 48 hours. Immersion syndrome occurs in water <5oC, wet drowning is much more common than dry drowning (90%:10%).

**15, Decompression sickness**

A, Results from descending too quickly

**B, Treatment is similar as for Arterial Gas Embolus**

C, In Type I DCS there may be cardiovascular collapse

D, Occurs up to 12 hours after surfacing

E, Patients should be evacuated to a hyperbaric facility as soon as possible with unpressurised aircraft staying below 500m.

Decompression illness (including decompression sickness and arterial gas embolus) results from ascending too quickly from depth. Type 1 DCI is “the bends” and other less serious, usually self limiting symptoms, such as itching a lymph node pain. Type II DCI is cardiovascular collapse, neurological injury similar to spinal cord injury, and the “chokes” of respiratory failure. It usually occurs within 10-30 minutes of surfacing. An unpressurised aircraft should fly no higher than 300 metres or in a cabin pressurised at 1atm.

**16, Physiology during diving**

**A, The absolute pressure increases by 1atm for every 10 metres the diver descends**

B, The “bends” is caused by collection of nitrogen bubbles in the skin.

C, All tissues absorb Nitrogen at a similar rate

D, As the diver goes deeper more Nitrogen is excreted via the lungs

E, Boyles Law states that the volume of gas will decrease as the diver ascends.

Decompression illness occurs on ascent with nitrogen that had been forced into tissues at higher pressure being forced into the blood. The “bends” is part of “mild” decompression sickness and is due to nitrogen in the joints. Absorption of nitrogen occurs at different rates in different tissues with blood absorbing more than bone. Boyles Law states that at increasing pressure the volume decreases (and vice versa) – think of pressing on the outside of a balloon.

**17, Regarding potential CBRN incidents**

A, You should position yourself downwind of the hot zone

B, The warm zone is safe to enter without protective clothing

C, STEP in the context of CBRN stands for “Safe To Evacuate Patient”

**D, Removal of clothing can remove 90% of contaminants**

E, STEP 1 requires you to send for specialist help.

In any CBRN incident safety of the rescuer is paramount. You should position yourself upward (and uphill) of the incident and not enter the hot zone (the area containing the hazard where full PPE will be required). The warm zone is where casualties are decontaminated and rescue personnel will be wearing PPE. STEP is the “Safety Triggers for Emergency Personnel”, STEP 1 is a single casualty and can be approached as normal; STEP 2 there are two casualties and caution advised; STEP 3 three or more casualties and you should not approach.

**18, Nerve agents such as Sarin gas**

**A, Cause miosis**

B, Respiration will be depressed

C, Increase the activity of acetylcholinesterase

D, The skin will be dry

E, Are treated with Edrophonium

Sarin acts like an organophosphate. Inhibiting anticholinesterase and has profound anticholinergic (parasympathetic) effects. This causes progressive motor paralysis, pupil constriction, SLUDGE (salivation/lacrimation/ urination/defaecation/GI distress and emesis). Treatment is with atropine to reverse the anticholinergic effects and pralidoxime to try to cleave the agent off the muscarinic receptors.

**19, Cyanide poisoning**

A, Is always as a result of deliberate release

B, Cause a decrease in oxygen saturations in the early phase

C, Should be treated with dicobalt edetate is there is any suspicion of cyanide exposure

D, Increase methaemoglobin production

**E, Lactate measurement may be helpful.**

Cyanide poisoning must be considered in house fires as it can be released from many household items. The pupils are normal or dilated. Methaemoglobin is reduced, whilst oxygen sats are normal or increased. Dicobalt edetate is an antidote for cyanide poisoning, however it itself is toxic and should pnly be used in confirmed cases. The patients become profoundly acidotic.

**20, In radiological incidents**

A, A single dose always causes risk to others

B, Polonium releases β particles

C, Acute radiation syndrome occurs at levels above 0.5mSv

D, Patients always present immediately

**E, Radioisotopes with specific antidotes include 131I and 137CS**

A single dose is low risk to healthcare workers, where as a prolonged contamination can be harmful. Polonium releases α particles. Acute radiation syndrome occurs at levels over 0.5Sv. Patients may not realised they have been exposed and the effects may take some time to come on, some presentation is delayed.

**21. If first on scene at a potential mass casualty incident**

A, Your first action should be to treat those with life threatening injuries

B, You should park well away from the scene and ensure your lights and engine are turned off

C, Consider the safety of those affected above your own

**D, The first “E” of METHANE is the Exact location of the incident**

E, The “triage sieve” comes after the “triage sort”

You should consider the CSCATT acronym on arrival at the scene of a major incident

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **C** | **S** | **C** | **A** | **T** | **T** |
| **C**ommand and control | **S**afety | **C**ommunicate | **A**ssessment of scene | **T**riage | **T**reatment |

Your first action is therefore to assume command and control, considering your own safety as a priority. You should park approximately 50 metres away from the incident, with your wheels turned off away from the incident, with you lights and engine left running. METHANE is used as an aide memoire to communicate with control and others.

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| --- | --- | --- | --- | --- | --- | --- |
| **M** | **E** | **T** | **H** | **A** | **N** | **E** |
| **M**ajor Incident declared/My Name is | **E**xact location off the incident | **T**ype of incident | **H**azards | **A**ccess/ Egress | **N**umber of casualties | Emergency services required |

The triage sieve allocates the patients into categories – P1, P2, P3, P4. The triage sieve is a relatively blunt tool that is used first for speed to highlight those most in need. The triage sort (which includes mor time consuming measurement such as BP and GCS) will be done later when there are more staff and fewer patients.

**22, During a Triage Sieve**

**A, Those that are not breathing when you first asses them but do after you open their airway are “P1”**

B, A respiratory rate of between 10 and 30 means the patient must be P3

C, Stop to perform CPR on those that need it

D, Those that have a pulse of >120 are always P2

E, P4 are the walking wounded

A triage sieve is a quick tool for allocating resources to a large number of patients quickly. Those that are “walking wounded” are immediately allocated P3 (Green). The first action is to assess if they are breathing – if not their airway should be opened and if this facilities respiratory effort they are P1. If breathing the respiratory rate is measured – below 10 and above 30 are P1. In those with a respiratory rate between 10 and 30 their pulse is measured – over 120 bpm are P1, those with a pulse <120 are P2. P4 is “expectant” and includes those who fail to breath after their airway is opened. There is no place for CPR in a major incident, where resources should be focussed on the those with a higher chance of survival.

**23, Which of the following is not the correct capacity for the oxygen cylinder described?**

A, C = 170l/min

**B, CD = 340l/min**

C. F= 1360l/min

D, G = 3400l/min

E, H = 6800l/min

Oxygen cylinder sizes

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **C** | **D** | **CD** | **E** | **F** | **G** | **J** |
| 170l/min | 340/min | 460l/min | 680l/min | 1360l/min | 3400l/min | 6800l/min |

**24, A child aged 7 should weigh approximately how many kilos (according to the APLS formula)**

A, 20kg

B, 24kg

**C, 28kg**

D, 32kg

E, 36kg

|  |  |
| --- | --- |
| **Age** | **Weight** |
| 6-12 | (age x 3) + 7 |
| 1-6 | (age x 2) + 8 |
| >1 | (Age in months/2) + 4 |

 The APLS formula for estimating weight is

**35, Each of these of a possible pre hospital cause of traumatic cardiac arrest except**

A, Hypovolaemia

**B, Hyperkalaemia**

C, Tension pneumothorax

D, Massive haemothorax

E, Hypoxaemia

Traumatic cardiac arrest is caused by hypovolaemia (hypovolaemic shock), tension pneumothorax and cardiac tamponade (obstructive shock) and hypoxia.

**36, Regarding “Celox” gauze**

A, The gauze should be applied and immediately bandaged in place

B, The gauze will be effective used as a bandage over a wound

C, Celox is derived from crushed insects

**D, Direct pressure should be applied for three minutes after the wound is packed**

E, It is not effective against arterial bleeding.

“Celox” gauze is used when direct pressure alone has not successfully stopped bleeding. It is derived from crushed shrimp shells and should be packed into the wound and direct pressure applied for three minutes, It is effective against arterial bleeding, as well as those on warfarin and heparin (as it is not dependant on the bodies own clotting factors to work).

**37, Which of the following forms part of the “safe triangle” for siting a thoracostomy?**

A, 5th Intercostal space mid axilliary line

B, 5th Intercostal space mid clavicular line

C, 2nd intercostal space mid clavicular line

D, Medial border of pectoralis major

**E, Medial border of latissimus dorsi**

The safe triangle for thorocostomy/intercostal chest drain placement is the lateral aspect of pectoralis major, the lateral border of latissimus dorsi and the nipple line.

**38, Which of these is the most common life-threatening chest injury in trauma according to TARN**

**A, Flail chest**

B, Massive haemothorax

C, Tension pneumothorax

D, Open pneumothorax

E, Cardiac Tamponade

The incident of life-threatening chest injuries in major trauma according to TARN are

|  |  |
| --- | --- |
| Flail Chest | 1 in 50 |
| Tension pneumothorax | 1 in 250 |
| Massive haemothorax | 1 in 1,000 |
| Cardiac tamponade | 1 in 1,250 |
| Open pneumothorax | 1 in 10,000 |

**39, Regarding Emergency Prehospital Delivery**

A, This can occur in up to 10% of booked hospital deliveries

B, There is no change in perimortal mortality rate

C, The second stage of pregnancy is the delivery of the placenta

D, When delivering the placenta you should apply gentle traction to the cord

**E, The placenta should be kept for inspection by the midwife.**

Emergency prehospital delivery is not common and occurs in <1% of booked deliveries. There is a slightly higher perimortal mortality rate (relative risk 5.8%). The stages of pregnancy are defined as: First stage – cervical effacement and dilatation; Second stage – cervix fully dilated until delivery of the baby; Third stage – begins with delivery of the baby and ends with delivery of the placenta. Cord traction can cause cord rupture and uterine inversion and is discouraged in the hands of the inexperienced.

**40, During the second stage of pregnancy**

A, The cervix will be dilated to 8cm

B, If the cord is around the neck you must make efforts to move it

C, Most deliveries require assistance.

**D, Following birth the baby should be dried and placed skin to skin with the mother**

E, You should give 1ml of Syntometrine to facilitate delivery.

The second stage pregnancy begins when the cervix is fully dilated (10cm and ends with the delivery of the baby. Most babies deliver spontaneously without assistance. The cord may appear to be around the neck, but the baby will usually deliver through the loops. Syntometrine (Oxytonin) is used in the third stage of pregnancy to decrease bleeding. It can be used in the second stage to augment labour, but not prehospital by non specialist obstetric clinicians.

**41, In shoulder dystocia,**

A, The posterior shoulder is impacted behind the symphysis pubis

B, You can use the exaggerated Sims’ manoeuvre to try to facilitate delivery

**C, Occurs in 1% of all deliveries**

D, The lobster sign is an indication it is present

E, If unsuccessful transfer to the nearest Obstetric Unit should take place in the supine position

In shoulder dystocia the anterior shoulder is impacted behind the symphysis pubis. The McRoberts manoeuvre (hyperflexing the hips and knees in the supine mother) and suprapubic pressure may be used. The exaggerated Sims is used in cord prolapse to try to take pressure off the cord. In shoulder dystocia the mother should be transferred in the left lateral position. The turtle sign is when the head moves back into the canal during contractions.

**42, Regarding Post Partum haemorrhage**

A, Is defined as 1 litre of blood loss

**B, Can occur up to 6 weeks after delivery**

C, Causes include placental abruption

D, Is rare and occurs in less than 1% of deliveries

E, Occurs after the third stage of pregnancy is completed.

Post partum haemorrhage is the loss of 500ml of blood after delivery and occurs in up to 10% of deliveries. It can occur up to six weeks following delivery. Placental abruption is a cause of antepartum haemorrhage (along with placenta previa).

**43, Which of these is least correct regarding breech presentation**

A, The safest delivery is via Caesarean section in an Obstetric unit

B, The mother should be in the lithotomy position

**C, You should always keep hands on the baby**

D, It occurs in 3-4% of pregnancies

E, The Pinard manoeuvre can be used to free the legs if necessary

During a breech presentation (when the presenting part is the feet or buttocks) you should keep you hands off the baby as much as possible: many will deliver without any intervention. It occurs in 3-4% of term pregnancies. The mother should be in the lithotomy position and there are multiple eponymous manoeuvres that can be tried (Pinard – releasing legs using pressure on popliteal fossa; Lovset – rotation to facilitate delivery of the arms; Mariceau-Smellie-Veit deliver head and support body with forearm, placing index and middle fingers of cheek bones).

**44, The following are estimated frequencies for complications in pregnancy except**

A, Cord prolapse occurs in <1% of deliveries

**B, Emergency prehospital delivery takes place for 5% of booked hospital deliveries**

C, Shoulder dystocia occurs in 1% of deliveries

D, Breech presentation occurs in 3-4% of deliveries

E, Post partum haemorrhage occurs in 10% of deliveries.

Estimated frequencies for complications of pregnancy:

|  |  |
| --- | --- |
| Post Partum Haemorrhage | 10% of deliveries |
| Breech position  | 3-4% of deliveries |
| Shoulder dystocia | 1% |
| Cord prolapse | <1% of deliveries |
| Emergency prehospital delivery  | <1% of booked hospital deliveries. |

**45, Pelvic binders**

**A, Should be placed over the skin if possible**

B, Should be used to package every patient at risk of pelvic trauma

C, Should be applied during a log roll to 90o

D, Are placed at the level of the pubic symphysis

E, Mandate the use of a spinal board

Not all patients at risk of pelvic trauma will need a binder. If haemodynamically normal, with a GCS >13 and no distracting injury a binder may not need to be applied (FPHC statement). They are placed over the greater trochanters and should be over skin (rather than clothes) if at all possible. A “spinal board” is a temporary extrication device and should not be used for transport. A binder can be placed during a roll to 15O. You should attempt minimal handling of trauma patients at all times to try to preserve formed clots and haemostasis.

**46, Which of the following injuries is not commonly found after a fall from height**

**A, Flail chest**

B, Fractured calcaneum

C, Pilon fracture of the ankle

D, Fractured tibial plateau

E, Jefferson fracture of the cervical spine.

The force from a fall from height will be transmitted from the feet (#calcaneum), through the ankle (#pilon ankle) to the knee (#tibial plateau) to the lumber spine. The Jefferson fracture is a compression fracture of C1 (the atlas), but fractures can occur at any site. A #calcaneum is associated with an L1 fracture.

**47, Which of the following is most correct regarding motor vehicle collisions?**

A, 80% of aortic injury occurs after lateral impact

**B, Presence of a tow bar in a rear impact increases the severity of injury**

C, Restrained occupants in a frontal impact are likely to suffer posterior dislocation of the hip

D, Waddell’s Triad of Injury in children hit by cars is unilateral head injury, intrathoracic or intraabdominal injury and a fractured femur

E, Frontal impacts are less well tolerated than lateral impacts due to the presence of the engine.

44% of aortic injuries occur after a lateral impact. If you are unrestrained in a frontal impact a posterior dislocation of the hip is more likely. The engine is protective against impact in frontal collisions. The tow bar transmits energy directly to the passenger cabin and bypasses the vehicles crumple zones.

Waddell’s triad is contralateral head injury, intraabdominal or intrathoracic injury and fractured femur.

**48. Tourniquets**

A, Should be tightened above venous pressure

**B, Should be placed as distally as possible**

C, A single tourniquet is always adequate to stop bleeding

D, Can be applied over clothes

E, Should be used immediately before other haemostatic methods have been attempted.

Tourniquets (contrary to the manufacturer guidance and detailed in a faculty statement) should be placed as distally as possible to preserve as much viable tissue as possible. It needs to be tightened above arterial pressure to stop bleeding, and should be applied over skin. You may need to use a second proximal tourniquet if the bleeding is severe and will not stop after the first has been used. The haemostatic ladder gives a good framework for the order that bleeding can be addressed: dressing; direct pressure; indirect pressure; haemostatic agents; tourniquet.

**49, When cooling a burn**

A, Non potable water can be used

**B, You may require up to 120l of water**

C, The ideal temperature is <5oC

D, Cooling is only effective in the first hour

E, Jewellery and clothing can be left on.

Large volumes of potable water, ideally at 12oC, but anywhere between 8-20oC should be used up to three hours after the burn. Jewellery and clothing should be removed.

**50, In the prehospital assessment and treatment of burns which of the following is not correct**

A, Extent is more important than depth

B, Fluid resuscitation should be given to all those with >5% TBSA burn

C, At least 20 minutes of cooling with water is recommended

**D, A weak acid can be used to neutralise an alkali burn**

E, Full thickness burns can be painful**.**

Extent is more important than depth (which can be very hard to judge immediately and in the prehospital environment). Fluid is given to those with over 15% burns. At least 20 minutes of cooling is recommended, and this may be effective up to three hours post burn. Contrary to popular belief full thickness burns may be painful.

**51, In patients involved in Motor Vehicle Collisions**

A, They must all have cervical spine immobilisation

**B, A long spinal board can be used for extrication if absolutely necessary**

C, They should be transported to hospital on the long spinal board

D, A patient can never have their cervical spine cleared at the scene

E, The majority of spinal injuries occur in the thoracic spine.

Long spinal boards are extrication devices, but should not be used for patient transfer. Some patients can be “cleared” at scene. The majority of injuries occur in the cervical spine.

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|  | Cervical | Thoracic | Thoracolumbar | Lumbosacral |
| Incidence | 55% | 15% | 15% | 15% |

**52, The Canadian C Spine Rule**

A, Includes age under 65 as a risk factor

B, Is strongly specific for cervical spine fracture

C, Ambulant patients and those with front impact are “low risk”

D, Takes no account of the mechanism of injury

**E, Involves rotating the neck (if other criteria are met) to 45o in both directions**

The Canadian C spine Rule (along with NEXUS or a combination of the two) starts by assessing risk factors: age over 65; paraesthesia and mechanism. If none of these are present and only low risk factor (rear end collision, sitting position in ED, ambulatory, delayed onset of pain and no spinal tenderness) the neck can be moved. If the patient can rotate 45o their neck can be cleared.

**53, Which of these regarding the management of potential cervical spine injury is least correct**

A, Application of a semi rigid collar will still allow up to 30o of extension/flexion and rotation

B, Neurogenic shock can cause bradycardia and hypotension

**C, Patients should never be allowed to self-extricate from a vehicle**

D, A high cord injury can decrease the vital capacity to 10-20%

E, Priapism may be the only sign of cord injury in the unconscious patient.

A semi rigid collar still allows some movement within the collar. Neurogenic shock is due to a loss of sympathetic tone (in injuries about T6) causing unopposed parasympathetic activity. This decreases the heart rate and systemic vascular resistance and causing hypotension. After a high cord injury the innervation to the intercostal muscles may be lost leaving the patient dependant only on diaphragmatic breathing. Priapism may be still in cord injury, also due to unopposed parasympathetic action.

**54, Which of these is not part of the METHANE mnemonic**

A, Major Incident Declared

B, Exact Location of the Incident

**C, Time of incident**

D, Hazards

E, Access/Egress

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| --- | --- | --- | --- | --- | --- | --- |
| **M** | **E** | **T** | **H** | **A** | **N** | **E** |
| Major incident declared | Exact location | Type of incident | Hazards | Access/egress | Number of casualties | Emergency services required.  |

**55, Which of these is not part of the 30 second drills for optimisation of intubating conditions?**

**A, Change the intubating practitioner**

B, Optimise the operator position

C, Optimise the patient position

D, Release cricoid

E, Suction

The thirty second drills for optimising intubation conditions are: remove cricoid/use external laryngeal manipulation; optimise operator position; optimise patient position; suction; advance laryngoscope past the cords and gradually withdraw; change the laryngoscope.

**56, Regarding analgesia in the pre hospital environment**

**A, Using iv paracetamol can reduce the amount of iv morphine needed**

B, Ketamine is the drug of choice in mild pain

C, Entonox can be given to all trauma patients

D, Morphine is faster acting the fentanyl

E, Ketamine must not be used in patients with a head injury.

Ketamine is usually used (in analgesic doses) for those with at least moderate pain. It used to be thought that it increased intracranial pressure sufficiently to rule out its use in head injuries, but this has now been dismissed. Entonox should not be used in those with potentially expanding air spaces, such as pneumothorax and pneumocephalus. Fentanyl is more lipid soluble than morphine and therefore has a faster onset (and offset) of action.

**57, “Entonox”**

A, Is a mix of 50% nitrous oxide and 50% air

B, Is transported in a cylinder with a white collar

**C, Must be used with care at colder temperatures**

D, Should be stored vertically if at all possible

E, Is easy to carry from the vehicle to the scene.

“Entonox” is a 50:50 mixture of nitrous oxide and oxygen, transported in cylinders with a blue and white collar. At colder temperatures (<6oC) it can separate into its constituent gases and so should be repeatedly inverted to mix the gases. The cylinders are heavy and often left on vehicles when they may be useful.

**58, Minimal monitoring during prehospital anaesthesia should include of these except**

**A, Peripheral muscle stimulator**

B, No invasive blood pressure monitoring

C, End tidal carbon monoxide monitoring

D, Pulse rate and rhythm

E, Pulse oximetry.

A peripheral muscle stimulator is used to measure the action of neuromuscular blockers and has no place in prehospital care.

**59, Recommended positioning for prehospital anaesthesia (RSI) includes**

A, Performing RSI in the back of the ambulance.

B, Positioning the patient supine on the floor

C, Ensuring that the sun is in front of you to aim visualisation

**D, Two points of intravenous access**

E, A “kit dump” next to the ambulance.

An RSI is best performed where you have 360o access to the patient, at thigh height enabling to you perform laryngoscopy whilst kneeling. The sun should be behind you, with the kit dump immediately next to you. The patient should have two points of venous access, should one fail during the procedure.

**60, All of these are correct about ketamine except**

**A, It is an NMDA agonist**

B, It can be used for analgesia

C, It can be used for sedation

D, It can be used for anaesthesia

E, Can be safely used in patients with raised intracranial pressure.

Ketamine is an NMDA antagonist that can be used for analgesia, sedation and anaesthesia, including in head injury.

**61, This capnography trace is most likely to be seen in which condition**

A, Cardiac arrest

**B, Asthma**

C, Malignant hyperthermia

D, Oesophageal intubation

E, Pneumonia

The capnograph trace can give clues about the patient’s condition (as well as measuring the EtCO2). Here expiration is being delayed due to obstruction or bronchoconstriction.

**62, Which of these is the incorrect ECG lead position**

A, V1 - 4th intercostal space right sternal edge

B, V3 - 4th Intercostal space at left sternal edge

C, V4 - 5th Intercostal space left mid clavicular line

D, V6 - 5th Intercostal space left mid axillary line

E, V4R - 5th intercostal space right mid clavicular line

The correct lead positions are as follows:

V1 - 4th intercostal space right sternal edge

V2 - 4th Intercostal space at left sternal edge

V3 – Between V2 and V4

V4 - 5th Intercostal space left mid clavicular line

V5 – Between V4 and V6 in the same plane

V6 - 5th Intercostal space left mid axillary line

V4R - 5th intercostal space right mid clavicular line

**63, Regarding non invasive blood pressure monitoring**

A, The cuff should be the smallest that will fit round the arm

**B, It is placed at the same level as the heart**

C, Is accurate during motion

D, As small cuff may underestimate the measurement

E, Can be inaccurate if the patient is pyrexia

The BP cuff should be 40% of the mid arm circumference (usually 12.5cm). It is placed at the same level as the heart. BP may be overestimated if a smaller cuff is used and it can be inaccurate during motion (as well as in patients with irregular heart rhythms and low BPs).

**64. In cardiac ultrasound which of these findings does not correlate with the diagnosis given**

A, Paradoxical movement of the septum and right ventricular collapse = cardiac tamponade

B, Right ventricle larger than the left ventricle = PE

C, Empty left ventricle at the end of systole = hypovolaemia

D, IVC collapse fully during respiration or is >12mm = hypovolaemia

**E, Hypodynamic well filled ventricle = sepsis.**

These are all correct, except that in sepsis the ventricle may appear hyperdynamic and well filled.

**65, When driving under blue lights the driver is exempt from which of the following**

A, Failing to obey a “STOP” sign

B, Driving the wrong way up a one way street

C, Failing to obey a “GIVE WAY” sign

D, Failing to obey a “NO ENTRY” sign

**E, Parking on the offside of the road at night, facing oncoming traffic.**

Even under blue light driving conditions, drivers must still obey Stop, No Entry (including driving up a one-way street) and Give Way signs. Parking on the offside of the road, facing oncoming traffic, is not usually allowed, although under blue lights drivers are exempt from this.

**66, The following are all key principles of the Mental Capacity Act (MCA) except**

A, The person must be supported to make a decision

**B, The person must prove they have capacity in order to make an unwise decision**

C, A person who has consumed alcohol may still have capacity

D, A person with learning difficulties may have capacity

E, Anything done to a person lacking capacity must be in the person’s best interest.

Capacity is the ability to make specific decisions about your life and should be assumed to be present. The MCA applies only to those 16 and above. Every capacitous person has the right to make decisions, even if they might be deemed unwise. Alcohol consumption does not necessarily mean you lack capacity (nor that you should not be held responsible for your actions). If found to be lacking in capacity anything done to the person must be deemed to be in their best interest.

**67, The following all affect the degree of injury in firearm injuries except**

**A, The size and location of the wound**

B, Muzzle velocity

C, Projectile mass

D, Projectile construction

E, Distance travelled in the body.

The size and location of the wound does not necessarily indicate the potential damage caused, due to the unpredictable nature of the bullet’s trajectory within tissues.

**68, Features of primary blast injury**

A, Occurs most commonly in solid organs

B, Blast lung can cause cardiac tamponade

C, Is more common in large bowel than small bowel

D, Is always unsurvivable

E, Are a feature of low order explosions such as petroleum based explosions.

Primary blast injury are injuries caused by the stress and shear forces, particularly at gas-tissue interfaces (such as the lung, bowel and ear). Survivable is less likely if suffering from primary blast injury, not least because it implies a proximigty to the blast, however, death is by no means certain. Low order explosions such as petroleum and gunpowder are less likely to cause primary blast injury as they are subsonic.

**69, The four Cs of incident management at a firearms incident does not include**

A, Confirm – Confirm presence of threat

**B, Communicate – Ensure using a local operating channel**

C, Clear – Clear people away from the threat

D, Cordon – Create a cordon at a safe distance to the incident

E, Control – Create an incident control point to control the incident.

The police are responsible for the control of incidents involving firearms or a threat and their initial actions will follow the four Cs: Confirm; Clear; Cordon; Control.

**70, During a firearm incident**

A, Any assailant should not be treated ahead of the innocent

B, Casualties should not be moved prior to assessment and treatment

C, Clothing removed from casualties can be discarded

**D, The engine block and wheels may provide more protection than other parts of a car**

E, Any pre-hospital provider should be prepared to operate within the outer cordon of an active firearms incident.

Ideally casualties should be moved to the RVP for assessment and treatment. Nothing should be touched or disturbed except to treat casualties and clothing kept for forensic examination. When cutting clothes try to avoid the point of penetration. Medics operating in the outer cordon of an active incident should have extra training in tactical medicine.

**71, What would be the oxygen requirement to transfer an intubated patient for 30 minutes with ventilator settings of FiO2 = 1, Rate = 10/min and tidal volume = 500ml**

A, 80 litres

B, 110 litres

C, 150 litres

D, 180 litres

E, 210 litres

To calculate the amount of oxygen required TV (in litres) x Respiratory rate (in breaths per minute x time (in minutes) = 150 litres. In real life you would also add on extra for potential delays, but the question does not ask this.

**72, Which of these would not be a sign in acute severe asthma**

A, PEFR 33-50l/min

B, Silent chest

C, Resp rate>25/min

D, Heart rate >110bpm

E, Inability to complete sentences in one breath.

The BTS guideline for asthma includes silent chest as a criteria for defining “life threatening asthma” rather than acute severe asthma.

**73, Which of these is not part of the NATO phonetic alphabet**

A, A = Alpha

B, I = India

C, J = Juliet

D, O = October

E, X = X-ray

The NATO phonetic alphabet was devised in 1955 and is used internationally

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| A = Alpha | B = Bravo | C = Charlie | D = Delta | E = Echo | F = Foxtrot | G = Golf |
| H = Hotel | I = India | J = Juliet | K = Kilo | L = Lima | M = Mike | N = November |
| 0 = Oscar | P = Papa | Q = Quebec | R = Romeo | S = Sierra | T = Tango | U = Uniform |
| V = Victor | W = Whiskey | X = X-ray | Y = Yankee | Z = Zulu |  |  |

**74, Which of these is not part of the “Sepsis Six”**

A, Oxygen (to saturations >94%)

**B, White cell count**

C, Intravenous antibiotics

D, Lactate measurement

E, Urine output measurement

The “Sepsis Six” are Oxygen to saturations >94%; intravenous antibiotics; intravenous fluids; intravenous antibiotics; blood cultures; lactate; urine output.

**75, Which of the following are a symptom of anticholinergic poisoning**

A, Miosis

**B, Dilated pupils**

C, Hypothermia

D, Salivation

E, Lacrimation

Anticholinergic toxidrome can be seen with antidepressant and antipsychotic overdose. It causes a decrease in parasympathetic activity and leads to the phrase “blind as a bat; dry as a bone; full as a flask (retention); red as a beet; mad as a hatter”. In an MCQ/SBA it is always worth seeking out two opposite possible answers, as one will likely be correct. Here it is likely to be one of miosis and dilated pupils (mydriasis), so even if you have no idea the odds have shortened to 50:50.

**76, Which of these should be dosed according to total body weight and not “ideal” body weight**

**A, Midazolam bolus**

B, Fentanyl

C, Vecuronium

D, Rocuronium

E, Morphine.

Ideal body weight (the recommended weight for a person’s height) can be used for drug dosing for some medications, rather than actual body weight. The “ideal” body weight can also be calculated using the “Broca” formula: Men – height in centimetres-100; women height in centimetres – 110. Generally hydrophilic drugs would be dosed according to ideal body weight and lipophilic drugs to total body weight.

If you had no idea you could assume that drugs of the same class (here vecuronium and rocuronium, and morphine and fentanyl) are the same, leaving only propofol as the single best answer. Corrected body weight may also be used for some drugs (Ideal body weight plus 40% of excess weight).

|  |  |  |
| --- | --- | --- |
| **Ideal Body Weight** | **Corrected body Weight** | **Total/Actual Body Weight** |
| Propofol bolus | Induction Agents | Fentanyl | Suxamethonium |
| Thiopentone | Sugammadex | Midazolam |
| Ketamine | Local anaesthetics | Atracurium |
| Rocuronium | Muscle relaxants | Antibiotics | Propofol infusion  |
| Vecuronium |  |  |
| Morphine |  |  |

**77, When treating children**

A, intramuscular adrenaline can be used in mild or moderate wheeze

B, Children with suspected meningitis should receive antibiotics pre hospital

C, Repeated doses of nebulised adrenaline should be given in stridor

D, Parents should not go in the back of the ambulance so as not to distract clinical staff

**E, Intravenous glucose should not be given in concentrations higher than 20%.**

Intramuscular adrenaline can be used in life threatening wheeze in asthma or anaphylaxis, but only if not responding to other measures such as bronchodilators. Children with meningococcal sepsis should receive antibiotics prehospital (usually benzylpenicillin or a cephalosporin depending on local protocols). Parents should accompany children wherever possible. Glucose should be given in concentrations less than 20% as it is very irritant to small veins. The dose is 2ml/kg of 10% dextrose.

**78, The “Pillars” of clinical governance do not include**

A, Human resources support

**B, Regulatory body oversight**

C, Professional development

D, Working in a “safety culture”

E, Clinical audit

The seven pillars of high quality and safe care are: Service user involvement; HR management; personal and professional development; clinical effectiveness; clinical audit; risk management and clinical information management.

**79, Regarding children**

A, Children under 16 can never give their consent for a procedure

B, Both parents are required to give consent for a child under 16

**C, There are circumstances when consent to perform a procedure is not needed**

D, Consent decisions are always straightforward

E, Children can be designated as being “Selleck competent”

Consent decisions with children (under 16) can be difficult, especially if there is disagreement between the parents, or the child and their parents. A child under 16 can consent (or refuse) a procedure if they are “Gillick” competent – here, in the opinion of the professional consenting them, they are mature enough, with understanding and intelligence to understand what is involved. Only one parent is needed to give consent. In a medical emergency, where the child may die or come to serious harm you can proceed without consent.

**80, The JRCALC suicide risk assessment does not include**

**A, B – Background: Family history of suicide**

B, I – Intent: Are they still having suicidal thoughts now?

C, P – Plan: Have they made practical, rehearsed plans?

D, A – Action: Have they carried out any task in anticipation: writing will, organising affairs. Do they have a history of previous attempts?

E, P – Protective – What level of support do they have?

IPAP is basic suicide assessment risk tool that can be used by non mental health professionals. It does not include “Background”.

81, Using the NARU Triage Sieve assign this patient involved in a major incident a triage category:

A 65 year old man who has a traumatic amputation of his leg and is bleeding profusely and asking for help. Pulse 100/min. Respiratory Rate 28/min.

**A, P1 – Catastrophic haemorrhage despite normal obs**

B, P2

C, P3

D, Dead

E, Survivor

82, Using the NARU Triage Sieve assign this patient involved in a major incident a triage category:

A 23 year old man who has broken his arm and is ambulant at scene.

A, P1

B, P2

**C, P3 – Walking wounded**

D, Dead

E, Survivor

83, Using the NARU Triage Sieve assign this patient involved in a major incident a triage category:

A 36 year old female who is unconscious, with an open airway, but not breathing.

A, P1

B, P2

C, P3

**D, Dead – If a patient is not breathing despite an open airway they are dead. There is no place for CPR in a major incident.**

E, Survivor

84, Using the NARU Triage Sieve assign this patient involved in a major incident a triage category:

An 18 year old man screaming in pain from bilateral broken legs. Pulse 110/min. Respiratory Rate 32/min.

**A, P1 – His tachypnoea puts him in this category**

B, P2

C, P3

D, Dead

E, Survivor

85, Using the NARU Triage Sieve assign this patient involved in a major incident a triage category:

A 75 year old woman who has a chest and abdominal injury. Pulse 80/min. Respiratory Rate 20/min.

A, P1

**B, P2 – “Normal” obs, although these may be vastly abnormal for her or altered by medication, eg beta blockers**

C, P3

D, Dead

E, Survivor