

1. Which is **not** a typical physiological response to hypothermia
 - a) Oliguria
 - b) Leftward shift of oxyhemoglobin dissociation curve
 - c) Hypocapnoea
 - d) Widened QRS

2. In the resuscitation of patients whose core temperature is $<30^{\circ}\text{C}$ which is true
 - a) Pulse check should not be for longer than 10 seconds
 - b) Defibrillation for VT/VF should be stretched to every 4 minutes of CPR until $>30^{\circ}\text{C}$
 - c) In an arrest double dose intervals of resuscitation drugs such as adrenaline should be given until $>30^{\circ}\text{C}$
 - d) AF requires no therapy and revert spontaneously with rewarming

3. Which is considered a cardinal feature of heat stroke
 - a) Hypotension
 - b) Anhidrosis (absence of sweating)
 - c) Confusion
 - d) Temperature $\geq 39^{\circ}\text{C}$

4. Regarding arterial gas embolisms which is correct
 - a) Most cases present after 20 minutes of ascent
 - b) Trandelenburg position should be adopted to stop further cerebral gas embolisms
 - c) Aspirin should be administered immediately
 - d) $>90\%$ fully recover with hyperbaric oxygen therapy

5. Regarding decompression sickness (the bends) which is **incorrect**
 - a) Symptoms may occur days after a dive
 - b) Exercise after a dive will decrease severity of symptoms
 - c) Decompression sickness is rare in non-professional "free divers" (breath hold diving)
 - d) Type I DCS has no neurological or systemic symptoms compared to Type II

6. In drowning which is a **not** a predictor of poor outcome
 - a) Immersion time > 10 minutes
 - b) CPR in the emergency department
 - c) Submersion in icy water
 - d) Identifiable precipitant (eg AMI prior to event)

7. Which clinical criteria would warrant a transfer of a burns patient to a tertiary or burns centre?
- Burns in pregnant women
 - Partial thickness burns >5% of total BSA
 - Burns in children under 6 years old
 - Any full thickness burns in adults
8. Which is **not** considered a risk factor for urgent intubation due to inhalational injury from burns
- Voice change
 - Oral erythema and blistering
 - Hypoxia needing high FiO₂
 - Soot in nares
9. Regarding burns management which is correct
- Suxamethonium should be avoided due to risk of hyperkalaemia
 - Fluid resuscitation based on Parkland formula recommends Harmann's solution over others
 - Burns wound debridement should be done >12 hours post injury
 - Parkland formula guides fluid replacement, maintenance fluid should also be given
10. In chemical burns which is correct
- Hydrofluoric acid burns requires topical, subcutaneous or IV Magnesium
 - Sulphuric acid burns should be washed out with isopropyl alcohol rinse or polyethylene glycol PEG
 - Chromic acid can be fatal even at 10% BSA burn
 - Acid burns penetrate deeper in the skin compared to alkali as they cause liquefactive necrosis
11. Regarding electrical injury which is true
- High voltage injury is considered to be >600 volts
 - AC is more dangerous than DC as it can cause tetanic muscle contractions
 - <1 Amp cannot cause VF or respiratory arrest
 - Dry skin has less resistance than blood and muscles
12. Regarding Lightning injury which is **incorrect**
- Direct strikes are often fatal
 - Arrest is usually transient and in a mass casualty CPR should be commenced
 - Delayed arrhythmias are common
 - Fixed and dilated pupils in this injury may not relate to brain injury and is thus not prognostic

13. EMQ match the symptoms and treatments with the appropriate (non-snake) animal bite or sting

- i. Red back spider
- ii. Funnel Web spider
- iii. Ticks
- iv. Box Jellyfish
- v. Irukandji Jellyfish
- vi. Blue Ring Octopus
- vii. Stonefish

- a. Local signs: Ladder pattern of injury, immediate pain.
Systemic: Collapse with cardiac arrhythmia and arrest
Specific Treatment: Vinegar topically, antivenom and magnesium systemically
- b. Local signs: Bruising and puncture mark, immediate pain
Systemic: Nausea and vomiting, abdominal pain
Specific Treatment: Hot water topically, antivenom systemically
- c. Local signs: Swelling and piloerection to limb but no evidence of injury, delayed pain
Systemic: Pain initially local then systemic, sweating, hypertension, tachycardia
Specific Treatment: Antivenom
- d. Local signs: Slight bruising, itchy and swelling, not painful
Systemic: Generalized malaise, unsteady on feet
Specific Treatment: Supportive only
- e. Local signs: No evidence of injury, delayed pain
Systemic: Vomiting, agitation, sweating, systemic pain, severe hypertension, tachycardia, pulmonary oedema
Specific Treatment: Large doses of IV opioids, GTN infusion, IV Magnesium
- f. Local signs: Puncture marks and piloerection, immediate pain
Systemic: Vomiting, headache, agitation, abdominal pain, sweating, salivation, cardiovascular unstable, muscle fasciculation, pulmonary oedema
Specific Treatment: Antivenom, atropine
- g. Local signs: No evidence of injury, no pain
Systemic: Blurred vision, ptosis, symmetrical descending paralysis
Specific Treatment: Supportive only, intubation

14. Regarding Amanita (death cap mushroom) poisoning which is correct
- a) Nausea and vomiting in the first 6 hours following ingestion is suggestive of amanita poisoning
 - b) Charcoal is not useful for decontamination
 - c) Treatment includes penicillin, NAC and Silibinin
 - d) Mortality is 75% despite treatment
15. In carbon monoxide poisoning which is **not** an indication for hyperbaric oxygen therapy referral
- a) Within 12 hours of exposure
 - b) Pregnancy
 - c) COhb levels > 20%
 - d) Neurological deficits due to toxicity
16. EMQ match the most likely snake with the clinical and biochemical syndrome
- i Brown Snake
 - ii Tiger Snake
 - iii Black Snake
 - iv Death Adder
 - v Taipan
- a. No symptoms initially, ptosis and diplopia, limb weakness 60 minutes after bite, INR>10, CK level 1000
 - b. Swollen painful bite site, myalgia to limbs, INR 2, CK level 10,000
 - c. Mild stinging at bite site, ptosis and diplopia, limb weakness 3 hours after bite, INR and CK levels normal
 - d. Collapse at the scene but recovered in ED with no further symptoms, INR>10, CK normal
 - e. Mild pain at bite site, asymptomatic initially, myalgia and gum bleeding 8 hours later, INR>10, CK level 100,000 at 8 hours

Answers

1. A (Cold induced diuresis, others include bradycardia, long QT, J waves, increased blood viscosity, decreased drug metabolism, fixed dilated pupils <30°C, prolong bleeding time, decreased platelets, decreased WCC. LITFL Hypothermia revised 31 March 2014)

2. D (Pulse check should be done for ½ to 1 minute, defibrillation should be as standard every 2nd minute but maximum of 3 shocks then no more until temp >30°C, resus drugs should not be given if temp <30°C and should have dose intervals doubled if temp between 30°C to 35°C, AF can be considered a normal rhythm at temp <30°C. LITFL)
3. C (Heat stroke = neurological abnormality and temp >40°C)
4. D (Most cases present <20 minutes after ascent often <5 min, supine position is recommended but not Trandelengburg, aspirin is not longer recommended but IV lignocaine is indicated. Problems of ascent, DUNN RJ emergencymedicinemanual.com 2016)
5. B (Strenuous exercise <4 hours post dive is a risk factor for DCS, type I musculoskeletal and type II neuro/systemic, DCS can occur in commercial, competitive and repeated free diving but is rare in non-professional. Decompression Sickness Medscape updated 12 July 2016. & DUNN RJ)
6. C (other predictors: warm water drownings, CPR at any time, asystole, GCS<5, dilated non reactive pupils, pH <7.0, high lactate, delay in CPR at scene. Drowning revised 24May 2014 LITFL)
7. A (Partial thickness BSA >10% or full thickness >5% or partial thickness >5% in children or any full thickness in children, burns in children <1 year old, burns to special areas, circumferential burns, associated major trauma, electrical or chemical burns, burns in the elderly, NAI, inhalational burns, etc. Burns/management of burn wounds clinical guidelines RCH.org.au, anzba.org.au/care/referral-criteria/)
8. D (Others: stridor, significant hypoventilation. Burns DUNN emergencymedicinemanual.com)
9. D (Parkland formula for fluid replacement 4xkgxBSA over 24 h with ½ replaced in the first 8 hours, no one fluid more superior, Sux is safe if burns <5 days old. Burns DUNN RJ emergencymedicinemanual.com 2016)
10. C (Acids cause coagulative necrosis whilst alkali cause liquefactive necrosis and penetrate deeper, Hydrofluoric acid burns should be treated with Calcium although it can also cause hypomagnesaemia, Sulfuric acid burns should be treated with copiuous irrigation whilst Phenol should be treated with PEG or isopropyl alcohol)
11. B (High voltage considered to be >1000 V, wet skin / mucous membrane / blood / muscles have least resistance followed by dry skin with tendons / bones having most resistance. 100mAmp to 1 Amp can produce VF or resp arrest, >2Amp causes burns, >10Amps causes asystole. Electrical Injury DUNN RJ emergencymedicinemanual.com 2016)
12. C (Lightning injury, DUNN RJ emergencymedicinemanual.com 2016)
13. (Julian White. A Clinician's Guide to Australian Venomous Bites and Stings. Feb 2013. & Lindsay Murray. Toxicology Handbook. Second edition)
 - A = iv
 - B = vii
 - C = i
 - D = iii
 - E = v
 - F = ii
 - G = vi
14. C (GIT symptoms within 6 hours is unusual for Amanita poisoning, charcoal is useful for up to 36 hours post ingestion and forced emesis within 4 hours, mortality if eary aggressive therapy is 10%)

but if delayed for >48 hours is 75%. Lindsay Murray, Toxicology Handbook, Second edition. Mushrooms, DUNN RJ emergencymedicinemanual.com 2016)

15. A (Hyperbaric therapy within 6 hours. Carbon Monoxide, DUNN RJ)

16. (Isbister et al. 'Snakebite in Australia: a practical approach to diagnosis and treatment' MJA 199(11) 16 Dec 2013. & Lindsay Murray. Toxicology Handbook. Second edition)

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