



Toxicology

Single Choice Questions (SCQ) and Extended Match Questions (EMQ)

Emergency Medicine Fellowship Program

1. With regards to decontamination which is incorrect?

- a) it should begin at the scene if possible
- b) the clothing should be removed because as much as 80% of contaminating material can be on the clothing
- c) at hospital the priority is to decontaminate the intact skin prior to the orifices
- d) at hospital the priority is to decontaminate the wounds prior to the intact skin
- e) waste water from the decontamination process of more than one person cannot go into the normal drainage system

2. Which is incorrect with regard to Australian insects?

- a) death from a bee sting in Australia is usually due to anaphylaxis as opposed to venom effect
- b) ticks act by slowing the action potential classically causing weakness, Bell's palsy, difficulty swallowing and flaccid paralysis
- c) once the tick is removed symptoms usually improve
- d) 30% of scorpion bites in Australia are fatal
- e) the puss caterpillar toxin classically produces a grid pattern on the skin

3. Which statement is incorrect?

- a) the risk of malignant hyperthermia is genetically inherited
- b) drugs which classically cause malignant hyperthermia include inhalational anaesthetic agents, succinylcholine and amide local anaesthetics
- c) the drug used to treat malignant hyperthermia is dantrolene
- d) serotonin syndrome classically causes CNS, autonomic and motor dysfunction
- e) the drug used to treat severe serotonin syndrome is bromocriptine

4. Which statement is incorrect?

- a) serotonin syndrome usually onsets within a few hours of drug ingestion whereas Neurolept Malignant Syndrome usually takes days
- b) they both display autonomic dysfunction
- c) the length of duration of NMS is usually longer than that of Serotonin Syndrome
- d) most cases of serotonin syndrome self resolve in 24-48 hours whereas drug treatment is usually required in NMS
- e) both serotonin syndrome and NMS give a high CK and ocular clonus

5. Which of the following may be useful in severe Funnel Web spider envenomation

- a) Pressure bandage and immobilisation of the patient
- b) Metoprolol 0.02mg/kg titrated to effect
- c) Atropine 0.01mg/kg titrated to effect
- d) Antivenom, 2 ampules stat (125U/ampule, Rabbit IgG)
- e) All of the above

6. The most common symptom associated with mushroom poisoning is

- a) Hallucinations
- b) Lacrimation
- c) Dry mouth
- d) Jaundice
- e) Gastroenteritis

7. Carbon monoxide poisoning

- a) Is more significant for the foetus compared to the mother
- b) Usually presents with "cherry red" skin
- c) Is almost never associated with angina
- d) Is associated with coma at a concentration above 30%
- e) Is only problematic due to displacement of O₂ from Hb

1) C

2) D

3) E

4) E

5) E

6) E

7). A

1.Regarding Iron overdoses which is true?

- a) 95% of ingested tablets are seen on plain x-ray?
- b) Large overdose will produce a metabolic acidosis with a normal anion gap
- c) Charcoal is the recommended method of GIT decontamination in the first hour
- d) desferrioxamine when given to a severe OD will produce rose coloured urine
- e) has no local GIT irritating effects

2.Regarding arrhythmias secondary to overdose which is false?

- a) HCO₃ is the drug of choice for arrhythmias caused by tricyclic antidepressants
- b) In arrhythmias secondary to digoxin OD cardioversion is recommended
- c) Arrhythmias associated with cocaine may respond to benzodiazapines
- d) Quinine in OD produces 1A antiarrhythmic effects
- e) Dextropropoxyphene increases the QRS and QT segments in OD

3.With regards to acute cyanide OD which is false?

- a) ferric ion of cytochrome oxidase system is bound, ceasing oxidative phosphorylation and aerobic metabolism
- b) less than half the population will recognise the bitter almond odour
- c) Cobalt EDTA is a safe and non toxic method of treating overdose
- d) Hydroxycobalamin is a safe and non toxic method of treating overdose
- e) A cyanide level is rarely useful in management of acute OD

4.Which is false?

- a) at pH 7.4 salicylic acid is in the unionized form
- b) patients are often hyperthermic

- c) when alkalinizing the urine, serum K⁺ replacement may be required
- d) haemodialysis is of benefit
- e) a serum salicylate level of 2.0 at 6 hours is sufficient for medical discharge.

5. With regard to paracetamol OD which is false?

- a) children are relatively resistant to toxicity because the CYP450 system is under developed
- b) in "at risk" patients the threshold level for N-acetylcysteine should be halved
- c) acute alcohol coingestion in a person that does not usually drink is reason to lower the treatment threshold for paracetamol OD
- d) if a patient presents at 8-24 hours after OD, N-acetylcysteine should be commenced pending the results
- e) the Rumack Mathews nomogram is not helpful in multiple ingestions at different times over 24 hours.

6. A learning exercise: All of the below statements are true regarding GHB (gamma hydroxybutyrate)

- a) is a psychoactive drug of abuse
- b) it has been used clinically to treat narcolepsy, as an anaesthetic agent, to treat alcohol withdrawal and in body building
- c) it has a very short elimination half life (30 mins) and thus may not be detectable in a urine sample taken after delay of several hours
- d) has been involved in two separate group presentations to Gold Coast hospital where 11 of the 14 pts needed intubation
- e) usually taken with a coingestant, probably not recognized by the pt

7. With regards to management of Warfarin toxicity which is false?

- a) any major bleeding should be managed with 5-10 mg IV Vit K and FFP
- b) the onset of action of IV Vit K is 1-3 hours
- c) with an INR of 13, if a patient has minor or no bleeding then FFP is still warranted
- d) If a pt has an INR of 13 with minimal bleeding, an appropriate IV dose of Vit K would be 1-2 mg IV
- e) If Vit K is given for a toxic INR with no major bleeding then the INR should be checked in 6-12 hours, and the warfarin withheld for 1-2 days.

8. Lithium toxicity. Which is false?

- a) Toxicity associated with chronic use occurs at lower serum levels
- b) In a non user an acute overdose may not be symptomatic until the serum level is greater than 3
- c) Introduction of thiazide diuretics or NSAID's may cause a pt usually in the therapeutic range to become toxic
- d) Most effects of acute OD are neurological
- e) Appropriate management of an acute OD could include charcoal, IV fluids and haemodialysis

9. Which is the wrong mechanism of action for the listed drug/toxin?

- a) Colchicine: binds to intracellular tubulin preventing cell mitosis
- b) Amanita phalloides: impairs DNA synthesis
- c) Strychnine: inhibits glycine in the spinal cord
- d) Isoniazid: reduces folate activity
- e) Iron: disrupts oxidative phosphorylation
- f) Paraquat: generates oxygen free radicals

10. With regards to organophosphates and carbamates which is false

- a) both inactivate acetyl cholinesterase
- b) both cause an acute cholinergic syndrome
- c) both respond to treatment with atropine
- d) both respond to treatment with pralidoxime
- e) if there is associated CNS signs and muscle weakness the cause is likely to be organophosphates.

11. Which is false about the blue-ringed octopus?

- a) it has a toxin similar to tetrodotoxin, which causes paralysis
- b) treatment consists of antivenom administration and cardiovascular support
- c) spontaneous ventilation usually recurs after 12 hours
- d) despite needing CPR or assisted ventilation the patient is aware and conscious
- e) first aid consists of compression bandaging

12. Which is false with regard to the box jelly-fish?

- a) it has a vaccine which can be administered i.v. or i.m., though i.v. is more effective
- b) the tentacles may extend up to 3 metres and produce an extremely painful sting
- c) vinegar is used for its symptomatic relief only
- d) its toxin causes neuromuscular paralysis, cardiotoxicity and dermatonecrosis
- e) compression bandaging is recommended

13. Which is false?

- a) first aid of all marine 'spine' wounds consists of administration of hot water
- b) the stone fish has an antivenom which is available i.m.
- c) in Australia there are no reported deaths due to stone fish
- d) fatalities have been reported due to cone shell envenomation for which no antivenom is available
- e) most of the documented stingray fatalities are secondary to their toxin

14. With regard to snake bite which is true?

- a) there is no specific sea snake antivenom
- b) tiger and brown snakes are more likely to cause paralysis than black snake
- c) in Victoria the only two venomous snakes are the tiapan and the brown snake
- d) the dose of antivenom needed for tiger snake envenomation is usually one vial
- e) the antivenom should be diluted 1 in 10 in Normal Saline and given over half an hour

15. Comparing the Red back and the funnel web spiders, which is false?

- a) it is the female redback and the male funnel web which are harmful
- b) death due to the funnel web spider can happen within 1 hour
- c) the atratoxin of the funnel web spider causes cholinergic effects as well as muscle fasciculations and paralysis
- d) the red back spider venom is rabbit based and given iv with little risk of allergy
- e) severe toxicity with red back spider envenomation takes at least three hours.

16. With regard to the alcohols which is false?

- a) methanol causes snow storm vision in severe intoxication
- b) ingestion of both methanol and ethylene glycol causes a metabolic acidosis with an increased anion gap and an increased osmolar gap
- c) neither methanol or ethylene glycol are absorbed through the skin
- d) you might expect to find oxalate crystals in the urine of a pt who had an ethylene glycol OD
- e) methanol is not found in Australian methylated spirits

17. In patient taking meclizine you would only administer?

- a) fluoxetine
- b) tramadol
- c) lithium
- d) pethidine
- e) aspirin

18. In a child who definitely ingested some household dishwashing powder your treatment would consist of?

- a) inserting a NGT and aspirating stomach contents
- b) giving ipecac
- c) giving the child 250ml of water to drink
- d) admitting for observation
- e) urgent gastroscopy regardless of the time of day or night

19. With regards to antihistamines in overdose which is false?

- a) H2 receptor antagonists are relatively safe
- b) 1st and 2nd generation H1 antagonists cause anticholinergic effects as well as alpha blockade and serotonin blockade.
- c) 1st generation H1 blockers cross into the CNS but H2 blockers do not
- d) Terfenadine can cause arrhythmias when mixed with ketoconazole and cimetidine
- e) 1st generation blockers tend to cause more CVS and CNS effects

20. With regard to Calcium channel blocker OD which is a false statement?

- a) CaCl has more elemental calcium than CaGluconate per gram
- b) There is no role for treatment with i.v. glucagon
- c) They bind to charcoal d) Verapamil OD will be hypotensive and bradycardic
- e) Felodipine OD will be tachycardic if it is a small OD but bradycardic if it is large

21. with regard to carbon monoxide which is false?

- a) its half life with 100%O₂ is 90 mins
- b) the fetus is relatively protected from the effects of CO
- c) CO moves the O₂ dissociation curve to the left
- d) The Alfred hospital study showed no long or short term difference between 100% O₂ for 48 hours and two hyperbaric dives to 3 ATM
- e) CO is a direct myocardial suppressant

22. Which is false?

- a) digoxin toxicity is more like to produce bradyarrhythmias than tachyarrhythmias
- b) acute digoxin OD in a non user will cause hyperkalemia
- c) cardioversion is safe
- d) in an elderly person who is digoxin toxic they are more likely to be hypokalemic
- e) both hyper and hypokalemia exacerbate digoxin's toxicity

23. With regard to Isoniazid OD which is not true?

- a) Impairs vit B 6 activity
- b) pyridoxine is the antidote
- c) one to 10 ampules of the antidote is usually sufficient
- d) there is a metabolic acidosis e) phenytoin is ineffective against seizures

24. With regard to Amanita Phalloides which is incorrect?

- a) they have characteristic pink spores and pink gills
- b) they impair DNA synthesis
- c) they cause a severe gastroenteritis initially

- d) there delayed effect is hepatic necrosis
- e) their mortality is up to 30%

25. Which is false?

- a) metHb does not carry oxygen
- b) mothballs and lignocaine produce metHb
- c) methylene blue can cause metHb
- d) metHb is the presence of Fe³⁺ in the haem moiety of Hb
- e) methylene blue is same in pts with G6PD deficiency

ANSWERS: 1) D 2)B 3)C 4)E 5)C 6) no answer 7)C 8)E 9)D 10)D 11)B 12)C 13)E 14)E 15)D 16)C 17)E 18)C 19)B 20)B 21)B 22)C 23)C 24)A 25)E

1. Regarding acid ingestion burns

- A they cause coagulative necrosis
- B they cause liquefactive necrosis
- C first aid is milk
- D steroid therapy reduces stricture formation

3. Digoxin toxicity is potentiated by all EXCEPT

- A hypokalemia
- B. hypomagnesemia
- C. hypermagnesemia
- D. hypocalcemia
- E. hypothyroidism

13. In regard to QT interval which is incorrect

- A with TCA overdose a long Qt interval predicts poor outcome
- B all class I antiarrhythmics prolong the QT interval

15. Regarding Amanita Phylloides mushroom toxicity, which is FALSE:

- a) Large doses of penicillin IV may be useful
- b) Silybinin, a milk thistle extract, may inhibit hepatic uptake of Amatoxin
- c) Multiple dose charcoal is indicated
- d) Haemoperfusion may be useful if utilised within 48 hours of ingestion
- e) Symptoms typically occur within the first 4 hours of ingestion

16. Which of the following toxins does NOT cause a syndrome comprising mydriasis, thirst, tachycardia, and urinary retention:

- a) Tricyclic antidepressants
- b) Trumpet lily
- c) Scopolamine
- d) Organophosphates
- e) Antihistamines

Answers

1. A 3. D 13. B 15. E 16. D

1. Regarding acute theophylline toxicity:

- a) theophylline has very poor oral bioavailability
- b) metabolic complications include hyperkalaemia and hypophosphataemia
- c) elimination is not increased by haemodialysis
- d) signs of minor toxicity usually manifest at serum concentrations from 220 to 440 $\mu\text{mol/L}$ (20 to 40mg/L)
- e) phenytoin is the anticonvulsant of choice in seizures resulting from toxicity

37. Haemodialysis would increase the excretion of:

- a) tricyclics
- b) benzodiazepines
- c) digoxin
- d) lithium
- e) calcium channel blockers

45. A 30 yo man is treated in the ED after being trapped in a burning house. His carboxyHb level is 50%. Which of the following statements is true?

- a) Both pO₂ and O₂ saturations are likely to be normal
- b) CarboxyHb shifts the O₂ dissociation curve to the right, and therefore interferes with O₂ delivery to the tissues
- c) Serum carboxyHb levels correlate well with toxicity
- d) Symptoms would be expected to be equivalent to those of a patient with 50% blood loss
- e) None of the above

47. Pseudo-hyponatraemia results from a shift of water from the intracellular to extracellular space, caused by the presence of osotically active solutes in the ECF. Which of the following causes the most significant fluid shifts?

- a) Acetone
- b) Mannitol
- c) Ethylene glycol
- d) Ethanol
- e) Urea

48. A patient who has been taking a MAO Inhibitor for years presents to the ED with hyperthermia, confusion, hypertension and diaphoresis. He has no known allergies/adverse reactions. Which of the following agents should NOT be used in his management?

- f) Diazepam
- g) Pethidine
- h) Chlorpromazine
- i) Cyproheptadine
- j) Methysergide

Answers

1. D - Cam 699

37 D Tint 1062

45. A Ros 1447 –1448

47. B Ros 2432

48. B Cam chap 26.1

3. Formation of acetone occurs in poisoning with:

- a) ethanol
- b) methanol
- c) Ethylene glycol ?
- d) isopranolol
- e) acetaminophen

12. The following blood gases pH 7.17, PCO₂ 59, Bic 21, PO₂ 130 are most likely to be consistent with:

- a) diabetic ketoacidosis
- b) diuretic overdose
- c) premature twin baby
- d) camphor ingestion with seizures
- e) oliguria and renal failure

15. One of the differences between morphine and pethidine relates to:

- a) analgesic efficacy
- b) route of metabolism
- c) ability to suppress cough
- d) histamine release effects

e) abuse potential

68. All of the following substances bind well to activated charcoal EXCEPT:

- a) thioridazine
- b) atenolol
- c) cyanide
- d) benztropine
- e) tetrahydrocannabinol (THC)

69. In paracetamol poisoning:

- a) there are theoretical advantages to giving the antidote at 2 hours post ingestion
- b) toxicity is less likely in children than adults
- c) the initial dose of N-acetylcysteine is given over 5 minutes
- d) Nacetylcysteine is not indicated more than 20 hours post ingestion
- e) activated charcoal is not used more than 1 hour after ingestion

70. A patient who presents psychotically disturbed, hot, sweating, and tachycardic is most likely to be poisoned with:

- a) promethazine
- b) chlorpheniramine
- c) dexamphetamine
- d) trumpet lilies
- e) all of the above

71. Digoxin specific antibodies:

- a) can be used to treat oleander poisoning
- b) should be used if serum digoxin is $>4\text{meq/L}$
- c) are indicated if profound first degree heart block is present
- d) should be used if serum potassium is $>4.5\text{mmol/L}$

e) all of the above

72. The best predictor of serious toxicity in TCA poisoning is:

- a) drug plasma levels
- b) GCS less than 8
- c) estimates of ingested drug dose
- d) rightward deviation of the QRS vector
- e) QRS duration of >100msec

73. Lithium poisoning:

- a) is treatable with multidose activated charcoal
- b) presents usually as cardiac arrhythmias
- c) is treated in part with frusemide
- d) is more dangerous if due to chronic poisoning
- e) produces ECG changes similar to hyperkalaemia

74. The safest and most efficacious therapy for cyanide poisoning is:

- a) sodium thiosulphate
- b) amyl nitrite
- c) sodium nitrite
- d) cobalt EDTA
- e) hydroxycobalamin

85. The patient with these electrolytes: Na⁺ 144 mmol/L K⁺ 4 mmol/L HCO₃⁻ 26mmol/L Cl⁻ 100 mmol/L could be suffering from all of the following EXCEPT:

- a) acute renal failure
- b) methanol poisoning
- c) lower limb crush injury

d) salicylate poisoning

e) severe diarrhoea

3. D 12. D 15. C 68. C 69. B 70. C 71. A 72. B 73. D 74. E 85. E

PSYCH & TOXICOLOGY MCQs

Q1 In psychoses, which ONE of the following is FALSE?

- | | |
|--------------------------|---|
| A) <input type="radio"/> | Dysthymic disorder is a form of depression |
| B) <input type="radio"/> | Schizophrenia accounts for 25 of hospital admissions |
| C) <input type="radio"/> | In bipolar disorders, depressive episodes are less frequent than manic ones |
| D) <input type="radio"/> | Psychoses are axis 1 disorders in the DSM-V classification system |
| E) <input type="radio"/> | Schizophrenia is characterised by primary delusions and hallucinations |

Q2 Regarding haemodialysis, all of the following criteria make a substance amenable EXCEPT?

- | | |
|--------------------------|----------------------------|
| A) <input type="radio"/> | Low molecular weight |
| B) <input type="radio"/> | Low water solubility |
| C) <input type="radio"/> | Low volume of distribution |

D) Not plasma protein bound

E) None of the above

Q3 Ingestion of gardenia flowers is likely to cause:

A) GIT irritation

B) Delirium / hallucinations

C) Digitalis toxicity

D) Oedema of mouth, tongue, throat

E) No symptoms

Q4 Regarding Bipolar affective disorder:

A) Rapid Cyclers have 5 or more episodes of mania and depression per year

B) Male : Female incidence is equal

C) Criteria include poor self esteem and flight of ideas

D) Can be caused by Hyperthyroidism

E) Lithium is metabolised in the liver

Q5 All of the following measures are indicated in the treatment of an agitated patient suffering from acute amphetamine intoxication EXCEPT?

A) place the patient in a calm environment and minimize external stimuli

- B) aggressive cooling measures in hyperthermic patients
- C) acidification of the urine to promote urinary excretion of amphetamines
- D) aggressive management of seizures
- E) administer chemical restraint with benzodiazepines

Q6 All of the following have been associated with neuroleptic malignant syndrome EXCEPT :

- A) Nortriptyline
- B) Olanzipine
- C) Organic brain disease
- D) Haloperidol
- E) Metoclopramide

Q7 Regarding hydrofluoric acid, which of the following is TRUE?

- A) Death is usually from myocardial conduction failure
- B) Hypokalemia is seen in systemic toxicity
- C) 40 concentration will cause minimal pain
- D) Ingestion only results in mild gastritis
- E) Systemic symptoms rarely occur with a burn of 10 BSA

Q8 The following antidotes may be used in cyanide poisoning except

- A) Dimercaprol

- B) Sodium thiosulphate
- C) Sodium nitrite
- D) Hydroxycobalamin
- E) Dicobalt EDTA

Q9 Extracorporeal elimination of drugs may be of use in all of the following EXCEPT:

- A) carbamazepine
- B) atenolol
- C) salicylates
- D) Ethylene glycol
- E) organophosphates

Q10 The following statements about Digibind are true EXCEPT?

- A) They are produced from sheep
- B) Indicated for use if serum digoxin level is 10mmol/L in acute overdose
- C) Serum digoxin levels increase following its administration
- D) Indicated when there is a hx of ingestion of 10 mg
- E) 40 mg bids approximately 0.6 mg digoxin

Q11 All of the following symptoms are commonly found in sympathomimetic intoxications EXCEPT?

- A) agitation
- B) tachycardia and hypertension
- C) hyperthermia
- D) dry, flushed skin
- E) mydriasis

Q12 Regarding antivenom treatment in snakebite, which is true?

- A) Polyvalent antivenom contains a mixture of 1 ampoule of all the monovalent antivenoms
- B) Indications for giving AV include urinary retention
- C) Sea snake envenomation can be treated with Brown snake AV
- D) FFP should be used concurrently with AV in massive envenoma
- E) End point of AV therapy in Brown snakes is restoration of vision

Q13 Which of the following is the MOST appropriate therapy for severe lithium intoxication?

- A) flumazenil
- B) multiple dose-activated charcoal

- C) hemodialysis
- D) carbonic anhydrase inhibitor
- E) gastric lavage followed by activated charcoal

Q14 All of the following are AIDS defining illnesses EXCEPT?

- A) Pneumocystis carinii pneumonia
- B) Kaposi sarcoma
- C) Cerebral toxoplasmosis
- D) Oral candidiasis
- E) Cryptococcal meningitis

Q15 All of the following suggest inhalational effects from toluene (Hydrocarbon) abuse Except:

- A) Ataxia
- B) Haematemesis
- C) Euphoria
- D) Myopathy
- E) Cardiac arrhythmias and hypotension

Q16 Which of the following drugs is most suitable for elimination by haemodialysis?

- A) Digoxin
- B) Lithium

C) <input type="radio"/>	Doxepin
D) <input type="radio"/>	Aspirin
E) <input type="radio"/>	Iron

Q17 Which of the following is associated with anorexia nervosa

A) <input type="radio"/>	Rapid gastric emptying
B) <input type="radio"/>	Menorrhagia
C) <input type="radio"/>	Diabetes insipidus
D) <input type="radio"/>	Hyperkalaemia
E) <input type="radio"/>	Increased deep tendon reflexes

Q18 A 28-year-old sales assistant presents with difficulty sleeping. He recounts how he has great difficulty falling asleep, going over the events of the day in his head. When at last he gets to sleep, he wakes often during the night. He sometimes has nightmares and usually feels unrefreshed in the mornings. His sleep disturbance is CHARACTERISTIC of

A) <input type="radio"/>	nocturnal epilepsy
B) <input type="radio"/>	schizophrenia
C) <input type="radio"/>	generalised anxiety disorder
D) <input type="radio"/>	major depression
E) <input type="radio"/>	borderline personality disorder

Q19 Regarding insecticide poisoning which of the following is true?:

A) <input type="radio"/>	Miosis and muscle fasciculations are unreliable signs of organophosphate poisoning
B) <input type="radio"/>	Organophosphate-induced delayed neuropathy occurs 1-3 weeks after acute poisoning
C) <input type="radio"/>	P-cholinesterase levels takes about 1 week to return to baseline after exposure
D) <input type="radio"/>	P-cholinesterase levels have good prognostic value regarding atropine requirements and mechanical ventilation
E) <input type="radio"/>	Pralidoxime should be administered to asymptomatic patients with a significant ingestion

Q20 Naltrexone maybe useful in treatment for addiction to opioids and

A) <input type="radio"/>	GHB (gamma hydroxybutyric acid – “fantasy”)
B) <input type="radio"/>	MDMA (ecstasy)
C) <input type="radio"/>	zolpidem
D) <input type="radio"/>	Alcohol
E) <input type="radio"/>	Cocaine

Q21 If sea-snake envenomation has occurred?

A) <input type="radio"/>	Pressure-immobilisation bandage may cause further activation of venom and should be avoided
B) <input type="radio"/>	Profuse bleeding from the site is common
C) <input type="radio"/>	Tiger snake anti-venom may be used as an alternative to sea-snake anti-venom
D) <input type="radio"/>	Immersion in hot water will provide immediate relief
E) <input type="radio"/>	The bite site is nearly always painful

Q22 All of the following are effectively bound by activated charcoal EXCEPT?

- A) acetaminophen
- B) tricyclic antidepressant
- C) iron
- D) theophylline
- E) salicylates

Q23 The MOST effective treatment of a widened QRS on ECG from a tricyclic antidepressant (TCA) overdose is?

- A) physostigmine
- B) sodium bicarbonate boluses
- C) hemodialysis
- D) multiple dose-activated charcoal
- E) rapid sequence intubation and controlled hypoventilation

Q24 Tricyclic antidepressants possess all of the following pharmacologic properties EXCEPT?

- A) anticholinergic effects
- B) alpha agonist effects
- C) quinidine-like membrane stabilizing effects
- D) central blockade of the reuptake of norepinephrine and serotonin
- E) highly tissue bound with a large volume of distribution

Q25 All of the following are correct EXCEPT:

A) <input type="radio"/>	Disulfiram used as chelating agent for zinc toxicity
B) <input type="radio"/>	Prussian blue exchanges potassium for thallium in toxic thallium ingestion
C) <input type="radio"/>	Desferrioxamine can reliably be used IV or IM or orally as a chelating agent for iron overdose
D) <input type="radio"/>	Mercury poisoning can be treated by chelation therapy with penicillamine, or dimercaprol (British antilewisite / BAL)
E) <input type="radio"/>	Lead poisoning is only treated if symptomatic using Calcium EDTA and or dimercaprol (BAL)

ANSWERS

1. C
2. B
3. E
4. B
5. C
6. A
7. A
8. A
9. E
10. B
11. D
12. A
13. C
14. D
15. B
16. B
17. C
18. C
19. B
20. D
21. C
22. C
23. B
24. B
25. C

1. Question

Which of the following is not a feature of drug withdrawal syndromes

- 1. Lacrimation
- 2. Miosis
- 3. Piloerection
- 4. Diarrhoea

2

Mydriasis is the usual feature associated with drug withdrawal syndromes. (link)

2. 2. Question

The cumulative suicide risk at one year following an episode of non fatal poisoning in Australia is approximately

- 1. 3%
- 2. 1%
- 3. 5%
- 4. 7%

2

The cumulative suicide risk at one year has been reported to be less than 1%, rising to approximately 7% by 10 years.

3. 3. Question

The yield of screening for detectable paracetamol concentrations following overdose in patients without a history of paracetamol ingestion is approximately.

- 1. 1%
- 2. 5%
- 3. 10%
- 4. 15%

2

(link)

4. 4. Question

A 33 year old man is brought to your ED with vomiting and diarrhoea. On examination he has small pupils, a heart rate of 32 beats/min, blood pressure of 115/70 mmHg, has copious tears, is swallowing frequently and has a moist cough. Which of the following is the most likely cause for his symptoms.

- 1. Ingestion of inocybe or clitocybe mushrooms
- 2. Ingestion of nicotinic insecticides
- 3. Ingestion of theophylline
- 4. Envenomation by a redback spider

1

The presentation is typical of a cholinergic toxidrome, the only cause of which that is listed is that of ingestion of inocybe or clitocybe mushrooms.(link)

5. 5. Question

Match the poisoning and the usually diagnostic odour that it causes.

Turpentine –	violets
Thallium –	garlic
Chloral hydrate –	pear
Cyanide –	almond
Disulfiram –	rotten eggs

6. 6. Question

Ingestion of which one of the following is least likely to give a garlic like smell on the breath following toxic ingestion

- 1. Selenium
- 2. Organophosphates
- 3. Chloroform
- 4. Arsenic

3

Chloroform ingestion is usually associated with a sweet, ketotic odour.

7. 7. Question

You are attending a 42 year old woman who was brought to your ED semiconscious. She has a heart rate of 48 beats/min, blood pressure of 90/60 mmHg, a GCS of 8, and small pupils. Examination of the oral cavity and skin is unremarkable. Poisoning from which of the following agents is most likely.

- 1. GHB
- 2. Methadone
- 3. Organophosphates
- 4. Methyphenidate

2

(link)

8. 8. Question

Which one of the following investigations is the most useful in stratifying risk of early adverse outcome in patients who present following a toxic ingestion of unknown substances

- 1. Osmolar gap
- 2. Blood glucose
- 3. Serum paracetamol
- 4. 12 lead ECG

4

The 12 lead ECG is the cornerstone of risk stratification for early (cardiovascular) complications of poisoning. Serum paracetamol and osmolar gap may have prognostic significance, but mostly for delayed complications (if untreated). (link)

9. 9. Question

The agents involved in significant toxicity following poisoning can be determined by history, examination and basic laboratory investigations in approximately what percentage of drug ingestions

- 1. 40%
- 2. 95%
- 3. 60%
- 4. 80%

2

10. 10. Question

Which one of the following is not normally a feature of heavy metal poisoning

- 1. Grey blue mucous membrane discolouration
- 2. Vomiting
- 3. Hepatitis
- 4. Peripheral neuropathy

3

(link)

11. 11. Question

The yield of screening for paracetamol concentrations requiring the use of NAC following overdose in patients without a history of paracetamol ingestion is approximately

- 1. < 0.5%
- 2. 2.5%
- 3. 5%
- 4. 10%

1

(link)

12. 12. Question

The percentage of poisonings in adults that involve more than 3 substances is approximately

- 1. 20%
- 2. 40%
- 3. 5%
- 4. 10%

3

(link)

13. 13. Question

Which one of the following is least likely to cause severe toxicity following poisoning

- 1. Colchicine
- 2. Diclofenac
- 3. Isoniazid
- 4. Chloroquine

2

NSAIDs are relatively non toxic compared to the other agents that can all cause life threatening toxicity.(link)

14. 14. Question

Following chronic use, which one of the following agents is least likely to cause a withdrawal syndrome following sudden cessation of use.

- 1. SSRIs
- 2. Lithium
- 3. GHB
- 4. Amphetamines

2

15. 15. Question

Which one of the following agents would be least likely to cause delayed onset of toxicity following oral ingestion

- 1. Colchicine
- 2. Lithium
- 3. Calcium channel antagonists
- 4. Chloroquine

4

Chloroquine usually has a relatively rapid onset and offset of toxicity. (link)

16. 16. Question

Which one of the following substances would be most likely to cause blindness with normal pupillary reflexes following poisoning

- 1. Quinine
- 2. Methanol

- 3. Hydrogen sulphide
- 4. Phencyclidine

3

Blindness with preserved pupillary reflexes indicates a cortical cause – hydrogen sulphide is the only one of the substances listed that does not cause retinal toxicity, although cocaine could cause both. Phencyclidine has no direct retinal toxicity, however “sun gazers retinopathy” is a recognised complication of PCP use.(link)

17. 17. Question

A 16 year old girl is brought to your ED having been found agitated in a park. She is alert, with pressure of speech, has a heart rate of 120 bpm, a BP of 140/70 mmHg, warm sweaty skin and a resting tremor. Her pupils are dilated and examination of the abdomen reveals few bowel sounds and a palpable suprapubic mass that extends midway to the umbilicus. The most likely cause is:

- 1. Ingestion of Angel's trumpet
- 2. Ingestion of amphetamines
- 3. Ingestion of promethazine
- 4. Injection of pilocarpine

2

The pressure of speech and sweaty skin suggests stimulant poisoning, otherwise the features could be of an antimuscarinic toxidrome. The suprapubic mass could be due to urinary retention or a pregnant uterus. (link)

18. 18. Question

The percentage of poisonings in adults that involve more than one substance is approximately

- 1. 20%
- 2. 10%
- 3. 40%
- 4. 60%

4

60% of ingestions in adults involve more than one substance, however the percentage is much lower in children. (link)

19. 19. Question

Which of the following would be least likely to contribute to the onset of toxicity being delayed following ingestion of a toxic amount of a substance.

- 1. Diabetes
- 2. Co ingestion of ethanol
- 3. Shock
- 4. Connective tissue disorders

2

Connective tissue diseases often reduce gastric motility as can shock and diabetes, bezoar formation can cause delayed release of active substance.(link)

20. 20. Question

An 18 month old boy is brought to your ED by his distraught parents. He has a heart rate of 150bpm, a BP of 120/60 mmHg, is floppy and has frequent fasciculations in his right forearm and arm. Which of the following is the most likely cause.

- 1. Envenomation by a funnel web like spider
- 2. Ingestion of betel nut
- 3. Ingestion of nicotine replacement therapy
- 4. Serotonin toxicity

1

The focality of the fasciculations suggests a funnel web like spider bite, instead of nicotine replacement therapy, which would be expected to cause more generalised fasciculations.(link)

21. 21. Question

Which one of the following is least likely to give a sweet, apple like smell on the breath

- 1. Diabetic ketoacidosis
- 2. Sodium valproate ingestion
- 3. Isopropyl alcohol ingestion
- 4. Chloroform ingestion

2

Sodium valproate ingestion is associated with an ammonia like odour.

524. All of the following statements concerning hypotension in the setting of tricyclic antidepressant (TCA) overdose are true EXCEPT

- (A) alpha blockade contributes to the hypotension
- (B) it is usually readily reversible with a bolus of isotonic fluid
- (C) sodium bicarbonate boluses may be helpful
- (D) if unresponsive to fluids, dopamine should be added
- (E) quinidine-like effects cause a decrease in cardiac output

525. Which of the following has been shown to be helpful in the evaluation and treatment of a patient with iron ingestion?

- (A) Sodium bicarbonate lavage
- (B) Activated charcoal
- (C) Deferoxamine challenge test
- (D) Measurement of the total iron binding capacity (TIBC)
- (E) None of the above

526. Atropine can improve all of the following symptoms of organophosphate poisoning EXCEPT

- (A) bronchorrhea
- (B) salivation
- (C) muscle weakness
- (D) diarrhea
- (E) lacrimation

527. All of the following symptoms are commonly found in sympathomimetic intoxications EXCEPT

- (A) agitation
- (B) tachycardia and hypertension
- (C) hyperthermia
- (D) dry, flushed skin
- (E) mydriasis

528. All of the following are effectively bound by activated charcoal EXCEPT

- (A) acetaminophen
- (B) tricyclic antidepressant
- (C) iron
- (D) theophylline
- (E) salicylates

529. Tricyclic antidepressants possess all of the following pharmacologic properties EXCEPT

- (A) anticholinergic effects
- (B) alpha agonist effects
- (C) quinidine-like membrane stabilizing effects
- (D) central blockade of the reuptake of norepinephrine and serotonin
- (E) highly tissue bound with a large volume of distribution

530. All of the following signs and symptoms in the setting of tricyclic antidepressant overdose are appropriately matched with treatments EXCEPT

- (A) widened QRS complex on ECG: sodium bicarbonate
- (B) hypotension: normal saline, norepinephrine
- (C) confusion, coma: physostigmine

- (D) seizure: benzodiazepine
- (E) severe obtundation: intubation

531. A young woman presents to the emergency department after being bitten by a black widow spider. All of the following are true EXCEPT

- (A) she may develop abdominal rigidity
- (B) calcium gluconate is helpful in relieving symptoms
- (C) pregnancy would exclude her from antivenom treatment
- (D) ECG changes similar to those produced by digitalis may be present
- (E) venom causes an influx of calcium into presynaptic membranes

532. All of the following statements regarding dystonic reactions are true EXCEPT

- (A) they are a reaction to neuroleptics consisting of involuntary muscle movement and spasm, especially of the head and neck
- (B) symptoms tend to wax and wane
- (C) single-dose intramuscular injection of an anticholinergic agent is adequate if symptoms resolve completely and there is no recurrence after 2 hours of observation
- (D) prophylactic therapy is not indicated because dystonia is idiosyncratic and not dose dependent
- (E) they can occur with antiemetics such as prochlorperazine and droperidol

533. Neuroleptic malignant syndrome is characterized by all of the following symptoms EXCEPT

- (A) hypothermia
- (B) muscular rigidity
- (C) altered level of consciousness
- (D) autonomic instability
- (E) it can result in rhabdomyolysis

534. After an acute ingestion of neuroleptics, patients may present with all of the following EXCEPT

- (A) light sedation
- (B) dilated pupils
- (C) mild hypotension
- (D) radio-opaque pills on abdominal radiograph
- (E) minor dysrhythmias

535. The MOST effective treatment of a widened QRS on ECG from a tricyclic antidepressant (TCA) overdose is

- (A) physostigmine
- (B) sodium bicarbonate boluses
- (C) hemodialysis
- (D) multiple dose-activated charcoal
- (E) rapid sequence intubation and controlled hypoventilation

536. Which of the following is the MOST appropriate therapy for severe lithium intoxication?

- (A) flumazenil
- (B) multiple dose-activated charcoal
- (C) hemodialysis
- (D) carbonic anhydrase inhibitor
- (E) gastric lavage followed by activated charcoal

537. What is the MOST important therapy in the management of a serious barbiturate ingestion?

- (A) Multiple dose-activated charcoal
- (B) Alkaline diuresis
- (C) Aggressive airway management
- (D) Cardiac monitoring
- (E) Hemodialysis

538. All of the following symptoms can be attributed to an oral ingestion of phenytoin EXCEPT

- (A) ataxia
- (B) hypotension
- (C) confusion and coma
- (D) seizures
- (E) nystagmus

539. Which of the following opiates has been reported to cause seizures?

- (A) Oxycodone
- (B) Meperidine
- (C) Dextromethorphan
- (D) Morphine
- (E) Pentazocine

540. All of the following drugs should be avoided in a patient taking monoamine oxidase (MAO) inhibitors EXCEPT

- (A) morphine
- (B) meperidine
- (C) dextromethorphan
- (D) dopamine

(E) aspirin

541. Pharmacokinetics properties that make hemodialysis an effective method of drug elimination include all of the following EXCEPT

(A) relatively small molecular weight (less than 500 daltons)

(B) a small volume of distribution (under 1 L/kg)

(C) mostly protein bound

(D) low endogenous clearance (less than 4 ml/min/kg)

(E) water soluble

542. All of the following statements concerning a patient with an isopropanol ingestion are true EXCEPT

(A) the patient would have an increased anion gap metabolic acidosis

(B) the patient would have an increased osmolal gap

(C) acetone would be detected in the blood and urine

(D) intoxication to the point of lethargy to coma may be present

(E) symptoms of hemorrhagic gastritis may occur

543. Which of the following is the MOST important initial therapy for methanol intoxication?

(A) Oral activated charcoal, 1 g/kg

(B) Ethanol infusion

(C) Replacement of calcium

(D) Urine alkalinization

(E) Nasogastric tube aspiration

544. Which of the following is the best treatment for a patient suffering from acute cocaine intoxication?

- (A) Haloperidol
- (B) Propranolol
- (C) Midazolam
- (D) Adenosine
- (E) Lidocaine

545. All of the following measures are indicated in the treatment of an agitated patient suffering from acute amphetamine intoxication EXCEPT

- (A) place the patient in a calm environment and minimize external stimuli
- (B) aggressive cooling measures in hyperthermic patients
- (C) acidification of the urine to promote urinary excretion of amphetamines
- (D) aggressive management of seizures
- (E) administer chemical restraint with benzodiazepines

546. Patients with a phencyclidine overdose can be expected to manifest all of the following symptoms EXCEPT

- (A) nystagmus
- (B) hypothermia
- (C) emotional lability with potential for aggressive behavior
- (D) tachycardia and hypertension
- (E) seizures

547. The Done nomogram for assessing salicylate toxicity is useful in which of the following circumstances?

- (A) A single ingestion of methylsalicylate 8 hours ago
- (B) A one-time ingestion of 20 enteric-coated aspirin tablets

- (C) A confused elderly patient who has been using high doses of aspirin over several days
- (D) A one-time ingestion of aspirin tablets 10 hours prior to arrival
- (E) An ingestion of bismuth subsalicylate (Pepto Bismol)

548. All of the following metabolic derangements can be seen with a significant salicylate intoxication EXCEPT

- (A) combined respiratory and metabolic acidosis
- (B) hypoglycemia
- (C) hyperpyrexia
- (D) increased anion gap, metabolic acidosis
- (E) noncardiogenic pulmonary edema

549. All of the following statements concerning alkalinization in salicylate intoxication are true EXCEPT

- (A) it increases the ionized portion of salicylates
- (B) relative hypokalemia allows for a more efficient urinary clearance of salicylates
- (C) diuresis alone is less effective than when combined with alkalinization
- (D) use of carbonic anhydrase to promote alkalinization is contraindicated
- (E) it diminishes CNS penetration and toxicity

550. All of the following statements concerning acetaminophen toxicity are true EXCEPT

- (A) hepatotoxicity occurs because of a depletion of glutathione
- (B) drugs that enhance the cytochrome p450 system diminish the toxic potential
- (C) signs of hepatotoxicity do not occur until at least 8 hours post ingestion
- (D) hepatic necrosis is centrilobular in distribution

(E) cimetidine may be protective because of its ability to diminish hepatic metabolism

551. All of the following statements concerning iron ingestions are true EXCEPT

(A) aggressive use of activated charcoal is the most useful modality in preventing absorption

(B) serum iron levels that exceed total iron binding capacity (TIBC) result in free serum iron producing diffuse cellular toxicity via disruption of oxidative phosphorylation

(C) initial symptoms of significant iron ingestion are due to the direct corrosive effects of iron on the gastrointestinal tract

(D) iron pills are often radio-opaque

(E) metabolic acidosis and changes in mental status are signs of serious toxicity

552. Initial therapy of kerosene ingestion consists of which of the following?

(A) Gastric lavage

(B) Activated charcoal

(C) Observation for pulmonary symptoms

(D) Treatment with n-acetylcysteine (NAC) to prevent liver toxicity

(E) Syrup of ipecac

553. The nicotinic effects of organophosphate poisoning include all of the following EXCEPT

(A) fasciculations

(B) CNS confusion

(C) diffuse muscle weakness

(D) severe bronchorrhea

(E) diminished respiratory effort

554. All of the following are consequences of a significant theophylline ingestion EXCEPT

- (A) seizures
- (B) hyperkalemia
- (C) ventricular dysrhythmias
- (D) hypotension
- (E) tachycardia

555. All of the following statements concerning digoxin toxicity are true EXCEPT

- (A) potassium is commonly elevated in severe, acute intoxications
- (B) serum levels are useful predictors of toxicity after the administration of digoxin-specific FAB fragments
- (C) ingestion of oleander can cause symptoms of digoxin toxicity and a measurable digoxin level
- (D) FAB fragments are indicated in those patients with evidence of significant ingestion and signs of a life-threatening arrhythmia
- (E) in the setting of digoxin-induced hyperkalemia, calcium chloride enhances toxicity and should be avoided

556. The single MOST effective therapeutic treatment in a significant beta blocker overdose is

- (A) adenosine
- (B) glucagon
- (C) isoproterenol
- (D) phentolamine
- (E) epinephrine

557. All of the following have been implicated in cyanide toxicity EXCEPT

- (A) smoke inhalation
- (B) acetonitrile exposure
- (C) cassava consumption
- (D) nitroprusside therapy
- (E) dapsone ingestion

524	D	525	E	526	C	527	D
528	C	529	B	530	C	531	C
532	C	533	A	534	B	535	B
536	C	537	C	538	B	539	B
540	E	541	C	542	A	543	B
544	C	545	C	546	B	547	D
548	A	549	B	550	B	551	A
552	C	553	D	554	B	555	B
556	B	557	E				

Toxicologic Emergencies

Each question below contains five suggested responses. Choose the ONE BEST response to each question.

19-531 All of the following statements concerning decontamination of the poisoned patient are TRUE EXCEPT

- (A) ipecac syrup continues to be a front-line tool in home management of poisoning
- (B) gastric lavage is of limited utility except in selected overdoses when the airway has been adequately protected
- (C) current superactivated charcoal has 1.5 times the absorptive area of older preparations
- (D) cathartics may cause electrolyte derangements and dehydration
- (E) whole bowel irrigation is a highly effective method for dealing with body "packers" or "stuffers" and overdoses with enteric-coated or sustained release medications

[Show Answer](#)

19-532 Which of the following toxin-antidote pairs is correct?

- (A) Arsenic and British antilewisite (BAL)
- (B) Lead and calcium disodium edetate or dimercaptosuccinic acid
- (C) Mercury and BAL
- (D) Nitrites and methylene blue
- (E) All of the above

[Show Answer](#)

19-533 Which of the following is TRUE regarding tricyclic antidepressants (TCA)?

- (A) TCA overdoses are the leading cause of death in intentional ingestions, with a mortality rate of 10 to 15 percent
- (B) All TCAs share a general structure composed of six aromatic rings
- (C) TCAs have no activity against central nervous system histamine receptors
- (D) TCAs are competitive antagonists of acetylcholine at peripheral and central nicotinic receptors
- (E) None of the above

[Show Answer](#)

19-534 Which of the following TCAs is capable of causing status epilepticus without QRS widening?

- (A) Nortriptyline

- (B) Amoxapine
- (C) Maprotiline
- (D) Desipramine
- (E) Amitriptyline

[Show Answer](#)

19-535 A 22-year-old female presents to the ED comatose after a seizure, with a blood pressure of 80/40 and a pulse of 148. QRS duration is 280 ms. She has been depressed and began taking nortriptyline 2 weeks ago. What is the MOST appropriate initial therapeutic intervention?

- (A) Intravenous access and sodium bicarbonate at a dose of 1 to 2 mEq/kg
- (B) Intravenous access, gastric lavage, and diazepam to control seizures
- (C) Airway control, intravenous access, and activated charcoal per nasogastric tube
- (D) Airway control and mechanical ventilation, intravenous access, and sodium bicarbonate at a dose of 1 to 2 mEq/kg
- (E) Physostigmine, 0.5 to 2.0 mg intravenously, diluted in 10 mL saline and given over 5 min

[Show Answer](#)

19-536 If sodium bicarbonate therapy is ineffective, which of the following antidysrhythmics may be used to treat ventricular dysrhythmias associated with TCA overdose?

- (A) β -blockers
- (B) Calcium channel blockers
- (C) Phenytoin
- (D) Lidocaine
- (E) Class IA or IC antidysrhythmics

[Show Answer](#)

19-537 Which of the following statements about fluoxetine (Prozac) is FALSE?

- (A) It is the most frequently prescribed antidepressant in the United States
- (B) It is the most potent of the selective serotonin reuptake inhibitors (SSRIs)
- (C) Seizures occur in approximately 0.2 percent of patients taking fluoxetine
- (D) Fluoxetine is the most potent inhibitor of P-450 hepatic drug metabolism and may elevate TCA levels 2- to 10-fold
- (E) The most common symptoms seen in fluoxetine overdose are sinus tachycardia, drowsiness, tremor, and nausea/vomiting

[Show Answer](#)

19-538 All of the following statements concerning serotonin syndrome are TRUE EXCEPT

- (A) it is characterized by alterations in cognitive-behavioral ability, autonomic nervous function, and neuromuscular activity

- (B) it is usually seen when monoamine oxidase inhibitors or selective serotonin reuptake inhibitors are combined with other serotonergic drugs
- (C) morphine and fentanyl are contraindicated for treatment
- (D) neuromuscular symptoms are greatest in the lower extremities
- (E) mandatory treatment includes discontinuation of all serotonergic medications

[Show Answer](#)

19-539 Which of the following drugs can be safely used in patients taking monoamine oxidase inhibitors (MAOIs)?

- (A) Codeine
- (B) Dextromethorphan
- (C) Ketamine
- (D) Meperidine
- (E) Morphine

[Show Answer](#)

19-540 Which of the following statements regarding adverse effects of neuroleptic medications is INCORRECT?

- Lower potency drugs such as chlorpromazine have greater anticholinergic, (A) antiadrenergic, and antihistaminic side effects, whereas the higher potency agents such as haloperidol have mainly antidopaminergic side effects
- (B) Dopamine antagonism accounts for adverse reactions, resulting in movement disorders
- (C) Dystonic reactions are idiosyncratic, present early, and are seen more frequently in females
- (D) Akathisia and drug-induced parkinsonism are seen early and may be treated with benzotropine or amantadine
- (E) Tardive dyskinesia is a late adverse effect and has no proven treatment

[Show Answer](#)

19-541 After initial stabilization of airway, breathing, and circulation in a patient with neuroleptic malignant syndrome, which of the following is the BEST initial drug therapy?

- (A) Bromocriptine
- (B) Dantrolene
- (C) Molindone
- (D) Diazepam
- (E) Pancuronium

[Show Answer](#)

19-542 Which of the following statements regarding overdose of antipsychotic medications is FALSE?

- (A) Seizures and dysfunction of temperature regulation may be significant findings
- (B) Hypotension is due to ALPHA₁-adrenergic blockade and direct myocardial depression

- (C) Tachycardia is due to anticholinergic effects, and to a reflex response to vasodilation
- (D) Conduction abnormalities due to a quinidinelike action and ventricular dysrhythmias including torsades de pointes have been reported
- (E) Class IA antidysrhythmics are indicated to treat neuroleptic-induced dysrhythmias

[Show Answer](#)

19-
543

Which of the following factors increases the risk of lithium toxicity at standard doses?

- (A) Diabetes mellitus
- (B) Renal failure
- (C) Advanced age
- (D) Concurrent use of nonsteroidal antiinflammatory drugs (NSAIDs)
- (E) All of the above

[Show Answer](#)

19-
544

Which of the following statements regarding barbiturates is FALSE?

- (A) Barbituric acid has no central nervous system activity
- (B) In a pure barbiturate overdose, the patient's pupils will be small
- (C) Barbiturates may be used to treat seizures, induce anesthesia, or manage elevated intracranial pressure
- (D) A severe overdose may result in a flat- line EEG
- (E) Charcoal administration and alkalinization of the urine are beneficial treatments for barbiturate overdose

[Show Answer](#)

19-
545

Flumazenil is a selective antagonist of benzodiazepines. Which of the following is TRUE regarding its use in a patient with an altered level of consciousness?

- (A) Flumazenil can be safely used if there is a reliable history of pure benzodiazepine overdose
- (B) Benzodiazepine overdoses are usually isolated overdoses and flumazenil can be freely used with diagnostic and therapeutic benefit
- (C) Administration of a trial of flumazenil has very low risk of adverse effect
- (D) Few patients who overdose on benzodiazepines are physically dependent on these drugs
- (E) In the ED, flumazenil is most useful for reversing effects of benzodiazepines given for diagnostic and therapeutic procedures

[Show Answer](#)

19-
546

After an overdose, which of the following findings does NOT match with the listed sedative-hypnotic agent?

- (A) Ethchlorvynol-prolonged coma
- (B) Meprobamate-gastrointestinal concretions

- (C) Methaqualone-hyperacusis and hypertonicity
- (D) Chloral hydrate-vinyl-like odor on the breath
- (E) Glutethimide-anticholinergic symptoms

[Show Answer](#)

19-547 Which of the following statements regarding alcohol toxicity is TRUE?

- (A) Cocaethylene has 40 times higher affinity for cocaine receptors than cocaine
- (B) Methanol causes a severe anion gap acidosis and is directly toxic to the optic nerve
- (C) Isopropanol is strongly associated with hemorrhagic gastritis and produces a profound anion gap acidosis
- (D) Ethylene glycol is commonly found in antifreeze and causes a severe nonanion gap acidosis
- (E) Isopropanol is less intoxicating than ethanol

[Show Answer](#)

19-548 Which of the following drugs is the MOST efficacious for the treatment of opiate withdrawal in an intravenous drug user?

- (A) Methadone
- (B) Compazine
- (C) Clonidine
- (D) Ativan
- (E) Naloxone

[Show Answer](#)

19-549 Which of the following statements regarding cocaine is TRUE?

- (A) Cocaine is both a local anesthetic and a central nervous system stimulant
- (B) Cocaine has a quinidine-like effect on myocardial conduction causing QRS widening and QT prolongation
- (C) Cocaine inhibits presynaptic reuptake of norepinephrine, dopamine, and serotonin
- (D) Overdose on cocaine predisposes to dysrhythmias, seizures, hyperthermia, and rhabdomyolysis
- (E) All of the above

[Show Answer](#)

19-550 Which of the following is NOT associated with toxic doses of amphetamines?

- (A) Cerebral vasculitis and choreoathetosis
- (B) Cardiomyopathy and polyarteritis nodosa
- (C) Urinary incontinence and dysuria
- (D) Nausea, vomiting, and diarrhea

(E) Elevated thyroxine level and leukocytosis

[Show Answer](#)

19-551

Which of the following statements regarding hallucinogens is TRUE?

- (A) Phencyclidine (PCP) is strongly associated with synesthesias
- (B) Flashbacks are common with PCP use
- (C) Patients who have ingested lysergic acid diethylamide (LSD) are prone to anxiety-induced paranoia and auditory hallucinations
- (D) Complications are common with nutmeg, marijuana, mescaline, and peyote
- (E) Hallucinogenic amphetamines are associated with vasculitis

[Show Answer](#)

19-552

Which of the following statements about acetaminophen poisoning is FALSE?

- (A) Hepatotoxicity has traditionally been defined as an ALT or AST level > 500 IU/L
- (B) The Rumack-Matthew nomogram predicts the risk of hepatotoxicity after a single overdose of acetaminophen based on blood levels obtained 4 to 24 h after ingestion
- (C) The risk of death in an untreated patient whose blood level is in the "probable toxicity" zone of the nomogram is 5 to 24 percent
- (D) The toxic metabolite of acetaminophen is *N*-acetyl-para-benzo-quinoneimine (NAPQI)
- (E) There are four stages of acetaminophen toxicity

[Show Answer](#)

19-553

Which of the following are side effects of NSAIDs?

- (A) Nausea, vomiting, and abdominal pain
- (B) Headache, behavioral and cognitive problems, and aseptic meningitis
- (C) Seizures
- (D) Metabolic acidosis and acute renal insufficiency
- (E) All of the above

[Show Answer](#)

19-554

Which of the following drugs does NOT increase the serum half-life of theophylline?

- (A) Cimetidine
- (B) Erythromycin
- (C) Phenytoin
- (D) Quinolones
- (E) Allopurinol

[Show Answer](#)

19-555

Which of the following statements regarding chronic digitalis toxicity is FALSE?

- (A) It is most often seen in elderly patients taking digoxin and diuretics
- (B) Chronic digitalis toxicity may mimic common diseases such as influenza or gastroenteritis
- (C) This toxicity may manifest as mental status changes or psychiatric symptoms
- (D) Serum potassium is usually decreased or normal
- (E) The serum digoxin level is markedly elevated

[Show Answer](#)

19-556

Phenytoin administration decreases the serum level of all of the following drugs EXCEPT

- (A) oral anticoagulants
- (B) carbamazepine
- (C) methadone
- (D) furosemide
- (E) valproic acid

[Show Answer](#)

19-557

Which of the following is FALSE regarding toxic iron ingestions?

- (A) Iron poisoning can be divided into four stages based on clinical signs and symptoms
- (B) A child with nausea and vomiting, WBC >15,000/ μ L, and serum glucose > 150 mg/dL is likely to have a serum iron level > 300 μ g/dL
- (C) A negative deferoxamine challenge test is unreliable in ruling out significant iron ingestion
- (D) Deferoxamine is best administered intravenously at a rate of at least 15 mg/kg/h
- (E) Total iron binding capacity (TIBC) assays are unaffected by the presence of acute iron overdose

[Show Answer](#)

19-558

Which statement about hydrocarbon toxicity is TRUE?

- (A) Hydrocarbon ingestion accounts for up to 10 percent of childhood accidental ingestions in the United States and 20 percent in less developed nations
- (B) Persons ingesting hydrocarbons with viscosities of < 30 Saybolt Seconds Universal (SSU) are at much lower risk of aspiration than those ingesting agents with SSU ratings of > 60
- (C) Highly volatile hydrocarbons such as diesel oil have a high toxic potential when inhaled
- (D) Volatile hydrocarbon inhalational solvent abuse may cause chronic encephalopathy and cerebellar ataxia
- (E) All of the above

[Show Answer](#)

19-559

Which of the following statements about hydrofluoric acid exposure is FALSE?

- (A) Hydrofluoric acid is a widely used industrial chemical and is formulated in solution ranging from 20 to 70 percent in strength
- (B) Exposure may result in extensive burns despite minimal initial findings
- (C) Subcutaneous or intramuscular calcium injection is a recommended therapy
- (D) Exposure may cause life-threatening hypocalcemia and hypomagnesemia
- (E) Intraarterial administration of calcium gluconate is a highly recommended therapy for extremity exposures to hydrofluoric acid

[Show Answer](#)

19-560

All of the following are signs of acetylcholinesterase inhibitor toxicity EXCEPT

- (A) miosis
- (B) salivation
- (C) diarrhea
- (D) muscle fasciculations
- (E) anhydrosis

[Show Answer](#)

19-561

Which of the following plants may cause anticholinergic toxicity?

- (A) *Datura stramonium*
- (B) Deadly nightshade
- (C) Henbane
- (D) Mandrake
- (E) All of the above

[Show Answer](#)

19-562

Which of the following is NOT a central nervous system finding in cyanide toxicity?

- (A) Arterialization of retinal veins
- (B) Headache
- (C) Agitated delirium
- (D) Coma
- (E) Seizures

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(531) The answer is C

Current superactivated charcoal has three times the absorptive area of older preparations, or 3000 m²/kg. The dose is 1 mg/kg, and it may reduce absorption of ingested toxins by 50 percent. Cathartics may be dangerous, especially in pediatric patients and when given in multiple doses to poorly hydrated patients.

(Chapter 151)

(532) The answer is E

Arsenic, mercury, and gold poisoning are treated with BAL. Each milliliter of BAL in oil has 100 mg of dimercaprol in 210 mg of 21 percent benzyl benzoate and 680 mg of peanut oil. Dimercaptosuccinic acid is an oral, water-soluble preparation of BAL that can be used to treat lead poisoning.

(Chapter 151)

(533) The answer is E

TCA overdoses are the leading cause of death in intentional ingestions, with a mortality rate of 2 to 5 percent. All TCAs share a general structure composed of three aromatic rings (a central seven-member ring with two outer benzene rings) with an aminopropyl side chain connected to the central ring. TCAs are active against central nervous system histamine receptors. This results in sedation. TCAs are competitive antagonists of acetylcholine at peripheral and central muscarinic receptors.

(Chapter 152)

(534) The answer is B

TCA-induced seizures are usually single, generalized, self-limited, and brief. However, amoxapine and maprotiline can cause status epilepticus. Amoxapine seizures commonly occur without QRS widening. Seven percent of the population in the United States are "slow metabolizers" of TCAs and are prone to developing higher serum levels for a given dosage.

(Chapter 152)

(535) The answer is D

This patient is severely intoxicated due to TCA overdose. She is at high risk of further cardiopulmonary decompensation and aspiration unless immediate airway control and ventilation are initiated. After ensuring an

adequate airway, intravenous access and bicarbonate therapy are the treatment priorities. Gastric lavage (if soon after the ingestion) and activated charcoal are then indicated to prevent continuing absorption of the drug. Use of physostigmine in this case may show transient improvement in level of consciousness but is contraindicated because of the risk of death.

(Chapter 152)

(536) The answer is D

Lidocaine is the second-line agent of choice in TCA overdose after sodium bicarbonate for treatment of ventricular dysrhythmias. Class IA and IC antidysrhythmics, β -blockers, calcium channel blockers, and phenytoin are contraindicated and may exacerbate TCA-related dysrhythmias. Bretylium is the third-line drug for TCA rhythm disturbances unresponsive to bicarbonate or lidocaine.

(Chapter 152)

(537) The answer is B

Paroxetine is the most potent of the SSRIs. The most serious side effect of this class of antidepressants is serotonin syndrome. Extrapyramidal symptoms, hyponatremia, hypoglycemia, and sexual dysfunction are also associated with SSRI medications.

(Chapter 153)

(538) The answer is C

Morphine and fentanyl are considered safe treatments for serotonin syndrome. The syndrome is usually seen after increasing the dose of a potent serotonin agonist or adding a second serotonergic agent (such as lithium) to a patient's regimen. Electroconvulsive therapy, cocaine, meperidine, levodopa, L-tryptophan, and other drugs may predispose patients to serotonin syndrome.

(Chapter 153)

(539) The answer is E

Drugs that are safe to use with MAOIs include aspirin, acetaminophen, ibuprofen, morphine, albuterol, epinephrine, norepinephrine, and isoproterenol. Drugs that are contraindicated if the patient is taking MAOIs include bretylium, pseudoephedrine, caffeine, levodopa, theophylline, and TCAs. MAOIs result in three basic

types of drug interactions: pharmacodynamic, pharmacokinetic, and idiosyncratic. Indirect-acting sympathomimetics are the most common cause of pharmacodynamic drug interactions for the MAOI patient. The indirect-acting sympathomimetics can result in a tyramine-like hyperadrenergic state when consumed in conjunction with MAOIs. Pharmacokinetic drug interactions from MAOIs are due to inhibition of usual drug metabolism by cytochrome oxidase. Opiates and sedative-hypnotics are especially susceptible to this phenomenon.

(Chapter 154)

(540) The answer is C

Dystonic reactions are more likely to occur in males and are seen in 12 percent of patients treated with a single dose of neuroleptic. Akathisia (subjective restlessness) and acute parkinsonism are also early movement disorders associated with neuroleptic administration. Both are more likely to present in females and occur in 20 percent and 13 percent of patients, respectively. Neuroleptic malignant syndrome occurs in fewer than 3 percent of patients and is more common in males. Tardive dyskinesia is a late-appearing neurologic syndrome that occurs more commonly in females and affects 30 percent of long-term neuroleptic patients. At present, there is no effective treatment.

(Chapter 155)

(541) The answer is D

Diazepam, in large doses if necessary, is the first-line drug treatment for neuroleptic malignant syndrome (NMS). If this fails, paralytic drugs are indicated. Other drugs that may be used in the treatment of NMS include dantrolene, bromocriptine, carbidopa/levodopa, or amantadine. Presenting symptoms for NMS include hyperthermia, muscular rigidity, altered level of consciousness, and autonomic instability. Haloperidol is the most common inciting agent. Patients taking neuroleptics simultaneously with lithium, TCAs, MAOIs, or antiparkinsonian drugs are at greatest risk.

(Chapter 155)

(542) The answer is E

Seizures, tachycardia, hypotension, and atrioventricular/ intraventricular dysrhythmias have all been reported in neuroleptic overdose. Hypothermia and hyperthermia can also be seen. Coma and respiratory depression are rare with isolated neuroleptic ingestion. Anticholinergic symptoms are common with overdoses of low-potency neuroleptics such as chlorpromazine and thioridazine, and extrapyramidal disorders are more likely with high-potency antipsychotics. Class IB (lidocaine or phenytoin) antidysrhythmics are indicated to treat neuroleptic-induced dysrhythmias.

(Chapter 155)

(543) The answer is E

Any factor that decreases the efficiency of the kidney to deal with chronic lithium exposure increases the risk of lithium toxicity. Pathophysiologic factors that deplete the body of water or total body sodium increase lithium toxicity. Risk factors for lithium toxicity include diabetes mellitus, hypertension, renal failure, old age, a low sodium diet, and coingestion of diuretics or NSAIDs.

(Chapter 156)

(544) The answer is B

A general rule of thumb is that 10 times the therapeutic dose of barbiturates causes severe toxicity. Overdose results in progressive central nervous system depression similar to that seen with ethanol ingestion. Hypothermia is common, skin bullae occur in 6 percent of patients, and pupils may be either constricted or dilated. Flat-line electroencephalogram (EEG) is not uncommon in severe overdose. Hence, brain death cannot be declared until the effects of the acute ingestion have resolved.

(Chapter 157)

(545) The answer is E

Benzodiazepine overdose is usually a mixed overdose. If the patient is prone to seizures (e.g., when TCAs are coingested), flumazenil is contraindicated. Even if the history is reliable for a pure benzodiazepine overdose, the patient may be benzodiazepine-dependent and thus at risk for intractable seizures if flumazenil is administered. Because supportive care and charcoal lead to good outcomes after most benzodiazepine overdoses, blind use of flumazenil in the ED patient with an altered level of consciousness is unwarranted.

(Chapter 158)

(546) The answer is D

Chloral hydrate overdose is associated with a pear-like odor of the breath. Ethchlorvynol overdose is associated with a vinyl-like odor of the breath. Glutethimide overdose may show waxing and waning sedation and can be associated with a flat-line EEG.

(Chapter 159)

(547) The answer is A

The combination of ethanol with cocaine produces a dangerous metabolite, cocaethylene. Risk of sudden death in coingesters is about 20 times that with cocaine alone. Toxicity from methanol and ethylene glycol results from their metabolites, formaldehyde and formic acid, not direct toxicity. Isopropanol causes hemorrhagic gastritis, and it produces an osmolal gap but not an anion gap. Both methanol and ethylene glycol cause a severe anion gap metabolic acidosis. Isosopropanol is commonly used as rubbing alcohol and is approximately twice as potent as ethanol.

(Chapter 160)

(548) The answer is A

Methadone is an oral opiate that relieves all symptoms of opiate withdrawal except the desire to use a needle or "shoot up." Compazine, clonidine, and benzodiazepines provide partial relief of symptoms and are useful for treatment of opiate withdrawal in outpatients. Naloxone induces opiate withdrawal.

(Chapter 161)

(549) The answer is E

The parent compound of cocaine exists naturally in the plant *Erythroxylon coca* and is indigenous to South America. In large doses, cocaine may exert a direct negative effect on the myocardium because of its quinidine-like activity. Plasma cholinesterase converts cocaine to ecgonine methyl ester. Benzoylecgonine, the other major metabolite, is excreted in urine and assayed in most toxicology screens. It is present in the urine for 24 to 72 h after an isolated use but may persist for up to 2 weeks in chronic users.

(Chapter 162)

(550) The answer is C

Amphetamine intoxication causes urinary retention but not incontinence. Patients may complain of dysuria and urinary hesitancy. The other listed effects have all been reported. In addition, flushing, tachycardia, hypertension, dysrhythmias, and myocardial infarction can be caused by amphetamine ingestion. Aggressive cooling measures and even paralysis are sometimes needed to control severe hyperthermia and prevent rhabdomyolysis.

(Chapter 162)

(551) The answer is E

Synesthesias are common with LSD and are manifested by the "hearing of colors" and "seeing of sounds." This phenomenon is not described with PCP. Flashbacks are common with LSD but not with PCP. Patients who have ingested LSD are prone to anxiety-induced paranoia and visual, not auditory, hallucinations. Complications are rare with nutmeg, marijuana, mescaline, and peyote. Chronic use of hallucinogenic amphetamines can lead to vasculitis.

(Chapter 163)

(552) The answer is A

Hepatotoxicity has traditionally been defined as an alanine aminotransferase (ALT) or aspartate aminotransferase (AST) level of greater than or equal to 1000 IU/L. The Rumack-Matthew nomogram predicts the risk of hepatotoxicity after a single ingestion of acetaminophen based on a blood level obtained 4 to 24 h later. The nomogram is inaccurate if additional acetaminophen was taken in the preceding 12 to 24 h. For a patient whose level is in the "probable toxicity" zone of the nomogram who is not treated with *N*-acetylcysteine, the risk of death is 5 to 24 percent and the probability of significant hepatotoxicity is 14 to 89 percent. Significant toxicity is possible in children who consume more than 140 mg/kg or adults who take more than 7.5 g of acetaminophen acutely. When it occurs, acute liver failure typically presents 72 to 96 h after the acute ingestion, during stage III of the poisoning.

(Chapter 165)

(553) The answer is E

NSAIDs include salicylates and nonsalicylates. There are five chemical classes of nonsalicylate NSAIDs: acetic acids, propionic acids, fenamic acids, oxicams, and pyrazolones. Mefenamic acid ingestion can lead to seizures. Aseptic meningitis has been reported with NSAID use and is most often found in patients suffering from autoimmune disorders. NSAID-induced aseptic meningitis is thought to be due to drug hypersensitivity.

(Chapter 166)

(554) The answer is C

Phenytoin, rifampin, phenobarbital, and carbamazepine all decrease the half-life of theophylline. The half-life of theophylline is also reduced in children, smokers, patients with hyperthyroidism, and in those who eat charcoal-

broiled foods. Drugs that increase the half-life of theophylline include erythromycin, clarithromycin, mexilitine, tocainide, and propafenone. The half-life of theophylline is also increased in patients with cirrhosis, severe obstructive airway disease, pneumonia, and congestive heart failure.

(Chapter 167)

(555) The answer is E

A high index of clinical suspicion is necessary to make the diagnosis of chronic digoxin toxicity. Chronic toxicity is usually associated with a normal or mildly elevated digoxin level. Acute, but not chronic, digoxin overdose is associated with hyperkalemia. Hypomagnesemia is a common feature of chronic overdose.

(Chapter 168)

(556) The answer is A

Phenytoin increases the serum level of oral anticoagulants, acetaminophen, and primadone. Drugs whose levels are decreased include amiodarone, disopyramide, mexilitene, and quinidine. Phenylbutazone, sulfonamides, valproic acid, high-dose salicylates, and tolbutamide increase levels of phenytoin. The mechanism for this increase in serum phenytoin level is displacement of the drug from protein binding. This increases the free fraction of phenytoin, although total drug concentration may decrease.

(Chapter 172)

(557) The answer is E

Iron poisoning can be divided into four stages based on clinical signs and symptoms. Nausea and vomiting, white blood cell (WBC) count $> 15,000/\mu\text{L}$, and serum glucose $> 150 \text{ mg/dL}$ are all highly predictive of a serum iron level $> 300 \mu\text{g/dL}$ in acute iron overdose. A single negative deferoxamine challenge test should not be used to rule out significant iron ingestion in the presence of a strong history or significant signs or symptoms. TIBC assays may be falsely elevated in the setting of acute iron overdose. If the patient survives an acute ingestion, the fourth stage of toxicity may develop days to weeks later; this stage is characterized by gastric outlet or small bowel obstruction.

(Chapter 173)

(558) The answer is D

Hydrocarbon ingestion accounts for up to 10 percent of childhood accidental ingestions in the United States and between 33 and 59 percent in less developed nations. Persons ingesting hydrocarbons with viscosities of < 60 SSU are at much higher risk of aspiration than those ingesting agents with SSU ratings of > 100. Highly volatile hydrocarbons have a high toxic potential when inhaled, but diesel oil is not highly volatile.
(Chapter 174)

(559) The answer is C

Subcutaneous or intramuscular injection of calcium is useless in hydrofluoric acid exposure. The recommended methods of delivery of calcium gluconate are as a 2.5 percent gel by intradermal injection of 10 percent solution with a 30-gauge needle, or by intraarterial injection of 10 mL of 10 percent calcium gluconate diluted in 50 mL of D₅W over 4 h. Therapy is successful when the patient achieves and maintains a pain-free state. Calcium chloride should not be used because of the risk of tissue necrosis if inadvertent extravasation occurs.
(Chapter 175)

(560) The answer is E

Acetylcholinesterase inhibitor toxicity due to organophosphate or carbamate poisoning is characterized by diaphoresis, not by anhidrosis. Signs and symptoms of these poisonings may be classified as muscarinic, nicotinic, and central. Miosis is the most specific muscarinic finding and muscular fasciculations is the most specific finding for nicotinic receptors. The acronym *SLUDGE* (salivation, lacrimation, urination, diarrhea, gastrointestinal, emesis) describes the clinical presentation. Organophosphate binding to acetylcholinesterase becomes covalent and irreversible if not treated with pralidoxime within 24 to 36 h. Carbamate binding to acetylcholinesterase is reversible.
(Chapter 176)

(561) The answer is E

Datura stramonium is the scientific name for the plant commonly known as jimsonweed. It is a weed that is widely distributed throughout the United States, grows 3 to 6 feet high, and has large, jagged, white or purple trumpet-shaped flowers. All parts of the plant are toxic and contain atropine, hyoscyamine, and scopolamine. Mydriasis from jimsonweed may persist for up to 1 week and can result from systemic or ocular exposure ("cornpicker's" eye). The classic description of a patient with anticholinergic syndrome is: "hot as a hare, blind as a bat, dry as a bone, red as a beet, and mad as a hatter."
(Chapter 177)

(562) The answer is C

Agitated delirium is not a feature of acute cyanide toxicity. Cyanide results in progressive central nervous system dysfunction, with coma and death being the end result. Local effects of cyanide include oropharyngeal burns and the odor of almonds. Cardiopulmonary effects are divided into early and late stages. The early stage includes dyspnea, hypertension, tachycardia, and dysrhythmias. The late cardiopulmonary effects are bradycardia, hypotension, and cardiopulmonary arrest.

(Chapter 182)