



KISII UNIVERSITY

UNIVERSITY EXAMINATIONS

THIRD YEAR EXAMINATION FOR THE AWARD OF THE DEGREE OF BACHELOR OF SCIENCE IN CLINICAL MEDICINE

AND COMMUNITY HEALTH

SECOND SEMESTER 2022/2023

[JANUARY-APRIL, 2023]

PAED 380: PAEDIATRICS

STREAM: Y3S2

TIME: 2 HOURS

DAY: TUESDAY, 9:00 – 12:00 PM

DATE: 18/04/2023

INSTRUCTIONS

1. Do not write anything on this question paper.

SECTION I: ATTEMPT ALL

1. Briefly highlight the difference in the WHO classification of DEHYDRATION between “some dehydration” and “severe dehydration” in children. List the clinical signs of dehydration in an infant. (10 marks)
2. outline the fluid management you would employ for a severely dehydrated severely malnourished three-year-old child currently weighing 10kg. (10 marks)
3. List the etiology and presentation (signs) of upper airway obstruction in children. (10 marks)
4. Briefly outline the important treatment modalities of (i) acetaminophen and (ii) Organophosphate (OPP) poisoning. (10 marks)
5. List the indications and limitations of autopsy in pediatric practice. State the difference between euthanasia and assisted suicide. (10 marks)
6. What objective does the WHO ETAT guidelines seek to fulfill? Point out the triage criteria you could employ in pediatrics. (10 marks)

SECTION II: ATTEMPT ANY TWO QUESTIONS

7. Discuss Acute Asthmatic attack under the following;
 - a. Definition of asthma and Status Asthmaticus (SA) (5 marks)
 - b. Clinical management of severe asthmatic attack (10 marks)
 - c. Management of SA (5 marks)

8. (A) Discuss the pathophysiology of dehydration in children (5 marks)
(B) describe the fluid management of an infant and a toddler having severe dehydration (10 marks)
(C) Prescribe the treatment of a child with repeat potassium of 6.1 mmol/L (5 marks)
9. Discuss status epilepticus (SE) under the following topics (20 marks)
- Definition
 - Etiology
 - diagnosis
 - Emergency treatment
 - What is refractory SE and how could it be managed

SECTION III: ATTEMPT ALL

1. An infant presenting with acute onset of irritability, abdominal pain and vomiting is likely to have the following except:
 - a. A strangulated inguinal hernia.
 - b. Testicular torsion
 - c. Diverticulitis
 - d. Peritonitis
 - e. Appendicitis
2. The following are true regarding acute abdomen in children, except;
 - a. Abdominal pain is often encountered in the pediatric practice and emergency room settings.
 - b. The clinician's only role is to identify patients with potentially life-threatening conditions
 - c. Making a timely diagnosis so treatment can be initiated and potential morbidity prevented is paramount
 - d. Appendicitis is the most common surgical emergency in children and adolescents
 - e. Life-threatening causes of abdominal pain include those related to trauma, intestinal obstruction, and peritoneal irritation.
3. History facts regarding abdominal conditions in children to be borne in mind are correct except one of the following;
 - a. Patients with sickle cell disease are predisposed to cholecystitis and splenic sequestration
 - b. Patients with DKA rarely present with accompanying abdominal pain.
 - c. Patients with Hirschsprung's disease are at risk for enterocolitis and toxic megacolon
 - d. Patients with nephrotic syndrome may develop primary bacterial peritonitis.
 - e. Patients with previous abdominal surgery are predisposed to adhesions

4. Thorough evaluation of a patient with acute abdomen is vital because of the following facts except;
 - a. A child in severe pain may prefer to be an extended rather than curled up position that shortens the rectus muscles.
 - b. A child with peritonitis often appears acutely ill and prefers to lie still.
 - c. Intussusception should always be considered in a young child with altered mental status.
 - d. The abdominal examination is optimally performed when the child is quiet, calm, and cooperative
 - e. A mass may be indicative of neoplasm, intussusception, or stool.
5. One of the following are not important in evaluation of abdominal pain in children;
 - a. CBC can help point towards or away from an inflammatory process.
 - b. C-reactive protein (CRP) is useful as an early inflammatory marker
 - c. A urinalysis to evaluate hydration status and the presence of infection is useful.
 - d. In the presence of clinical evidence of obstruction or a mass, a complete CBC with differential is of limited value
 - e. LFTs, amylase, lipase and inflammatory markers may be useful
6. In the management of a child suspected to have acute abdominal pain the following should be done except to:
 - a. Quickly stabilize the patient, perform the necessary diagnostic steps and initiate a treatment plan.
 - b. Give supportive care, such as monitoring and intravenous fluids and administer effective analgesia
 - c. Withhold opiates because of the danger of altering the presentation of the pain symptom thus complicating the diagnostic process
 - d. Administer antibiotics because antibiotics have been shown to delay progression of certain disease processes
 - e. Repeat the examination so as to identify evolving clinical features.
7. True regarding testicular torsion in children except;
 - a. Torsion of the testicle causes ischaemic infarction that must be urgently surgically corrected.
 - b. Torsion is most common in infants and adolescents
 - c. In older children it is characterized by severe pain and vomiting.
 - d. A torted testis is high riding, hard and tender.
 - e. Ultrasound is helpful in differentiating torsion of the testis from the testicular appendages

8. Regarding dehydration, children are at increased risk of hypovolemia for the following reasons except;
 - a. There is a higher frequency of GE in children compared with adults.
 - b. Adults have a higher Surface Area/Volume Ratio with proportionally lower insensible losses
 - c. Young children are unable to communicate their need for fluids and cannot independently access fluids to replenish losses.
 - d. Prolonged inadequate intake devoid of excessive losses.
 - e. Third-space fluid sequestration occurring in children with edema due to renal disease, liver failure, malnutrition, heart failure, or those with increased vascular permeability from systemic inflammation
9. False regarding severe dehydration in children,
 - a. During hypernatremic dehydration, water is osmotically pulled from cells into the extracellular space.
 - b. In rapid rehydration of hypernatremia, the increased osmotic activity of the cells can result in a large influx of water causing cellular swelling and rupture thus worsening cerebral edema.
 - c. Slow rehydration over 48hours is preferred if there is severe hypernatremia
 - d. Neurologic complications occur only in hyponatremic dehydration states
 - e. Hyponatremic dehydration occurs when the lost fluid contains more sodium than the blood (loss of hypertonic fluid).
10. Predisposing factors to hyponatremia include all the following except
 - a. Renal disease
 - b. Gastroenteritis
 - c. Excessive water intake
 - d. Diuretics
 - e. Diabetes insipidus
11. Hyperkalemia may be due to the following factors except;
 - a. Massive tissue injury, crush or burns
 - b. Hypoventilation and acidosis
 - c. Massive transfusions
 - d. hemodialysis
 - e. Haemolytic states
12. The following is the normal body water at various ages. Which combination of the age groups are most prone to dehydration;

Age	Total Body Water (%)	ECF	ICF
Newborn	75-80	35-45	35
1 wk	70-75	30-40	40
1 yr	60-65	20-25	40
>5 yr	60	20	40

- a. Newborns and 1-year-olds
 - b. A 5 years and 1-year-old
 - c. 1 week and 1-year-old
 - d. The 5 year olds and newborn
 - e. The 1 week old and the newborn
13. A child presented with nausea, vomiting and headache. On investigations the following was found; Serum Sodium 124 mEq/L, potassium 5.2 mEq/L and magnesium 0.75 Mmol/L. the clinician attending to the child concluded that this child is suffering from
- a. Hypokalemia
 - b. Acute hyponatremia
 - c. Normo-magnesemia
 - d. Severe hyponatremia
 - e. Severe hyperkalemia
14. Children with upper airway obstruction (UAO) are at risk for sudden decompensation and frequently require emergency airway intervention. A common cause of UAO include a patient with;
- a. smoke inhalation
 - b. bronchial obstruction or injury
 - c. near drowning
 - d. bronchial asthma
 - e. bronchiectasis
15. the risk factors of meningitis are all those below, except;
- a. Recent colonization with pathogenic bacteria
 - b. Household contact
 - c. Male gender
 - d. Asplenia
 - e. Gammaglobulinemia
16. The best decision to make regarding treatment of a on older child in stable condition with CSF study results given as here below:
CSF looks cloudy (turbid) in a bottle and is not blood stained. WBC count of $>10 \times 10^6/L$ Gram positive diplococci.
- a. Classify it as meningitis and commence ceftriaxone as you await culture and sensitivity results to change to appropriate antibiotic

- b. Classify it as definite meningitis and commence high dose ceftriaxone plus steroid.
 - c. Classify the case as probable meningitis and commence on ceftriaxone and call for senior review
 - d. Check for stiff neck or kerning sign; if positive commence on treatment with high dose ceftriaxone
 - e. Classify it as definite meningitis and commence high dose ceftriaxone.
17. In the prophylaxis for meningitis;
- a. Vaccination against varicella zoste is helpful
 - b. Chemoprophylaxis to susceptible individuals or close contacts is futile
 - c. For chemoprophylaxis against H. influenzae, rifampicin 2-5 mg/kg bd for 3/7 is sensible
 - d. For N. Meningitidis outbreaks-rifampicin is contraindicated.
 - e. None of the above.
18. The anatomic location of a burn often directs treatment. Burns on the face, hands, feet, and genitalia as well as large burns in other areas of the body are often referred to burn centers for specialized expertise. Which of the following forms the soundest decision regarding treatment of burns in children?
- a. Superficial burns are treated conservatively with debridement, topical agents, and dressing changes at home
 - b. Deep burns require debridement at outpatient unit. Wound depth can evolve from superficial to deep thus, reassessment is important.
 - c. Superficial (epidermal) burns do not require antimicrobial therapy at all
 - d. For extensive superficial burns, topical antimicrobials may be used to prevent colonization while maintaining a moist wound healing environment
 - e. Breakthrough pain during dressing changes or physio-therapy does not require opioids or strong painkillers to be used.
19. 2-year-old child is admitted because of weakness proceeding to coma. According to the parent, he had been well until several hours prior to admission, when they noted diarrhea, cough, wheezing, and sweating. Physical examination reveals a comatose child with diffuse weakness and areflexia. Pupils appear pinpoint and unresponsive. Examination of the chest reveals generalized wheezing and oral secretions which are copious. Which of the following should you administer at this time?
- a. Adrenaline
 - b. Atropine
 - c. Pralidoxime

- d. Cefotaxime
 - e. IV NS
20. A 14-year-old male has a 5-day history of fever, sore throat, and fatigue. Physical examination reveals an exudative tonsillitis and bilateral enlarged and slightly tender anterior cervical lymph nodes. The spleen is not palpable below the rib cage. Which agent is most likely responsible for this patient's illness?
- a. Group A β -hemolytic streptococcus
 - b. Adenovirus
 - c. mumps
 - d. Epstein-Barr virus
 - e. *Corynebacterium diphtheria*
21. A 30 kg child you are taking care of in the hospital is receiving IV fluids in preparation for surgery. You are trying to determine if the fluids are running at an appropriate rate for daily maintenance. What do you determine is the approximate daily fluid requirement for this child?
- a. 3L
 - b. 2400 mL
 - c. 1700 mL
 - d. 1200 mL
 - e. 1000 mL
22. A 15-month-old male presents with moderate dehydration. Resuscitation proceeds with assessment of airway, breathing, and circulation. An isotonic intravenous fluid bolus of 20 cc/kg is administered. Laboratory studies reveal a serum sodium of 165 meq/L and a normal serum potassium. Which of the following is the most appropriate plan for rehydration?
- a. Correct the hyponatremia over 8 hours with 0.45% NS without maintenance potassium
 - b. Correct the hypernatremia over 8 hours with D5 W with maintenance potassium
 - c. Correct the hypernatremia over 24–48 hours with D5 0.45% NS with maintenance potassium
 - d. Correct the hypernatremia over 12 hours with D5 0.45% NS with maintenance potassium
 - e. Correct the hypernatremia over 24–48 hours with D10W without maintenance potassium
23. 13-year-old female presents to the emergency department with a 3-day history of fever above 40°C; vomiting; diarrhea; and diffuse, erythematous rash. She is found to have orthostatic hypotension. Laboratory evaluation reveals decreased platelets and elevated liver and renal function tests. The mother of the child informs you that the child is currently menstruating. You suspect that this child has a toxin

- mediated infection. What is the most likely etiology of this toxin mediated infection?
- Streptococcus pyogenes
 - Staphylococcus aureus
 - Neisseria gonorrhoeae
 - Streptococcus agalactiae
 - Shiga-toxin-producing Escherichia coli
24. Management with multiple-dose activated charcoal may be indicated in the overdose of which of the following?
- Iron
 - Cyanide
 - Carbamazepine
 - Tricyclic antidepressants
 - Methanol
25. Use of **aspirin** in children has declined since it was associated with
- Reye syndrome
 - Intoxication in toddlers
 - Most cases of severe salicylate poisoning or death occur among adolescents with intentional ingestion
 - Restriction of the number of tablets per bottle (package)
 - The introduction of Child-resistant packaging
26. Choose the directly matched poisonous agent and its corresponding antidote;
- Naloxone ---- cyanide
 - Oxygen --- carbon monoxide
 - Deferoxamine ---- benzodiazepines
 - Sodium bicarbonate --- organophosphates
 - Atropine --- opioids
27. Which of the following statements regarding drowning and near-drowning is correct?
- Perimeter fencing around pools has not decreased the incidence of drownings.
 - Children under the age of 5 years who drown in home pools most often enter the pool by climbing over a fence.
 - The incidence of drowning peaks in elementary school-age children.
 - About half of those who drown are declared dead at the scene.
 - Among children who survive, neurologic impairment is generally uncommon.
28. The following are indications of Antivenom administration, except;
- Systemic manifestations of hemostatic disturbance
 - Incoagulable blood or prolonged CT, elevated fibrin degradation products and thrombocytopenia
 - Gross limb swelling with hemodynamic stability

- d. Hypotension or shock, abnormal ECG, cardiac arrhythmias, cardiac failure, pulmonary edema and respiratory failure
- e. Neurotoxicity with generalized rhabdomyolysis

29. The following drugs used in asthma are not β -agonists except

- a. Salmeterol.
- b. Terbinafine
- c. Albuterol
- d. Ventolin
- e. Terbutaline.

For Questions 30 through 35;

the following group of questions are followed by a list of lettered answer options. For each question, match the one lettered option that is most closely associated with the question. Each lettered option may be selected once, multiple times, or not at all.

30. Organophosphates	
31. Cyanide	
32. Carbon monoxide	
33. Opioids	
34. Methanol	
35. Iron	

- A) Naloxone (B) Flumazenil (C) Oxygen (D) ethanol (I) All the above (E) Deferoxamine (F) None of the above (G) Atropine (H) Sodium nitrite/sodium thiosulfate

36. A 3-year-old girl presents to your clinic with 5 days of rhinorrhea, cough, and congestion. Her mother has been using an over-the-counter cough and cold remedy to help control the symptoms. What is the most appropriate counseling to give this mother regarding over-the counter medication usage in children?

- a. All over-the-counter medications are safe.
- b. All over-the-counter medications labeled pediatric or children are safe.
- c. Many over-the-counter medications have a combination of medications that can have serious side effects in children
- d. It is very rare that over-the-counter cold medications have acetaminophen as an ingredient.

- e. It is safe to give over-the-counter medications with acetaminophen as well as regular doses of acetaminophen if a child has a fever.
37. A 14-year-old female presents to the emergency room 20 hours following ingestion of 8.5 g of acetaminophen. Therapy with which of the following should be initiated?
- a. deferoxamine
 - b. physostigmine
 - c. N-acetylcysteine
 - d. glutathione
 - e. no therapy is indicated
38. What is the definition of status epilepticus?
- a. A seizure that lasts at least 5 minutes
 - b. A seizure that lasts between 5-15 minutes
 - c. A seizure that lasts between 15-30 minutes
 - d. A seizure that lasts more than 20 minutes
 - e. A seizure that lasts more than an hour
39. What is the most common cause of status epilepticus in children?
- a. Structural brain abnormalities
 - b. Infections
 - c. Idiopathic (unknown)
 - d. Electrolyte imbalances
 - e. Inherited metabolic disorders
40. How is status epilepticus diagnosed in children?
- a. Clinical examination plus EEG
 - b. EEG alone is enough
 - c. MRI and CT scan
 - d. All of the above
 - e. None of the above
41. What is the first line of treatment for status epilepticus in children?
- a. Diazepam
 - b. Phenobarbital
 - c. Lorazepam
 - d. Phenytoin
 - e. Sodium valproate
42. How is the severity of status epilepticus in children assessed?
- a. Duration of the seizure
 - b. Frequency of seizures
 - c. Type of seizure
 - d. Presence of underlying medical conditions
 - e. All of the above

43. What is the role of antiepileptic drugs in the management of status epilepticus in children?
- To control seizures
 - To prevent recurrence of seizures
 - To improve cognitive and behavioral outcomes
 - All of the above
 - None of the above
44. What is the prognosis of status epilepticus in children
- Very Good
 - Fairly good
 - Poor
 - Not clear
 - It depends on the underlying cause
45. What is the most important factor in the management of status epilepticus in children?
- Early recognition and treatment
 - Close monitoring and observation
 - All of the above
 - None of the above
 - History of the control of seizures