

The University of Fiji
(An Entity of Arya Pratinidhi Sabha of Fiji)



Umanand Prasad School of Medicine and Health Sciences
Year 2023

PAED 604 FINAL COURSE EXAMINATION PAPER

COURSE CODE: PAED 604- PAEDIATRICS

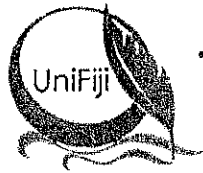
Important Instructions to Students:

1. Read the questions, instructions carefully and answer the questions.
2. You are allowed an **extra 10 minutes reading time** (during this time, you are not allowed to write with pen) and **180 minutes (3 Hours) to complete this paper.**
3. Silent, non-programmable calculators are allowed, but not supplied.
4. Write all your answers in the answer booklet provided. If you need extra sheets, please ask from the supervisor. Write your name, course code and student identification number in the answer booklet and in the attendance sheet.
5. **This Final Course Examination Paper is worth 100 marks contributes 40% of the total course assessments.** Students must at least score **50%** in this final exam to pass the course.
6. This paper contains three (3) sections A, B, and C. All questions are compulsory to answer **except** section A which has choices.
7. Write all your answers legibly. The marker has the right to award zero for answers that are not legible.
8. This is a **Closed Book Examination.** The University views plagiarism, cheating and dishonest practice as serious offences and if found, offenders are penalized.

Examination Paper Content (Format):

<u>Section</u>	<u>Question</u>	<u>Content</u>	<u>Marks</u>	<u>Suggested Time</u>
A	1-40	Multiple Choice	40	72 minutes
B	41-70	Short Answer Questions (Case Scenarios-3)	30	54 minutes
C	71-100	Long Answer Questions (Case Scenarios-2)	30	54 minutes
		TOTAL	100	180 Minutes

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Registration Certificate Number (RGN0020/11)*



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**Umanand Prasad School of Medicine and Health Services Department
of Clinical Sciences**

Year 2023

FINAL COURSE EXAMINATION PAPER

PAED 604

November 22, 2023

Section A. Multiple Choice Questions

Choose the only right letter to your answer sheet from the questions provided in this examination. (40-mark points)

1. What is the primary goal of managing refeeding syndrome in a paediatric patient with severe acute malnutrition?
 - A. Rapidly replenish all electrolyte imbalances
 - B. Provide high-calorie diets to promote weight gain
 - C. Gradually increase caloric intake to minimize metabolic stress
 - D. Administer aggressive diuretic therapy to reduce fluid overload

2. In premature babies with hyaline membrane disease (HMD), which of the following best describes the role of surfactant in the alveoli?
 - A. Surfactant increases alveolar surface tension, reducing lung compliance.
 - B. Surfactant decreases alveolar surface tension, increasing lung compliance.
 - C. Surfactant has no effect on alveolar surface tension or lung compliance.
 - D. Surfactant primarily affects alveolar blood flow, not lung compliance.

3. In a post-mature baby with meconium aspiration pneumonitis (MAP), how does the presence of meconium affect alveolar surface tension?
 - A. Meconium reduces alveolar surface tension, improving lung compliance.
 - B. Meconium increases alveolar surface tension, reducing lung compliance.
 - C. Meconium has no impact on alveolar surface tension or lung compliance.
 - D. Meconium primarily affects alveolar blood flow, not lung compliance.

4. In paediatric patients with uncomplicated acute appendicitis, what is the role of antibiotics in management?
 - A. Antibiotics are the sole treatment for uncomplicated appendicitis.
 - B. Antibiotics are used only after surgical removal of the appendix.
 - C. Antibiotics are not typically part of the management plan.
 - D. Antibiotics are given to prevent appendiceal rupture before surgery.

5. Which of the following clinical signs is suggestive of severe hypoglycemia in a neonate?
 - A. Jitteriness and irritability
 - B. Tachycardia and hypertension
 - C. Apnoea and cyanosis
 - D. Poor feeding and somnolence

6. What is the pathophysiological basis for the development of shock in dengue shock syndrome (DSS)?
- A. Immune complex deposition in blood vessels
 - B. Bacterial superinfection
 - C. Severe dehydration
 - D. Increased vascular permeability
7. A 5-month-old infant diagnosed with acyanotic heart disease, what is the primary reason for increased pulmonary blood flow and volume overload of the left ventricle?
- A. Left-to-right shunt
 - B. Right-to-left shunt
 - C. Decreased preload
 - D. Impaired ventricular contractility
8. Which of the following best describes the pathophysiology of Salmonella Typhi infection in young children?
- A. Attachment to respiratory mucosa and invasion of lung tissue
 - B. Invasion of the gastrointestinal mucosa, leading to inflammation and systemic dissemination
 - C. Invasion of the bloodstream and subsequent damage to various organs
 - D. Direct infection of the skin and underlying tissues
9. Minimal change disease (MCD) is a common cause of nephrotic syndrome in children. What is the primary pathophysiological alteration in MCD?
- A. Immune complex deposition
 - B. Glomerular sclerosis
 - C. Podocyte foot process effacement
 - D. Tubular obstruction
10. A 1-week-old infant born to a gestational diabetic mother is noted to have macrosomia, hypoglycemia, and poor muscle tone. What is the most likely complication in this infant, and what long-term follow-up is recommended?
- A. Congenital heart defect; Cardiac evaluation at 6 months
 - B. Intellectual disability; Developmental assessment at 12 months
 - C. Polycythemia; Haematological evaluation at 2 years
 - D. Neonatal hypoglycemia; Neurodevelopmental assessment in childhood
11. A 10-day-old neonate presents with fever, poor feeding, and irritability. On examination, the infant appears unwell, with a high-pitched cry. What is the most likely diagnosis, and what is the initial management step?
- A. Gastroesophageal reflux disease (GERD); Elevate the head of the crib.
 - B. Urinary tract infection (UTI); Collect a catheterized urine sample for culture and start empiric antibiotics.
 - C. Colic; Offer a pacifier and provide reassurance.
 - D. Constipation; Increase fluid intake and prescribe stool softeners.
12. When is defibrillation indicated in pediatric cardiac arrest?
- A. After 2 minutes of effective CPR.
 - B. Immediately upon recognizing cardiac arrest.
 - C. After 5 minutes of effective CPR.
 - D. After 1 minute of effective CPR.
13. In a 3-year-old boy with confirmed Pulmonary Tuberculosis (TB), a positive sputum Acid-Fast Bacilli (AFB) smear indicates:
- A. Active TB infection
 - B. Latent TB infection
 - C. Past TB infection
 - D. Non-specific findings

14. What is a common complication associated with prolonged mechanical ventilation in pediatric patients?
- A. Decreased pulmonary vasculature resistance.
 - B. Decreased risk of ventilator-associated pneumonia.
 - C. Ventilator-induced lung injury.
 - D. Increased cerebral venous drainage.
15. What is the most appropriate first-line medication for rapidly relieving bronchospasm in a child experiencing a life-threatening asthma event?
- A. Nebulized epinephrine.
 - B. Oral corticosteroids.
 - C. Nebulized Salbutamol.
 - D. Intravenous antibiotics.
16. Which of the following is a potential consequence of not exclusively breastfeeding an infant during the fourth and sixth months of life?
- A. Reduced risk of allergies
 - B. Increased risk of respiratory infections
 - C. Reduced risk of obesity
 - D. Increased risk of diabetes
17. Which of the following statements is true regarding the use of zinc supplementation and low osmolarity oral rehydration solution (ORS) in children with diarrhea in developing countries?
- A. Zinc supplementation is only recommended for children with severe dehydration.
 - B. Low osmolarity ORS is less effective than standard ORS in reducing the duration of diarrhea.
 - C. Zinc supplementation should be initiated within the first 24 hours of diarrhea onset.
 - D. Low osmolarity ORS is contraindicated in children under 2 years of age.
18. Which of the following respiratory infections is characterized by inflammation of the epiglottitis and presents with a sudden onset of high fever, drooling, and severe respiratory distress?
- A. Viral croup
 - B. Epiglottitis
 - C. Bacterial tracheitis
 - D. Bronchiolitis
19. Which of the following statements best describes the difference between viral croup, and other upper airway obstruction such as epiglottitis, and bacterial tracheitis?
- A. Viral croup is characterized by a barking cough and stridor, while epiglottitis presents with a sudden onset of high fever, drooling, and severe respiratory distress.
 - B. Viral croup is caused by bacterial infection, while epiglottitis and bacterial tracheitis are caused by viral infections.
 - C. Viral croup affects primarily the trachea, while epiglottitis and bacterial tracheitis involve inflammation of the epiglottitis and trachea, respectively.
 - D. Viral croup is a self-limited illness, while epiglottitis and bacterial tracheitis require immediate medical intervention.
20. Which of the following statements best describes the difference between a cold and warm septic shock in a young child?
- A. Cold septic shock is characterized by peripheral vasoconstriction and cool extremities, while warm septic shock is characterized by peripheral vasodilation and warm extremities.
 - B. Cold septic shock is associated with decreased cardiac output and impaired tissue perfusion, while warm septic shock is associated with increased cardiac output and adequate tissue perfusion.
 - C. Cold septic shock is more common in younger children, while warm septic shock is more common in older children.
 - D. Cold septic shock is typically caused by Gram-negative bacteria, while warm septic shock is typically caused by Gram-positive bacteria.

21. The coagulation system's involvement in the pathogenesis of septic shock in a young infant leads to which of the following specific conditions?
- A. Disseminated intravascular coagulation (DIC)
 - B. Hypercoagulability state
 - C. Impaired platelet function and bleeding tendencies
 - D. Thromboembolism formation
22. Reflux in a young neonate is defined as the:
- A. Forceful expulsion of stomach contents through the mouth
 - B. Passive movement of stomach contents into the esophagus.
 - C. Involuntary movement of partially digested food from the small intestine to the stomach.
 - D. Spitting of excess saliva after formula milk feeding.
23. How does Ballard's score contribute to the care of preterm and small-for-gestational-age (SGA) babies with intrauterine growth restriction (IUGR)?
- A. It determines the likelihood of neurodevelopmental disorders.
 - B. It helps evaluate the baby's respiratory function.
 - C. It guides the timing of necessary medical interventions.
 - D. It predicts the need for long-term follow-up care.
24. When is exchange transfusion considered in the management of pathologic jaundice in newborns?
- A. As a routine treatment for all cases of jaundice.
 - B. When the bilirubin level exceeds a certain threshold.
 - C. When the baby shows signs of liver dysfunction.
 - D. Only in cases of severe haemolytic disorders.
25. How can immediate surgical emergency intervention be diagnosed in children with abdominal pain?
- A. Based on the patient's age and gender.
 - B. Through laboratory blood tests.
 - C. By the presence of worsening pain.
 - D. Using imaging techniques like X-ray or ultrasound.
26. Hyperinsulinemia in neonates born to gestational diabetic mothers can result in which of the following complications?
- A. Hyperglycaemia
 - B. Intrauterine growth retardation
 - C. Cardiac abnormalities
 - D. Renal Agenesis
27. What is the long-term prognosis for neonates born to diabetic mothers?
- A. They have a higher risk of developing diabetes in childhood.
 - B. They are at increased risk of obesity and metabolic syndrome.
 - C. With proper management, their long-term outcomes are similar to those of infants born to non-diabetic mothers.
 - D. They are at increased risk of developmental delays and neurologic abnormalities.
28. Which of the following is a common cause of non-cardiogenic pulmonary edema in children?
- A. Congenital heart disease
 - B. Viral pneumonia
 - C. Rheumatic heart disease
 - D. Myocardial infarction

29. Pulmonary edema can be classified into two types based on its underlying cause: cardiogenic and non-cardiogenic. How can these two types be differentiated?

- A. Cardiogenic pulmonary edema is caused by infections, while non-cardiogenic pulmonary edema is caused by allergic reactions.
- B. Cardiogenic pulmonary edema is caused by fluid overload, while non-cardiogenic pulmonary edema is caused by heart failure.
- C. Cardiogenic pulmonary edema is caused by heart failure, while non-cardiogenic pulmonary edema is caused by fluid overload.
- D. Cardiogenic pulmonary edema is caused by allergic reactions, while non-cardiogenic pulmonary edema is caused by infections.

30. In the context of the COVID-19 pandemic, why is it important to consider Kawasaki Disease?

- A. Kawasaki Disease has a similar clinical presentation to COVID-19.
- B. COVID-19 infection can increase the risk of developing Kawasaki Disease.
- C. Kawasaki Disease can have complications that are similar to COVID-19.
- D. COVID-19 infection can present with symptoms that resemble Kawasaki Disease.

31. The primary treatment for Kawasaki Disease includes:

- A. Antibiotics
- B. Antiviral medications
- C. Corticosteroids
- D. Intravenous immunoglobulin (IVIG)

32. Parents brought their 5-day-old infant to the NICU clinic. The mother is O negative and was Coombs positive at delivery. The term child weighed 3055 grams at birth and had measured baseline hemoglobin of 16 g/dL and a total serum bilirubin of 50 µmol/L. He passed a black tarlike stool within the first 24 hours of life. He was discharged at 30 hours of life with a stable axillary temperature of 36.5°C. Today the infant's weight is 3000 g, his axillary temperature is 35°C, and he is jaundiced in the chest and upper trunk area. Parents report frequent yellow, seedy stools. You redraw labs and find his hemoglobin is now 14.5 g/dL, and his total serum bilirubin is 220 µmol/L. The change in which of the following parameters is of most concern for consideration for admission?

- A. Hemoglobin
- B. Temperature
- C. Body weight
- D. Bilirubin

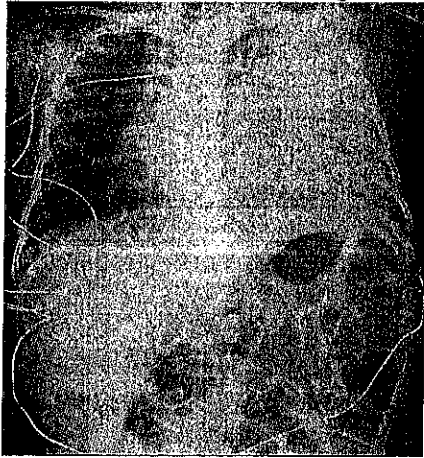
33. You are admitting to the hospital a 2-month-old infant who has been having poor feeding, emesis, and diarrhoea for 3 days. In the emergency room, her electrolytes were found to be: Sodium 159 mEq/L, Potassium 2.6 mEq/L, Chloride 120 mEq/L, Bicarbonate 14 mEq/L, Creatinine 1.8 mEq/L, Blood urea nitrogen (BUN) 68 mEq/L, and glucose 10 mmol/L. She was given a fluid bolus in the emergency room and has subsequently produced urine. Which of the following is the most appropriate next step in her management?

- A. Slow rehydration over 48 hours.
- B. Continued rapid volume expansion with 1/4 normal saline.
- C. Rehydration with free water.
- D. Urinary electrolyte determination.

34. You are awakened in the night by a 2-year-old boy brought by his parents in your center, who has developed noisy breathing on inspiration, marked retractions of the chest wall, flaring of the nostrils, and a barking cough. He has had a mild upper respiratory infection (URI) for 2 days. Which of the following therapies is indicated?

- A. Short-acting bronchodilators and a 5-day course of steroids.
- B. Observation for hypoxia and dehydration alone.
- C. Racemix epinephrine and a dose of steroids.
- D. Rigid bronchoscopy and possible intubation.

35. A 6-year-old girl presents with a 2-day history of cough and fever. At your clinic, she has a temp. of 39.4°C, a respiratory rate of 45 breaths per minute, and decreased breath sounds on the left side. Her chest x-ray is shown below. Which of the following is the most appropriate initial treatment?



- A. Do chest physiotherapy and postural drainage.
- B. Start with IV antibiotics.
- C. Do chest tube thoracostomy insertion.
- D. Tuberculosis skin testing.

36. A 7-year-old boy presented to the outpatient department with a fever and cough, you diagnosed him as a case of pneumonia and decided to admit and give parental therapy but the child refused. Which of the following ethical statements is the best response?

- A. Explain to the father about dangers of omitting the treatment.
- B. Try to explain the risk to the child.
- C. Given the chance for oral antibiotics and accept the child's decision.
- D. Inform your consultant.

37. Which one of the following is true of the umbilical cord?

- A. The umbilical cord contains two arteries and one vein and the arterial oxygen concentration is higher than the vein.
- B. The umbilical vein carries deoxygenated blood away from the baby back to the placenta.
- C. The umbilical cord carries oxygenated blood in the vein and deoxygenated blood in the arteries.
- D. The umbilical cord must be clamped before the baby takes its first breath.

38. Which one of the following is true of weight loss in the first week of life?

- A. Weight loss of up to 12.5% of birth weight is to be expected in breastfed babies.
- B. Breastfed babies usually lose a little more weight than formula-fed babies.
- C. Weight loss of >12.5% is often associated with hyponatremic dehydration.
- D. Weight loss of > 5% of birth weight is an indication for a feeding assessment.

39. In a full-term baby who has a respiratory rate of 80 breaths/min, subcostal recession, and oxygen saturations of 90% in air at 2 hours of age.

- A. Antibiotics are not indicated unless there is a positive blood culture.
- B. A chest X-ray will rarely be useful.
- C. A pneumothorax should be ruled out using a pen light.
- D. Provided the baby is feeding well they should just be observed

40. Which of the following conditions are consistent with a simple febrile convulsion?

- A. A 2-minute seizure in a 3-month-old child with a UTI and a temperature of 39 °C.
- B. A single seizure in a 3-year-old child that lasts 20 minutes and is terminated with buccal midazolam.
- C. A focal seizure of the left hand in a 4-year-old with a temperature of 39.5 °C.
- D. A 2-minute generalized tonic seizure in an 18-month-old child with a temperature of 38 °C and signs of tonsillitis.

Section B. Simple-Answer Questions. Answer the following question in the allotted sheets provided. (30-mark points)

Case 1: A vomiting baby (10-mark points)

A 5-week-old baby has been vomiting for the last 48 hours. Initially, he was keeping some feeds down but now he is vomiting after every feed. He was breastfed initially but for the last week has been given formula milk via a bottle because his mother, who is only 17, developed a breast abscess and decided to stop breastfeeding.

A) You are worried about this baby, who seems quite ill. What further information do you need from the history? **Show the answer for 4-mark points.**

You examine the baby. His temperature is 36.8 °C. He has sunken eyes, a slightly sunken fontanelle, and dry mucous membranes. The nappy is dry and empty. His pulse is 160 beats/min, and his capillary refill time is 3 seconds. He weighs 2.8 kg. He is irritable. As you examine him, he vomited previously ingested milk.

B) His mother is carrying her child's health record (MCH Card). How can you establish exactly the degree of dehydration? Do you think he is dehydrated? If so, to what degree? **Show the Answer for 4-mark points.**

Following your examination, you decide to admit the child and undertake some blood tests. These are the results: Sodium 130 mmol/L; Potassium 2.8 mmol/L; Chloride 90 mmol/L; Bicarbonate 32 mmol/L; Creatinine 90 mol/L; Urea 6.7 mmol/L; Glucose 5.5 mmol/L; pH 7.53; PCO₂- 5 KPa ; PO₂- 55; Base excess +7 mmol/L

C) Knowing the results above of the following investigations, what is the most likely diagnosis and differential diagnosis? **Show Answer for 2 -mark points.**

Case 2: Developmental delay (10-mark points)

Melania is 22 months old. Her Zone Nurse has referred her for a check-up as she is concerned that Melania is not yet beginning to talk. Her mother is not too worried, as her mother told her that she was a slow developer herself.

You take a developmental history and discover that Melania walked at 13 months, and is now able to run. You settle down to play with Suzie and find that she can build a tower of three bricks when she is shown how. She readily takes a crayon but does not know how to scribble. She babbles happily to herself but does not have any words yet. Her mother tells you that she waves bye-bye, eats with her fingers, and drinks from a bottle. She has been offered a spoon but has shown no interest in using it.

A) What are the four developmental areas that you should assess? What do you think of the milestones she has attained? **Show the Answer for 4-mark points.**

B) What is important to look for in your history and physical examination? **Show the Answer for 4-mark points.**

C) What are the possible causes of Melania's developmental delay? **Show the Answer for 2-mark points.**

Case 3: Abdominal pain (10-mark points)

A 5-year-old girl named Karishma is taken by her parents to the family doctor. She has been non-specifically unwell since she had a viral illness a few weeks before. Her mother is worried because she has been complaining of tummy aches. She has been wetting the bed again, having been dry at night since the age of 20 months.

A) What other clinical and risk assessment would you consider for her abdominal pain and bedwetting? **Show the answer for 2-mark points.**

Karishma's mother collects a clean-catch urine sample and takes it to the private laboratory. The doctor performs a dipstick test and then sends the urine to the lab.

The results are as follows:

Dipstick:

Specific gravity 1010; Leucocytes +3; Protein +1; Nitrites negative; with Glucose +4

Laboratory results:

White cells 10–20; Red cells: none; Gram stain negative; Culture: mixed growth of bacteria.

B) How do you interpret the dipstick result and Laboratory results? Show the answer for 4-mark points.

When the doctor rings the family to discuss the result, he finds that Karishma has become more unwell, with severe abdominal pain, and has been vomiting all night. He decides to visit at home.

When he arrives at the home Karishma is dehydrated and lethargic. He calls an ambulance. As a precaution, he checks her capillary blood glucose and finds that it is 28 mmol/L. He telephones ahead to Aspen Hospital to warn them.

C) What is the possible diagnosis of your patient? What treatment will she require when she reaches the hospital? Show the answer for 4- mark points.

Section C. Long-Answer Questions (Case Scenarios). Answer the following question in the allotted sheets provided. (30-mark points)

Case Scenario 1: A baby with suspected cyanosis (15-mark points)

As an Intern, you are asked to see a baby who is 24 hours old. He is the third baby in the family. Mother is of Fijian of Indian origin and has an overt diabetes. The baby was breastfeeding well until a few hours ago and has no signs of respiratory distress. The mother is worried about the baby's color and thinks he looks "blue around the lips"

A) What will you look for on examination? Show the answer for 5- mark points.

B) State and discuss how simple bedside investigations can help make a diagnosis of cyanotic Congenital Heart Defects (CHD). Show the answer for 5-mark points.

C) What do you think the cardiac diagnosis might be? What would be your immediate management if the examination and investigations suggest CHD? Show the answer for 5- mark points.

Case Scenario 2. A 3-month-old baby with bruises (15-mark points)

A 3-month-old baby boy is referred by the GP who noticed a number of bruises when the baby was seen for a routine immunization. The baby attended with both parents. There is a 1 cm circular bruise on the left cheek and two similar-sized bruises on the abdomen. The baby is a little quiet and it is mentioned that his feeds have reduced that day but he is otherwise well. There is no history of any injury.

A) What further history is needed and what specific signs should be checked on examination? Please provide a comprehensive answer worth 5 marks.

B) What investigations should be performed and what will be your diagnosis and management of this patient? Please provide a comprehensive answer worth 5 marks.

C) Describe the necessary safeguarding measures and processes that should be in place for the well-being of your 3-month-old infant. Please provide a comprehensive answer worth 5 marks.

