

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PAEDIATRICS) EXAMINATION (NEW REGULATION)
JULY / AUGUST 2011

Date : 18th July 2011

Time : 9.00 a.m.- 12.00 noon

PAPER I – STRUCTURED ESSAY QUESTIONS

Please indicate “NEW” in front of your Index number in each book.

Answer **all five** questions.

Answer each question in a **separate book**.

Q.1.

- 1.1 Describe the physiology of glucose homeostasis in children. (20 marks)
- 1.2
- (a) List eight (08) causes of persistent hypoglycaemia in infants. (25 marks)
- (b) List five (05) causes of transient hypoglycaemia in infants. (Exclude the neonatal period). (10 marks)
- 1.3 Discuss what is meant by “hyperglycaemia” ? (20 marks)
- 1.4 Outline the pathogenesis of the **two** most important metabolic sequelae of type I diabetes. (25 marks)

Q.2.

- 2.1 Explain what is meant by “Millennium Development Goals”.(MDG)
(25 marks)
- 2.2 List the MDG’s which will **directly** affect child health in **Sri Lanka**.
(30 marks)
- 2.3 Comment on the present status of “Under Five Mortality” in Sri Lanka.
(25 marks)
- 2.4 Briefly describe important interventions that will have a major impact in reducing “Under Five Mortality” in Sri Lanka. (20 marks)

Q.3.

- 3.1 Describe what is meant by Apparent Life Threatening Event (ALTE).
(20 marks)
- 3.2 Mention **one** ALTE associated with Gastro-Oesophageal Reflux Disorder (GORD) and describe the mechanism of its causation.
(20 marks)
- 3.3
- (a) List **five (05)** other extra intestinal manifestations of GORD in infants. (15 marks)
- (b) List **two (02)** extra intestinal manifestations of GORD in children. (10 marks)
- 3.4 Define the terms “Gastro Oesophageal Reflux” (GOR) and Gastro oesophageal Reflux Disorder. (15 marks)
- 3.5 List **five (05)** factors that influence the gastric pressure-volume dynamics. (20 marks)

Q.4.

- 4.1 What is “autoimmune hepatitis” ? (20 marks)
- 4.2 Describe the basis for the classification of autoimmune hepatitis. (20 marks)
- 4.3 List **four (04)** investigations you would perform to help confirm the diagnosis of autoimmune hepatitis. (30 marks)
- 4.4 Outline the specific therapeutic options for autoimmune hepatitis. (30 marks)

Q.5.

- 5.1 List the aetiologic classification of shock in children, giving two (02) examples for each category. (30 marks)
- 5.2 Briefly describe the pathophysiology of compensated shock. (30 marks)
- 5.3 Outline the emergency management protocol for a child with anaphylactic shock. (40 marks)

POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (PAEDIATRICS) EXAMINATION (NEW SYLLABUS)
JULY / AUGUST 2011

Date : 19th July 2011

Time : 9.00 a.m.- 12.00 noon

PAPER II – CASE HISTORIES

Answer all five questions.

Answer each question in a separate book.

Write new syllabus on the front cover of each book.

1. A 21 day old baby girl was transferred to Lady Ridgway Children's Hospital (LRH) because of poor feeding, vomiting and irritability.

She had been treated at a Base Hospital since age seven days for poor feeding, jaundice and lethargy. She had been successfully resuscitated and after taking blood for investigations had been treated with IV cefotaxime, IV fluids and kept nil orally for 48 hours. Blood culture had grown E.coli.

Subsequently she had shown improvement clinically, had fed at the breast and passed normal colour stools. Urine output had been adequate.

She was the firstborn to unrelated parents, weighing 2.9 Kg. She was born at term and birth events had been normal. She passed meconium and urine within 24 hours of birth. Neonatal examination was normal and she had been discharged home on exclusive breast feeding, until the admission at seven days of age.

On the 10th day of her antibiotic course she became irritable and started vomiting and fed poorly again. Weight was 2.4 kg. Antibiotic was changed to intravenous meropenam but due to lack of improvement she was transferred for further management.

Investigations done at one week of age:

FBC	WBC $15.8 \times 10^9 / L$	N-60%, L – 40%
Hb	14g%	
Platelet count	$124 \times 10^9 / L$	
CRP	28 mg/dl	(0-6)
Blood Group	Baby B+	Mother B +
RBS	1.8 mmol/l	
Serum bilirubin Total	320 $\mu\text{mol/l}$	
Indirect	308 $\mu\text{mol/L}$	
Direct	12 $\mu\text{mol/L}$	
CSF	normal with sugar of 1.2 mmol/L	

Investigations done after admission to LRH:

Full blood count	normal	
Blood culture	negative	
CRP	2 mg/dL	(0 - 6)
S.Bilirubin	280 $\mu\text{mol/L}$	
Direct	90 $\mu\text{mol/L}$	
Indirect	190 $\mu\text{mol/L}$	
ALT	90 IU/I	(10-40)
AST	110 IU/I	(9-48)
Prothrombin time	16 sec	(control 12sec)
INR	1.3	
RBS	2.2 mmol/l	
Serum protein	6 g/dl	(6.4 – 8 g/dl)
TORCH screen	negative	
TSH	3 $\mu\text{mol/L}$	(1.5 – 8)
USS of abdomen	Enlarged liver with increased echogenicity and normal portal flow, Spleen normal size. Kidneys normal.	

- 1.1 Mention two (02) differential diagnoses at this stage. (20 marks)
- 1.2 Mention other **clinical and laboratory** findings that will help you to arrive at a definitive diagnosis, describing the diagnostic procedures/tests, their value and possible yield. (40 marks)
- 1.3 What is the most likely diagnosis of this baby's illness ? (15 marks)
- 1.4 Outline the treatment. (15 marks)
- 1.5. Mention one she long term problem, directly related to her underlying illness, that she may develop despite adequate treatment.
 - (a) During primary school days (05 marks)
 - (b) During her adolescent years (05 marks)

2. A 4 year old girl was admitted with a history of a generalized tonic clonic seizure lasting 30 minutes. During the past one month she has been unwell with mild fever on and off. She had taken treatment from the Estate Hospital with no improvement in her condition. She vomited three to four times and became more irritable over the last two days.

She was born at term at home. Her development and immunization have been up to-date. She has been well apart from a simple febrile seizure at the age of 18 months, which was managed at the local hospital.

Both parents are unrelated, estate labourers. Her only sibling a 6 year old brother is apparently healthy. They live in a two roomed estate accommodation together with the maternal grandmother who has poorly controlled asthma.

On physical examination :

Weight	9.5 kg (<3 centile)
Height	90 cm (3 rd centile)
Irritable, drowsy, temperature 101 ⁰ F	
Mild pallor, no icterus, mild dehydration, no skin rashes or bleeding manifestations	
No lymphadenopathy.	
Pulse	100/min
BP	90/60
Heart	dual rhythm with no murmurs.
Chest	Few rhonchi heard over both lungs.
Abdomen	Liver is palpable 1.5 cm below costal margin and is non tender.

Investigations

WBC	12.5 x 10 ⁹ /L	N 41%, L 53%, E 06%
Hb	10g / dl	
Platelet count	400 x 10 ⁹ / L	
CRP	36 mg/dl	(< 6 mg/dl)
Urine analysis		
protein	Trace	
pus cells	4 – 6/hpf	
SGPT	20 iu/L	(< 40)
SGOT	17 iu/L	(< 40)
Blood Urea	3.1 mmol/l	(1.8 – 6.4)
Na ⁺	132 mmol/l	(135-145)
K ⁺	3.5 mmol/l	(3.5 – 4.5)
Chest X ray	Prominent hilar shadows +	

- 2.1 Mention **four (04)** differential diagnoses. (20 marks)
- 2.2 What further clinical examination would you perform to help arrive at a diagnosis. (20 marks)
- 2.3 List **five (05)** investigations you would perform on this child and give the expected results of each. (30 marks)
- 2.4 Which of the above diagnoses is most likely ? (10 marks)
- 2.5 What is the treatment for the most likely diagnosis ? (20 marks)

3. A 36 hour old baby boy was transferred from a private hospital to the Lady Ridgeway Hospital for management of persistent hypoglycaemia. He was the 2nd child of non-consanguineous parents. The mother had an uneventful pregnancy and the baby was born by a caesarean section at 39 weeks. Birth weight was 3.03 kg (3-10th centile), OFC 35.5 cm (10th centile) and length was 51 cm (centile). Apgar was 9 at 1 min and 10 at 5 min. There was a small cleft in the soft palate and rest of the neonatal examination was normal. He was put to the breast soon after and was able to suck well.

At 6 hours of age baby was found to be jittery and capillary blood sugar was 1.2 mmol/l. As IV access was difficult 10% Dextrose 10 ml has been given orally. Capillary blood sugar 30 minutes later was 1.1 mmol/l and the baby was transferred to LRH. Baby arrived, without a drip, and was cold and jittery on examination. Capillary blood sugar was recorded as low repeatedly.

- 3.1 List two (02) immediate therapeutic actions you would take.
(10 marks)

- 3.2 List the immediate investigations you would carry out.
(15 marks)

Despite being on a 12.5 Dextrose infusion and breast feeds, his blood sugar remained below normal.

The following investigation results are available

Hb	14.4 g/dl
WBC	10.4 x 10 ⁹ /L N-32, L- 66, M - 2
Platelets	19.8 x 10 ⁹ /L
Random venous blood sugar	0.9 mmol/l (3.8 -7.7)
Serum electrolyte	
Na ⁺	139 mmol/L
K ⁺	4.5 mmol/L
CL ⁻	99 mmol/L
Serum bilirubin	
Total	212 mmol/l
Indirect	199 mmol

ALT	26 iu/L	(10-40)
AST	90 iu/L	(9-48)
Serum insulin	< 2 µ/ml	(upto 28.4)
Serum creatinine	43 mmol/L	(27 – 88)
Blood urea	3.4 mmol/l	(1-2.5)

US scan of abdomen

No focal lesions seen in the liver and the spleen. Gallbladder appears normal. Minimal fullness of the pelvicalyceal system of both kidneys noted. Normal bladder contour. No ascites. No supra renal mass or adrenal hyperplasia. Right testis is 1.1 x 0.5 cm Left testis is retractile and measures 1.1 x 0.4 cm.

US scan of brain – normal

- 3.3. List three (03) conditions which you would consider as possibilities in this newborn. (15 marks)

- 3.4. Name two (02) specific clinical features that support your diagnosis. (20 marks)

- 3.5. List four (04) other investigations that you would now perform to establish the underlying aetiology giving reasons. (40 marks)

4. A baby boy was born vaginally at 29 weeks of gestation at a District General Hospital following spontaneous rupture of membranes 10 hours prior to delivery. Apgar scores were 5 and 7 at 1 and 5 minutes respectively. He weighed 1.2 Kg. as the baby was in respiratory distress, he was transferred to a tertiary care hospital for further management.

He is the 2nd child of non related healthy parents. Mother received one dose of dexamethasone 6 hours before delivery.

On arrival in the tertiary care hospital baby was dusky with cold peripheries.

Temp 35⁰C, Heart rate 140/min, CRT 3 sec. RR-68/min

He was grunting with intercostals and subcostal recessions.

Abdomen was soft with no organomegaly.

He was intubated and given surfactant at 14 hours of age.

Ventilator settings and arterial blood gas 2 hours after surfactant therapy are given below.

Mode SIMV		Arterial blood gas	
FiO ₂	0.6	pH	7.18
PIP	18	pCO ₂	25 mmHg
PEEP	5	pO ₂	70 mmHg
Ti	0.32	HCO ₃	10 mmol/L
RR	40	SpO ₂	93-95%

- 4.1. What is the conclusion you arrive at from this blood gas analysis ?
(10 marks)
- 4.2. Write five (05) steps you would take to correct the above abnormality/ies ?
(25 marks)

The baby improved and was stable after interventions.

He self-extubated at 72 hours of age. the Paediatric Registrar on call kept him on 0.5L/min nasal prong O₂, since the baby was not distressed.

On day 5, baby looked pale with mild facial puffiness. RR – 80/min, HR – 170/min, CRT – 3 sec, SpO₂ 90%.

Lungs – Air entry equal, but mild chest recessions were noted.

Abdomen was mildly distended but soft. Liver was palpable 2 cm below the right costal margin. You are called to see this neonate. By the time you arrive you find that the baby has suddenly developed bleeding from nose, mouth and via the NG tube. SpO₂ has dropped to 70%.

4.3. Write four (04) possible causes for this deterioration ? (20 marks)

4.4. List five (05) investigations that you would perform to confirm the diagnosis. (20 marks)

4.5. How would you manage this deterioration ? (25 marks)

5. A 6 year old boy was brought by his aunt to the casualty ward for vomiting, headache and dizziness for the last 2 days. he developed a generalized tonic clonic convulsion after admission.

2 years ago he has had almost a similar presentation and needed hospital stay of 2 weeks. the diagnosis card was lost and he has defaulted follow up. He is the 2nd child of 2nd degree consanguineous parents. His elder brother is attending a special school. Mother is abroad. His maternal uncle had died following a stroke at 50 years of age having been on long term medications.

On examination he was drowsy. Temperature 99⁰F. CRT normal and there was ankle oedema.

Respiratory rate 48/min and heart rate 120/min. On examination of lungs air entry is diminished on right side with crepitations. Liver – 2 cm below the costal margin. Deep tendon reflexes exaggerated but plantar flexor.

His height is on 50th centile and weight is on 3rd centile.

The following reports are available

Hb	9.5 g/dl	
WBC	10 x 10 ⁹ /l	N – 60%
Platelet	490 x 10 ⁹ /l	
CRP	3 mg/dL	(< 6)
Serum creatinine	160 µmol/L	(18 – 35)
Na+	126 mmol/L	(135 – 145)
K+	5.5 mmol/L	(3.5 – 5.0)
Ca++	2.2 mmol/L	(2.2 – 2.7)
RBS	6 mmol/l	

- 5.1. What is the most likely cause of the generalized tonic clonic convulsion ? (20 marks)
- 5.2. What other important clinical data would you look for ? (30 marks)
- 5.3. Give a complete diagnosis at this stage (20 marks)
- 5.4. What further investigations you would request, with reasons to support your diagnosis. (30 marks)