Name: _____ Date:_____

Total Marks:_____ / = %

Paediatric Clinician Task-Sharing Final Examination Paper 1

Please put the name and date on the top of each page in the space provided.

You will have 2 hours 30 minutes for this exam paper.

You should have a calculator and a list of medication and their doses for reference.

Remember to read the questions carefully.

1)

a. List 3 causes of upper airway obstruction (15 marks)

Collapse of airway due to muscle tone loss or build-up of secretions due to poor cough reflex:
- Depressed conscious level from any cause.
- Drug or alcohol intoxication or overdose.
- Bulbar palsy.
- Myopathy.

Airway inflammation and oedema:

Infective:
- Upper respiratory tract infection in an infant.
- Viral croup.
- Bacterial tracheitis.
- Epiglottitis.
- Severe tonsillitis.

Non-infective:
- Recurrent croup.
- Anaphylaxis.

Space-occupying lesion or structural abnormality:

Intranasal, pharyngeal or in upper trachea:
- Adenoidal hypertrophy
- Foreign body: choking
- Retropharyngeal abscess
- Tumour
- Extrinsic haematoma (e.g. post thyroidectomy)

Congenital pharyngeal, laryngeal or tracheal abnormalities especially if respiratory tract infection occurs:
- Choanal atresia
- Laryngomalacia
- Subglottic stenosis
- Laryngeal web or haemangioma
- Congenital tracheal stenosis
- Tracheomalacia (e.g. vascular ring)

Maximum 15 marks

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b. In children with upper airway obstruction, list 3 signs they might present with? (15 marks)

Stridor
Respiratory distress– tachypnoea, recession
Hypoxia
Cyanosis
Agitation/anxiety

Maximum 15 marks

You are called to see a 12-month-old girl in the emergency department who has presented with a 2-day history of coryzal symptoms and a barking cough. She has stridor at rest with severe subcostal recession. Her oxygen saturations are 91% in air and she has mildly reduced air entry all over. There are no signs of shock. She is alert.

c. What is your diagnosis? (5 marks)

Croup

d. Explain your initial management of this patient. She weighs 8.3kg. (Please prescribe in full any medication you wish to give) (50 marks)

Call for help
Try to keep the child calm, do not examine throat/do not do painful procedure
Give oxygen if tolerated to aim Sp02 >94%
Oral dexamethasone 5mg (0.6mg/kg) stat (15 marks)
Consider adrenaline nebuliser 3.3mg (400microgram/kg) stat (15 marks)
Review after initial treatment
Admit to hospital for close monitoring

For each prescription give 5 marks each for correct drug, route, dose (and frequency if not a one-off dose)
Give 5 marks for reference to keeping the child calm or avoidance of distressing examination/procedure

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2) You are called to see a patient with known Sickle Cell Disease who has presented with a vaso-occlusive crisis.
   a. Explain how a vaso-occlusive crisis occurs in sickle cell disease (10 marks)

Abnormal HbS sickles and clumps together
blocks small blood vessels leading to infarction of tissues

   b. Except for a vaso-occlusive crisis, list 3 other ways that Sickle Cell Disease can present in children (15 marks)

Bone pain
Hand-foot syndrome – dactylitis
Anaemia
Infection: especially *Streptococcus pneumoniae* or *Salmonella*
Acute chest syndrome
Stroke
Priapism

Maximum 15 marks

   c. Describe the principles for managing an acute sickle-cell crisis (40)

Oxygen – if SpO_2 <94% in air.

Incentive spirometry – blowing up a balloon or disposable glove

Ensure well hydrated

Severe anaemia – Transfusion if Hb <5g/dl or >2g/dl fall from baseline, or child compromised by anaemia

Antibiotics for infection

Analgesia – according to analgesia ladder. May need opioids or IV paracetamol initially

Keep warm

Laxatives

Thromboprophylaxis if peripubertal

Maximum 40 marks

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d. You are called to see the patient who is in severe pain despite IV Paracetamol. Please prescribe a dose of IV Morphine in full. The patient is 4 years old & weighs 18kg. (5 marks)

IV morphine 100microgram/kg = 1.8mg

e. List 2 side effects of opioid medication that you need to closely monitor for (10 marks)

Respiratory depression requiring bag valve mask ventilation
Reduced conscious level
Reduced blood pressure

3) You are called to the emergency department to see a 2-year-old child who is having a generalised tonic-clonic convulsion. It has lasted for 8 minutes.

a. List 5 causes of seizures (25 marks)

Fever
Meningitis
Encephalitis
Cerebral Malaria
Hypoxia
Epilepsy
Metabolic abnormalities – hypoglycaemia, hyponatraemia, hypocalcaemia
Cerebral haemorrhage
Medication
Space occupying lesion – tumour

Maximum 25 marks

b. Describe your initial management of this patient with focus on the treatment of the seizure. She weighs 11.5kg. (Please prescribe in full any medication you wish to give) (35marks)

Name: _____ Date:_____

Ensure the airway is patent
Apply oxygen
Check blood glucose and treat for hypoglycaemia if low
IV Diazepam 2.3-3.4mg and observe effect (15 marks)
Check temperature
Monitor closely

For each prescription give 5 marks each for correct drug, route, dose (and frequency if not a one-off dose)

The seizure stops following your initial management. The patient has a fever of 39degrees. Their Malaria test is negative.

c. Please prescribe the appropriate antibiotic to cover for meningitis. (20 marks)

IV Ceftriaxone 920mg once daily

d. When you treat a patient with anti-seizure medication for status epilepticus,
   i. what side effect do you need to observe for?
   ii. What equipment must you have available at the bedside? (10 marks)

Respiratory Depression
Bag-valve-mask

4) You see a 6-month-old baby who has presented with a fracture of his leg. You are concerned about child abuse.
   a. List 3 factors that may make a child vulnerable to child abuse (15 marks)

Prematurity
Separation and impaired bonding in the neonatal period
Disability
Behavioural problems/difficult temperament/personality/screamers/hyperactivity
Soiling and wetting past developmental age
Born to a mother who has conceived after rape

b. When you examine the child how would you document your examination? (5 marks)

A full body map

c. List 3 other injuries in a child which make you suspect child abuse? (15 marks)

Burns – cigarette/symmetrical scalding injury from immersion
Multiple bruises of different ages
Multiple fractures of different ages
Bite marks
Head injury not in keeping with the history

Max 15 marks

Following your history and examination, you remain concerned because the story does not explain how the child has a fracture and on examination you also find multiple bruising.

d. Describe what immediate action you would take? (15 marks)

Escalate your concerns to the senior doctor
Admit to the hospital as a place of safety
See if there are any other siblings at home that may be in danger
Follow local hospital safeguarding procedures

Maximum 15 marks

5)

a. Complete the table for the signs of severe dehydration vs some dehydration according to the WHO assessment for patients with a history of acute watery diarrhoea. (20 marks)

Severe Dehydration	Some Dehydration
Lethargy	Restless/Irritable
Sunken Eyes	Sunken Eyes
Very slow skin pinch >2 seconds	Slow skin pinch
Not able to drink	Drinks eagerly

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You see a 2-year-old boy with a 3-day history of acute watery diarrhoea and signs of severe dehydration. He has a strong pulse and warm peripheries. His capillary refill time is 2 seconds. He weighs 11.8kg and is well nourished.

b. Explain your initial fluid management for this patient and show any calculations. (45 marks)

WHO Plan C

Obtain Intravenous access or intraosseous access

Ringer's Lactate 30ml/kg over 30 minutes = 354ml then re-assess (15 marks)

Ringer's Lactate 70ml/kg over 2.5 hours = 826ml (15 marks)

Re-assess

ORS when tolerated

Give 5 marks for the correct fluid/drug and correct dose and correct duration

c. What other medication would you prescribe in acute diarrhoeal illness? Please prescribe in full using the patient's weight. (10 marks)

Zinc Sulphate 20mg

d. Why is it difficult to assess the level of dehydration in a severely malnourished child? (5 marks)

The signs of dehydration are also present in severe malnutrition

e. Why is severe dehydration managed differently in a malnourished child compared to a well nourished child? (5 marks)

High risk of cardiac failure and fluid overload

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6) You are called to see a 5-year-old with a 2-day history of cough and fever. His respiratory rate is 40, oxygen saturations 85% in air and he has crepitations at the left base. He has severe subcostal recession and is unable to speak properly. His heart rate is 150, he is warm and well perfused with strong radial pulses and capillary refill time 2 seconds. He is alert.

a. What is your diagnosis? (5 marks)

Pneumonia (Severe)

b. How would you manage this patient? His weight is 20.3kg. (Write any prescriptions in full) (65marks)

Admit to the ward
Oxygen - Aim Sp02 94-98%
IV Ampicillin 1g (50mg/kg) every 6 hours (20 marks)
IV Gentamicin 142mg (7mg/kg) every 24 hours (20 marks)
IV Ringer's Lactate + 5% Dextrose at 100% maintenance = 1506ml/day = 63ml/hour (10 marks)
Monitor urine output
Close monitoring

For each prescription give 5 marks each for correct drug, route, dose (and frequency if not a one-off dose)

c. When would you want to do a chest x-ray in a patient with pneumonia? (5 marks)

If the patient is not responding to treatment
Doubt of the diagnosis