Paediatric SAQs

Emergency Medicine Fellowship Program

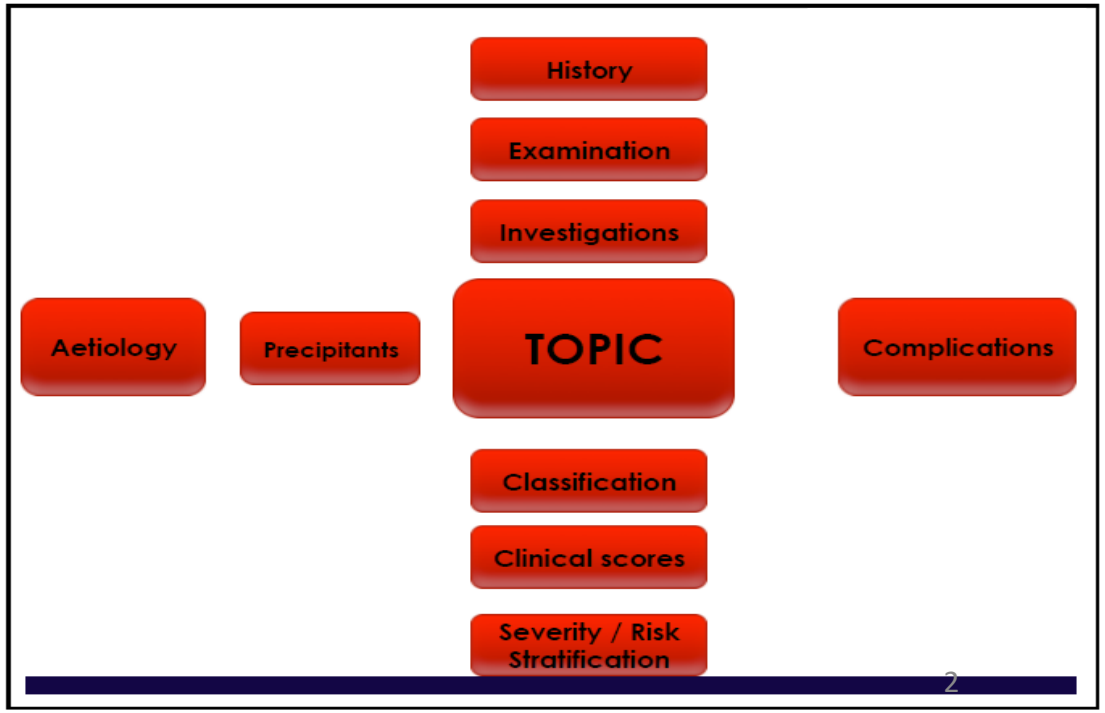
How to use this book:

1) Complete SAQs
- < 3 months until exam: Exam conditions – focus on clear answers ‘to time’
- 3-6 months until exam: Transition towards exam conditions
- > 6 months until exam: Open book is ok, ‘focus on good answers and developing knowledge acquisition

2) Read and study around SAQ
- Use each SAQ as motivation to study around the individual topic
- Think about the different ways the topic could come up in the SAQ exam (use the topic structure provided by APEM course)

3) Write SAQs to further develop this program
- Review syllabus of medical expertise
- Create SAQs relating to topics not covered in this book, please format to be in exam-format, include answers
- This will help further develop this program as well as help you think like an examiner
- Return to ben.shepherd86@gmail.com

ALL THE BEST!



Neurological

A mother has brought her 2 yr old son to your Emergency Department following a suspected seizure. He has been unwell for 2 days with a febrile illness. You suspect the child has had a febrile convulsion.

a. What is the frequency (in %) of febrile convulsion in children ? (1 Mark)

_____ %

b. List 4 features associated with a simple febrile convulsion (2 marks)

1. _____

2. _____

3. _____

4. _____

c. List 4 factors associated with an increased risk of a child having recurrent febrile convulsions (4 marks)

1. _____

2. _____

3. _____

4. _____

d. The patient's mother is concerned about the risk of her child developing epilepsy. List 3 factors associated with an increased risk of future afebrile convulsions. (3 marks)

1. _____

2. _____

3. _____

A 4 month old child presents via ambulance after a generalised convulsion which lasted approximately 2 minutes then stopped spontaneously. He has been unwell for the last 24 hours with coryza and a fever and had paracetamol half an hour ago. He is a previously well term baby immunised to date.

The child appears listless and mottled with a capillary refill time of 3 seconds.

His observations are as follows:

Temp	37.8	ºC Rectal
HR	160	/min
BP	80/40	mmHg
Sats	98%	on room air

i. List five (5) differential diagnoses (5 marks)

1 _____

2 _____

3 _____

4 _____

5 _____

ii. State four (4) management priorities (4 marks)

1 _____

2 _____

3 _____

4 _____

iii. The child is not currently seizing. Prescribe two (2) medications in the chart below. (4 marks)

Date	Medication (Print Generic Name)		Tick if Slow Release
Route	Dose	Frequency	

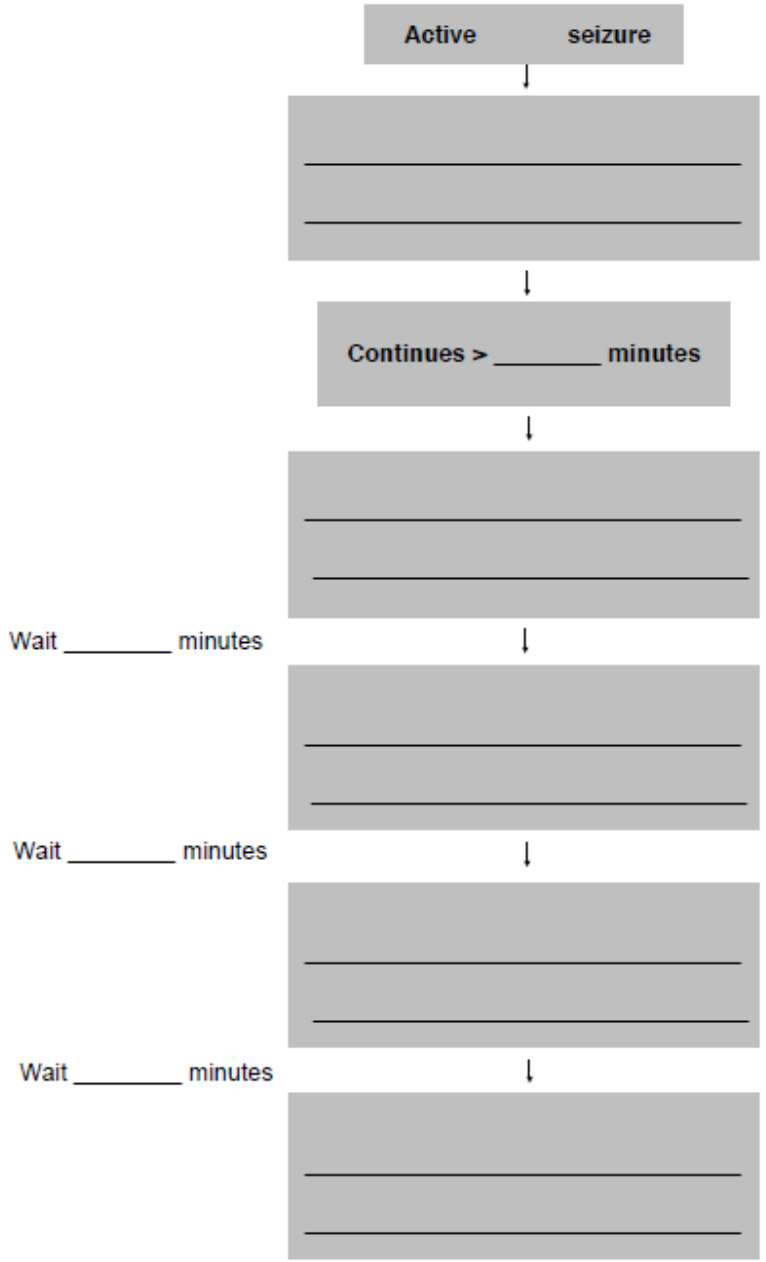
Date	Medication (Print Generic Name)		Tick if Slow Release
Route	Dose	Frequency	

iv. State two (2) rationale for your choice of drug. (2 marks)

1 _____

2 _____

v. The child begins to seize again while you are examining them. He has IV access. Complete the following algorithm. (14 marks)



vi. The child has stopped seizing. List your next two (2) investigations. State one pro and one con for each. (6 marks)

	Investigation	Pro	Con
1			
2			

A 5yo girl presents with a likely febrile convulsion which has terminated prior to arrival in ED.

1. List three 3 differences between a simple febrile convulsion and a complex febrile convulsion. (6 marks)

	Simple febrile convulsion	Complex febrile convulsion
1		
2		
3		

2. List four (4) risk factors for recurrent seizures for this patient.(4 marks)

1. _____

2. _____

3. _____

4. _____

3. List three (3) discharge criteria/requirements for this patient. (3 marks)

1. _____

2. _____

3. _____

A 2 year old girl was discharged from your ED last night with a presumptive diagnosis of simple febrile convulsion. No investigations were performed.

She has returned after a tonic clonic seizure which self terminated and is now :

GCS = 6 (no spontaneous eye opening, withdraws when IV inserted, no vocalisation)

HR	146	/min
Sats	90 %	RA
Temp	36.6°C	
RR	12	/min
Cap return	< 2 seconds	

a) List four (4) risk factors that increase the recurrence rate of a further febrile convulsion. (4 marks)

1. _____

2. _____

3. _____

4. _____

b) List three (3) immediate bedside procedures you would perform on this patient. (3 marks)

1. _____

2. _____

3. _____

She has another tonic clonic seizure ;
c) List one (1) parenteral medication with dosage to immediately terminate the seizure. (1 mark)

Medication	IV dosage

d) List one (1) parenteral medication with dosage to prevent further seizures. (1 mark)

Medication	IV dosage

e) List three (3) causes for the seizure (apart from a febrile convulsion) that should be considered.(3 marks)

1. _____

2. _____

3. _____

A 12 year old boy walks into emergency with his father having been knocked out attempting to make a tackle while playing rugby 1 hour ago. He was unconscious for approximately 90 seconds at the time. He now has a moderate headache and has vomited once. GCS is 15 and observations are normal.

i. Outline 5 features of the history and examination that are common across paediatric clinical decision rules that suggest a CT brain is indicated (5 marks)

ii. The patient's father asks about the risk of a CT brain. Outline your response (3 marks)

iii. You decide there is no indication for CT - outline your further management (4 marks)

iv. On discharge your final diagnosis is concussion. What management plan/advice do you give the child and his parents (5 marks)

You are asked to review a 3 month old male who was brought in by ambulance with his mother following an unresponsive episode at home. The infant became floppy and did not appear to breathe for almost 20 seconds.

i. List 4 pertinent features in the history (4 marks)

_____

_____

_____

_____

ii. What is the likely diagnosis (1 mark)

_____

_____

iii. List 4 low risk features that need to be satisfied for this diagnosis (4 marks)

_____

_____

_____

_____

iv. List 4 indications for admission (4 marks)

_____

_____

_____

_____

A 4 year old previously well girl, presents with a sudden onset generalised tonic-clonic seizure lasting 40 minutes, terminated with one dose of midazolam. Immediately afterwards she is GCS 3, and apnoeic.

i. Briefly describe two methods for maintaining ventilation in this situation and the reason for your preferred method (4 marks)

ii. List 5 possible causes of apnoea in this situation (5 marks)

The child improves to a GCS of 14 in 30 minutes. There are no focal neurological signs and no preceding illness or fever apart from the occasional headache. The child was born in Australia but spent 3 months in India returning 6 months ago. Her glucose and electrolytes are normal.

iii. List 5 possible causes for the seizure (5 marks)

iv. Outline a pro and con of CT vs MRI of brain in this situation (4 marks)

	PRO	CON
MRI		
CT		

You are the consultant in a regional Emergency Department. A 5 year old girl re-presents having been discharged 7 hours ago. She was assessed during the previous presentation for a head injury, sustained after a fall from a slide at preschool. No investigations were performed.

i. List 6 indications for CT scan of brain for this child (6 marks)

ii. Give 3 positive findings from the axial CT Image below (3 marks)

A CT BRAIN IS SHOWN IN THE PROPS BOOKLET, PAGE 5

iii. The child deteriorates to GCS 5. List your top 5 management priorities (5 marks)

iv. Concerns about the management of the initial presentation are brought to your attention. Give 3 potential issues and action required (6 marks)

A 12 year old girl was brought to ED via ambulance following a syncopal episode.

i. What is the definition of syncope (3 marks)

ii. What is the most common cause of syncope in children (1 mark)

iii. Name a form of syncope unique to the preschool population (1 mark)

iv. List 5 red flags in this girl's history that would prompt further investigation (5 marks)

v. List 5 conditions you would look for in this girl's ECG (5 marks)

A three year old child is brought in by her mother in with the presenting complaint of vomiting.

Her initial observations are: Temp 37C, PR 120, normal colour, RR 18, Oxygen saturation 99% R/A, GCS 15, pupils 3mm, briskly reactive.

After 10 minutes in the waiting room the triage notes that she has a staggering gait. You are called to review her in the CIN room.

She is pale and drowsy with generally reduced tone, PR 88, RR 10, pupils 2mm and slightly sluggish.

(a) Outline 5 essential steps in her resuscitation (20%)

(a) Apart from ingestions list 4 potential aetiologies for her presentation (20%)

(a) List 5 potential toxicological aetiologies for this presentation (20%)

(a) You learn that her mother had given methadone to settle her behaviour. What is your response? (20%)

Respiratory

A 5 year old boy presents with an exacerbation of his known asthma.

1. What four (4) signs on physical examination would suggest a severe (but **NOT** life threatening) exacerbation?

2. List four (4) drugs with their doses, routes and indications for the use in the treatment of childhood asthma in the emergency department.

Drug	Dose	Route	Indication

3. List five (5) criteria for discharge.

i. Complete the following table with regards to the clinical severity assessment of children presenting with bronchiolitis.

Clinical factor	MILD	MODERATE	SEVERE

ii. List six (6) risk factors for severe complications related to bronchiolitis

1 _____

2 _____

3 _____

4 _____

5 _____

6 _____

iii. List two (2) indications for a CXR

1 _____

2 _____

A 2 yo boy presents after an acute choking episode.He had a brief episode of coughing and appeared blue at home.He now has an ongoing intermittent cough.

His observations are within normal limits and appears well.

His Chest X ray is shown in Props booklet ;Page 10

1. What is the diagnosis and which side is affected? (2 marks)

_____

_____

2. List four (4) radiological findings that support your diagnosis (4 marks)

1. _____

2. _____

3. _____

4. _____

The child becomes suddenly distressed and is markedly short of breath..

3.List six (6) steps that you would take to reduce his distress whilst in the Emergency department. (6 marks)

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

4. List four (4) indications for urgent definitive treatment for this child. (4 marks)

1. _____

2. _____

3. _____

4. _____

A 3 year-old boy presents to your ED at 0400hrs with acute asthma, triggered by a viral upper respiratory tract infection. Examination reveals:

GCS	15	
Heart rate	110	bpm
Oximetry	91%	room air

The child speaks in short phrases. He has moderate subcostal recession. His mother last administered salbutamol via spacer 2 hours ago. The child has never been to hospital before, for asthma. He weighs 15kg.

a) Complete the following table by listing three (3) different key treatment interventions in the first hour, for this child. Assume there are no contraindications.(6 marks)

	Agent	Route	Dose	Frequency
1				
2				
3				

b) If this child was to clinically deteriorate despite initial treatment, list three (3) agents you can administer, in addition to the above. (3 marks)

1. _____

2. _____

3. _____

c) If invasive ventilation was indicated for this child, complete the following table about your interventions. (3 marks)

Principal Induction Agent for RSI:	
Inspiratory to Expiratory (I:E) Ratio on Ventilator:	
Maximum Tolerated Peak Airway Pressure (in cmH_2O):	

d) Other than trigger avoidance, state two (2) evidence-based interventions that are effective for primary prophylaxis (prevention) in a 3 year-old child whose asthma attacks typically occur fortnightly. (2 marks)

1. _____

2. _____

A 5 month old boy brought in by his parents appears breathless and is "off his feeds." Your provisional impression is bronchiolitis.

i. Name three common organisms which cause this illness (3 marks)

_____

_____

_____

ii. List 4 clinical features which would indicate a severe episode warranting admission (4 marks)

_____

_____

_____

_____

iii. Complete the following table describing the rationale for each investigation in a child with bronchiolitis (3 marks)

Investigation	Indication/Rationale
Chest Xray	
Nasopharyngeal aspirate	
Blood gas	

iv. This illness is contagious. List 2 ways to reduce transmission in hospital (2 marks)

_____

_____

A 10 year old girl with a known history of asthma presents to your department with marked respiratory distress. She weighs 30kg.

i. In the table below, compare the differences between six (6) clinical signs for a moderate-to-severe and a life-threatening asthma attack.

	Clinical sign in moderate-to-severe asthma	**Clinical sign in life-threatening asthma**
1		
2		
3		
4		
5		
6		

ii. List five (5) initial pharmacological treatments with dose ranges and routes of administration for her life threatening attack.

	Initial pharmacological treatments
1	
2	
3	
4	
5	

iii. Complete the table provided with regard to intubating this patient.

ETT size:	
Induction agent and dose:	
Relaxant agent and dose:	

iv. List three (3) causes for hypotension post intubation, and one (1) intervention to treat each of them.

	Causes of hypotension post intubation	**Intervention**
1		
2		
3		

A 5 year old is brought to the Emergency Department with worsening asthma for the last 4 hours.

i. What are four clinical features of life threatening asthma (4 marks)

ii. List your immediate pharmacological management (3 marks)

iii. Despite appropriate escalation of management the patient's condition deteriorates over several hours and they are intubated in the ED. Complete the following table (5 marks)

Parameter	Setting	Justify
Respiratory Rate		
Tidal volume		
Peak inspiratory pressure		
PEEP		
I:E ratio		

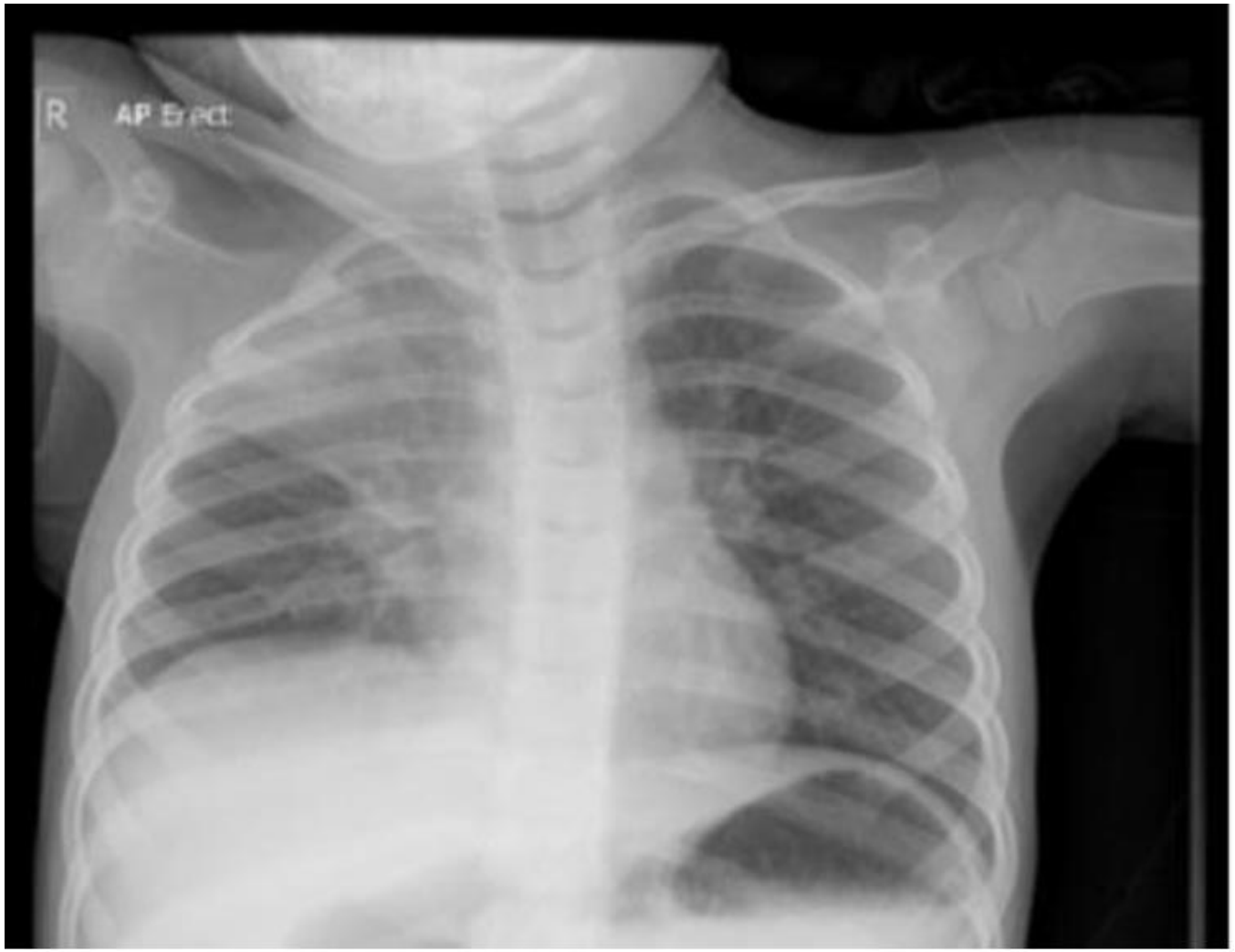
iv. After connecting to the ventilator the patient suddenly deteriorates becoming progressively hypotensive and tachycardic. Give three possible causes (3 marks)

A 3-year-old boy presents to the ED with wheezing and SOB for 2/7. His mother feels that his symptoms are getting progressively worse. His observations are: RR 40, BP 90/50, HR 150 and Sats 92% RA.

See image on page 9 in separate book

1. List 6 causes of wheezing in a child and 2 historical features that may support that diagnosis. (6 marks)

Cause of Wheezing	2 Features on History



2. List 3 abnormalities seen on the chest x-ray. (2 marks)

3. Over the course of his time in ED, RR 50, increased work of breathing, sats 89% on 6L O2, T37.4 and wheezing only on the right upper side. List 4 management priorities. (2 marks)

4. What is the most likely diagnosis? (1 mark)

A 2 month old boy is brought in by his parents from the GP with increased Work of breathing. You are concerned he has bronchiolitis.

1. List **6** factors which would categorises him as having moderate bronchiolitis (3 marks).

i. _____

ii. _____

iii. _____

iv. _____

v. _____

vi. _____

2. List **4** potential factors which would increase his risk of apnoeas (4 marks).

i. _____

ii. _____

iii. _____

iv. _____

3. List and justify **2** investigations you could undertake (2 marks).

i. _____

ii. _____

4. List **2** causes of Bronchiolitis (1 mark).

i. _____

ii. _____

A 4 month old boy has been brought to the ED with difficulty breathing over the last 2 days.

Your examination reveals widespread chest crackles and wheezes.

Your provisional diagnosis is bronchiolitis.

1. **List 4 microbiological causes of this condition.** **(4 marks)**

_____

_____

_____

_____

2. **Give 2 differential diagnoses and for each provide a discriminatory examination finding.** **(4 marks)**

Differential diagnosis	Examination finding

3. **List 5 criteria that would need to be satisfied for discharge home in the parents' care.** **(5 marks)**

_____

_____

_____

_____

_____

A 3 year old boy presents with acute onset of wheeze and cough. On examination he is pale, respiratory rate 50 breaths/minute, blood pressure 90/60, pulse rate 180 bpm and oxygen saturation on room air of 92%.

a) Tabulate the normal range of vital signs with age (6 marks)

Age	Heart rate	Blood pressure	Respiratory rate

b) List the differential diagnoses you would consider in this child. (4 marks)

Endocrine / Renal / Metabolic

A previously well 1 year-old girl, estimated weight of 10 kg, presents to the ED with lethargy. Shortly after arrival, she suffers a generalised tonic-clonic seizure.
She is afebrile.

a) How long can you allow the seizure to continue before treatment with anticonvulsant medication? (1 marks)

_____

You fail IV access and the seizure persists past your time frame as stated in part (a).
b) List 3 options for providing non- intravenous anticonvulsant medication.(3 marks)

1. _____

2. _____

3. _____

The child continues to seize after your initial management. A blood glucose is recorded as 1.4 mmol/L.

c) List two (2) of your next treatment steps (2 marks)

1. _____

2. _____

d) List five (5) likely causes for her hypoglycaemic state?(5 marks)

1. _____

2. _____

3. _____

4. _____

5. _____

A 22 month old previously well boy presents to your tertiary Emergency Department. He has a one week history of periorbital oedema and bilateral leg swelling. He has had no fever and no recent illnesses.
On examination he has normal vital signs.

His urine dipstick result is shown in the props booklet provided - page 13.

i. Describe the urine dipstick giving three (3) positive and three (3) relevant negative findings.

1 _____

2 _____

3 _____

4 _____

5 _____

6 _____

ii. What is the most likely diagnosis?

_____

iii. List three (3) underlying causes for this condition?

1 _____

2 _____

3 _____

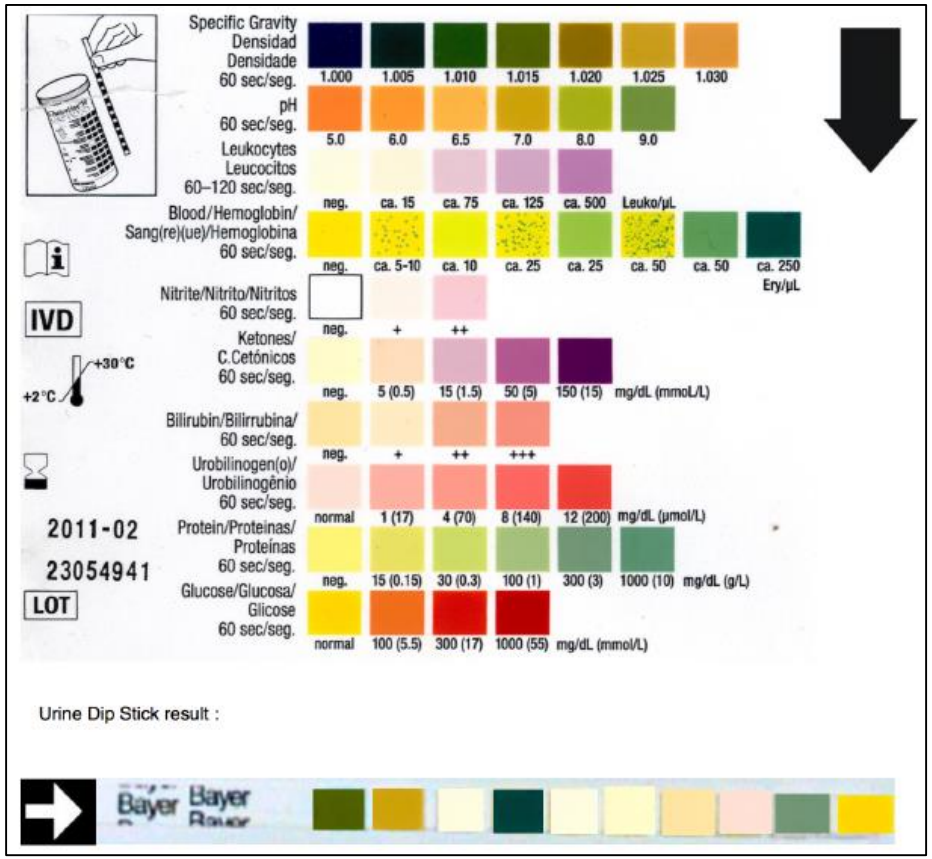
iv. List four (4) complications of this conditions.

1 _____

2 _____

3 _____

4 _____



A 7 yo boy presents with a non-blanching purpuric rash and abdominal pain. He appears well and is afebrile.You are concerned about HSP (Henoch-Schonlein Purpura)

a) List two (2) **other** features of the typical HSP rash. (2 marks)

1. _____

2. _____

His abdomen is soft and non-tender. Urine dipstick shows microscopic haematuria.

b) List four (4) other examination findings that may be associated with HSP and are important in deciding treatment.(4 marks)

1. _____

2. _____

3. _____

4. _____

You establish the likely diagnosis of HSP and request FBE and UECs.

c) State and explain one (1) feature on **FBE** that would exclude the diagnosis of HSP?(1 mark)

_____

FBE is normal and UEC shows :

Na	140	mmol/L	(135 - 145)
K	4.2	mmol/L	(3.5 - 5)
Bicarbonate	22	mmol/L	(22 - 28)
Urea	8	mmol/L	(3 - 8)
Creatinine	108	umol/L	(50 - 100)

The patient is deemed safe for discharge after assessment and discussion with the paediatric inpatient team.

d) State five (5) important and specific elements of treatment and follow up required for this patient.

1. _____

2. _____

3. _____

4. _____

5. _____

A 17 year old girl is brought to the Emergency Department by her parents as they are concerned she isn't eating enough. On examination she is extremely pale and thin. Her weight is 42 kg and her height is 173 cm.

1. What are **4** of the diagnostic criteria for anorexia nervosa? (4 marks).

   i. _____

   ii. _____

   iii. _____

   iv. _____

2. Give **4** medical indications for admission of patients with severe eating disorders (4 marks).

   i. _____

   ii. _____

   iii. _____

   iv. _____

3. Give **2** long term complications of eating disorders (2 marks).

   i. _____

   ii. _____

A 4 year old boy has been brought to your ED with a 2 day history of increasing vomiting and lethargy.

He has had a venous blood gas taken. The result is provided in the **PROPS BOOKLET**.

1. **Give the 2 most relevant findings regarding the patient's acid-base status. For each, provide the formula you have used. (4 marks)**

Conclusion	Formula

Venous blood gas

pH	7.18		(7.35 – 7.45)
pCO2	21	mmHg	(35 – 45)
pO2	25	mmHg	(80 – 100)
HCO3-	8	mmol/L	(22 - 32)
BE	-18.5	mmol/L	(-3 - +3)
Na	125	mmol/L	(135 – 145)
K	5.7	mmol/L	(3.5 – 5.0)
Cl	88	mmol/L	(100 – 110)
Glucose	38	mmol/L	(3.0 – 7.8)

2. State the underlying clinical condition. (1 mark)

_____

3. Give a brief explanation for each of the following abnormalities. (3 marks)

Abnormality	Explanation
Low Sodium	
High Potassium	
Low Chloride	

4. List 5 other investigations you might perform on this child, providing the clinical indication for each. (10 marks)

Investigation	Clinical indication

The patient has the following vital signs:

GCS	15	
Pulse	180	/min
BP	80/40	mmHg
RR	35	/min
O2 saturation	99%	room air
Temperature	36.5	degrees

The patient appears poorly perfused.

5. State 4 specific elements of your fluid and electrolyte therapy. (4 marks)

1) _____

_____

2) _____

_____

3) _____

_____

4) _____

_____

6. State 2 other components of your management of this patient. (2 marks)

1) _____

_____

2) _____

A 12 month old Asian boy is brought to the ED by his parents. Over the last 48 hours his mother noticed him becoming increasingly pale and lethargic and noted his urine was dark. He was seen by his GP 4 days ago with fever, vomiting and cloudy urine which settled with a course of trimethoprim. He is haemodynamically stable and apyrexial.

i. List 4 possible causes of this presentation (4 marks)

He has the following blood results:

WCC	11.8 x10^9/L	(3.6-11)
Neutrophils	7.3 x 10^9/L	(1.8-7.5)
Hb	60g/L	(115-165)
Hct	0.29L/L	(0.37-0.44)
Plt	500 x 10^9/L	(140-400)
RCC	3.5 x 10^{12}/L	(3.8-5.8)
MCV	90 fL	(80-96)
MCHC	320g/L	(285-300)
Reticulocyte count	240x10^9/L	(30-140)

DAT / Coombs test – negative
EUC – normal

ii. Describe and interpret the above results (2 marks)

iii. List 4 other investigations to help confirm the likely diagnosis and provide your reasoning (8 marks)

iv. You suspect he has G6PD. List 4 causes of this condition (4 marks)

v. What would be your treatment for this patient (2 marks)

Infectious Disease

A 4 year old child is brought to the emergency department by their parents with fever and conjunctival injection.

i. What are the diagnostic criteria for Kawasaki disease?

1 _____

2 _____

3 _____

4 _____

5 _____

6 _____

7 _____

ii. List four (4) major differential diagnoses for Kawasaki disease.

1 _____

2 _____

3 _____

4 _____

iii. List the three (3) most important investigations you would perform in the emergency department to support the diagnosis of Kawasaki disease.

1 _____

2 _____

3 _____

An 18 month old child presents with a rash on her thumb that has been present for the last week and is not improving after a course of oral cephalexin from their local doctor. She has been systemically well and is afebrile at triage.

A clinical photograph has been taken and is shown on page 10 of the props booklet

i. Describe the clinical photograph giving four (4) relevant positive finding and 2 relevant negatives. (6 marks)

1 _____

2 _____

3 _____

4 _____

5 _____

6 _____

ii. What is the most likely diagnosis and organism responsible? (2 marks)

_____

_____

iii. List two (2) differential diagnoses. (2 marks)

1 _____

2 _____

iv. List three (3) possible complications of this condition. (3 marks)

1 _____

2 _____

3 _____

v. Prescribe two (2) appropriate medications in the chart below. (8 mark

Date	Medication (Print Generic Name)		Release
Route	Dose	Frequency	

Date	Medication (Print Generic Name)		Tick if Slow Release
Route	Dose	Frequency	

A 2 year old girl is referred by the GP with a high temperature. On examination she is pale and has increased work of breathing. She has a fine non blanching petechial rash on both her arms, legs and torso. Her lungs are clear. She has hepatosplenomegaly.

Her vital signs are:

HR	170	beats/min
BP	90/66	mmHg
RR	60	/min
Temperature	39	°C
O_2 Saturation	96	% on room air
Cap return	2	sec

i. List three (3) differential diagnostic categories and two (2) examples of each for this scenario.

	Diagnostic categories	Examples
1		1.
		2.
2		1.
		2.
3		1.
		2.

ii. List six (6) immediate investigations and provide one (1) justification for each of them.

	Investigation	Justification
1		
2		
3		
4		
5		
6		

A 2 year old girl is referred by the GP with a high temperature. On examination she is pale and has increased work of breathing. She has a fine non blanching petechial rash on both her arms, legs and torso. Her lungs are clear. She has hepatosplenomegaly.

Her initial investigations show:

Hb	34	g/L	(120 – 180)
WCC	30 x 10^9	g/L	(4 – 10)
Platelet	40 x 10^9	g/L	(150 – 400)
Blood film	Immature blasts	g/L	

i. List two (2) abnormalities on this result and give one (1) treatment for each.

	Abnormality	Intervention
1		
2		

ii. List four (4) likely potential complications arising from the underlying condition.

	Complications of underlying condition
1	
2	
3	
4	

_____ / 4

iii. List four (4) likely potential complications arising from the emergency treatment of this patient.

	Complications of treatment
1	
2	
3	
4	

A 3 year old child presents to your mixed regional emergency department acutely unwell with a fever and rash (pictured).

There are two (2) images below.

i. List five (5) differential diagnoses and one (1) specific treatment for each of these.

	Differential diagnosis	Specific treatment
1		
2		
3		
4		
5		

ii. Following an unsuccessful resuscitation, the child dies in the emergency department. Outline five (5) issues that need to be addressed.

1. _____

2. _____

3. _____

4. _____

5. _____

A 10 year old girl is brought to the ED by her parents who noticed a rash on her chest. She is normally well and fully vaccinated although she has an intercurrent upper respiratory tract infection and cough. Her vital signs are normal except for a fever of $38.5^{0}C$

A CLINICAL IMAGE IS SHOWN IN THE PROPS BOOKLET, PAGE 8

i. Describe the rash (1 mark)

_____

_____

ii. List 5 possible causes of this presentation (5 marks)

_____

_____

_____

_____

_____

iii. Briefly describe 5 clinical developments or investigation findings that would raise your level of suspicion for a serious bacterial infection in this patient (5 marks)

The patient's Full Blood Count results are displayed.

Component	Result	Normal Range
White Cell Count	16.1	4-11
Haemoglobin	110	115-175
Platelet Count	97	150-450
Haematocrit	0.30	0.36-0.56
MCV	79	79-96
MCH	28	27-32
MCHC	32	30-36
Neutrophil	2.1	2.9-7.9
Lymphocyte	9.8	1.8-4.0

iv. Given these blood results, list 2 possible differential diagnoses for the presentation. For each differential diagnosis outline clinical or investigation findings that would either support that diagnosis or make it less likely (6 marks)

A two year old well looking boy, is brought to your Emergency Department with rash.

A photo of his rash is shown in **PROPS BOOKLET; PAGE 4**

a) List Two (2) characteristics when describing his rash.(2 marks)

1. _____

2. _____

b) List Three (3) differential diagnosis for his presentation (and one history/examination finding for each to support your diagnosis (6 marks)

	DDx	Hx/Ex
1		
2		
3		

c) State two (2) investigations that are indicated for this patient. List one (1) rationale for each? (4 marks)

	Investigation	Rationale
1		
2		

A 4-year-old boy is brought in to the Emergency Department by his concerned parents. He has been unwell with a fever for 6 days. He has a diffusely erythematous pharynx and a unilateral 3cm cervical lymph node on the right.

See images on pages 21 & 22 in separate book

1. What is the most likely diagnosis? (1 mark)

_____

2. Give **4** differential diagnosis. (2 marks)

(1) _____

(2) _____

(3) _____

(4) _____

3. Outline the typical features of this condition. (4 marks)

_____

_____

_____

_____

4. List 2 potential complications. (2 marks)

Cardiac complication	
Non-cardiac complication	

5. Outline your management? (4 marks)

An 18 month old immunised boy presents to ED with a 7 day history of a fever to > 39 degrees, poor oral intake and lethargy. On examination, he appears unwell with a blanching rash with some desquamation, a red tongue and bilateral conjunctivitis.

i. List 4 possible diagnoses starting with the most likely (4 marks)

ii. List the diagnostic criteria of the most likely diagnosis (5 marks)

iii. List 4 important investigations with a rationale for each (4 marks)

iv. List 3 possible drug therapies for the most likely condition (3 marks)

The 3 year old child pictured below is brought to your emergency department with a history of fever and lethargy for the past 12 days. Your examination reveals an irritable child with a fever of 39.2, HR 150bpm and BP 80/50.

a) What is the most likely diagnosis? (1 mark)

b) Name 3 differential diagnoses: (3 marks)

c) List 6 of the diagnostic clinical criteria which would confirm the most likely diagnosis:

(6 marks)

d) List 2 potentially life threatening complications which may occur in the case of the most likely diagnosis: (2 marks)

e) Name 2 managements which are likely to be beneficial if the most likely diagnosis was confirmed (2 marks)

An 18 month-old boy is brought by his worried mother to the ED with a rash and spots in his buccal cavity. He is also pyrexial (T 38.9°C).

1. What changes are shown and what is the diagnosis? (2 marks)

2. List 2 acute complications of this condition (2 marks)

3. What laboratory findings would be expected with this diagnosis (3 marks)

3. In the ED, the child starts fitting. They are placed on their side with oxygen given by mask. An iv is placed. Outline your immediate management including drug doses (3 marks)

Paediatric Surgery

A 13 year old boy presents with a painful right testis.

i. What six (6) features on history and examination would raise your suspicion of a testicular torsion?

1 _____

2 _____

3 _____

4 _____

5 _____

6 _____

ii. What are your four (4) other most likely diagnoses?

1 _____

2 _____

3 _____

4 _____

iii. What is the utility of ultrasound in the acute setting?

_____

_____

_____

You are the emergency consultant at a tertiary hospital. A 4 year old female presents with RLQ pain and a fever of 38 degrees.

i. List the eight (8) parameters of the "Paediatric appendicitis score" (PAS). (8 marks)

1 _____

2 _____

3 _____

4 _____

5 _____

6 _____

7 _____

8 _____

ii. Complete the following table regarding the utility of this scoring system. (6 marks)

Score (3 marks)	Management decision (3 marks)

iii. You decide your patient is fit for discharge. State three (3) instructions you would give the parents. (3 marks)

1 _____

2 _____

3 _____

An 18 month old boy presents to the ED with R groin swelling and distress.

(1) Complete the following table stating four (4) historical or examination findings that may be used to differentiate each diagnosis. (12 marks)

	Testicular torsion	Torsion of the appendix testis	Inguinal hernia
1			
2			
3			
4			

(2) List four (4) steps required to reduce an inguinal hernia (4 marks)

1. _____
2. _____
3. _____
4. _____

(3) List three (3) indications for paediatric surgical consultation in the emergency department in a child with an inguinal hernia. (3 marks)

1. _____
2. _____
3. _____

A 3 month baby is brought to your regional Emergency department with a new lump in his left groin, **photo is shown in PROPS booklet ; page 13 .**

a) List four (4) differential diagnosis for his condition. (4 marks)

1. _____

2. _____

3. _____

4. _____

b) List three (3) likely complications of this condition (3 marks)

1. _____

2. _____

3. _____

c) List four (4) predisposing factors for this condition. (4 marks)

1. _____

2. _____

3. _____

4. _____

An 18 month old boy was brought by concerned parents to your Emergency Department, with 3 day history of viral illness and 24 hour history of intermittent crying and abdominal pain. On arrival he looks mildly dehydrated but has otherwise normal examination and vital signs.

a) List five (5) differential diagnoses for this child (5 marks)

1. _____

2. _____

3. _____

4. _____

5. _____

An Xray is taken-which is shown in PROPS booklet ; page 18 .

b) List three (3) abnormal findings in the Xray (3 marks)

1. _____

2. _____

3. _____

c) What is your most likely diagnosis? (1mark)

_____

d) List four (4) different radiological investigations to confirm your diagnosis and one rationale for its use (8 marks).

	Investigation	Rationale
1		
2		
3		
4		

The parents of a young child arrive in the ED with a GP letter diagnosing a likely intussusception.

a) List three (3) risk factors for intussusception. (3 marks)

1. _____

2. _____

3. _____

b) List three (3) clinical findings when examining this child's abdomen that would support the diagnosis or complication of intussusception. List one (1) significance for each finding. (6 marks)

	Examination finding	Significance
1		
2		
3		

c) List three (3) complications of performing an air enema. (3 marks)

1. _____

2. _____

3. _____

A 15 month child is brought to your emergency department by his parents, following a 3 day history of a viral illness with a maculopapular rash. On the day prior to presentation his parents report he had bouts of colic but had been eating and drinking and had been otherwise settled. On examination he looks unwell, has evidence of blood stained diarrhoea in his nappy and a capillary refill time of 3 seconds. As part of your assessment an abdominal xray is performed and is shown below.

a) What is the likely diagnosis? (2 marks)

b) List 3 factors which may predispose to this condition. (3 marks)

c) What are his estimated fluid requirements (showing calculations) for the next 24 hours? (5 marks)

A 10-year-old boy presents to the Emergency department with abdominal pain.

1. What clinical features of the history and examination make a diagnosis of appendicitis more likely? (4 marks)

_____

_____

_____

_____

After history and physical examination, you decide the most likely diagnosis is appendicitis but want to exclude other causes of abdominal pain in children.

2. List **four** tests and the diagnosis they would exclude in the table below. (4 marks)

Test	Diagnosis

After referral to the Surgical registrar on call you are asked to keep the child nil by mouth.

3. Please prescribe maintenance fluid in the table below for the next 12 hours. Assume only 1000ml bags of intravenous fluid are available. (2 marks)

Date	Route	Fluid type	Additive and dose	Total volume	Rate (ml/hr)

Other Paediatrics

A 14 month old boy is brought to your emergency department by her mother, as he has been refusing to weight bear for the last two (2) days after having his leg caught in a car seat strap whilst being removed from his car seat.

X-ray is performed and shown in PROPS booklet ; page 17 .

a) List two (2) abnormalities in his Xray (2 marks)

1. _____

2. _____

b) What is the name of this finding ? (1 mark)

_____

c) What is the likely mechanism of this injury (1 marks)

_____

d) List Four (4) features on history that may support your diagnosis (4 marks)

1. _____

2. _____

3. _____

4. _____

5. _____

e) List four (4) other concurrent injuries that you would look for in this child (4 marks)

1. _____

2. _____

3. _____

4. _____

f) List four (4) groups whom you will involve in his ongoing care (4 marks)

1. _____

2. _____

3. _____

4. _____

A 6 month old boy is brought to the emergency department by his grandmother. Initial examination reveals bruising to the face, right buttock and right upper torso. The baby appears quiet and withdrawn. He cries upon handling and prefers to lie still in his grandmother's arms.

i. Complete the following table listing four (4) potentially associated injuries for each region (face and torso) based on the initial examination.

	Face	Torso
1		
2		
3		
4		

ii. List and justify seven (7) separate investigations you would consider requesting.

	Investigations	Justifications
1		
2		
3		
4		
5		
6		
7		

_____ / 7

iii. List five (5) people/services you will consult about this presentation.

1. _____
2. _____
3. _____
4. _____
5. _____

_____ / 5

A 2 year old girl is brought to ED by her mother, who tells you her daughter has been reluctant to weight bear. The mother tells you that her daughter pulled a drawer full of cutlery onto her foot yesterday afternoon.

i. Outline four key points of your physical examination of this patient (4 marks)

_____

_____

_____

_____

ii. A femur and knee Xray is performed. Describe your findings (1 mark)

AN XRAY IS SHOWN IN THE PROPS BOOKLET, PAGE 6

_____

_____

iii. Describe three pharmacological options for analgesia in this patient. Provide drug names, doses, dosing intervals, route of administration, and possible adverse effects (9 marks)

NAME	Dose/Route of administration	Adverse effects

iv. List five features which might suggest a non-accidental cause of injury in this patient (5 marks)

v. The mother decides to discharge the child against medical advice prior to formal splinting and orthopaedic referral. Outline four steps you will take to protect this child (4 marks)

A 4 year old girl presents with her parents with a limp and not wanting to run as usual over the last 2 days. Her initial observations are:

Temp 38.0°C
HR 105bpm
SaO2 99%RA

On examination, she has pain on internal rotation and abduction, and has a noticeable limp on walking.

1. List **4** potential causes for her limp (2 marks).
   i. _____
   ii. _____
   iii. _____
   iv. _____

2. Justify **3** potential investigations which would aid your diagnosis (3 marks).
   i. _____
   ii. _____
   iii. _____

You are concerned that she may have partially treated septic arthritis as her parents state that she is just finishing a course of Amoxicillin for a febrile illness prescribed by the GP.

3. List **3** causative organisms for Septic Arthritis (3 marks).
   i. _____
   ii. _____
   iii. _____

4. What is/are the most appropriate empiric IV antibiotic(s) for septic arthritis? (2 marks)

_____

_____

A 4 year old child presents to your emergency department having developed a limp over the last 4 hours. The child looks well, is afebrile, but refuses to place its left foot on the ground.

a) What diagnoses would you consider most likely in this child? (4 marks)

b) What examination findings would you seek to aid in making a definitive diagnosis and to guide your investigation choice? (6 marks)

A 3½ year old boy accompanied by mum presents to ED with painful left leg and ongoing limp left leg for last four days. According to mum there is no history of fall or trauma. On examination, he is holding left leg in slight flexion and is unable to weight bear. You decide to do a pelvic X-ray. His observations are:
Pulse 95bpm BP 90/60mmHg RR 22/min Sats 97%air Temp 37.1C

1. Describe the abnormality on the XR (1 mark)

2. What is the most likely diagnosis? (1 mark)

3. List 8 causes of atraumatic limp in a child this age (4 marks)

4. List 4 assessment parameters are the most useful for suspected septic arthritis in a child with a painful hip (4marks)

3.15 Neonates and Infants

a) Apnoea of prematurity DIS G
b) Hyperbilirubinaemia DIS G
c) Feeding problems DIS G
d) Congenital heart disease DIS G
e) Diaphragmatic hernia DIS G
f) Congenital syndromes DIS G
g) Gastroesophaegeal reflux DIS G
h) Metabolic disease DIS G
j) Necrotising enterocolitis DIS G
j) Respiratory distress DIS H
k) Seizures DIS H
l) Infections/sepsis
j) Occult bacteraemia DIS H
m) Sudden infant death syndrome DIS H
n) BRUE/ALTE

Neonates & Infants

Column "LO" – Categories of Learning Objectives			Column "LP" – Levels of Practice
DIS - Diseases/Injuries/Symptoms	D - Pharmacological & toxicological agents		Ex - Expert
E - Physical Examination	P - Procedures	S - Systems	H - High
I - Investigations	Eq - Equipment	NCI - Non-clinical/clinical interface	G - General
M - Medical Interventions	T - Theories		

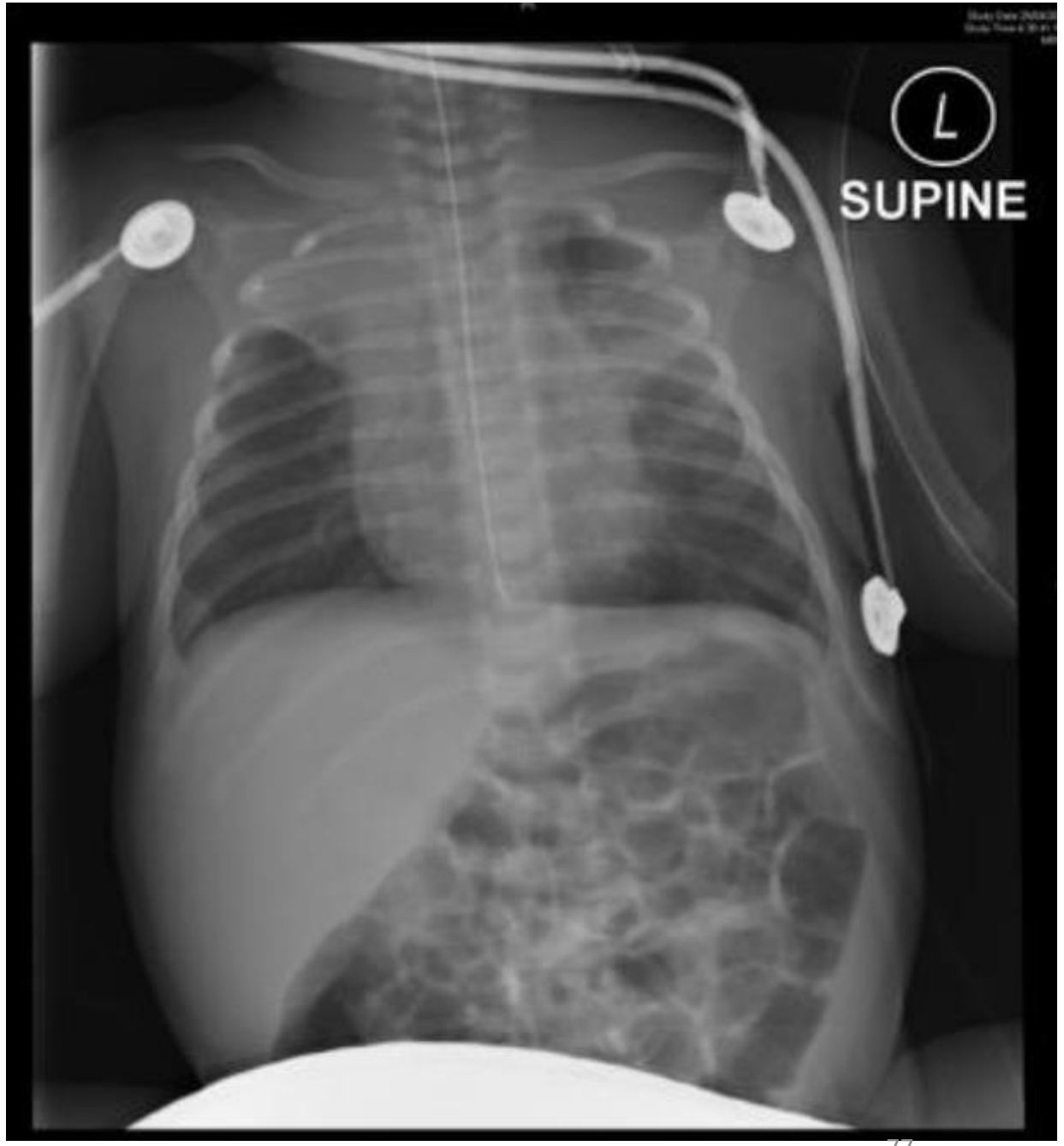
A 4 week old baby presents to your urban ED with a runny nose, mild cough and increased work of breathing over the past 2 days. The child had several episodes where her breathing became slower but this resolved with gentle stimulation. She has not fed for 8 hours.

Vital signs	Temp	36.6 deg C
	HR	190 bpm
	CR	3 sec
	RR	70/min
	SaO2	93% RA

i. List 4 differential diagnoses (4 marks)

ii. Describe and interpret the CXR (4 marks)

A CHEST XRAY IS SHOWN IN THE PROPS BOOKLET, PAGE 13



iii. Outline your management steps (4 marks)

_____

_____

_____

_____

iv. You prepare for intubation. Complete the following table (6 marks)

Weight	4kg
ETT size	
ETT insertion depth	
Blade type and size	
Induction agent and dose	
Paralytic agent and dose	
Ventilator settings (TV, RR, Fi02)	

You are in a non-tertiary hospital Emergency Department with no paediatric service. You are called urgently to the resuscitation area. A 30 year old woman at 39 weeks gestation has just arrived in the department and is in advanced labour. A colleague with obstetric experience is managing the patient and delivery. Your role is to manage the infant post delivery.

i. List the five (5) key examination features in assessment of the infant and provide details of your examination.

	Examination Feature	Details
1		
2		
3		
4		
5		

ii. The infant is born and is cyanosed with no respiratory effort. List five (5) key steps in your management in the first 2-3 minutes.

1 _____

2 _____

3 _____

4 _____

5 _____

i. There is no response to your initial measures. The infant is in a resuscitation bay and your resuscitation team is assembled. A nearby paediatric service is notified by your assistant. A nurse is caring for the father. List and outline your six (6) key management steps over the next 20 minutes.

	Key Management Step	Outline
1		
2		
3		
4		
5		
6		

You have successfully resuscitated the neonate. They are intubated and cardiovascularly stable. They are, however, persistently hypoxic at 85% on 100% FiO2.

ii. List six (6) possible causes for this persistent hypoxia

1 _____

2 _____

3 _____

4 _____

5 _____

6 _____

A 4 week old child is brought to your emergency department with a distended abdomen.

i. What six (6) questions would you ask to aide you with your diagnosis? (6 marks)

1 _____

2 _____

3 _____

4 _____

5 _____

6 _____

An AXR is taken and is shown on page 8 of the props booklet.

ii. State two (2) positive and two (2) relevant negative findings on the AXR. (4 marks)

	Positive findings (2 marks)	Relevant negative findings (2 marks)
1		
2		

iii. What is the most likely diagnosis? (1 mark)

_____

iv. Name two (2) differential diagnosis. (2 marks)

1 _____

2 _____

v. State three management steps. (3 marks)

1 _____

2 _____

3 _____

A 4 week old baby, born at term with no neonatal problems, presents with poor feeding and lethargy.

An ECG is performed and is shown in the props booklet on page 9

i. What is the ECG diagnosis? (1 mark)

_____

ii. List three (3) ECG features that support this diagnosis. (3 marks)

1 _____

2 _____

3 _____

iii. List four (4) possible underlying causes. (4 marks)

1 _____

2 _____

3 _____

4 _____

iv. State five (5) steps of management in the order that you would perform them. (5 marks)

1 _____

2 _____

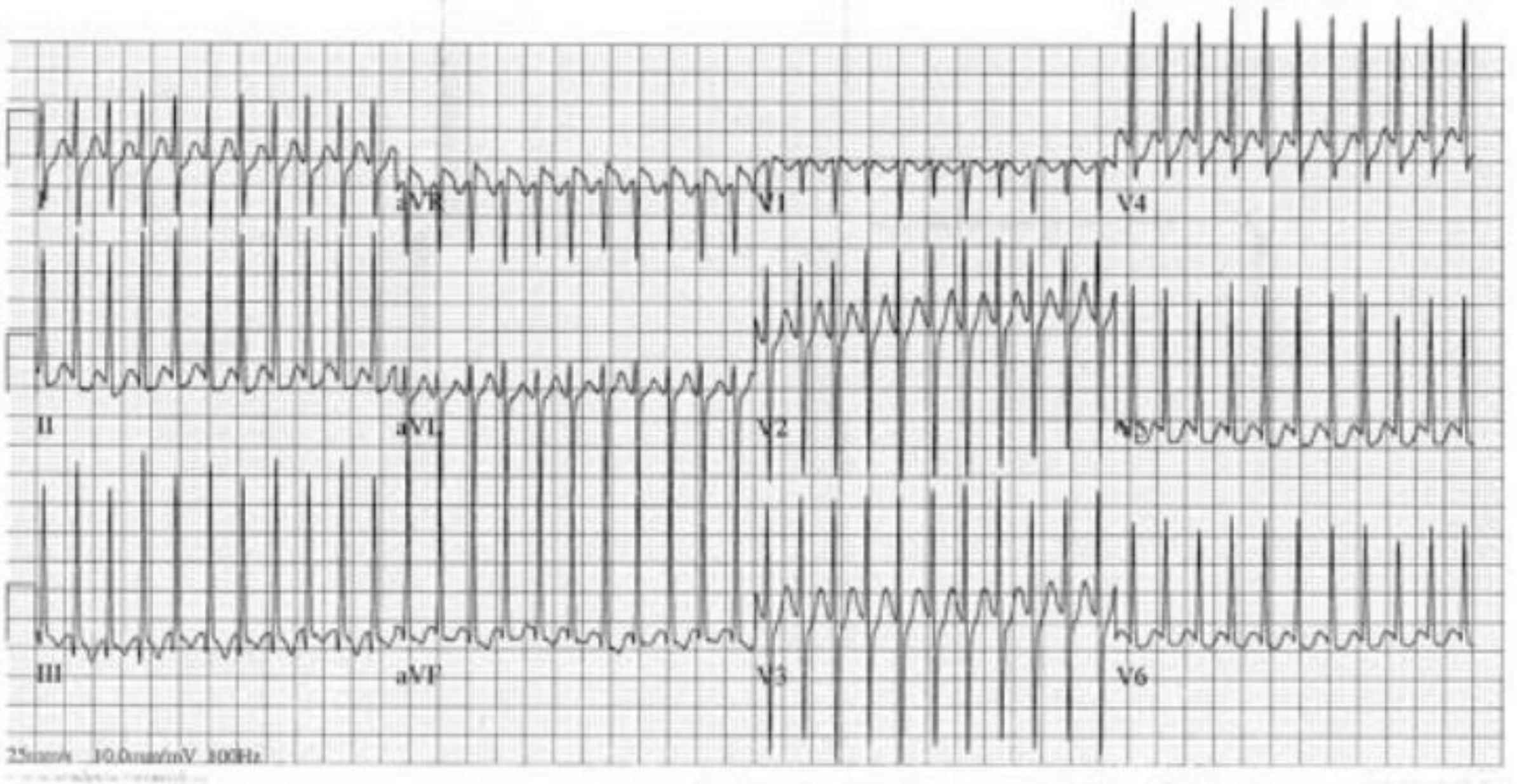
3 _____

4 _____

5 _____

v. Prescribe your drug of choice. (1 mark)

Medication	Route	Dose


I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
25mm/s 10.0mm/mV 100Hz

A 12 day old girl presents to ED with poor feeding and increased work of breathing. On examination , she is drowsy and has widespread crepitations on auscultation of the chest with central capillary refill time of 3 seconds. Her vital signs :

T: 36.8 ºC , SBP 70 mmHg , RR :80/min and O2 sats 93% RA,

An ECG is performed and shown in PROPS Booklet , Page 16 .

a) What is the diagnosis ? (1 mark)

_____

b) List four (4) ECG findings to support your diagnosis (4 marks)

1. _____

2. _____

3. _____

4. _____

c) State Four (4) initial management priorities for management of her tachydysrhythmia? (4 marks)

1. _____

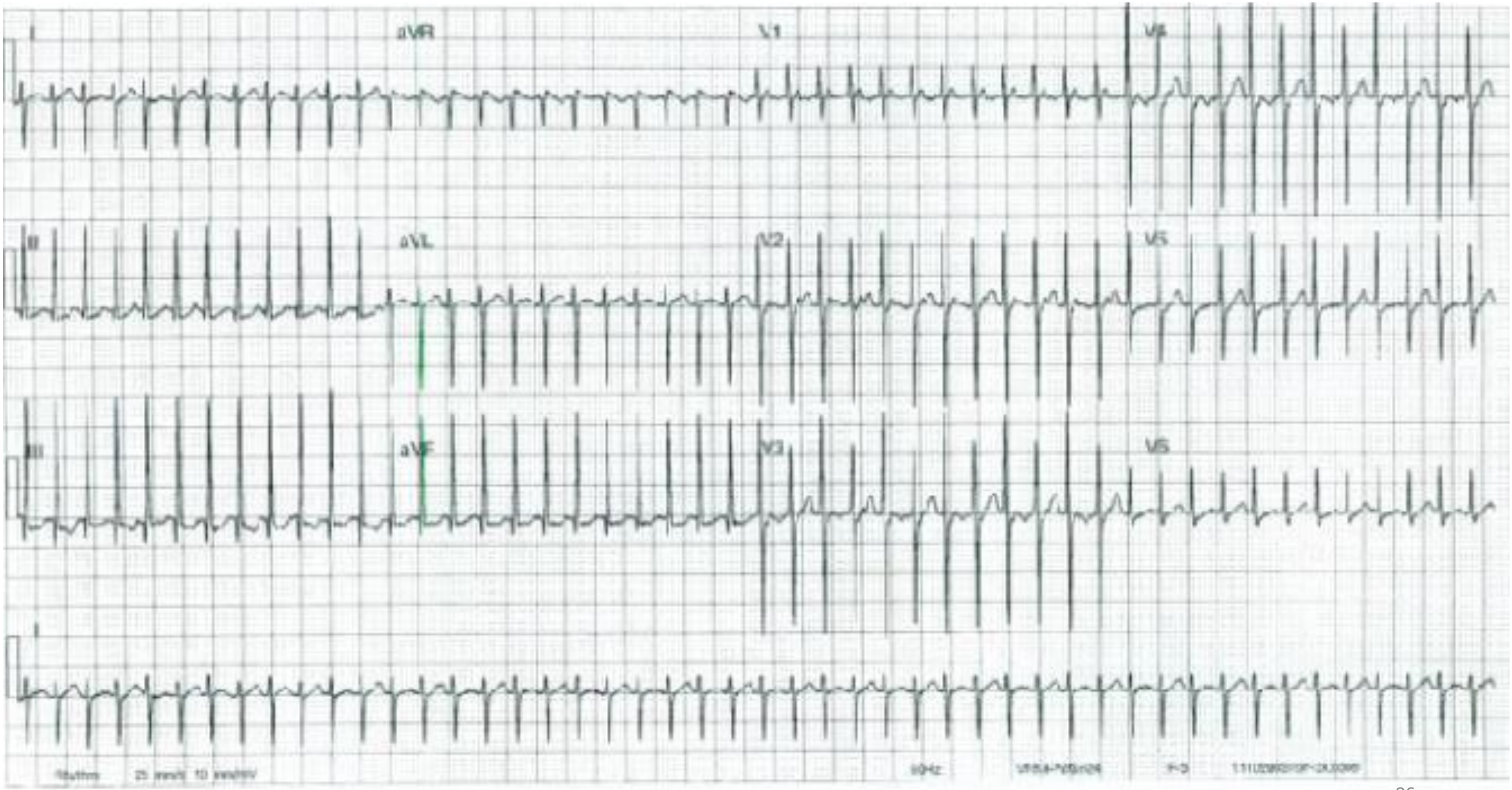
2. _____

3. _____

4. _____

d) List Three (3) further investigations for her with one (1) justification for each choice. (6 marks)

	Investigation	Justification
1		
2		
3		


I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6

A ten day-old male infant presents with poor feeding and breathlessness. He is poorly perfused on your initial assessment.

a) List four (4) important differential diagnoses. (4 marks)

1. _____

2. _____

3. _____

4. _____

b) List four (4) important features which should be sought on examination to assess for possible cardiac pathology.(4 marks)

1. _____

2. _____

3. _____

4. _____

The child progressively deteriorates in the ED with very poor perfusion and decreased conscious state.

c) List six (6) important management steps of his shock. (6 marks)

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

A concerned first-time mother has brought her 2-week-old baby to the ED because the baby is jaundiced.

i. What is the name of the pathological condition caused by neonatal jaundice? (1 mark)

ii. If left untreated, what are 2 sequelae of this condition? (2 marks)

iii. List 2 benign causes of neonatal jaundice (2 marks)

iv. List 4 pathological causes of neonatal jaundice (4 marks)

v. What 5 historical features will guide your assessment of this child? (5 marks)

vi. How can a serum bilirubin assist your assessment? (2 marks)

vii. List 5 other investigations you might consider (5 marks)

You are at a peripheral hospital with no paediatric or neonatal facilities when a 23 year old female presents in advanced labour. You have been asked to care for the baby after birth.

i. List 5 of the most important factors that the mother or baby may have that will increase the risks of the infant needing resuscitation (5 marks)

ii. List 3 ways you can estimate the gestational age of the infant (3 marks)

iii. On delivery, the baby is limp, with poor respiratory effort and a HR of 90/min. List 5 of your immediate actions to resuscitate the baby (5 marks)

iv. If this is a term infant should you resuscitate with air or a higher concentration of oxygen? Provide reasons for your answer (2 marks)

A mother has brought her 6 day old baby to your Emergency Department concerned that her child has become increasingly jaundiced.

a. What percentage of term and pre-term babies develop jaundice in the first week of life ? (2 Marks)

Term baby _____%

Pre-term baby _____%

b. List 4 causes of neonatal unconjugated hyperbilirubinaemia (4 Marks)

1. _____

2. _____

3. _____

4. _____

c. List 2 causes of neonatal conjugated hyperbilirubinaemia (2 Marks)

1. _____

2. _____

d. List two factors associated with an increased risk of developing kernicterus (2 Marks)

1. _____

2. _____

A four day neonate presents to the Emergency department. The child is shocked. Observations are RR60, HR 190, Capillary refill time centrally is 5 secs. They are responsive to pain.

1. List three antenatal / perinatal risk factors for neonatal sepsis. (3 marks)

   (1) _____

   (2) _____

   (3) _____

2. Give three differential diagnoses of neonatal collapse other than sepsis. (3 marks)

   (1) _____

   (2) _____

   (3) _____

3. What empiric therapy would you commence? Be specific. (3 marks)

   _____

   _____

   _____

   _____

4. List 6 investigations you would order. (3 marks)

   (i) _____

   (ii) _____

   (iii) _____

   (iv) _____

   (v) _____

   (vi) _____

A 32yo female is brought into ED by her husband in the third stage of labour. Her husband advises you that she is 40 weeks pregnant and that this is her third pregnancy.

Whilst in the ED she delivers a baby boy.

Your colleague is assessing the mother.

1. Briefly describe your initial management and assessment of the baby boy (2 marks).

_____

_____

The baby has not yet established adequate respiratory efforts and you commence face mask rescue breathing.

2. What initial rate of face-mask ventilations should you be administering (1 mark).

_____

3. What are the two most important indications for commencing chest compressions in a newborn child? (2 marks).

i. _____

ii. _____

4. List two methods for determining the heart rate of newborns (2 marks).

i. _____

ii. _____

Despite your initial management and face mask ventilations you need to commence cardiac compressions.

5. What is the ratio of and frequency of chest compressions to ventilations in the newborn? (1 mark).

_____

You need to get vascular access and you decide to cannulate the umbilical vein.

6. Describe how you determine which vessel is the umbilical vein (2 marks).

_____

_____

This 6 week old infant presents with respiratory distress. Her mother states she has been feeding poorly over the last week.

a) Given the findings in the above picture, list the 2 most likely differential diagnoses for this patients presentation: (2 marks)

b) List the 4 most important clinical features you would you look for when examining this patient in support of your most likely diagnosis. (4 marks)

c) List the 4 investigations you would perform in this infant with justification for each. (8marks)

Investigation:	Justification:

The concerned parents of a 2 day old infant present for review at your emergency department. They have noted that there is marked yellowing of the skin. You note that the yellow discolouration extends from the head to the trunk but not to the arms or legs.

1. List 6 differentials you would consider for this neonate. (3 marks)

2. List the most relevant investigations which you would consider in the ED. (5 marks)

3. List the most important steps if the conjugated bilirubin level is greater than 15% of the total (measured level at 15microM/L). What would be the next appropriate investigation and why? (2 marks)