

FExNet 2026

Collated SAQs: Neonatal Emergencies

QUESTION BOOKLET

20 short-answer questions covering neonatal emergencies — newborn resuscitation, cyanotic and acyanotic congenital heart disease, surgical emergencies (bowel obstruction, necrotising enterocolitis, midgut volvulus), neonatal sepsis, hyperbilirubinaemia, inborn errors of metabolism, hypoglycaemia, neonatal seizure, respiratory distress, hypoxic-ischaemic encephalopathy, neonatal abstinence syndrome, and non-accidental injury. Stems are written in detailed prose with abbreviations spelt out in full on first use; sub-questions labelled a) b) c) state the required number of responses.

20 questions • 215 marks

ACEM-aligned format. Sub-questions labelled a) b) c). Mark allocations indicative; references cited in the Answer Booklet. Question and answer indexes are clickable.

Question Index

Click any entry to jump to its question. Marks shown right.

Q1. Term Newborn Resuscitation in the Emergency Department	14	Q11. Neonatal Hypoglycaemia and Inborn Errors of Metabolism	11
Q2. Persistent Cyanosis in the Newborn — Hyperoxia Test	11	Q12. Neonatal Seizure	11
Q3. Heart Failure in the Newborn — Coarctation	11	Q13. Hypoxic-Ischaemic Encephalopathy	10
Q4. Bilious Vomiting — Malrotation and Midgut Volvulus	12	Q14. Failure to Thrive	10
Q5. Failure to Pass Meconium — Hirschsprung's Disease	11	Q15. Neonatal Pneumonia and Respiratory Distress	10
Q6. Necrotising Enterocolitis	11	Q16. Apnoea in the Neonate	10
Q7. Hypertrophic Pyloric Stenosis	10	Q17. Neonatal Abstinence Syndrome	11
Q8. Early-Onset Neonatal Sepsis	12	Q18. Oesophageal Atresia / Tracheo-Oesophageal Fistula	9
Q9. Neonatal Hyperbilirubinaemia	12	Q19. Non-Accidental Injury — Neonate	11
Q10. Severe Neonatal Hyperbilirubinaemia — Treatment	9	Q20. Congenital Diaphragmatic Hernia	9

Question 1 | Term Newborn Resuscitation in the Emergency Department (14 marks)

A 32-year-old woman in active labour presents to your small urban emergency department with no antenatal care. She is at an estimated 38 weeks gestation by fundal height. Within minutes of arrival she delivers a female infant on the resuscitation cubicle trolley. Immediately after the cord is clamped and cut, the baby is placed on the resuscitaire in front of you. The infant is floppy, has no spontaneous respiratory effort, is centrally cyanosed, with a heart rate of 50 beats per minute (auscultated at the umbilicus). Copious meconium-stained liquor is noted on the baby's skin.

a) List 4 immediate actions in the first 30 seconds before addressing the airway. (4 marks)

b) Explain why peripheral oxygen saturation is measured on the right hand (rather than the left hand) of a newborn, AND state the target saturations at 5 minutes. (3 marks)

c) State the initial T-piece resuscitator settings for this term infant (4 components). (4 marks)

d) Describe how to identify the umbilical vein for catheter insertion AND state when umbilical venous catheterisation is indicated. (3 marks)

Question 2 | Persistent Cyanosis in the Newborn — Hyperoxia Test (11 marks)

A 12-hour-old male neonate is brought to your emergency department from a peripheral midwife-led birthing unit because his peripheral oxygen saturation is persistently around 75 percent on room air. He was born at term by uncomplicated normal vaginal delivery with appropriate growth (birth weight 3.4 kilograms). He has a respiratory rate of 60 breaths per minute (mildly increased), no work of breathing, no grunting, but appears centrally cyanosed. Auscultation reveals normal heart sounds and clear lung fields. The infant is well perfused with normal pulses in all four limbs.

a) List 4 differential diagnoses for persistent central cyanosis in a newborn. (4 marks)

b) Describe the hyperoxia test AND interpret the results. (4 marks)

c) State 3 immediate management priorities while awaiting paediatric cardiology / NETS retrieval. (3 marks)

Question 3 | Heart Failure in the Newborn — Coarctation (11 marks)

A 14-day-old male neonate is brought to your emergency department by his mother who has noticed increased breathlessness during feeding, sweating with feeds, and difficulty taking the breast over the past 48 hours. The baby was born at term by normal vaginal delivery and appeared well at discharge from hospital on day 1. On examination he is tachypnoeic (respiratory rate 70 breaths per minute) with mild intercostal recession, peripheral oxygen saturation 92 percent on room air (right hand) and 88 percent (foot), heart rate 180 beats per minute. Blood pressure differs between upper limbs (110/65 millimetres of mercury) and lower limbs (75 millimetres of mercury systolic). Femoral pulses are weak compared with brachial pulses.

a) State the most likely diagnosis AND list 3 supportive features. (3 marks)

b) List 4 immediate management priorities. (4 marks)

c) List 4 acyanotic congenital cardiac causes of neonatal heart failure. (4 marks)

Question 4 | Bilious Vomiting — Malrotation and Midgut Volvulus (12 marks)

A 5-day-old male neonate is brought urgently to your emergency department because of green vomiting that started 6 hours ago. The baby is otherwise well at rest but became distressed with each vomit. He was born at term by uneventful normal vaginal delivery and discharged on day 1 in good condition. On examination, he appears unsettled but is haemodynamically stable: heart rate 150 beats per minute, blood pressure 70 millimetres of mercury systolic, capillary refill 2 seconds, peripheral oxygen saturation 99 percent. The abdomen is mildly distended but without obvious tenderness or palpable mass. The baby has not passed any stool today.

- a)** State the most concerning diagnosis AND explain why bilious vomiting is a surgical emergency in the neonate. (3 marks)

- b)** List 4 immediate management priorities. (4 marks)

- c)** Name 3 differential diagnoses for neonatal obstruction at this age. (3 marks)

- d)** Name the imaging investigation of choice AND describe the diagnostic finding. (2 marks)

Question 5 | Failure to Pass Meconium — Hirschsprung's Disease (11 marks)

A 36-hour-old male neonate is brought to your emergency department by a community midwife because of failure to pass meconium since birth, with associated mucous-like vomiting. The baby is otherwise alert and well-perfused, with heart rate 140 beats per minute, blood pressure 65 millimetres of mercury systolic, respiratory rate 35 breaths per minute, peripheral oxygen saturation 99 percent on room air, normal core temperature. The abdomen is moderately distended but soft.

a) Complete each statement. (4 marks)

b) List 5 essential actions in the emergency department prior to transport to a specialist paediatric surgical centre. (5 marks)

c) State the maintenance intravenous fluid choice and rate for a term neonate (day 1) of weight 3.0 kilograms. (2 marks)

Question 6 | Necrotising Enterocolitis (11 marks)

A 28-day-old former preterm neonate (born at 32 weeks gestation, now corrected age 36 weeks; discharged home 1 week ago after uncomplicated neonatal course) is brought to your emergency department with a 12-hour history of feeding intolerance, increasing abdominal distension, and blood-stained stool. He is mildly lethargic. Examination reveals: heart rate 175 beats per minute, blood pressure 60 millimetres of mercury systolic, capillary refill 4 seconds, peripheral oxygen saturation 94 percent on room air, temperature 36.0 degrees Celsius. The abdomen is distended, tense, and tender with visible bowel loops.

- a)** List 4 plain abdominal radiograph findings of necrotising enterocolitis. (4 marks)

- b)** State 4 immediate management priorities. (4 marks)

- c)** List 3 risk factors for necrotising enterocolitis. (3 marks)

Question 7 | Hypertrophic Pyloric Stenosis (10 marks)

A 4-week-old preterm female neonate (4 weeks corrected age to term) is brought to your emergency department by her mother with 12 hours of vomiting. The vomiting is described as projectile and non-bilious. The baby is hungry to feed shortly after vomiting. On examination, the baby has sunken eyes, is irritable, with temperature 37.5 degrees Celsius, capillary refill 4 seconds, heart rate 172 beats per minute, respiratory rate 40 breaths per minute, peripheral oxygen saturation 98 percent on room air. Visible peristalsis is observed traversing the upper abdomen during feeding.

- a)** List 3 obstructive AND 3 non-obstructive causes of vomiting in this age group (3 of each). (4 marks)

- b)** Describe the classic biochemical abnormality of pyloric stenosis AND state the imaging investigation of choice. (3 marks)

- c)** State 3 management priorities — emphasise the ORDER of priority. (3 marks)

Question 8 | Early-Onset Neonatal Sepsis (12 marks)

A 4-day-old male neonate is brought to your emergency department by his parents who report he is lethargic and feeding poorly. He was born at term by uncomplicated normal vaginal delivery and went home on day 2. On examination, he is mottled, cool peripherally, with heart rate 190 beats per minute, blood pressure unrecordable, capillary refill 5 seconds centrally, respiratory rate 60 breaths per minute (with grunting and chest recession), temperature 35.5 degrees Celsius, peripheral oxygen saturation 88 percent on room air. He responds to painful stimulus but is not consoling.

a) List 3 antenatal and perinatal risk factors for early-onset neonatal sepsis. (3 marks)

b) List 4 differential diagnoses for collapsed neonate other than sepsis. (4 marks)

c) State the empirical antibiotic regimen for neonatal sepsis at this age AND list 4 essential investigations. (5 marks)

Question 9 | Neonatal Hyperbilirubinaemia (12 marks)

A first-time mother brings her 5-day-old male neonate to your emergency department with concerns about jaundice. He was born at term by normal vaginal delivery (birth weight 3.6 kilograms) and discharged on day 2 in good condition. He is exclusively breastfed but the mother reports he has been less keen to feed for the past 24 hours. On examination he is alert but lethargic, with yellowish discolouration of skin extending to the abdomen and proximal lower limbs. His weight today is 3.3 kilograms (8 percent loss). Vital signs: heart rate 160 beats per minute, peripheral oxygen saturation 99 percent, alert on the AVPU scale.

a) List 5 likely causes for his jaundice. (5 marks)

b) List 4 'red-flag' findings that warrant admission and urgent investigation. (4 marks)

c) List 3 investigations with rationale. (3 marks)

Question 10 | Severe Neonatal Hyperbilirubinaemia — Treatment (9 marks)

A 4-day-old male neonate (born at 38 weeks gestation, blood group O-positive, mother A-negative with positive antibody screen) is brought to your emergency department with rapidly progressive jaundice. He is feeding poorly and has noticeable lethargy. His total serum bilirubin is 480 micromoles per litre (above the exchange-transfusion threshold on the Bhutani nomogram for his age). Direct Coombs test is positive. Haemoglobin is 110 grams per litre (low for age).

a) Describe the principles of intensive phototherapy. (3 marks)

b) List 3 indications for exchange transfusion. (3 marks)

c) State 3 complications of exchange transfusion. (3 marks)

Question 11 | Neonatal Hypoglycaemia and Inborn Errors of Metabolism (11 marks)

A 6-day-old male neonate is brought to your emergency department by his mother who reports increasing lethargy, poor feeding, and unusual breathing pattern over the past 24 hours. He was born at term by uncomplicated normal vaginal delivery to a non-consanguineous mother. His newborn screening (Guthrie card) result is not yet available. On examination he is hypotonic, with tachypnoea (respiratory rate 60 breaths per minute), intermittent twitching of the limbs, capillary refill 4 seconds. Bedside glucose is 1.8 millimoles per litre. Venous blood gas: pH 7.18, bicarbonate 9 millimoles per litre, anion gap 22, ammonia 250 micromoles per litre (normal <100).

a) List 4 differential diagnoses suggested by the metabolic profile. (4 marks)

b) State 4 immediate management priorities. (4 marks)

c) State 3 reasons inborn errors of metabolism are often missed initially. (3 marks)

Question 12 | Neonatal Seizure (11 marks)

A 3-day-old male neonate is brought to your emergency department by his parents who witnessed him having repetitive jerky movements of the right arm and leg lasting approximately 2 minutes. He was born at term following a difficult forceps delivery with shoulder dystocia, with Apgar scores of 4 at 1 minute and 7 at 5 minutes. He has been mildly lethargic since birth. On examination, he has a cephalohaematoma over the right parietal area, subtle eye deviation to the left, and lip-smacking movements. His vital signs are: heart rate 160 beats per minute, peripheral oxygen saturation 96 percent on room air, capillary refill 3 seconds, bedside glucose 4.5 millimoles per litre.

a) List 4 causes of neonatal seizure relevant to this case. (4 marks)

b) State 4 immediate management priorities. (4 marks)

c) State 3 indications for therapeutic hypothermia in this case. (3 marks)

Question 13 | Hypoxic-Ischaemic Encephalopathy (10 marks)

A term male neonate (gestation 39 weeks; birth weight 3.5 kilograms) was born by emergency Caesarean section in your peripheral hospital after prolonged second stage and foetal bradycardia (detected on cardiotocography). He required extensive resuscitation including 5 minutes of positive pressure ventilation and brief chest compressions. Apgar scores were 1 at 1 minute, 4 at 5 minutes, and 6 at 10 minutes. Cord arterial pH was 6.95 with base deficit -18 millimoles per litre. He is now 30 minutes old and remains lethargic with abnormal tone (initially flaccid, now intermittent stiffness). He has had one focal seizure of the right arm.

a) Describe the Sarnat staging of hypoxic-ischaemic encephalopathy. (4 marks)

b) State the eligibility criteria for therapeutic hypothermia AND describe the protocol. (4 marks)

c) List 2 contraindications to therapeutic hypothermia. (2 marks)

Question 14 | Failure to Thrive (10 marks)

A 3-week-old male neonate is brought to your emergency department by his mother because he is feeding poorly and has not gained weight since birth. He weighs 2.95 kilograms today (birth weight 3.0 kilograms). The mother reports he was born at term by uncomplicated normal vaginal delivery, exclusively breastfed (mother of three previous children, no feeding difficulties), but he tires during feeding and now takes 30 minutes per feed. She has noticed sweating during feeds and his breathing seems faster than her older children's did. On examination he is alert but pale, with a respiratory rate of 65 breaths per minute (mildly increased), heart rate 170 beats per minute, peripheral oxygen saturation 95 percent (right hand) and 92 percent (foot).

a) List 5 features on examination AND state the relevance of each. (5 marks)

b) List 5 investigations with rationale tailored to this presentation. (5 marks)

Question 15 | Neonatal Pneumonia and Respiratory Distress (10 marks)

A 9-day-old female neonate is brought to your emergency department by her parents with a 24-hour history of increased work of breathing, irritability, and reduced feeding. She was born at 38 weeks gestation by uncomplicated normal vaginal delivery. Her mother had positive Group B streptococcus screening but received only 1 dose of intrapartum penicillin (incomplete prophylaxis as labour was rapid). On examination, the baby has a respiratory rate of 70 breaths per minute, with grunting, intercostal recession, and nasal flaring. Peripheral oxygen saturation is 88 percent on room air, rising to 95 percent on 4 litres oxygen via low-flow nasal cannulae. Heart rate 180 beats per minute, temperature 38.2 degrees Celsius.

a) List 4 differential diagnoses for neonatal respiratory distress. (4 marks)

b) State the empirical antibiotic regimen AND identify 3 essential investigations. (3 marks)

c) List 3 indications for intubation in a neonate with respiratory distress. (3 marks)

Question 16 | Apnoea in the Neonate (10 marks)

A 4-week-old male former preterm neonate (born at 34 weeks gestation, now corrected age 38 weeks) is brought urgently to your emergency department by ambulance after his mother witnessed him become limp, pale, and stop breathing for approximately 30 seconds. She gave him gentle stimulation and he began breathing again and now appears well. He does not have a history of any similar episodes. He had been mildly snuffly with rhinorrhoea for the past 2 days. On arrival, he is alert, haemodynamically stable, with normal saturations and vital signs.

a) List 4 specific differential diagnoses to consider in this clinical context. (4 marks)

b) Apply the AAP BRUE criteria — state whether this is HIGHER- or LOWER-risk AND why. (4 marks)

c) List 2 essential discharge criteria if this patient were lower-risk. (2 marks)

Question 17 | Neonatal Abstinence Syndrome (11 marks)

A 3-day-old male term neonate is brought to your emergency department by his mother who is concerned that he is irritable, crying inconsolably, sweating, and feeding poorly with vomiting. He was born by uncomplicated vaginal delivery and discharged on day 1. The mother has a history of opioid dependence (maintained on methadone 60 milligrams daily during pregnancy, last dose this morning). On examination, the baby has tremulousness, hyperalert state, increased tone, frequent yawning, sneezing, mild diarrhoea, and a high-pitched cry. He is afebrile with normal vital signs.

a) List 4 features of neonatal abstinence syndrome (by system). (4 marks)

b) State 4 management priorities. (4 marks)

c) List 3 considerations for safe discharge of an NAS infant. (3 marks)

Question 18 | Oesophageal Atresia / Tracheo-Oesophageal Fistula (9 marks)

A term male neonate (gestation 39 weeks) is brought to your emergency department from a birthing centre 1 hour after birth because of excessive frothing of saliva from the mouth and choking with attempted feeds. The pregnancy was complicated by polyhydramnios. He has been unable to take any feeds. On attempted nasogastric tube insertion, the tube could not be advanced beyond approximately 10 centimetres.

a) State the most likely diagnosis AND describe the most common anatomical variant. (3 marks)

b) State 3 immediate management priorities. (3 marks)

c) List 3 investigations to confirm the diagnosis and assess for associated anomalies. (3 marks)

Question 19 | Non-Accidental Injury — Neonate (11 marks)

A 14-day-old female neonate is brought to your emergency department by her father with a 4-hour history of progressive lethargy. The father reports the baby fell off the changing table earlier today. The father is on his own as the mother is at work; this is the first time he has cared for the baby alone. On examination, the baby is sleepy, with Glasgow Coma Score 12 (E3 V3 M6), heart rate 175 beats per minute, blood pressure 90/55 millimetres of mercury, respiratory rate 50 breaths per minute, peripheral oxygen saturation 96 percent, temperature 36.8 degrees Celsius. There are several small bruises on the cheeks and a swelling of the occipital scalp. Her anterior fontanelle is full. Computed tomography of the head shows a unilateral subdural haematoma and diffuse cerebral oedema.

a) List 4 features supporting non-accidental injury. (4 marks)

b) State 4 immediate medical management priorities. (4 marks)

c) State 3 child protection management priorities. (3 marks)

Question 20 | Congenital Diaphragmatic Hernia (9 marks)

A term male neonate is brought to your emergency department by his parents 2 hours after a precipitate home delivery. The pregnancy was unmonitored. He has increasing respiratory distress with grunting and central cyanosis. On examination he has a scaphoid abdomen, decreased breath sounds on the left chest, displaced apex beat to the right, with audible bowel sounds in the left chest. Vital signs: heart rate 180 beats per minute, blood pressure 65 millimetres of mercury systolic, peripheral oxygen saturation 75 percent on bag-valve-mask ventilation.

a) State the diagnosis AND list 3 supportive examination features. (3 marks)

b) State 3 immediate management priorities. (3 marks)

c) State 3 prognostic factors. (3 marks)
