# PAEDIATRICS
# Questions&Answers

**Q-1**

**A 3 month old infant presents with recurrent infections and feeding difficulties. His face looks dysmorphic and has a cleft palate. A chest X-ray shows absent thymic shadow. What is the SINGLE most likely diagnosis?**

A. **Down's syndrome**
B. **Fragile X syndrome**
C. **DiGeorge syndrome**
D. **Marfan's syndrome**
E. **Edward's syndrome**

ANSWER:
DiGeorge syndrome

EXPLANATION:
DiGeorge syndrome is a deletion of chromosome 22q11.2. It causes absent thymus, fits, small parathyroids (thus decreased $Ca^{2+}$), anaemia, lymphopenia, low levels of growth hormone, low T-cell immunity.

It is related to velo-cardiofacial syndrome: characteristic face, multiple anomalies, eg cleft palate, heart defects, cognitive defects

Developmental delay, facial dysmorphism, palatal dysfunction and feeding difficulties are seen in most infants with this syndrome.

The facial dysmorphism is typicallymild but fairly typical. These include hypertelorism, hooded eyelids, tubular nose, broadnose tip, small mount and mild ear abnormalities. Note that you do not need to remember these features for PLAB. The most important factor to memorize here is the absent thymic shadow which is pathognomic for DiGeorge syndrome

***Mnemonic: CATCH-22***

- ***C****ardiac abnormality (commonly interrupted aortic arch, truncus arteriosus and tetralogy of Fallot)*
- ***A****bnormal facies*
- ***T****hymic aplasia*
- ***C****left palate*
- ***H****ypocalcaemia/Hypoparathyroidism*

- *With the 22 to remind one the chromosomal abnormality is found on the 22 chromosome*

**Q-2**

**A 4 year old boy is referred by the GP to the paediatrician with a cervical lymphadenopathy that is 2 cm in size. His mother says that she thinks the lymph node is growing. It was first noticed 6 weeks ago. The child is generally well with no complaints of tenderness. He has no history of fever. On examination, the spleen is not palpable and there are no other palpable lymph nodes around the body. The cervical lymph node is firm, non-tender and immobile. His throat is clear with no signs of infection. What is the SINGLE most appropriate initial investigation to perform?**

A. **Full blood count and blood film**
B. **Ultrasound of lymph node**
C. **Lactate dehydrogenase**
D. **Liver function test**
E. **Epstein Barr virus and cytomegalovirus serology**

ANSWER:
Full blood count and blood film

EXPLANATION:
All the above tests are appropriate but the number one test to do if you had to choose would be to perform a full blood count and blood film to look for evidence of haematological malignancies such as leukaemia or lymphoma. A lymph node that is increasing in size and larger than 2 cm should be a worry. There are many causes of lymphadenopathy in children which include CMV, EBV, Kawasaki's disease, tuberculosis but the one diagnosis that you do not want to miss are haematological malignancies.

An ultrasound of the lymph node is appropriate since it is persisting beyond 16 weeks, isolated, larger than 2 cm and increasing in size. However, it would not be the initial test to perform.

**Q-3**

**An 8 year old boy is brought by his mother to the emergency department with bruises on his lower back and a left shoulder dislocation. The child currently lives with his stepfather. The young boy is quiet and makes no eye contact while in conversatikon. What is the SINGLE most likely diagnosis?**

A. **Non accidental injury**
B. **Malnutrition**
C. **Thrombocytopaenia**
D. **Osteogenesis imperfecta**
E. **Haemophilia**

ANSWER:
Non accidental injury

EXPLANATION:
This is a frequent paediatric topic on PLAB 1. This is a case of non-accidental injury. Having a non biological father in the picture is always a hint for non accidental injury in PLAB.

**Non accidental injury**
**Presentation:**
- Delayed admission into hospital or clinic by carer
- Child usually brought in by step-father or boyfriend
- Bruising – of varying degrees, color variations (means long term abuse)
- Fractures

**Diagnosis:**
- Mostly clinical history

**Treatment:**
- Admit to ward and manage pain
- Refer to social services
- Treat any other underlying medical conditions

**Q-4**

**A 5 year old boy is brought to clinic by his mother. The young boy has a distinct nasal speech and snores heavily at night. He is hyperactive during the day but has poor concentration. He is noted to be constantly breathing through his mouth. What is the SINGLE most appropriate action?**

**A. Arrange hearing test**
**B. Assess developmental milestones**
**C. Refer to ENT surgeon**
**D. Refer to speech therapist**
**E. Arrange a magnetic resonance imaging scan**

ANSWER:
Refer to ENT surgeon

EXPLANATION:
The likely diagnosis here is obstructive sleep apnoea syndrome. Referrals are usually to paediatric physicians, although sometimes paediatric neurologists, respiratory doctors or ENT consultants may have a specialist interest.

**Obstructive sleep apnoea syndrome in children**
Obstructive Sleep Apnoea Syndrome in Children is mainly due to enlarged tonsils and adenoids

**Presentation**
- Snoring - usually parents seek attention; many will just get better as they grow older
- Mouth breathing
- Witnessed apnoeic episodes
- Daytime sleepiness and somnolence is common in childhood OSAS, in contrast with adults who often fall asleep during the day
- Sleep-deprived children tend to become hyperactive, with reduced attention spans,

and be labelled as difficult or disruptive, or even ADHD. They may not be doing well at school due to poor concentration

**Investigations:**
- Overnight in-laboratory polysomnography (PSG) continues to be the gold standard instrument
  - o During sleep studies the following are usually monitored:
    - ▪ Oxygen saturations and heart rate.
    - ▪ Airflow at nose or mouth.
    - ▪ Chest and abdominal movements.
    - ▪ ECG, electroencephalogram, electromyogram and sometimes electro-oculogram (eye movements)

**Q-5**

**A 4 week old female infant presents to the Emergency Department with vomiting after every feed. The mother describes the vomiting as projectile and non-bilious. The child is also constipated. On examination, there is a right sided olive-sized abdominal mass on palpation. What is the SINGLE most appopriate next step of action?**

**A. Abdominal ultrasound**
**B. Abdominal X-ray**
**C. Intravenous fluids**
**D. Serum potassium level**
**E. Nasogastric tube insertion**

ANSWER:
Serum potassium level

EXPLANATION:
This is a classic presentation of pyloric stenosis on PLAB 1. As the child is vomiting profusely, there will be electrolyte imbalance. Hypokalaemia may be present and therefore need to be corrected immediately.

In reality, one would take blood for serum potassium levels and arrange an abdominal ultrasound while waiting for the serum potassium results. However, the exam writers want you to think which is the most important given the stem.

Pay attention to the final line of the question. If the question is asking for the NEXT STEP of action, serum potassium levels would be appropriate. If the question is asking for the NEXT STEP TO DIAGNOSE the condition, then abdominal ultrasound would be the answer.

Intravenous fluid should follow after taking bloods.

**Presentation:**
- Projectile non-bilious vomiting
- Age group: 3-8 weeks
- Olive sized abdominal mass
- The child will feel hungry and want to feed despite constant vomiting

**Diagnosis:**
- Abdominal ultrasound

**Treatment:**
- Metabolic alkalosis – correct electrolyte imbalance + hydration
- Then referral to paediatric surgery (pyloromyotomy) + nasogastric tube

## Q-6

**A 4 year old girl presents to the emergency center with difficulty breathing and stridor. She has a temperature of 39.1 C. The parents state that the child had been in her usual state of health but awoke with a hoarse voice, and difficulty swallowing. They tell you that she has not been immunised because they are afraid of the side effects of the vaccination. What is the SINGLE most likely diagnosis?**

A. **Cystic fibrosis**
B. **Acute epiglottitis**
C. **Immunodeficiency**
D. **Inhaled foreign body**
E. **Recurrent aspiration**

ANSWER:
Acute epiglottitis

EXPLANATION:
The most worrisome and likely diagnosis here is acute epiglottitis. The fact that she is not immunised and has a high temperature along with difficulty swallowing gives the likelihood of this being acute epiglottitis. If the question was asking for management, summon the most experienced anaesthetist to intubate before obstruction occurs.

**Acute epiglottitis**
- Now rare due to the introduction of Hib vaccine. However, it is still a serious infection. Prompt recognition and urgent treatment is essential
- Caused by Haemophilus influenzae type B

**Features**
- Rapid onset
- High temperature
- Stridor
- Drooling of saliva
- Difficulty speaking
- Muffling or changes in the voice

## Q-7

**A 2 week old male, term infant presents to the Emergency Department with a sudden onset of green, bilious vomiting for two hours and blood in diapers. Abdominal x-ray reveals dilatation of the stomach and in the proximal loops of the bowel. Barium enema indicates partial obstruction of the duodenum and malposition of the caecum. Which of the following is the SINGLE most likely diagnosis?**

A. **Jejunal atresia**
B. **Hypertrophic pyloric stenosis**
C. **Malrotation and volvulus**
D. **Acute appendicitis**
E. **Intussuception**

ANSWER:
Malrotation and volvulus

EXPLANATION:
When you see sudden onset of green, bilious vomiting and blood per rectum in neonates for PLAB 1, think of malrotation with volvulus. PLAB 1 may have abdominal x-ray result as “double bubble sign”. Pyloric stenosis in PLAB 1 would have projectile vomiting as a key feature and the age would be older than 3 weeks. Intussusception is uncommon in neonates and would most likely occur in infants 6 months or older. Note that it may be possible in PLAB 1 for them to show an x-ray for case stems so instead having a description of the result you may need to interpret the radiology yourself.

**Malrotation and volvulus**
**Presentation:**
- Green, bilious vomiting
- Blood per rectum
- Sudden onset
- Age: neonates

**Diagnosis:**
- Abdominal x-ray
- Barium enema

**Treatment:**
- ABCDE protocol
- Decompression with nasogastric tube
- Referral to paediatric surgery for laparotomy and resection

**Q-8**

**A 5 month old child is unable to speak but makes sounds. She can hold things with her palm, but not with her fingers. She smiles and laughs and is not shy. She cannot sit independently but can hold her hand and sit when propped up against pillows. What is the SINGLE best development stage to describe this child?**

A. **Normal**
B. **Delayed speech and language development**
C. **Delayed social development**
D. **Delayed fine motor development**
E. **Delayed gross motor development**

ANSWER:
Normal

EXPLANATION:
Only around 12 months does the child say his/her first words. E.g. “mama”

Smiling, laughing and being not shy is normal for her age group

Only around 7 to 8 months do babies sit unsupported. Refer if by 12 months unable to sit unsupported

Holding using her palms at her age group is normal.

Developmental milestones is a commonly asked question in PLAB. Try to memorize some basic ones.

**PAEDIATRIC DEVELOPMENTAL MILESTONES**

| Age | Gross motor | Fine motor | Language | Social |
|---|---|---|---|---|
| **6 weeks** | Good head control | Fixes and follows face | Still in response to sound | Smiles |
| **3 months** | Neck holding | Hands open half the time | Startle at loud noise, cooing | Recognises mother |
| **6 months** | Rolls over in both directions (supine to prone) (prone to supine) | Transfers hand to hand | Monosyllabic (mostly babbles) | Knows familiar faces<br>Likes to play with others, especially parents |
| **9 months** | Crawling, sit with support, pulls to stand | Pincer grasp | Bi-syllabic (“Mama”, “bye bye”) | Stranger fear, holds/bites food |
| **1 year** | Walks independently | Stacks two blocks, Throws objects | Two words with meaning | Wave, clapping |
| **2 years** | Running, up and down steps holding on, kicks ball | Stacks four blocks, makes or copies straight lines | Simple sentences (with 2 to 4 words) | Copies others |
| **3 years** | Tricycle, walks up and down stairs, one foot on each step | Stacks eight blocks, makes or copies circles | Can tell name, age, gender | Dresses and undresses self |
| **4 years** | Hops, jumps, walks | Stacks twelve blocks | Tell Stories, poems | Cooperates with other children |
| **5 years** | Skips (both legs above ground) | Can draw a peson with at least 6 body parts, copies a triangle and other geometric shapes | Understands complex instructions | Wants to please friends |

Here are some ways to memorise this table


This figure is intersected at 4 different levels of the body which represent different time frames.

- 3 months – **Neck** – Holds neck
- 6 months – **Body** – Rolls both directions
- 9 months – **Knees** – Crawling
- 12 months – **Feet** – Walks

For fine motor skills, remember this pattern:

- At 2 years – Draws a line
- At 3 years – Draws a circle
- At 4 years – Draws a cross and square
- At 5 years – Draws a triangle

Below are certain negative indicators (things a child cannot do) by a certain age that you should recognise and refer to a specialist community paediatric assessment:

- Unable to sit unsupported at 12 months of age
- Unable to walk by 18 months of age
- No speech at 18 months of age
- Unable to run by 2.5 years of age
- Unable to hold objects placed in hand by 5 months of age
- Unable to reach for objects by 6 months of age

*Centres for disease control and prevention website have really good videos of babies to watch which would help you with your studies for paediatric milestones*

**Q-9**

**An 8 year old child is brought into A&E with a fractured leg. The parents are unable to explain how the leg fractured. X-rays reveal several other fractures in various stages of healing. The parents cannot explain what might have caused them. On examination, the child has a blue sclerae and difficulty hearing. What is the SINGLE most likely diagnosis?**

A. **Osteogenesis imperfecta**
B. **Non accidental injury**
C. **Haemophilia**
D. **Achondrogenesis**
E. **Wilson's disease**

ANSWER:
Osteogenesis imperfecta

EXPLANATION:
There is frequently a history of multiple bony fractures with no history of trauma.

Scenes like this occur may occur which may lead you to think of non accidental injuries (e.g. child abuse). But in this case, the cause of the fractures is not child abuse. It is osteogenesis imperfecta (OI). Osteogenesis imperfecta is an inherited disorder of type I collagen that results in fragile, low density bones. The bones break easily often from little or no apparent cause. A person with osteogenesis imperfecta may sustain just a few or as many as several hundred fractures in a lifetime.

PLAB may give a scenario like the above but they will have to give some other sign that it is not a non accidental injury. In this case, they gave the sign of blue sclerae and hearing loss which is found in osteogenesis imperfecta.

**Q-10**

**A 13 year old girl with several years of elevated liver enzymes of unknown etiology presents to clinic with a slow deterioration in her school performance. On examination, there is hepatosplenomegaly, intention tremor, dysarthria and dystonia. Her urinalysis has elevated levels of glucose, protein, and uric acid. What is the SINGLE most likely diagnosis?**

A. **Autoimmune hepatitis**
B. **Glycogen storage disease**
C. **Alpha-1 antitripsin deficiency**
D. **Hereditary haemochromatosis**
E. **Wilson's disease**

ANSWER:
Wilson's disease

EXPLANATION:
PLAB 1 clues for Wilson's disease: there will be behavioural changes, liver dysfunction, and Kayser-Fleischer rings. Option C, while similar to Wilson's, does not exhibit neurological or behavioural changes. Option D is iron overload and also does not exhibit the neurological or behavioural changes typically found in Wilson's.

**Wilson's Disease**
**Presentation:**
- Kayser-Fleischer rings
- Liver dysfunction → deranged liver function tests, cirrhosis
- Neurological → ataxia, dysarthria, dystonia
- Behavioural → personality changes, decreased school performance

**Diagnosis:**
- Wilson's disease scoring system → score > 4
- Serum ceruloplasmin - initial
- Measurement of hepatic parenchymal copper concentration - definitive

**Treatment:**
- Choice of: D-penicillamine ; trientine ; ammonium tetrathiomolybdate
- Neurological involvement - zinc - first line
- Acute liver failure / cirrhosis - liver transplant - definitive

## Q-11

**An 18 month old boy has been brought to the emergency department by his mother because he has been refusing to move his left arm and crying more than usual for the past 24 hours. He has recently been looked after by his mother's new partner while she attended college. Assessment shows multiple bruises on his body and the medial aspect of his left upper arm. What is the SINGLE most appropriate next step?**

A. **Admit under care of pediatrician**
B. **Discharge with painkillers**
C. **Start intravenous pain relief**
D. **Follow up in paediatric outpatient department**
E. **Follow up with GP**

ANSWER:
Admit under care of pediatrician

EXPLANATION:
The likely diagnosis here is a non-accidental injury. Bruising in unusual sites (eg medial aspect of upper arms or thighs) should prompt consideration of non accidental injury. The child needs to be admitted for further investigation and also to prevent further injury from the mother's partner.

**Non accidental injury**
Presentation:
- Delayed admission into hospital or clinic by carer
- Child usually brought in by step-father or boyfriend
- Bruising – of varying degrees, color variations (means long term abuse)
- Fractures

**Diagnosis:**
- Mostly clinical history

**Treatment:**
- Admit to ward and manage pain
- Refer to social services
- Treat any other underlying medical conditions

## Q-12

**A 12 month old male infant presents to clinic because his mother is concerned that the child cannot sit on his own, crawling but not standing with support, unable to pick up small items, and is not socially interactive with his older sibling. What is the SINGLE best management?**

A. **Arrange hearing test**
B. **Assess developmental milestones**
C. **Reassure**
D. **MRI brain**
E. **Referral to physiotherapist**

ANSWER:
Assess developmental milestones

EXPLANATION:
For the exam, it is important to memorize the development milestones. The questions that come up for development are similar to the one above. A scenario is presented where the mom is concerned and you would be told to give the best advice/management. You must answer accordingly depending on the scenario. This child is clearly showing indications of developmental delay and therefore requires assessment.

Infants are usually able to sit without support at 7-8 months. At 12 months if they are unable to do this, we should assess and reffer.

At 12 months, he should be able to walk with support. A concern would be if he is unable to stand holding on by 12 months.

**Q-13**

**A 3 year old girl ingested 10 capsules from her grandmother's medication bottle thinking it was candy. By the time the child is in the Emergency Department, she is drowsy and lethargic. Paramedics noted myoclonic twitching. ECG reveals tachycardia and widened QRS. Potassium is elevated. What SINGLE most likely medication did the child ingest?**

A. **Tricyclic antidepressants**
B. **Acetaminophen**
C. **Thyroxine**
D. **Amiodarone**
E. **Nifedipine**

ANSWER:
Tricycylic antidepressants

EXPLANATION:
This is a diagnosis of tricyclic antidepressant (TCA) overdose. This topic in PLAB 1 overlaps with toxicity and emergency medicine. This is a typical PLAB 1 stem: there is a child that accidently ingests an unknown bottle of medications. For TCA overdose, look for widened QRS, peaked T waves, hyperkalemia as main clues. Note that in young children (< 5 years) the symptoms would usually be drowsiness, lethargy, and in this stem indications of seizure. In adolescents and adults, you would see more predominant signs of hypertension turning into hypotension and ventricular dysrrhythmias along with the widened QRS clue.

**Tricyclic antidepressant overdose in Paediatrics**
**Presentation:**
- Child ingesting an unknown bottle of medication

- Lethargy, drowsy
- +/- Coma or seizure
- ECG - widened QRS, peaked T waves (indications of hyperkalemia)

**Diagnosis:**
- Urea, electrolytes, toxicology screen
- ECG
- Arterial blood gas

**Treatment:**
- ABCDE protocol
- If within 1 hr of ingestion and >4mg/kg - activated charcoal
- Sodium bicarbonate
- Correct electrolytes if necessary

**TRICYCLIC ANTIDEPRESSANT (TCA) OVERDOSE**
Tricyclic antidepressant (TCA) overdose should always be considered potentially life-threatening. They can deteriorate very rapidly sometimes within 1 hour of ingestion.

**Clinical features**
- Dilated pupils
- Dry mouth
- Dry flushed skin
- Urinary retention
- Drowsiness and altered mental state leading to coma
- Hypotension

ECG monitoring for TCA overdose is essential. The important ECG finding suggestive of TCA poisoning is QRS widening (> 100 ms). Broad complex tachycardias may occur which are life threatening.

*Two popular stems in the exam where the answer is likely to be TCA overdose is the young child that takes his/her grandparents' medication who later becomes drowsy and lethargic. Another is an elderly person who has a terminal illness and wants to take his/her own life who comes in the ED having dry and flushed and pupils are dilated. TCA's are a prescription only medication and so you should think about how the person in the stem obtained the medication before you choose an answer.*

**Q-14**

**A 6 year old boy presents to clinic with obesity. He has a history of failure to thrive as an infant. He is now behind in school, has difficulty interacting with friends, and feeds constantly. His mother says he cannot stop eating. What is the SINGLE most likely diagnosis?**

**A. Cushing's disease**
**B. Congenital hypothyroidism**
**C. Primary hypoparathyroidism**
**D. Prader Willi syndrome**
**E. Down's syndrome**

ANSWER:
Prader Willi syndrome

EXPLANATION:
Prader Willi syndrome is a result of chromosomal abnormality in chromosome 15 on the paternal side. The key clue is behavioral problems and uncontrolled feeding habits. There may sometimes be clues in the stem stating the child has “blue eyes and blonde hair”.

**Presentation:**
- Male with blonde hair, blue eyes
- Behavioral problems
- If uncontrolled feeding + obesity, the boy usually < 6 years old
- Developmental delay

**Diagnosis:**
- Chromosomal analysis: abnormality of paternal chromosome 15
- Mostly clinical diagnosis

**Treatment:**
- Referral to paediatric psychiatry for behavioral problems and developmental delay

**Q-15**

**A 13 month old female baby presents to the emergency department with dificulty in breathing. On examination, she has intercostal recessions and a bilateral widespread wheeze. Her temperature is 37.9 C and respiratory rate is 35 breaths/minute. What is the SINGLE most likely diagnosis?**

A. **Bacterial upper respiratory tract infection**
B. **Pneumonia**
C. **Bronchiolitis**
D. **Respiratory distress syndrome**
E. **Alpha 1 antitrypsin deficiency**

ANSWER:
Bronchiolitis

EXPLANATION:
Bronchiolitis is very common in infants and young children. Their early symptoms are of those of a viral upper respiratory tract infection including mild rhinorrhoea, cough and fever. The fever is usually high (above 39°C) however in this stem a temperature of 37.9°C is given. Do not let that fool you into thinking that it is not an infective cause. Other symptoms of bronchiolitis include wheeze. Occasionally, one may find symptoms of cyanosis and poor feeding in the stem.

**Bronchiolitis**
- An acute infectious disease of the lower respiratory tract that occurs primarily in the very young, most commonly infants between 2 and 6 months old
- Respiratory syncytial virus (RSV) is the pathogen in 75-80% of cases

It is a clinical diagnosis based upon:
- Breathing difficulties
- Cough
- Coryzal symptoms (including mild fever)
- Decreased feeding
- Apnoeas in the very young
- Wheeze or fine inspiratory crackles on auscultation

**Management**
- Largely supportive involving humidified oxygen

## Q-16

**A 6 week old child is brought to A&E with persistent non-bilious vomiting. The child feels hungry and wants to feed despite constant vomiting. Biochemistry shows K+ of 3.1 mmol/L. What is the SINGLE most likely diagnosis?**

A. **Pyloric stenosis**
B. **Duodenal atresia**
C. **Malrotation**
D. **Achalasia cardia**
E. **Tracheo-oesophageal fistula**

ANSWER:
Pyloric stenosis

EXPLANATION:
Hypokalaemia and non-bilious vomiting should direct you towards pyloric stenosis as a diagnosis.

It is unlikely to be duodenal atresia as the newborn presents with bilious vomiting with every feed. In this question, the scenario was one of non-bilious vomiting.

Malrotation is manifested by bilious vomiting, crampy abdominal pain, abdominal distention, and the passage of blood and mucus in their stools. Again in this scenario, non-bilious vomiting was given.

**Pyloric stenosis**
**Presentation:**
- Projectile non-bilious vomiting
- Age group: 3-8 weeks
- Olive sized abdominal mass
- The child will feel hungry and want to feed despite constant vomiting

**Diagnosis:**
- Abdominal ultrasound

**Treatment:**
- Metabolic alkalosis – correct electrolyte imbalance + hydration
- Then referral to paediatric surgery (pyloromyotomy) + nasogastric tube

## Q-17

**A 3 year old boy is brought to A&E after having a generalized tonic-clonic seizure that lasted approximately 5 minutes. The parents say that he was previously well but started developing symptom s of a cold earlier in the morning. He is noted to have a fever of 39 C. What is the SINGLE most likely diagnosis?**

**A. Infantile spasms**
**B. Absence seizures**
**C. Epilepsy**
**D. Partial complex seizure**
**E. Febrile convulsion**

ANSWER:
Febrile convulsion

EXPLANATION:
Febrile seizures are common in children and usually occur in ages 6 months to 6 years. They occur in 3% of all children in this age group. Management for this patient would involve antipyretics.

**FEBRILE SEIZURES**
Febrile seizuresare epileptic seizures accompanied by fever in the absence of an intracranial infection.

**Key points**
- Usually between 6 months to 6 years of age with peak at 14-18 months
- Usually with a positive family history
- Temperature usually increases rapidly to > 39 C
- Typically a generalized tonic-clonic seizure is seen
- Must determine cause of fever and rule out meningitis

**Types**
- Simple febrile seizures are the most common type and are characterized by a single generalized seizure lasting less than 15 minutes
- Complex febrile seizures include those that are focal, prolonged, or recurrent

It is important to know the figures for febrile seizures as parents often ask questions like "would this seizure happen again?" and "would this lead to epilepsy in future?
- About 1 in 3 would have further episodes of febrile seizures
- About 1 in 3 who have further episodes would develop epilepsy (this means roughly about 10% of complex febrile seizures would develop epilepsy)

**Treatment**
- Antipyretics to control the fever
- Seizures lasting more than 5 minutes should be managed with benzodiazepines (i.e. buccal midazolam)

## Q-18

**A 4 year old girl attends clinic with a history of diarrhoea, bloating and abdominal pain. She is failing to thrive. Blood tests reveal a hypochromic microcytic anaemia. Alpha gliadin antibodies are positive. What is the SINGLE most likely diagnosis?**

A. **Pernicious anaemia**
B. **Crohn's disease**
C. **Ulcerative colitis**
D. **Coeliac disease**
E. **Whipple's disease**

ANSWER:
Coeliac disease

EXPLANATION:
The key word here is the alpha gliadin antibodies which are positive. This is a test for coeliac disease.

**Coeliac disease: an example of malabsorption**
Associated with exposure to gluten, rye, wheat, barley

Malabsorption typically presents with diarrhoea, failure to thrive and anaemia

As subclinical/latent forms exist, investigate any unexplained anaemia, fatigue, 'irritable bowel' symptoms, and diarrhoea

Patients mostly present between 6 months to 2 years of age but can occur at any age. There may be a deceleration on the growth chart after introduction to gluten at weaning (4–6 months).

**Diagnosis**
*Immunology:*
- raised IgA anti-tissue transglutaminase (IgAtTG), anti-gliadin (IgA-AGA), and endomysial antibodies (EMA)

*Biopsy:*
Confirm by finding villous atrophy on small bowel biopsy (gold standard)

**Q-19**

**A mother calls the postnatal ward with concerns of her newborn. Her baby was born at term by an uncomplicated vaginal delivery in the birthing centre yesterday evening. The baby is feeding well and not irritable. This is parents' first child and the parents are especially concerned as the baby has a yellowish colour to his skin and eyes. What is the SINGLE most appropriate management?**

A. **Reassure**
B. **Reassure and advise to seek medical opinion if jaundice continues beyond 2 weeks' time**
C. **Make an outpatient appointment for the newborn at the paediatric jaundice clinic**
D. **Inform the community midwife**
E. **Advise to return to the hospital and to be seen within the next 2 hours**

ANSWER:
Advise to return to the hospital and to be seen within the next 2 hours

EXPLANATION:
Neonatal jaundice within the first 24 hours of life should ring alarm bells in your head. They would require urgent assessment within two hours according to NICE guidelines.

Investigations such as transcutaneous bilirubin measurement, liver function test, full blood count, blood film, blood group, Coomb's test, G6PD levels and review for sepsis would be performed in the hospital.

**Q-20**

**A 13 month old child is assessed for developmental milestones. He holds furniture to help him stand and walk. He can say 'mama' and 'papa' but is unable to join two or three words in sentences. He makes eye contact and smiles to his mom but he is very shy around strangers. He can transfer objects from one hand to another. He responds to his name. What is the SINGLE best development stage to describe this child?**

**A. Delayed gross motor development**
**B. Delayed fine motor development**
**C. Delayed verbal development**
**D. Delayed social development**
**E. Normal development**

ANSWER:
Normal development

EXPLANATION:
Developmental milestones are frequently asked. In this stem, his developmental milestones are correct for his age. At a 12 month mark they should beable to do the following:

*Language and hearing*
- *Says "dada", "mama" to parents*
- *Vocalises two or three other words with meaning*

*Gross motor skills*
- *Sits well and for an identified period*
- *Can rise independently from the lying position to the sitting position*
- *Can cruise around furniture*
- *May be able to stand alone*

*Fine motor skills*
- *Can pick up small objects*
- *Can bang two bricks together*

*Personal and social milestones*
- *Stranger anxiety*
- *Can drink from a cup*

*Investigation is prompted in the following red flag situations*
- *No smile by 8 weeks*
- *Poor eye contact by 3 months*

- *No reaching by 5 months*
- *Not walking by 18 months*
- *No single words with meaning by 18 months*
- *No 2-3 word sentences by 30 months*

## Q-21

**A 2 year old boy fell off his tricycle and hurt his arm. He got up and was about to start crying but before there was any sound, he went pale, and unconscious. He recovered after 2 minutes but remained pale. His colour came back after a few minutes. His mother was concerned at that time that he was going to die. She is very worried and mentions that he had a similar episode 2 months ago after falling down some steps. What is the SINGLE most appropriate next step?**

**A. CT head**
**B. Electroencephalogram (EEG)**
**C. Full blood count (FBC)**
**D. Reassure**
**E. Skeletal survey**

ANSWER:
Reassure

EXPLANATION:
The diagnosis here is breath-holding spells

This usually occurs in young children when they are upset and can be precipitated by trauma or when separated from the parents.
Basically anything which may upset a child including injury from falling down

These children stop breathing for some time, they may turn blue or have little jerks of the limbs.

After a period of time they spontaneously start breathing. They become completely fine after an hour.

Treatment is not necessary. Usually just reassure parents

## Q-22

**A 3 month old term female infant presents to clinic with frequent episodes of non-projectile vomiting after feeds. She is exclusively breastfed. The mother complains it is difficult to breastfeed her child as she often gags, and chokes during feeds. Shortly after feeding, she occasionally would display signs of distress, cries and refuses feeds. On examination, the infant is irritable and she is below centiles on the growth chart in terms of weight. What is the SINGLE most likely diagnosis?**

**A. Pyloric stenosis**
**B. Duodenal atresia**
**C. Hypothyroidism**
**D. Gastro-oesophageal reflux disease**
**E. Tracheo-oesophageal fistula**

ANSWER:
Gastro-oesophageal reflux disease

EXPLANATION:
This is a diagnosis of gastro-oesophageal reflux disease (GORD). This is one of the most common causes to vomiting in infants. This is due to slower gastric emptying time, a weaker oesophageal sphincter, inability to sit up and a diet that is entirely liquid. Episodes of gagging, regurgitation can occur throughout the day.

While GORD can occur at any age, in paediatrics for PLAB 1 the case stem would usually have an infant < 1 year old. This is because, in the vast majortiy of cases (90%), reflux would be resolved by 1 year of age. If it still has not resolved by 1 year old, then there might be another pathology such as hiatus hernia.

It is common for growth to plateau off if the infant has persistent GORD and it is one of the more worrying features which warrants treatments.

**GASTRO-OESOPHAGEAL REFLUX DISEASE IN PAEDIATRICS**
**Presentation:**
- Age group for PLAB 1: < 1 year
- Excessive and frequent episodes of regurgitation/vomiting after feeds
- Difficult to feed
- Failure to thrive
- Irritable and crying

**Diagnosis:**
- Upper GI study with contrast as per NICE protocol only (do not offer routinely) - first line
- Upper GI endoscopy with biopsy as per NICE protocol only (do not offer routinely)

**Treatment:**
- If breast-feeding: Breast-feeding assessment
- If formula-fed: take feeding history → increase feeding frequency and reduce amount per feed → thickened formula
- Only presribe proton pump inhibitors (PPIs) or H2 receptor antagonists (H2RAs) and consider enteral feeding only if there is no improvement to the above

**Q-23**

**A 6 year old boy is brought to clinic by his mother. She says that he is still unable to keep dry at night and will be attending a sleepover party at a friend's house. She says that it would be embarassing if he wets himself during the sleepover and she wants to know if anything can be done. The child does not wet himself during the day. What is the SINGLE most appropriate management?**

**A. Desmopressin**
**B. Reassurance**
**C. Behavioural therapy**
**D. Enuresis alarm**
**E. Oxybutynin**

ANSWER:
Desmopressin

EXPLANATION:
For children older than 5 years of age, if rapid or short term-control of bedwetting is required (for example for sleepovers or school trips), offer treatment with desmopressin.

**PRIMARY ENURESIS MANAGEMENT**
The management of bedwetting can be a little confusing as different sources and books would have slightly different answers. But the best place to take the answers from would be NICE CKS as these are NICE guidelines and exam questions would have to adhere by them.

**The points on NICE CKS can be summarized bellow:**
***Primary bedwetting (without daytime symptoms)***
Younger than 5 → reassurance!
Older than 5 years of age
- If bedwetting is infrequent (less than 2x a week) → reassurance
- If long-term treatment required → enuresis alarm (1st line) + reward system
- If short-term control of bedwetting is required (e.g. sleep overs) → Desmopressin

If treatment has not responded to at least two complete courses of treatment with either an alarm or desmopressin → Refer to secondary care

***Primary bedwetting (with daytime symptoms)***
- Refer all children above 24 months with primary bedwetting and daytime symptoms to secondary care or an enuresis clinic for further investigations and assessment.

**Q-24**

**An 8 year old child has recurrent throat infections. He feels tired and lethargic all the time. Petechiae is noticed on his lower limbs. On examination, splenomegaly and gum hypertrophy was noted. Blood results show:**

**Hb 6.8 g/dL**
**WCC 7 x $10^9$/L**
**Platelets 75 x $10^9$/L**

**What is the SINGLE most likely diagnosis?**

**A. Acute lymphoblastic leukaemia (ALL)**
**B. Acute myeloid leukaemia (AML)**
**C. Chronic myeloid leukaemia (CML)**
**D. Chronic lymphocytic leukaemia (CLL)**
**E. Hodgkin's lymphoma**

ANSWER:
Acute lymphoblastic leukaemia (ALL)

EXPLANATION:
These symptoms that he is presenting with are due to pancytopenia. The likely cause given the options and his age is acute lymphoblastic leukaemia (ALL)

The commonest leukaemia in children is acute lymphoblastic leukaemia (ALL)

*One needs to be careful with picking AML or ALL as there are often questions with a very similar stem. In reality, it is difficult to diagnose them clinically as well. For the purpose of the exam, if one sees a clinical picture of acute leukaemia in a very acute setting with bleeding from the gums, AML is likely to be the answer. On the other hand, if one sees a clinical picture of acute leukaemia but less acute and only with gum hypertrophy, ALL is likely to be the answer. - Can these differences actually be used in real life? Probably not*

**Q-25**

**A 10 month old male infant presents with a 6 hour history of crying and passage of loose, bloody stool. On examination, the infant is irritable, with intermittent drawing up of his knees to his chest, and a temperature of 38.8 C. A currant jelly-coloured blood is seen in his stools. What is the SINGLE most likely diagnosis?**

A. **Constipation**
B. **Gastroenteritis**
C. **Intussusception**
D. **Meckel's diverticulum**
E. **Volvulus**

ANSWER:
Intussusception

EXPLANATION:
This is a diagnosis of intussusception. Note the PLAB 1 clues: the infant is between 5-12 months, child has been crying persistently (indication of abdominal pain), drawing the legs up to chest, currant jelly blood in stool, and sausage-shaped mass. This along with pyloric stenosis and malrotation with volvulus is a common paediatric surgical question. Know the differences between each.

**Intussusception**
**Presentation:**
- TRIAD of:
  - o Abdominal pain
  - o Currant jelly blood in stool
  - o Sausage-shaped mass on palpation (often in the right upper quadrant)
- Child is crying persistently
- Drawing up of legs
- May be vomiting if severe

**Diagnosis:**
- Abdominal ultrasound → may show doughnut or target sign
- Bowel enema

**Treatment:**
- Air enema reduction or laparotomy

*Remember: "Red currant jelly" stools is pathognomonic for intussusception*

## Q-26

**A 2 year old has atrophy of the buttocks. He has often had bloating of his abdomen with frequent offensive, smelly stools that are difficult to flush. He looks pale on examination. What is the SINGLE most appropriate initial investigation?**

A. **Sweat chloride test**
B. **Anti-endomysial antibodies**
C. **Upper gastrointestinal endoscopy**
D. **Colonoscopy**
E. **Stool culture**

ANSWER:
Anti-endomysial antibodies

EXPLANATION:
The diagnosis here is coeliac disease. Bulky, frothy and floating (difficult to flush) stools are a hint that he is having a malabsorption syndrome. He looks pale because he is anaemic.

If you have answered A (Sweat chloride test) for cystic fibrosis. You are not completely wrong as cystic fibrosis can occur at that age as well and has symptoms of malabsorption too (foul-smelling bulky stool that "floats). But the question writers are likely to give other hints like “repetitive cough over the last few months” if cystic fibrosis is the likely diagnosis. Also, given the two disease, coeliac is much more common compared to cystic fibrosis and thus the most likely investigation that would lead to a diagnosis is anti-endomysial antibodies. Prevalence of coeliac is 1 in 100 people in the UK while the prevalence of cystic fibrosis is 1 in 2500.

## Q-27

**A 9 year old girl with cystic fibrosis is discussing her problems with you and wishes to know the reason for her repeated pulmonary problems. What is the SINGLE most likely cause of her pulmonary symptoms?**

A. **Decreased mucus production**
B. **Ciliary dysfunction**
C. **Higher viscosity of mucus**
D. **Low immunity**
E. **Dehydration**

ANSWER:
Higher viscosity of mucus

EXPLANATION:
Due to CTFR gene there are abnormal chloride channels in the epithelial cells. This causes abnormal fluid production which results in increased thickening of mucus hence increases the changes of pulmonary infections.

Ciliary dysfunction is seen in Kartagener’s syndrome.

**CYSTIC FIBROSIS**
Cystic fibrosis is an autosomal recessive disorder which induces low salt and chloride excretion into airways leading to increased viscosity of secretions

**Clinical presentation**
- Recurrent chest infections (Cough and chronic sputum production)
  o Recurrent chest infections may lead to bronchiectasis
- Malabsorption → Leading to:
  o Frequent, bulky, greasy stools (Steatorrhoea)
  o Failure to thrive
- Pancreas → increased incidence of diabetes mellitus
- Delayed sexual development
- Male infertility, female subfertility
- Salty taste of skin
- Short stature
- Meconium ileus (in neonatal period)

**Diagnosis**
- Primarily made during newborn screening (Guthrie test)
  - All newborn infants in the UK are screened for cystic fibrosis using the heel-prick test – Majority of them would be identified using this method
  - If this is positive, then molecular genetic testign for CTFR gene and sweat test wuld follow.
- If not picked up by newborn screening and later on develops clinical manifestations of cystic fibrosis, then perform sweat test or genetic testing for CTFR gene.

**Q-28**

**A 5 year old boy presents with drooling of saliva and severe stridor. He has a temperature of 39.0 C and is sick looking. He has difficulty speaking and has muffled voice. A lateral radiograph demonstrates a "thumb sign". What is the SINGLE most likely diagnosis?**

**A. Croup**
**B. Recurrent aspiration**
**C. Diphtheria**
**D. Acute epiglottitis**
**E. Inhaled foreign body**

ANSWER:
Acute epiglottitis

EXPLANATION:
The given case is classic picture of acute epiglottitis.

The thumb sign is a manifestation of an oedematous and enlarged epiglottitis which is seen on lateral soft-tissue radiograph of the neck, and it suggests a diagnosis of acute infectious epiglottitis.

The second clincher here is drooling of saliva. If you find any questions with a child with drooling of saliva. It is likely that this is acute epiglottitis, Summon the most experienced anaesthetist to intubate before obstruction occurs.

**Acute epiglottitis**
- Now rare due to the introduction of Hib vaccine. However, it is still a serious infection. Prompt recognition and urgent treatment is essential
- Caused by Haemophilus influenzae type B

**Features**
- Rapid onset
- High temperature
- Stridor
- Drooling of saliva
- Difficulty speaking
- Muffling or changes in the voice

**Q-29**

**A 12 year old girl presents to clinic with sudden onset of pallor, palpitations, and difficulty breathing while running on the school track. After 30 minutes, her symptoms resolved. This is a first time event and she has never been cyanotic. Cardiac examination was normal. Chest x-ray and echocardiogram were normal. ECG reveals evidence of pre-excitation, delta waves, and prolonged QRS. What is the SINGLE most likely diagnosis?**

A. **Paroxysmal ventricular tachycardia**
B. **Paroxysmal supraventricular tachycardia**
C. **Wolff-Parkinson-White syndrome**
D. **Stokes-Adams pattern**
E. **Excessive stress during exercise**

ANSWER:
Wolff-Parkinson-White syndrome

EXPLANATION:
This is a diagnosis of Wolff-Parkinson-White (WPW) syndrome. In the UK, 1-3 out 1000 people have this condition therefore, this topic would occur frequently under cardiology for PLAB 1. The age group for the case stem may present itself in an older age (i.e. 20-30). However, the features are similar to the stem above. Note the ECG features, especially the presence of delta waves and pre-excitation pathway.

**Wolff-Parkinson-White syndrome**
**Presentation:**
- Child may be exercising with sudden onset of pallor, difficulty breathing, and palpitations followed by spontaneous recovery
- Otherwise asymptomatic child
- ECG: delta waves, pre-excitation pattern, prolonged QRS, shortened PR

**Diagnosis:**
- ECG
- 24 hour Holter monitor

**Treatment:**
- Catheter ablation - first line
- Medications - flecainide and propafenone

## Q-30

**After several episodes of urinary tract infections, a 2 year old girl undergoes a micturating cystourethrogram which reveals mild dilation of the renal pelvis and reflux into the ureters and kidney. She is currently not on any medication. Which of the following is the SINGLE most appropriate next step in treatment?**

A. **Low dose antibiotic prophylaxis daily**
B. **Observation with weekly urinalysis and urine culture**
C. **Surgical reimplantation of the ureters**
D. **Endoscopic injection of bulking agents**
E. **None of the above**

ANSWER:
Low dose antibiotic prophylaxis daily

EXPLANATION:
This is a diagnosis of vesicoureteral reflux (VUR).

For urology questions in paediatrics in this exam, pay particular attention to VUR and urinary tract infections.

Do not go into details for these questions, just know the basic presentation, diagnosis and management according to current guidelines. Note to have a basic understanding that the severity of VUR is graded and management is according to the grade. In this case the child is between grade II to III. Therefore, according to guidelines, she would start with low dose antibiotic prophylaxis before consideration for surgery.

**Vesicoureteral reflux**
Condition where urine flows retrograde from bladder into ureters/kidneys

**Presentation**
- Most children are asymptomatic
- Increases risk of urinary tract infection → Thus, symptoms of a UTI:
  - Fever
  - Dysuria
  - Frequent urination
  - Lower abdominal pain

**Diagnosis**
- Urinalysis, urine culture and sensitivity → initial investigation
- Renal ultrasound → initial investigation → might suggest the presence of VUR if ureteral dilatation is present
- Micturating cystourethrogram → gold standard
- Technetium scan (DMSA) → for parenchymal damage (seen as cortical scars)

**Treatment**
- VUR grade I-IV - start with low dose antibiotics prophylaxis daily (i.e. trimethoprim)
- If above fails and/or parenchymal damage consider surgery - reimplantation of the ureters

The International Reflux Study has found that children can be managed nonsurgically with little risk of new or increased renal scarring, provided they are maintained infection

free. Remember, the goal of treatment is to minimize infections, as it is infections that cause renal scarring and not the vesicoureteral reflux. Thus, the importance of continuous antibiotic prophylaxis outweighs surgery in most cases. Note that during early childhood, the kidneys are at higher risk of developing new scars. So it is particularly important to start parenteral antibiotic treatment for patients with vesicoureteral reflux before febrile breakthrough infections.

For patients with frequent breakthrough infections, definitive surgical or endoscopic correction is preferred. Surgical correction should also be considered in patients with persistent high-grade reflux (grades IV/V) or abnormal renal parenchyma.

**Q-31**

**A 7 year old child is brought in by her mother with complaints of having a fever, sore throat and feeling unwell. She has a maculopapular rash on her trunk and back which appeared a few hours ago. On examination of the throat, there is a white coating on the tongue and tonsils have pale exudates. She has a temperature of 39 C. What is the SINGLE most likely diagnosis?**

**A. Roseola infantum**
**B. Scarlet fever**
**C. Rubella**
**D. Parvovirus B19**
**E. Measles**

ANSWER:
Scarlet fever

EXPLANATION:
Scarlet fever is the diagnosis here. It is common around ages 2 to 8 years. The white coating of the tongue is an appearance of a white strawberry tongue. Usually, there is also prominent red papillae seen. The rash described is characteristic of the rash of scarlet fever.

*The other options remain less likely*

Roseola infantum (herpes 6 virus) may present with small (< 0.5 cm) blanching, rose-pink rashes with a high fever. The rash also commonly affects the trunk which is seen in this stem and it can present with a sore throat. However, they do not present with a strawberry tongue. Also the most common age group that this disease occurs in is around 6 months to 1 year. Note that roseola infantum, similar spots occur on soft palate and uvula called Nagayama spots.

Rubella usually has a rash that starts behind the ears and spreads from there to the rest of the face or body.

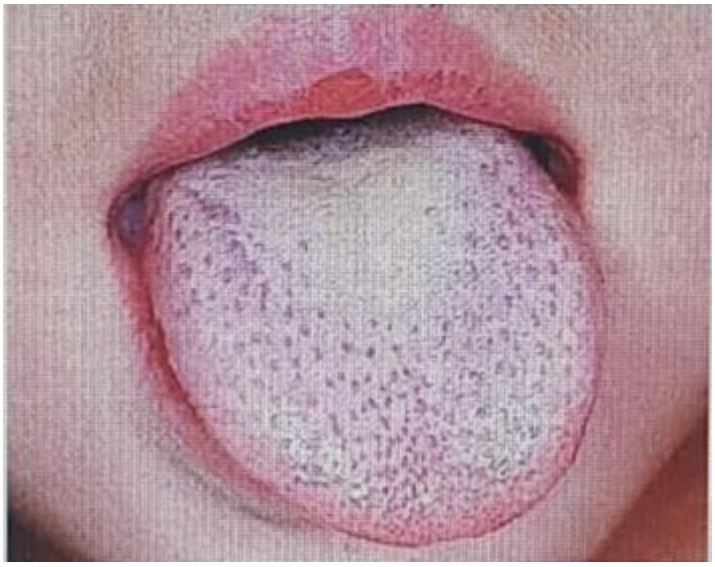
Measles usually present in a more unwell child with a fever more than 40 C. The red spots begin on the face and behind the ears and spread over 24 to 36 hours covering majority of the body except the soles and palms. The spots can initially be as big as 1 cm in diameter initially and often appear together.

**SCARLET FEVER**

Key points:

- Commonest in ages 2 to 8 years old
- Caused by group A streptococcus pyogenes
- Rash and fever are caused by toxins released by bacteria
- Diagnosis is clinical
- Presents with sore throat, fever (usually more than 38.3 C) and a rash
- Rash: Starts on torso 12 to 48 hours after fever and spreads to extremities, has a coarse texture like sandpaper.
- Other features
  - Strawberry tongue
  - Cervical lymphadenopathy
  - Tonsils covered with pal exudates with red macules on palate (Forchhemier spots)
- Treatment is with penicillin V for 10 days

Picture of strawberry tongue



**Q-32**

**Following an emergency caesarean section for fetal distress, a baby is in poor condition. His heart rate is 90 beats/minute. He is blue at extremities but his body is pink. He has some limb flexion and muscle tone. He is gasping for air irregularly and grimaces on aggressive stimulation. What Apgar score does this newborn infant have?**

**A. 8**
**B. 7**
**C. 6**
**D. 5**
**E. 4**

ANSWER:

5

EXPLANATION:

**Apgar Score**

Apgar score is a scoring system used to evaluate a newborn baby. It is done at 1 minute and 5 minutes after birth. It may be repeated at 10 minutes if scores remain low. The Apgar score is calculated by adding the total score of 5 components.

| | **Score of 0** | **Score of 1** | **Score of 2** | **Component of backronym** |
|---|---|---|---|---|
| **Skin color** | Blue or pale all over | Blue at extremities body pink (acrocyanosis) | No cyanosis body and extremities pink | **A**ppearance |
| **Pulse rate** | Absent | < 100 beats/minute | > 100 beats/minute | **P**ulse |
| **Reflex irritability grimace** | No response to stimulation | Grimace on suction or aggressive stimulation | Cry on stimulation, sneezes, coughs | **G**rimace |
| **Activity** | Flaccid | Some limb flexion | Flexed arms and legs that resist extension | **A**ctivity |
| **Respiratory effort** | Absent | Weak, irregular, gasping | Strong, robust cry | **R**espiration |

**Q-33**

**A 2 year old male presents to the Emergency Department with a left-sided reducible firm swelling near the groin. The swelling descends when the child cries. On examination, both testicles are palpable in the scrotum. What is the SINGLE most appropriate management?**

**A. Reassurance**
**B. Emergency herniotomy**
**C. Elective herniotomy**
**D. Emergency herniotomy and orchidopexy**
**E. Elective herniotomy and orchidopexy**

ANSWER:

Elective herniotomy

EXPLANATION:

The diagnosis is an inguinal hernia. There are no clues in the stem of strangulation; therefore, the herniotomy can be done electively. Most inguinal hernias can be reduced by gentle compression in the line of the inguinal canal. A paediatric surgeon will do an elective herniotomy on an outpatient basis for this child as long as it can be reduced. Herniotomy is usually performed for children under 10 years. Herniorrhaphy is done in adults.

Herniotomy is where there is ligation of the processus vaginalis which has become the hernia sac. Herniorrhaphy, which is done in adults, involves reinforcing the abdominal wall with a mesh.

There is no need to do an orchidopexy since this patient's testicles are both palpable in his scrotum and they are not incarcerated.

In children, if reduction is impossible, an emergency surgery would need to be performed due to the risk of compromise of the bowels or the testes.

*Features of a strangulated hernia include:*

- *Pain*
- *Inflammation*
- *Nausea and vomiting*
- *Fever*
- *Features of bowel obstruction such as severe abdominal pain, constipation and abdominal distention*

## Q-34

**An 8 year old boy presents with severe crushing chest pain. He is stall for his age and has a refractive error for which he wears thick glasses for. What is the SINGLE most likely syndrome?**

**A. Fragile X syndrome**
**B. Prader-Willi syndrome**
**C. DiGeorge syndrome**
**D. Marfan's syndrome**
**E. Ehlers-Danlos syndrome**

ANSWER:
Marfan's syndrome

EXPLANATION:
A tall, myopic child can only be Marfan's syndrome in the exam. The cardiovascular symptoms support this diagnosis.

**Marfan's syndrome**
**Features**

- Tall and thin
- Long arms, legs, fingers and toes
- Arachnodactyly (long spidery fingers)
- Flexible joints
- Scoliosis
- Cardiovascular → Aortic dilatation or dissection, aortic regurgitation, mitral valve prolapse, mitral regurgitation, abdominal aortic aneurysm
- Lungs → pleural rupture causing spontaneous pneumothorax
- Eyes → lens dislocation, high myopia.

## Q-35

**A 14 year old child is brought to the GP surgery by his mother with the complaint of mild dyspnoea. He also complains of coughing up about two tablespoons of mucopurulent sputum per day for about two years now. His past medical history is significant for cystic fibrosis. He has a history of repeated chest infections over the past few yeaers which he was treated with antibiotics. He has an oxygen saturation of 96% and his observations are within normal limits. What is the SINGLE most appopriate management for this patient?**

A. **Refer for chest physiotherapy**
B. **Administer oxygen**
C. **Prescribe antibiotics**
D. **Administer corticosteroids**
E. **Prescribe bronchodilators**

ANSWER:
Refer for chest physiotherapy

EXPLANATION:
Cystic fibrosis is often very difficult to manage and usually requires a multidisciplinary team approach. The physiotherapist helps the patient clear the bronchial secretions by physiotherapy, the paediatrics often have to prescribe antibiotics to treat the chest infection and prescribe pancreatic enzymes supplements to correct nutritional deficits.

All the answers given have a place in the management of cystic fibrosis and the real challenge here is picking which one is the best.

Chest physiotherapy involves techniques to clear the mucous such as postural drainage wehre gravity-assisted positions are used to aid drainage. Other techniques include chest percussion and positive expiratory-pressure device to aid dislodgement and expectoration of sputum. This would definitely improve this patient's symptoms of dyspnoea and mucopurulent sputum.

Although oxygen usually forms part of the initial treatment for anyone presenting with dyspnoea, it is not the most appropriate management for this patient since his oxygen saturations are normal.

Antibiotics are indicated in patients with cystic fibrosis only in an acute exacerbation of the disease or as prophylaxis in childhood. The prophylactic antibiotic to offer is flucloxacillin as it works well against respiratory Staphylococcus aureus infection for children with cystic fibrosis. It is offered from the point of diagnosis up to age 3, and consider continuing up to 6 years of age. If a mild exacerbation is present, antibiotics can be prescribed for 2 weeks.

Bronchodilators, specifically beta-2 agonists, are indicated in management of patients with cystic fibrosis but they only benefit some patients who have a reversible component of their airway obstruction.

The question becomes more difficult to answer because dyspnoea and increased sputum production are considered early signs of an exacerbation in which case bronchodilators, antibiotics and even corticosteroids have a role. However, since his observations are well and there is no history of fever or signs of infection, chest physiotherapy still remains the best choice amongst the answers.

## Q-36

**A 3 year old child presents with cough, a rash on his face and a high temperature which began 2 days ago. A rash is also seen on his buccal mucosa. His parents state that he was not given routine immunization as the parents were concerned of the adverse effects. The rash is erythematous and maculopapular. What is the SINGLE most appropriate diagnosis?**

A. **Measles**
B. **Roseola infantum**
C. **Rubella**
D. **Chicken pox**
E. **Impetigo**

ANSWER:
Measles

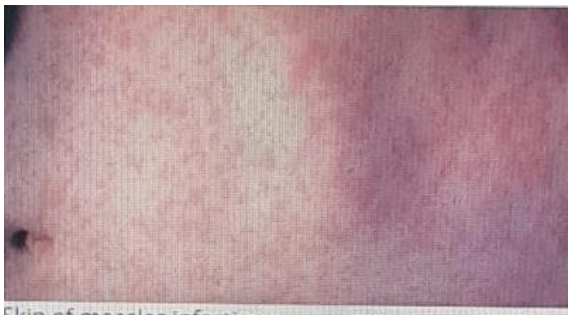
EXPLANATION:
This is a classic case of measles. The rash seen on his buccal mucosa is called Koplik spots. He was not given routine immunizations which include measles, mumps and rubella (MMR) vaccine which if he had the first jab, could have decreased his chance of developing measles.

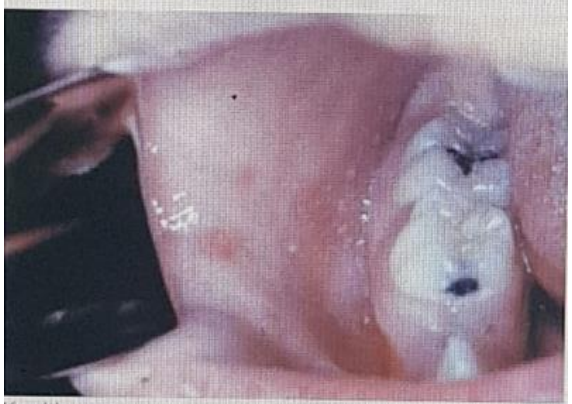
The distractor here is rubella which can present almost exactly like measles. The key features commonly seen in questions if rubella *(instead of measles)* were to be the answer is:

- Swollen lymph nodes
- Spots on soft palate (Forschhemier spots) *(in measles, the spots are on the buccal mucosa and are called Koplik spots)*

**Measles**
**Mnemonics to remember**
Hard K sounds → Koplik spots, Cough, Conjunctivitis, Coryza

**Features**
- prodrome: irritable, conjunctivitis, fever
- Koplik spots (before rash): white spots ('grain of salt') on buccal mucosa
- maculopapular rash: starts behind ears then to whole body


Skin of measles infection


Koplik spots

**Q-37**

**A 4 year old girl is taken by her mother to the emergency department and complains of pain during urination and feeling generally unwell. She has a temperature of 38.5 C. What is the SINGLE most appropriate initial action?**

A. **Suprapubic aspiration**
B. **Clean catch of urine**
C. **Catheter for sample of urine**
D. **Renal ultrasound**
E. **DMSA scan**

ANSWER:
Clean catch of urine

EXPLANATION:
The clinical features described are consistent with urinary tract infection for which a clean catch of urine is the next best action.

Special arrangements may be needed for collecting a sample from a child. (Clean catch, catheter or suprapubic aspiration are methods used which reduce the risk of contamination)

Routine investigations that are done in urinary tract infection are:

- Dipstick analysis of urine - may treat as bacterial if there are positive results for nitrite and/or leukocytes
- Urine microscopy - leukocytes indicate presence of infection
- Urine culture

**Q-38**

**A 15 year old boy attended the emergency department with shortness of breath. A diagnosis of spontaneous unilateral pneumothorax was made. He is noted to be tall for his age with long arms and fingers. He also has severe scoliosis. What is the SINGLE most likely syndrome?**

A. **Fragile X syndrome**
B. **Prader-Willi syndrome**
C. **DiGeorge syndrome**
D. **Marfan's syndrome**
E. **Ehlers-Danlos syndrome**

ANSWER:
Marfan's syndrome

EXPLANATION:
Spontaneous pneumothorax is common in Marfan's syndrome. The other signs and symptoms point towards Marfan's syndrome as well.

**Q-39**

**A 4 year old child presents to A&E with fever and stridor. He is unable to swallow his saliva. He has a respiratory rate of 45 breaths/minute. What is the SINGLE most appropriate next step in management?**

A. **Examine his throat**
B. **Secure his airways**
C. **Keep him in a supine position**
D. **Administer intravenous penicllin**
E. **Administer intramuscular epinephrine**

ANSWER:
Secure his airways

EXPLANATION:
The clincher is being unable to swallow his saliva. If you find any questions with a child with drooling of saliva, it is likely that this is acute epiglottitis. Summon the most experienced anaesthetist to intubate before obstruction occurs. In the above options, securing the airways is the most appropriate.

**Q-40**

**A 3 year old child is admitted to hospital for a very high fever. He is discovered to be below the 25$^{th}$ percentile for weight. After a week in hospital, his weight improves from 10 kg to 11 kg upon discharge. A week later, he is readmitted with pneumonia. His weight upon admission is back to 10 kg and improved to 11.5 kg at the end of 10 days upon discharge. What is the SINGLE most likely cause of his fluctuating weight?**

A. **Leukaemia**
B. **Cystic fibrosis**
C. **Non-accidental injury**
D. **HIV/AIDS infection**
E. **Pulmonary fibrosis**

ANSWER:
Non-accidental injury

EXPLANATION:
This is a seemingly tough question which in actuality, is quite simple. The normal weight for a 3 year old male child is around 14kg. We can see from admission that his weight is way below the average for his age group. The fact that his weight improved in hospital and declined upon discharge is highly suspicious of negligence. Another clincher to this fact is the frequent hospital admissions.

We cannot say this child has leukaemia or cystic fibrosis (although it is possible) because there is no evidence in the stem to suggest this. Thus, the best answer is nonaccidental injury.

*In certain questions like this one, there is insufficient information to properly know for certain which is the correct answer. This type of questions may reflect those that appear in the exam. Options C and B are still the top choices. Make one of these your choices and move on to the next question. Do not overthink this as it could waste valuable time in the exam.*

**Non-accidental injury/neglect:**

- Frequent attendance or unusual patterns of attendance to health care services, including frequent injury.

- Failure to access medical care appropriately (including non-attendance for routine immunisations, delay in presentation).
- Unsuitable explanations. Explanations which are inconsistent over time or between people, or which are not consistent with the presenting features.
- There is evidence of failure to thrive.
- Parents or carers do not administer prescribed medication.
- Inexplicably poor response to treatment.
- Reporting of new symptoms as soon as previous ones resolve.

## Q-41

**A 4 year old boy, who recently immigrated from Kenya with his parents, presents to clinic with intermittent watery diarrhoea, foul smelling flatulence, nausea, and abdominal pain. His weight is less than the 5$^{th}$ percentile for his age. On examination, he has a fever of 38 C and is dehydrated. Which of the following is the most likely to confirm his diagnosis?**

**A. Abdominal ultrasound**
**B. Complete blood count**
**C. Liver function test**
**D. ESR**
**E. Stool microscopy for ova and parasites**

ANSWER:
Stool microscopy for ova and parasites

EXPLANATION:
**Giardiasis**
**Presentation:**
- Watery diarrhea, foul-smelling flatulence
- Nausea, belching
- Abdominal pain
- +/- Fever

**Diagnosis:**
- Stool microscopy - first line
- Stool PCR / ELISA

**Treatment:**
- Hygiene
- Metronidazole

## Q-42

**An eight day old male neonate presents with vomiting, weight loss and lethargy. Urea and electrolyte blood tests have been done and show his serum potassium level to be 5.2 mmol/L. An ultrasound scan of his abdomen reveals bilaterlaly enlarged adrenal glands. What is the SINGLE most likely feature to be seen in this patient?**

**A. Straie gravidarum**
**B. Hypotension**
**C. Hypernatraemia**
**D. Hyponatraemia**
**E. Hypervolaemia**

ANSWER:
Hyponatraemia

EXPLANATION:
In order to answer what type of electrolyte imbalance this baby has, we first have to know a little about the condition he has presented with.

The child has congenital adrenal hyperplasia. The bilaterally enlarged adrenal glands in the stem directly points you to this diagnosis. Congenital adrenal hyperplasia has many different forms and varying severity however, it usually presents with the 'salt-wasting' form early on in males. The exam is likely to only test the 'salt-wasting' form in male children.

**Q-43**

**A 5 week old male infant presents to clinic with jaundice during routine check-up. His mother reports a normal vaginal delivery at term with a birth weight of 3.5 kg. On examination, the baby is irritable, below average centiles for weight, and the liver is enlarged. Pale stools and dark urine on diaper were observed. The mother is currently not breastfeeding and had picked him on formula. What is the SINGLE most likely diagnosis?**

A. **Galactosemia**
B. **Glucose-6-phosphate dehydrogenase (G6PD) deficiency**
C. **Rh incompatibility**
D. **Congenital viral infection**
E. **Biliary atresia**

ANSWER:
Biliary atresia

EXPLANATION:
Jaundice in newborns is an important topic within the paediatric section for PLAB 1. Understand the mechanisms and management for neonatal jaundice as well the causes of jaundice post 4 weeks of age. Examination results are consistent with obstructive jaundice therefore option is E. Jaundice in options B and C would occur within 24 hours of birth. Galactosemia would present with vomiting, diarrhea, failure to thrive with jaundice. Liver would not be hard or enlarged.

**BILIARY ATRESIA**
*Biliary atresia is notoriously asked during exams so one should know this topic inside and out.*

**Presentation:**
- Jaundice with pale stools and dark urine
- Usually would present in 3-4 weeks of life
- Splenomegaly is not usually a feature unless presentation is late
- Failure to thrive is a result of poor absorption

**Diagnosis:**
- Abdominal ultrasound (initial investigation)
- Cholangiogram (definitive diagnosis)

**Treatment:**
Kasai procedure = hepatoportoenterostomy

*It is extremely important to diagnose biliary atresia early as without intervention, chronic liver failure will develop which usually leads to death before age 2.*

**NEONATAL JAUNDICE**
*Physiological jaundice:*
- This results from increased erythrocyte breakdown and immature liver function.
- It presents at 2 or 3 days old, begins to disappear towards the end of the first week and has resolved by day 10.
- The bilirubin level does not usually rise above 200 µmol/L and the baby remains well.

*Early neonatal jaundice (onset less than 24 hours):*
*Note: The most common pathological causes of neonatal jaundice within 24 hours are: Rhesus incompatibility, ABO incompatibility, G6PD and sepsis*
- Haemolytic disease: eg, haemolytic disease of the newborn (rhesus), ABO incompatibility, glucose-6-phosphate dehydrogenase deficiency, spherocytosis.
- Infection: congenital (eg, toxoplasmosis, rubella, cytomegalovirus (CMV), herpes simplex, syphilis) or postnatal infection.
- Crigler-Najjar syndrome or Dubin-Johnson syndrome.
- Gilbert's syndrome.

*Prolonged jaundice (jaundice lasting for longer than 14 days in term infants and 21 days in preterm infants):*
*Note: The most impoortant diagnosis not to be missed in this group is biliary atresia.*
- Hypothyroidism
  - *Congenital hypothyroidism is usually identified on routine neonatal biochemical screening (Guthrie test)*
- Hypopituitarism.
- Galactosaemia
- Breast milk jaundice: the baby is well and the jaundice usually resolves by six weeks but occasionally continues for up to four months.
- Gastrointestinal (GI): biliary atresia, neonatal hepatitis.
  - Biliary atresia *(commonly asked question)*
  - Neonatal hepatitis

*It is worth knowing a little about the system for newborn jaundice in the UK. In the UK, follow up care following birth for mothers and newborns are delivered by the community midwives. They would come to visit the mother and newbonr at their own homes. If the newborn remains jaundiced after 14 days (or 21 days for premature babies), they are referred back to the hospital to see a paediatrician who would investigate further to rule out other rarer causes of jaundice. The most important reason that investigations need to be carried out for infants with jaundice lasting longer than 14 days is to diagnose biliary atresia promptly, as delay in surgical treatment in this group could lead to severe complications. A split bilirubin blood test is usually performed to see the levels of conjugated and unconjugated bilirubin. If hyperbilirubinaemia is unconjugated, the paediatric team are usually reassured since biliary atresia would have high levels of conjugated bilirubin.*

## Q-44

**A 6 week old baby is admitted with persistent vomiting and failure to gain weight. Her mother describes the vomiting as projectile and non-bilious. On examination, there is a right sided olive-sized abdominal mass on palpation. Bloods show the following:**

**Na+ 138 mmol/L**
**K+ 3.3 mmol/L**
**Cl- 83 mmol/L**
**HCO3- 28 mmol/L**

**What is the SINGLE most appropriate diagnostic test?**

A. **Abdominal ultrasound**
B. **Abdominal x-ray**
C. **CT abdomen**
D. **Tissue transglutaminase (TTG) antibodies (IgA)**
E. **Jejunal biopsy**

ANSWER:
Abdominal ultrasound

EXPLANATION:
Bloods show a hypochloraemic, hypokalaemic alkalosis which points towards the diagnosis of pyloric stenosis. This is diagnosed using an abdominal ultrasound.

## Q-45

**A 7 month old baby is admitted with a 3 day history of coughing. He has a temperature of 38.5 C. On examination, there is marked subcostal recession and widespread wheeze is noted bilaterally. His respiratory rate is 60 breaths/minute and oxygen saturation is 91%. What is the SINGLE most appropriate initial management?**

A. **Supportive care with humidified oxygen**
B. **Oral prednisolone**
C. **Intravenous hydrocortisone**
D. **Intramuscular adrenaline**
E. **Nebulised salbutamol**

ANSWER:
Supportive care with humidified oxygen

EXPLANATION:
The diagnosis here is bronchiolitis. Supportive care is the mainstay of treatment involving oxygen. Oxygen supplementation should be given to children with bronchiolitis if their oxygen saturation is persistently less than 92%.

The evidence for using nebulised salbutamol for children with bronchiolitis has always been very shaky. Currently NICE does not recommend using salbutamol as part of the management for children with bronchiolitis.

**Bronchiolitis**
- An acute infectious disease of the lower respiratory tract that occurs primarily in the very young, most commonly infants between 2 and 6 months old
- Respiratory syncytial virus (RSV) is the pathogen in 75-80% of cases

It is a clinical diagnosis based upon:
- Breathing difficulties
- Cough
- Coryzal symptoms (including mild fever)
- Decreased feeding
- Apnoeas in the very young
- Wheeze or fine inspiratory crackles on auscultation

**Management**
- Largely supportive involving humidified oxygen

## Q-46

**A 13 year old girl presents to the Emergency Department with weight loss, bloody diarrhoea, and fever intermittently over the last 6 months. The intermittent episodes have caused occasional restriction of activity. Currently she is having moderate abdominal pain. Labs reveal elevated ESR and positive p-ANCA. What is the SINGLE most likely management for this patient?**

A. **Topical and oral mesalazine**
B. **Prednisolone and mesalazine oral**
C. **Prednisolone IV**
D. **Cyclosporine IV**
E. **Infliximab IV**

ANSWER:
Topical and oral mesalazine

EXPLANATION:
This is a diagnosis of ulcerative colitis (UC). PLAB 1 would usually have an adolescent (12-17 years) who either presents to clinic or emergency with the above symptoms. There may or may not be other UC clues: growth failure, toxic megacolon, and affecting only the submucosa of the colon. Know Crohn's disease and ulcerative colitis well for PLAB 1 as it will appear in both paediatric and adult questions. Note that the management is according to NICE guidelines and is the same for both paediatrics and adult medicine. In this case, the patient is classified as having mild to moderate UC according to NICE.

**Ulcerative colitis in Paediatrics**
**Presentation:**
- Bloody diarrhea, abdominal pain, tenesmus
- Vomiting, weight loss, fatigue
- p-ANCA positive

**Diagnosis:**
- Clinical diagnosis combined with rectal biopsies
- Upper endoscopy - to rule out Crohn's
- Stool culture - to rule out infection
- Paediatric UC Activity Index - for classification of severity

**Treatment:**
- Topical and oral aminosalicylate (mesalazine/sulfasalazine) - first line
- Add prednisolone oral - only if aminosalicylate is ineffective with no improvement after 4 weeks treatment
- Infliximab - only in severe UC for paediatrics
- Cyclosporin - if severe UC
- Surgery - only consider if severe

## Q-47

**A 4 year old is brought to the emergency department by ambulance. His mother reports that he has been unwell with a sore throat. He is sitting on his mother's knee and is tolerating an oxygen mask but looks unwell. He has constant noisy breathing and he is drooling saliva. He has a temperature of 39.0 C. What is the SINGLE most likely diagnosis?**

A. **Acute asthma**
B. **Bronchiolitis**
C. **Croup**
D. **Epiglottitis**
E. **Tonsillitis**

ANSWER:
Epiglottitis

EXPLANATION:
The given case is classic picture of acute epiglottitis

The clincher here is drooling of saliva. If you find any questions with a child with drooling of saliva, it is likely that this is acute epiglottitis. Summon the most experienced anaesthetist to intubate before obstruction occurs.

## Q-48

**A 2 year old boy presents to the Emergency Department with bruising and generalised petechiae that is more prominent over his legs bilaterally. The mother states that the child recovered from the flu 2 weeks ago. On examination, there was no hepatosplenomegaly, no lymph node enlargement. Platelet count is 15000/microlitre. What is the SINGLE most likely diagnosis?**

A. **Von Willebrand disease**
B. **Acute lymphoblastic leukaemia**
C. **Idiopathic thrombocytopenic purpura**
D. **Thrombotic thrombocytopenic purpura**
E. **Aplastic anaemia**

ANSWER:
Idiopathic thrombocytopenic purpura

EXPLANATION:
This is a diagnosis of idiopathic thrombocytopenic purpura (ITP). This is a common PLAB 1 topic under the haematology component. Main clues in the case stem to ITP: previous viral infection, or in younger children previous immunization along with low platelets.

Also, the petechiae would be mainly in the legs and on occasion on the arms. Otherwise, the child feels well and is active.

**Idiopathic thrombocytopenic purpura**
**Presentation:**
- Follows viral infection or immunisation
- The most common presentation is petechiae or bruising. Petechiae mainly in arms and legs - sudden onset
- Up to a quarter present with nosebleeds
- Haematuria and gastrointestinal bleeds are less common.
- Older girls may have menorrhagia
- Otherwise the patient is well and physical examination is normal

**Laboratory diagnosis**
- Isolated thrombocytopenia; blood count otherwise normal

**Management:**
- Prednisolone
- IV immunoglobulin
- Emergency platelet transfusion
  - Only in life threatening haemorrhage. (usually platelet less than 20 x 109/L)

**Q-49**

**A 3 year old child is brought to the emergency department by his mother with bruises and swelling over the medial aspect of the left arm. The mother gives a history of her son falling down the stairs a few hours ago. Bruises on the child's back and left chest are seen on examination. X-ray of the chest shows multiple callus formation in the ribs. Analgesia has been given. What is the SINGLE most appropriate next step?**

**A. Check child protection register**
**B. Involve social services**
**C. Skeletal survey**
**D. Serum calcium**
**E. DEXA scan**

ANSWER:
Skeletal survey

EXPLANATION:
Skeletal survey is a series of x-ray which is usually used in non-accidental injury. It is performed systematicaly to cover the entire skeleton. Typically, this includes a bilateral anteroposterior and posteroanterior views of arms, forearms, humerus, feet, legs, femur, pelvis, spine and skull.

Once the skeletal survey has been done, then think of the child's protection register and involve social services. As a junior doctor you should involve your seniors prior to checking child's protection register or involving social services. The chief consideration is the treatment and protection of the child, so do not delay treatment of painful or apparently lifethreatening problems, whilst awaiting an 'expert'.

In every hospital system there will be a designated doctor for child protection who should be available for advice. He or she will examine the child and arrange hospital admission for further investigations (e.g. skeletal survey) as necessary. Social Services and the police may need to be involved.

**Bruises**
Children naturally sustain bruises during minor incidents as part of 'growing up'. Bruising over the knees and shins is a normal finding in children, particularly toddlers, who are also prone to sustaining injuries to their foreheads and chins as a result of falls. As well as considering the possibility of NAI, remember that bruising may occur as part of an unusual pathological disease process (eg Henoch–Schönlein purpura, haemophilia, ITP, leukaemia, and other causes of thrombocytopenia).

**The following bruises should prompt consideration of NAI:**
- Bruising in unusual sites (eg medial aspect of upper arms or thighs)
- Finger 'imprinting' (eg grip complexes around upper limbs or slap marks)
- Imprints or marks from other objects (eg belt, stick)

**Consider NAI in the following fractures**
- Multiple fractures of different ages
- Rib and spinal fractures
- Fractures in infants who are not independently mobile
- Long bone fractures in children

*There are a few rare bone diseases that may mimic NAI. One commonly asked in PLAB is Osteogenesis imperfecta. They would usually give other clues such as a blue sclerae, dental abnormalities and brittle bones.*

**Q-50**

**A 3 year old boy was brougth to the GP surgery with his mother with a 4 day history of fever and a widespread rash. He was given a diagnosis of a viral exanthem, reassured and advised to take paracetamol. The following day his mother notices he has become more lethargic and unwell and was brought into the Paediatric Emergency Department. His rash continues to spread. On examination, he has cracked red lips, red sore eyes, and cervical lymphadenopathy. His temperature was 39.1 C. He was admitted for further a full septic screen, investigations and management. 2 weeks later, his skin on his fingers and toes began to peel. What is the SINGLE most likely diagnosis?**

A. **Kawasaki disease**
B. **Takayasu's disease**
C. **Drug reaction**
D. **Scarlet fever**
E. **Hand, foot mouth disease**

ANSWER:
Kawasaki disease

EXPLANATION:
This young boy has 5 out of 5 of the diagnostic features of Kawasaki disease with a fever above 39 C for more than 5 days. It is important to realise that in its early stages,

Kawasaki disease can mimic a viral exanthem and so it is often diagnosed as a viral rash and children are sent home.

Kawasaki disease and scarlet fever have many similarities such as rash, fever, strawberry tongue (which was not mentioned in the stem), and cervical lymphadenopathy however the primary complaint of scarlet fever is usually the sore throat.

**KAWASAKI DISEASE**

Kawasaki disease is a febrile systemic vasculitis that predominantly affects children under 5 years of age.

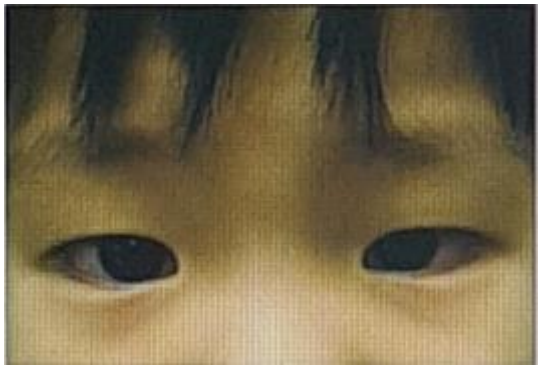
The disease is more common in Japanese children hence the Japanese name "Kawasaki" of whom described the disease in 1967.

**Diagnosis**

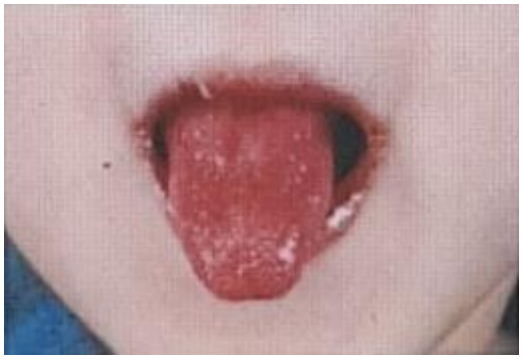
The diagnosis is made by clinical findings alone. Fever above 39 C for more than 5 days and at least 4 of the following features are diagnostic.

- Conjunctivitis
- Polymorphous rash
- Extremity changes: Erythema of palms and soles that later leads to desquamation
- Mucous membrane changes: Red, fissured lips, strawberry tongue
- Cervical lymphadenopathy

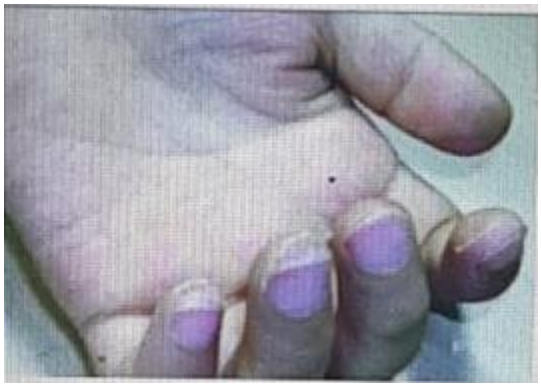
Prompt recognition is important as aneurysms of the coronary arteries are potentially devastating complications and treatment with immunoglobulins reduces their incidence. These coronary arteries are affected in around 30 percent of children within the first 6 weeks of illness. Hence, an echocardiogram would be an important investigation during the child's stay in the hospital.



Bilatera, non-exudative conjunctival injection



Strawberry tongue and bright red, swollen lips with vertical cracking and bleeding



Desquamatikon of the fingers

**Management**

- High dose aspirin – Reduces risk of thrombosis
  - Once fever subsides and inflammatory markers fall, low dose aspirin is given until echocardiogram is performed at 6 weeks to exclude aneurysm
- Intravenous immunoglobulin – If given within first 10 days, reduces the risk of coronary artery aneurysms

**Q-51**

**A 3 year old boy has had symptoms of a viral upper respiratory tract infection for the past 3 days. His temperature recorded by his mother at home ranges from 38 C to 39 C. He has been brought to the Paediatric Accidents & Emergency with a history of a fit lasting for 3 minutes. Further clinical examinations and investigations for infection were performed in the hospital and meningitis was excluded. There is no history of febrile seizures or epilepsy in the family. At discharge, he was given the diagnosis of febrile seizures. His mother has concerns regarding the prognosis of febrile seizures and if her other children would be affected. What is the SINGLE most appropriate advice to give to the mother?**

**A. Patient has more than 50% chance of further episode of seizure before 6 years of age.**
**B. Patient has more than 50% chance of further episode of seizure after 6 years of age**
**C. Patient likely to develop epilepsy in future**
**D. Patient has a 30 to 40% chance of developing another febrile seizure as a child**
**E. Febrile seizures have no genetic predisposition**

ANSWER:

Patient has a 30 to 40% chance of developing another febrile seizure as a child

EXPLANATION:

Around 30 to 40% of children with one episode of febrile seizure will continue to have another febrile seizure in future. Febrile seizures do have a genetic predispostion while there is a 10% risk of developing a febrile seizure if there is a first degree relative who has suffered from febrile seizures.

Around 10% children with complex febrile seizures go on to develop epilepsy.

**Q-52**

**Parents of a 2 month old baby are worried about cot death as their close friend recently lost their infant to sudden infant death syndrome (SIDS). She comes to you asking for advice on the best method to reduce her infant's risk of SIDS. What is the SINGLE most appropriate advice to give in regards to sleeping position and bedding?**

**A. Place baby in a prone position and at the middle of the cot to sleep**
**B. Place baby on his back with his feet at the foot of the cot to sleep**
**C. Place baby on his back and at the head end of the cot to sleep**
**D. Place baby on his side to sleep**
**E. Sleep with baby on bed by your side**

ANSWER:
Place baby on his back with his feet at the foot of the cot to sleep

EXPLANATION:
Cot death is more properly known as sudden infant death syndrome (SIDS). It is the term used to describe the sudden death of a child under the age of 1 year in its sleep where no cause or reason can be found. All other possible causes of death must be excluded for this diagnosis to be made.

Sleeping position is particularly important. Prone sleeping is a major, modifiable risk factor. Placing babies on their backs to sleep is advice which should be reinforced by professionals. Reassure parents that the risk of aspiration is not increased by sleeping in this position and a number of studies have confirmed this.

Other take hope notes are:
- Soft bedding increases the risk of SIDS
- Pillows should not be used

**SUDDEN INFANT DEATH SYNDROME (SIDS)**
These are some advices to give parents to decrease the risk of sudden infant death syndrome (SIDS)
- Avoid smoking near infants
- Put infants to sleep on their backs (not their front or sides)
- Avoid overheating by heavily wrapping infants
- Blankets should not be higher than their shoulders
- Infants should be placed with their feet at the foot of the cot
- Avoid bringing baby into the bed after parents have consumed alcohol or sedative medications
- Avoid sleeping with infant on sofa
- Avoid using a pillow
- Use sheets and blankets rather than a duvet

**Q-53**

**A first time mother presents to the paediatric outpatient department with the complaint that her baby is not gaining weight. The male child is three months old and the mother claims that he has not been gaining weight for the past one month despite regular feedings. The mother says that her baby is exclusively formula fed since she cannot breastfeed due to her work during the day. The infant is taken care of during the day by his grandparents who both say that they have been feeding the baby at regular intervals with baby formula. The mother is especially concerned that her baby might have a cow's milk allergy as the child has constant reflux. Upon examination, the baby appears irritable and cries continuously. The mother describes an uneventful pregnancy with her son being delivered via elective Cesarean section at 39 weeks of gestation. What is the SINGLE most appropriate next step in management?**

A. **Start weaning from milk and introduce semi-solids**
B. **Assess for cow's mil protein allergy using a skin prick test**
C. **Blood test for cow's milk protein antibody**
D. **Ask the mother to switch to soy milk formula**
E. **Change to hypoallergenic formula**

ANSWER:
Change to hypoallergenic formula

EXPLANATION:
There are two types of allergic reactions to cow's milk protein: IgE-mediated reactions and non-IgE-mediated reactions.

**IgE-mediated reactions**

- Occur within two hours of milk being consumed
- Symptoms include:
  - Nausea
  - Vomiting
  - Colicky abdominal pain
- Skin manifestations include:
  - Pruritus
  - Erythema
  - Urticaria or angioedema

**Non-IgE-mediated reactions**

- Occur hours or days after ingesting milk
- Symptoms include:
  - Reflux
  - Loose stools or constipation
  - Perianal redness
  - Abdominal pain
  - Food aversion
- Skin manifestations include:
  - Pruritus
  - Erythema
  - Atopic eczema

Upper and lower respiratory tract symptoms such as cough or a wheeze may be present for both IgE-mediated and non IgE-mediated

The best way to test for IgE mediated reactions is to diagnose it with a skin prick test or a blood test.

The best way to diagnose non-IgE-mediated reactions is to exclude cow's milk from the diet or to use a hypoallergenic formula such as extensively hydrolysed formula and see if there is an improvement in symptoms. We would normally expect improvements of symptoms in 2 weeks. If symptoms still persiist whilst using extensively hydrolysed formula, then swap to an amino acid formula.

Not gaining weight and reflux is seen more in Non-IgE mediated rections and thus this stem represents a classic scenario of a non-IgE mediated reaction and trying hypoallergenic formulas would be appropriate.

***Key points to remember for exam purposes:***
*If cow's milk allergy is suspected and reaction is acute –* ***Think IgE-mediated***
*If cow's mil allergy is suspected and reaction is delayed (reflux, loose stools, tapering of growth) –* ***Think non-IgE-mediated***

**Q-54**

**A 4 month old child is brought to Accident & Emergency by her parents. She is found to weigh 4.1 kg. She presents with multiple bruises on her left and right lower leg. Her left ankle is swollen and she refuses to move it. She appears irritable and she also has a runny nose. What is the SINGLE most likely diagnosis?**

A. **Haemophilia**
B. **Thrombocytopenia**
C. **Non-accidental injury**
D. **Malnutrition**
E. **Osteogenesis imperfecta**

ANSWER:
Non-accidental injury

EXPLANATION:
This is a probable non-accidental injury. This infant weighs 4.1kg. For a 4 month old infant this is beneath the normal weight gain line. A female infant of 4 months should weigh about 6.1kg and a male infant of 4 months should weigh about 6.8kg. Another clue to the diagnosis of NAI is the multiple bruises on her lower limbs. This is the most common site of NAI in the infant population. It arises from parents or caregivers gripping and pulling the infant by the legs.

Haemophilia is incorrect because even though haemophilia is a possible diagnosis, it is improbable. Haemophilia is an X-linked recessive condition and this is a female infant. Haemophilia CAN affect females but it is extremely rare and if they had wanted you to pick haemophilia they would have give additional clues such as neonatal bleeding following venipuncture, gastrointestinal hemorrhage or intracranial bleeding.

Thrombocytopenia is incorrect because it usually presents following a viral infection in children. Although it presents with bruising and petechiae, it is an improbable answer in this question because the diagnosis of thrombocytopenia lies solely on blood testing and blood smear. You cannot make a diagnosis of thrombocytopenia based on clinical signs.

## Q-55

**A 3 year old boy attends clinic with a history of diarrhoea on and off. The mother describes the stool as bulky, frothy and difficult to flush. He looks pale and wasted on examination. What is the SINGLE most likely investigation that would lead to a diagnosis?**

- **A. Sweat chloride test**
- **B. Anti-endomysial antibodies**
- **C. Liver function test**
- **D. Ultrasound abdomen**
- **E. Thyroid function test**

ANSWER:
Anti-endomysial antibodies

EXPLANATION:
The diagnosis here is coeliac disease. Bulky, frothy and floating (difficult to flush) stools are a hint that he is having a malabsorption syndrome. He looks pale because he is anaemic.

If you have answered A (Sweat chloride test) for cystic fibrosis. You are not completely wrong as cystic fibrosis can occur at that age as well and has symptoms of malabsorption too (foul-smelling bulky stool that "floats). But the question writers are likely to give other hints like “repetitive cough over the last few months” if cystic fibrosis is the likely diagnosis. Also, given the two disease, coeliac is much more common compared to cystic fibrosis and thus the most likely investigation that would lead to a diagnosis is anti-endomysial antibodies. Prevalence of coeliac is 1 in 100 people in the UK while the prevalence of cystic fibrosis is 1 in 2500.

## Q-56

**A 9 year old girl, known case of asthma, presents to the Emergency Department with a 1 day history of shortness of breath that is increasing in severity. She had a previous upper respiratory tract infection 1 week prior which had resolved. Chest x-ray reveals bilateral hyperinflation. On arrival, she was given oxygen, nebulized beta-2 agonist, and oral prednisolone. She is now drowsy, respiratory rate is 30 and her SpO2 is 90%. Which of the following is the SINGLE most appropriate investigation?**

- **A. Arterial blood gas**
- **B. Pulse oximetry**
- **C. Spirometry**
- **D. CT chest**
- **E. Peak flow meter**

ANSWER:
Arterial blood gas

EXPLANATION:
Know the step-wise management for acute asthma exacerbation in paediatric and adult medicine. Questions in PLAB 1 would have a similar case stem but asking questions pertaining to investigations and treatment. Here the patient is breathless and we would need to see if she is in respiratory acidosis to determine the need for intubation/assisted ventilation.

**Acute severe asthma**
SpO2 <92% PEF 33–50%
- Can't complete sentences in one breath or too breathless to talk or feed
- Heart rate >125 (>5 years) or >140 (2-5 years)
- Respiratory rate >30 breaths/min (>5 years) or >40 (2–5 years)

**Life threatening asthma**
SpO2 <92% PEF <33%
- Silent chest
- Cyanosis
- Poor respiratory effort
- Hypotension
- Exhaustion
- Confusion

**ASTHMA-MANAGEMENT OF ACUTE EXACERBATION IN CHILDREN**
**Immediate treatment**
- Start O2 if saturations < 94%, aim sats 94-98%
- Salbutamol nebulized with O2 (pMDI + spacer if mild exacerbation)
- Add ipratropium bromide (mixed with the nebulised salbutamol solution) if refractory to initial salbutamol nebulizers
- Oral prednisolone unless vomiting, then give intravenous hydrocortisone

*Remember, salbutamol and ipratropium bromide nebulizers can be repeated.*

**Other treatments to consider:**
- Intravenous salbutamol in severe attack where child is not responding to salbutamol nebulizers
- Intravenous aminophylline with severe attack not responding to other treatments
- Intravenous magnesium sulphate

## Q-57

**A 6 year old male presents to the clinic with obesity and short stature. On examination, his BMI is > 95$^{th}$ percentile. His past medical history is significant for a renal transplant. What is the SINGLE most likely diagnosis?**

**A. Cushing's syndrome**
**B. Congenital hypothyroidism**
**C. Primary obesity**
**D. Prader Willi syndrome**
**E. Down's syndrome**

ANSWER:
Cushing's syndrome

EXPLANATION:
Cushing's syndrome is a frequent topic that overlaps in paediatrics and endocrinology for PLAB 1. Here it is important to make a few assumptions. The child had a renal transplant and is most likely taking corticosteroids as part of his medication regime. Long term steroid use would induce Cushing's syndrome. Short stature would also result because the steroids would cause premature fusion of the growth plates.

**Presentation:**
- Patient is taking oral steroids
- Obesity, moon face, buffalo neck hump, purple abdominal striae
- Behavioral/mood changes
- Short stature

**Diagnosis:**
- Overnight dexamethasone suppression test or 24 hour urinary free cortisol (first line)

**Treatment:**
- Taper the child's steroid medication if possible or find another alternative for immunosuppression

**Q-58**

**A 9 year old boy is brought into the Paediatric Accidents and Emergency by his parents with severe shortness of breath. He has a history of asthma and has become unwell over the past few days with a productive cough. His symptoms are worsening and he feels the salbutamol inhalers are no longer effective in helping breathe. On examination, he has a widespread wheeze on auscultation. There are intercostal recessions and use of accessory muscles. His oxygen saturations were 88% and respiratory rate was 45 breaths/minute. Oxygen was immediately commenced. He was given back to back nebulizers with salbutamol and ipratroprium bromide. Intravenous hydrocortisone was administered. Due to poor response, he was given intravenous salbutamol and intravenous aminophylline. His symptoms continue to deteriorate with signs of exhaustions and poor respiratory effort. What is the SINGLE next most appropriate medications to be considered?**

**A. Nebulised corticosteroids**
**B. Intravenous magnesium sulphate**
**C. Oral monteleukast**
**D. Intramuscular adrenale**
**E. Nebulized adrenaline**

ANSWER:
Intravenous magnesium sulphate

EXPLANATION:
Intravenous magnesium sulphate would be the next medication to use in severe exacerbation of asthma. At this stage, it would also be appropriate to inform the anaesthetist and paediatric intensive care unit as intubation may be required.

There is insufficient evidence to support use of inhaled corticosteroids in acute asthma in children.

**Q-59**

**A 6 year old boy is brought into the Paediatric Accidents and Emergency by his parents with shortness of breath. He was given the diagnosis of asthma a year ago. His symptoms have been worsening despite use of salbutamol inhalers. On examination, he has a widespread wheeze on auscultation. There are intercostal recessions seen. His oxygen saturations were 95% and respiratory rate was 40 breaths/minute. He was given back to back nebulizers with salbutamol and ipratropium bromide. What would be the next most appropriate medication to be administered?**

**A. Oral corticosteroids**
**B. Oral monteleukast**
**C. Intravenous magnesium sulphate**
**D. Intravenous aminophylline**
**E. Nebulized adrenaline**

ANSWER:
Oral corticosteroids

EXPLANATION:
Oral steroids would be the next medication to administer. This involves liquid prednisolone or crushed prednisolone tablets dissolved in water to be consumed by the child. Intravenous corticosteroids could also be given if the child was having difficulty in swallowing due to his breathing or if he was vomiting however that option was not given here.

**Q-60**

**A 4 week old female child presents with non-specific symptoms such as irritability, poor feeding, vomiting, fever of 39 C and smelly nappies. An Eschericia coli infection was confirmed on a urine culture and she responded well to antibiotics. What is the SINGLE most appropriate next investigation?**

**A. Ultrasound**
**B. Computed tomography of the kidneys, ureter and bladder**
**C. Intravenous urogram**
**D. Dimercaptosuccinic acid (DMSA) scan**
**E. Micturating cystourethrogram (MCUG)**

ANSWER:
Ultrasound

EXPLANATION:
UTI presents atypically in neonates and may be associated with life-threatening sepsis.

If the child is less than 6 months old like in this case and responds well to treatment within 48 hours, an ultrasound can be arranged to be done within 6 weeks.

Micturating cystourethrogram (MCUG) is considered only if ultrasound is abnormal or if the child fails to respond to antibiotics within 48 hours. MCUG can also be performed if there is a history of recurrent UTI.

Dimercaptosuccinic acid (DMSA) scan is usually performed 4 to 6 months after the acute infection. It is not needed if the child responds well to antibiotics.

**REMEMBERING PAEDIATRIC UROLOGY SCANS**
***The key to remember paediatric urology scans are to remember the number 6!***

*If younger than **6** months:*
- *Ultrasound during acute infection – If does NOT respond well to antibiotics within 48 hours*
- *Ultrasound within **6** weeks – If responds well to antibiotics*
- *MCUG – If did NOT respond well to antibiotics during acute infection*
- *DMSA scan 4-**6** months – If did NOT respond well to antibiotics during acute infection*

**IMAGING CHILDREN WITH URINARY TRACT INFECTIONS**
**The different test**

**Ultrasound**
- First line test
- Non-invasive
- No radiation exposure
- Good at determining anatomy, renal size, presence of most congenital anormalies
- Not effective at detetecting mild to moderate vesicoureteric reflux

**Micturating cystourethrography (MCUG)**
- Gold standard test for detecting vesicoureteric reflux which affects between 25% and 40% of children with confirmed urinary tract infectin
- Requires catheterisation
- Radiation exposure

**DMSA (dimercaptosuccinic acid) scan**
- Gold standard test for detecting renal scarring or damage to renal parenchyma occuring in about 5% of children after proven urinary tract infection
- Uses intravenous radioactive isotope which concentrates in renal tissue
- Should not be done at time of infection as may get false positive results
- Usually done 4 to 6 months after infection

**Recommended Imaging**
Three definitions are important in deciding on imaging and when it should be done.

**Straightforward UTI**
- Responds well to treatment within 48 hours

**Atypical UTI** (Any of the following)
- Failure to respond to treatment within 48 hours
- Septicaemia
- Raised creatinine
- Infection with non E. coli species

**Recurrent UTI** (Any of the following)

- Two or more episodes of UTI with acute pyelonephritis/infection of the UTI
- Three or more episodes of UTI with cystitis/lower UTI

| Age | UTI | | |
|---|---|---|---|
| | **Straightforward** | **Atypical** | **Recurrent** |
| Below 6 months | USS within 6 weeks<br><br>MCUG if USS abnormal | USS during infection<br>DMSA 4-6 months after acute infection<br>MCUG | USS during infection<br>DMSA 4-6 months after acute infection<br>MCUG |
| 6 months to 3 years | None | USS during infection<br>DMSA 4 to 6 months after infection<br>Consider MCUG | USS within 6 weeks<br>DMSA 4-6 months after infection<br>Consider MCUG |
| Above 3 years | None | USS during infection<br>DMSA 4-6 months after infection | USS within 6 weeks<br>DMSA 4-6 months after infection |

*If the table above is too complicated to remember, at least remember these golden rules and you will likely get the answer:*

- *Below 6 months – ultrasound within 6 weeks if straightforward UTI*
- *Above 6 months – do NOT ultrasound if straightforward UTI*
- *If atypical, always ultrasound during acute infection no matter the age*
- *Always perform DMSA 4 to 6 months after any atypical or recurrent infection*
- *DMSA during an acute infection is always the WRONG answer*
- *MCUG after 3 years old is always the WRONG answer*

**Q-61**

**A 4 year old male child is brought to the GP by his mother with the complaint that he has started wetting the bed again. He had previously been dry for a period of seven months but had recently started wetting the bed again at night. This has been occurring regularly, at least once a night, for the past week now. He has no daytime symptoms. The mother describes her son's birth as uncomplicated. The patient has an older sister who is currently seven years old. She has never wet the bed. The patient is within the 50$^{th}$ centile for height and weight for his age. He has no past medical history of note. A urinalysis was performed in clinic with normal results. What is the SINGLE appropriate action?**

**A. Trial of desmopressin**
**B. Offer enuresis alarm**
**C. Refer to paediatrician**
**D. Reassure, if continues to wet bed after 5 years of age, refer to paediatrician**
**E. Reassure, no action required**

ANSWER:
Refer to paediatrician

EXPLANATION:
This patient has secondary enuresis. Secondary enuresis is defined as the involuntary passage of urine during sleep by a child who has previously been dry for at least six months.

Enuresis can be divided into different types. Remember that enuresis is normal up to the age of 5 years.

The types of enuresis are as follows:

- Primary enuresis – Child aged 5 years or older who constantly wets the bed at night
- Primary enuresis with daytime symptoms – Child aged 5 years or older who constantly wets the bed at night and who also has daytime symptoms such as urgency, frequency or daytime wetting
- Secondary enuresis – Child of any age who has previously been dry for at least six months and who is now wetting the bed consistently at night with or without daytime symptoms

The most common cause of secondary enuresis is emotional upset. Other caues include urinary tract infection, constipation or polyuria due to diabetes mellitus. It is therefore important to test the urine sample for infection and glucose. If tehre is no treatable UTI, then it would be reasonable to refer to a paediatrician for further investigation. The paediatriacian would obtain a full history to look for any family problems, developmental or learning difficulties which could account for the secondary enuresis.

*Remember, that one of the causes of emotional upset could be child abue. Keep that in mind with any child that presents with secondary enuresis.*

**Q-62**

**The newborn screening results of an 8 day old female infant are as follows:**

**TSH 40 mIU/L**
**Total T4 32 nmol/L**

**The mother notes that the child is difficult to feed and does not cry much. On examination, the child has cold mottled skin and weak, floppy muscles. What is the SINGLE most appropriate management?**

**A. Observation and reassess in 3 months**
**B. Propylthiouracil**
**C. Methimazole**
**D. Radioactive iodine**
**E. Levothyroxine**

ANSWER:
Levothyroxine

EXPLANATION:
This is a diagnosis of congenital hypothyroidism. Usually it is found upon newborn screening as per protocol of the NHS. In PLAB 1, thyroid disease is a frequent topic under the endocrine component. Know how thyroid diseases present in paediatrics especially in infants. The symptoms and signs are not always as clear-cut as adults.

The infant would usually present with difficulty in feeding, constipation, little crying, and may not be very responsive. On examination, there may enlarged posterior fontanelles

and hypotonia along with other usual hypothyroidism features (i.e. decreased temperature, bradycardia, puffy appearance).

**Congenital hypothyroidism**
**Presentation:**
- Difficulty feeding, constipation, little crying
- Not very responsive
- Hypotonia, dry mottled cold skin
- Prolonged neonatal jaundice

**Diagnosis:**
- Neonatal screening for TSH and T4 serum/plasma → initial
- Radioisotope scan → definitive
- Ultrasound of neck

*It is important that the results are interpreted according to age because TSH and T4 levels in the first weeks ofe life are significantly diferent from those in later life.*

**Treatment:**
- Levothyroxine oral until 2 years of age

**Q-63**

**A 6 month old boy is admitted with persistent irritability. He is lethargic and is not feeding well. He has a temperature of 38.2 C, a capillary refill time of 2 seconds and a respiratory rate of 34 breaths/minute. A urinalysis reveals leukocyte esterase positive and nitrite negative. What is the SINGLE investigation most likely to lead to diagnosis?**

A. **Blood culture**
B. **Ultrasound**
C. **Chest X-ray**
D. **Urine culture and sensitivity**
E. **CSF analysis**

ANSWER:
Urine culture and sensitivity

EXPLANATION:
The urine dipstick test shows leukocytes. A urine culture will be used to help confirm a urinary tract infection.

Action plan for infants and children between 3 months and 3 years old with a suspected urinary tract infecgtion:
- If both leukocyte esterase and nitrite are negative:
  - Antibiotic treatment not required
  - Urine sample for microscopy and culture not required unless suspectd to have acute pyelonephritis or serious illness
- If either leukocyte esterase or nitrite is positive:
  - Start antibiotic treatment
  - Send a urine sample for culture

**Q-64**

**A 1 day old male infant has developed abdominal distension, bilious vomiting and meconium ileus was present. Prenatal ultrasound had previously revealed echogenic bowel. Which of the following is the SINGLE most likely diagnosis?**

**A. Duodenal atresia**
**B. Cystic fibrosis**
**C. Gastroenteritis**
**D. Malrotation and volvulus**
**E. Hirschsprung disease**

ANSWER:
Cystic fibrosis

EXPLANATION:
This is a diagnosis of cystic fibrosis (CF). For PLAB 1, this topic overlaps in both paediatric and adult medicine. Due to the high prevalence and incidence amongst Caucasians in the UK, this is a frequent topic and should be looked into detail for the exam. Note that if the infant was older, then the stem would have features of "poor weight gain with foul smelling stools" and some variation of respiratory deficit. However, this infant is a newborn and therefore "meconium ileus" would be the most obvious clue to the diagnosis.

Features of cystic fibrosis in neonates/infants include

- Poor weight gain
- Failure to thrive
- Meconium ileus
- Bilious vomiting
- Echogenic bowel on prenatal ultrasound

**Q-65**

**A 2 year old child wasbrought by his mother with swelling on the right side of his neck extending from the angle of the mouth to the middle one third of the sternocleidomastoid muscle. The swelling is on the anterolateral side of the sternocleidomastoid muscle. On examination, the mass is partially compressible, when subjected to light test is brilliantly translucent. What is the SINGLE most likely diagnosis?**

**A. Lymphangioma**
**B. Branchial cyst**
**C. Thyroglossal cyst**
**D. Ranula**
**E. Graves' disease**

ANSWER:
Lymphangioma

EXPLANATION:
Both lymphangioma and branchial cyst are lateral neck masses. Branchial cysts are not translucent whereas lymphangioma when subjected to light test is brilliantly translucent.

Lymphangiomas
Lymphangiomas are uncommon, hamartomatous, congenital malformations of the lymphatic system that involve the skin and subcutaneous tissues. It occurs as a result of sequestration or obstruction of developing lymph vessels in approximately 1 in 12,000 births. Lymphangiomas can occur anywhere in the skin and the mucous membranes. The most common sites are the head and the neck especially in the posterior triangle of the neck.

The cysts are lined by endothelium and filled with lymph. Occasionally unilocular cysts occur, but more often there are multiple cysts infiltrating the surrounding structures and distorting the local anatomy.
The mass may be apparent at birth or may appear and enlarge rapidly in the early weeks or months of life as lymph accumulates; most present by age 2 years. (90% of lymphangioma occur in children less than 2 years)

Lymphangiomas are soft and nontender and when subjected to light test was brilliantly translucent.

**Q-66**

**An infant soon after birth developed difficulty in breathing with intercostal recession and nasal flaring. He is afebrile. On examination, there is diminished breath sounds. On examining the mother's notes, there was a history of spontaneous rupture of membranes 48 hours before delivery of baby. The mother was 36 weeks gestation when the baby was delivered. What is the SINGLE most appropriate initial investigation?**

- **A. Blood culture**
- **B. Chest X-ray**
- **C. Stool culture**
- **D. Sputum culture**
- **E. Maternal high vaginal swab**

ANSWER:
Chest X-ray

EXPLANATION:
Infant respiratory distress syndrome secondary to surfactant deficiency which is the cause of respiratory distress. There could be potential sepsis due to prolonged rupture of membranes which worsens the respiratory distress however this is unclear.

One must remember that prolonged rupture of membrane is not a risk factor for IRDS. In fact, the incidence of IRDS decreases with prolonged rupture of membranes. Note however, PROM occurring before 37 weeks (PPROM) is one of the leading causes of preterm birth. 30-35% of all preterm births are caused by PPROM. This puts the fetus at risk for the many complications associated with prematurity such as respiratory distress.

At this stage, a chest x-ray should be done to rule out other causes of respiratory distress.

**Infant Respiratory Distress Syndrome**

- Infant respiratory distress syndrome (IRDS) is caused by the inadequate production of surfactant in the lungs. It is usually seen in premature infants where they have immature lungs.
- It affects approximately one half of infants born at 28-32 weeks of gestation. It rarely occurs at term.

**Risk factors:**

- Premature delivery
- Infants delivered via caesarean section without maternal labour
- Maternal diabetes

**Presentation**

- Respiratory distress very soon after birth:
  - Tachypnoea
  - Expiratory grunting
  - Subcostal and intercostal retractions
  - Diminished breath sounds
  - Cyanosis
  - Nasal flaring

**Q-67**

**A 4 year old boy presents to the Emergency Department with fever, bloody diarrhoea, decreased urine output after a school field trip at a farm. On examination, the boy is pale, tired, and his face is swollen. Lab results: hematocrit 28%, platelets 72,000/microL. There is blood and protein in urine. What is the SINGLE most likely diagnosis?**

**A. Acute post-streptococcal glomerulonephritis**
**B. Disseminated intravascular coagulation**
**C. Ulcerative colitis**
**D. Intussusception**
**E. Haemolytic uraemic syndrome**

ANSWER:
Haemolytic uraemic syndrome

EXPLANATION:
For PLAB 1 paediatrics, know some of the major causes of bloody diarrhea/stool. This is a diagnosis of haemolytic uraemic syndrome. PLAB 1 clues: a young preschool child on an outing with family or friends and returns with bloody diarrhea. If the stem does not state specifically, assume that the child ate or was in an environment at high risk for Shiga toxin producing E. coli.

**HAEMOLYTIC URAEMIC SYNDROME**
**Presentation:**
- Preschool children (< 5 years)
- TRIAD: microangiopathic haemolytic anaemia, thrombocytopenia, and acute renal failure
- Bloody diarrhea, fever, abdominal pain
- Low haemoglobin and hematocrit, low platelets, hypoalbuminaemia

**Diagnosis:**
- Initial - E.coli serology, stool culture, urinalysis, full blood count
- Renal ultrasound to rule out damage

**Treatment:**
- Hydration and electrolyte balance
- +/- Nasogastric tube for nutrition intake
- +/- Dialysis
- Paracetamol for pain

## Q-68

**A 7 day old baby whose birth weight was initially 3.5 kg, has a weight of 3.3 kg currently. What is the SINGLE most appropriate next action?**

A. **Inform seniors and check the child protection register**
B. **Refer for a nutritional assessment**
C. **Request a skeletal survey**
D. **Reassure mother and continue regular child care**
E. **Inform the police**

ANSWER:
Reassure mother and continue regular child care

EXPLANATION:
It is usual for babies to lose between five per cent and 10 per cent of their birth weight a few days after the birth. Note that this does not mean the child is not getting enough milk. One should not jump to the conclusion of child abuse with such minor weight loss.

Remember that in labour, very often mothers receive intravenous fluid to prevent dehydration. This can contribute to a slightly higher birth weight for the neonate as he would have taken some fluid onboard. The fluids are loss over the next couple of hours to days which results in reduction of weight. Following these few days of weight loss, there would be gradual weight gain. By day 14, most babies would be above their birth weight.

## Q-69

**A 2 year old boy presents to the Emergency Department with painless rectal bleeding for the past 2 days. On examination, the child is afebrile, tachycardic, alert, playful, and feeding well. Abdominal examination was normal. Which of the following is the SINGLE most likely diagnosis?**

A. **Intussusception**
B. **Ulcerative colitis**
C. **Hirschsprung disease**
D. **Volvulus**
E. **Meckel's diverticulum**

ANSWER:
Meckel's diverticulum

EXPLANATION:
Meckel's diverticulum PLAB 1 clues (rule of 2): occurs between 2-3 years old, mostly male, approximately 2 inches long, around 2 feet away from the ileo-caecal valve. The child will usually start off with painless rectal bleeding but is otherwise well. Know how to differentiate between painful and painless rectal bleeding in children for PLAB 1. Options A to D would present with painful rectal bleeding with stool at onset.

**Meckel's diverticulum**
**Presentation:**
- Mostly asymptomatic
- Painless rectal bleeding
- If obstruction: vomiting, abdominal pain
- Age group: 2-3 years old; mostly male

**Diagnosis:**
- Radioisotope scan - initial
- Laparotomy

**Treatment:**
- Surgical resection

**Q-70**

**A 14 year old boy presents to the emergency department after he fell and hit his head in the playground at school. He did not lose consciousness but has swelling and tenderness of the right cheek with a subconjunctival haemorrhage on his right eye. His observations are stable and he is alert and conscious. You are the foundation year 2 doctor who first sees him. What SINGLE initial investigation would be helpful in this case?**

A. **Computed tomography of head**
B. **Fundoscopy**
C. **Magnetic resonance imaging of head**
D. **Skull X-ray**
E. **Facial X-ray**

ANSWER:
Facial X-ray

EXPLANATION:
There is no feature of intracranial haemorrhage but the swelling and tenderness of right cheek are likely to indicate a facial injury.

While facial X-rays used to be used more frequently in the past for investigations of facial fractures, the modality of choice is now a computed tomography to evaluate facial features. However, as a foundation year doctor, it would be easy, quick and appropriate to request for a facial X-ray in this situation. It may show possible signs of a facial fracture (such as fluid level in the sinuses), however, CT of the face would be needed to confirm the diagnosis.

## Q-71

**An 18 month old child is assessed for developmental milestones. He is unable to walk but is able to stand on support. He can crawl and pulls himself up to stand. He is able to transfer objects from hand to hand and is able to scribble but is unable to draw circles. He shows understanding of nouns such as "where's mommy?" and has a vocabulary of around 4 to 6 different words but unable to form a sentence. He can wave, clap nd imitate others. What is the SINGLE best development stage to describe this child?**

A. **Delayed gross motor development**
B. **Delayed fine motor development**
C. **Delayed verbal development**
D. **Delayed social development**
E. **Normal development**

ANSWER:
Delayed gross motor development

EXPLANATION:
A child who is unable to walk by 18 months of age should be referred to a specialist community paediatric assessment. This shwos delay in gross motor development.

## Q-72

**A 4 month old, healthy female infant presents to clinic for her routine immunizations of DTP, Hib, polio, MenB, and pneumococcal vaccines. At her 3 month immunization, she cried and was irritable for 3 hours followed by a fever that lasted for 2 days. Which of the following is the SINGLE most appropriate action now?**

A. **Don not give the vaccines**
B. **Give half the vaccine doses**
C. **Give paracetamol followed by vaccines**
D. **Proceed with standard immunization schedule**
E. **Defer vacccines for 2 weeks**

ANSWER:
Proceed with standard immunization schedule

EXPLANATION:
For PLAB 1, usually the paediatric immunization case stem would be similer to the one above. Know the immunization schedule and the protocol for giving it.

Proceed with immunization and reassure parents that a slight fever post vaccines is normal, can be relieved with paracetamol. If it persists for more than 1 week then seek expert help.

## Q-73

**A young anxious mother of a 1 year old boy comes to you requesting a test for cystic fibrosis as her brother died from cystic fibrosis. What is the SINGLE most appropriate investigation?**

A. **Sweat test**
B. **Heel prick test**
C. **Breath test**
D. **Chest X-ray**
E. **Genetic testing of parents**

ANSWER:
Sweat test

EXPLANATION:
Sweat testing confirms the diagnosis and is 98% sensitive. Chloride concentration > 60 mmol/L with sodium concentration lower than that of chloride on two separate occasions.

**Q-74**

**An 8 week old baby boy is noted to be jaundiced. He has feeding difficulty, with vomiting and failure to gain weight. His stools are yellow and his urine is pale straw coloured. On palpation, the paediatrician notices an enlarged liver. What is the SINGLE most likely diagnosis?**

A. **Galactosaemia**
B. **Biliary atresia**
C. **Glucose-6-phosphate dehydrogenase (G6PD) deficiency**
D. **Breast milk jaundice**
E. **Congenital viral infection**

ANSWER:
Galactosaemia

EXPLANATION:
This is really a question of exclusion

Biliary atresia causes obstructive picture where stools are pale and urine becomes dark which is NOT the case here.

Glucose-6-phosphate dehydrogenase (G6PD) deficiency like the other haemolytic diseases has an onset of jaundice usually less than 24 hours

Breast milk jaundice is a possibility but usually the baby is well and the jaundice usually resolves by six weeks. Occasionally it can continue for up to four months.

Congenital viral infection usually causes jaundice in the first 24 hours as well.

The only possible answer is galactosaemia

**Galactosaemia**
Although it is a rare inherited disease it is among the most common carbohydrate metabolism disorders. It can be a life-threatening illness during the newborn period

Cardinal features are hepatomegaly, cataracts and mental handicap.

**Presentation**
- There is often feeding difficulty, with vomiting and failure to gain weight, with poor growth in the first few weeks of life
- Lethargy and hypotonia occur
- Jaundice and hepatomegaly develop
- Cataracts may be apparent even in the early days of life

*For the exam, pick galactosaemia when you see these symptoms in a prolonged jaundice infant:*
- *Poor feeding*
- *Vomiting*
- *Hepatomegaly*

**Management:**
As soon as the diagnosis is made, milk should be discontinued to remove the lactose load. This will have some immediate benefit. A galactose free diet helps prevent the progression of liver disease.

**Q-75**

**An 8 year old boy presents to clinic with behavioural problems. He is inattentive in class. During the interview, he is unable to sit still; he is constantly blinking his eyes, making grunting nosies with his throat and rubbing his fingers. What is the SINGLE most likely diagnosis?**

**A. Asperger syndrome**
**B. Cotard's syndrome**
**C. Rett's syndrome**
**D. Ekbom's syndrome**
**E. Tourette's syndrome**

ANSWER:
Tourette's syndrome

EXPLANATION:
This is a classic scenario for Tourette's syndrome in PLAB 1. Other clues that may appear on PLAB 1 may be the child yelling in class intermittently or shouting expletives. Most Tourette's syndromes are diagnosed at 6-8 years, maximum to the age of 13.

*The other syndromes are less likely to be the answer:*

**Asperger syndrome** → Characterized by severe persistent impairment in reciprocal social interactions, repetitive behaviour patterns, and restricted interests. IQ and language are normal or, in some cases, superior. Although tics (like the above case) can also be found in asperger syndrome, it is more specific for Tourette's syndrome. Not to mention, the question would include an impairment of social skills if the PLAB examiners wanted you to have picked Asperger syndrome.

**Cotard's syndrome** → is a rare mental illness in which an afflicted person holds the delusion that they are dead

**Rett's syndrome** → There is normal development for 2–3yrs, followed by a loss of acquired motor, language, and social skills between ages 3 and 4yrs. Stereotypies and compulsions are common.

**Ekbom's syndrome** → Also called restless leg syndrome. Unpleasant, often painful sensations in the legs, particularly on sleep onset

**Tourette's syndrome**
**Presentation:**
- Young (6-8 years old) mostly male
- Repetitive movements or gestures that are disruptive in the classroom or to people around the child (can be motor or vocal) → Tics
- Jerks, blinks, sniffs, nods, spitting, stuttering, irrepressible explosive obscene verbal ejaculations, grunts, and squeaks

**Diagnosis:**
- Clinical diagnosis

**Treatment:**
- Risperidone or haloperidol
- Behavioral therapy - Habit-reversal training

## Q-76

**A 1 week old male infant, born at 32 weeks gestation, is currently in neonatal ICU and was doing well on increasing nasogastric feedings. The nurse now notes that the infant has been vomiting during the last 2 feedings, is less active, and has blood in his stool. On examination, the abdomen was tense, distended with decreased bowel sounds. Abdominal x-ray reveals distended loops of bowel with air in the bowel wall. What is the SINGLE most appropriate next step in management?**

A. **Emergent exploratory laparotomy**
B. **Reduce volume of feeds per feeding and feed more frequently**
C. **Remove nasogastric tube and replace with transpyloric tube, then switch feeds from nasogastric to nasoduodenal tube**
D. **Stop feeds, begin intravenous fluids, perform abdominal films, and initiate systemic antibiotics**
E. **Continue the same**

ANSWER:
Stop feeds, begin intravenous fluids, perform abdominal films, and initiate systemic antibiotics

EXPLANATION:
This is a diagnosis of necrotising enterocolitis (NEC). This is a classic presentation and are the main PLAB 1 clues: abdominal distension, bloody stool, and air in the bowel wall. Note that usually the infant is usually premature although they can also be a term infant in these case stems. According to guidelines, this infant is between Stage Ib and IIa of NEC, therefore option D is the most appropriate.

**Necrotising enterocolitis**
**Presentation:**
- Premature > term infant
- Vomiting (feeding intolerance), decreased activity, varying temperature
- Abdominal distension, bloody stools
- Abdominal plain film - air in the bowel wall

**Diagnosis:**
- Bell's criteria/staging system
- Abdominal x-ray (supine antero-posterior; lateral decubitus) - initial
- Blood work - include blood film, culture, coagulation, blood gas

**Treatment:**
- Initial - stop feeds → NG tube free drainage with aspiration → antibiotics → fluids and electrolyte balance
- Antibiotics - penicillin + gentamicin + metronidazole
- If pneumoperitoneum - surgery

**Q-77**

**A 12 year old boy presents with severe watery diarrhoea for the past 7 days. His urine output is low, mucous membranes are dry, and skin turgor is decreased. What is the SINGLE most appropriate initial management?**

A. **Antibiotic**
B. **Antimotily**
C. **Antiemetic**
D. **Fluid replacement**
E. **Reassurance**

ANSWER:
Fluid replacement

EXPLANATION:
This child is dehydrated. The low urine output, dry mucous membranes and decreased skin turgor are signs of dehydration. Fluid replacement is needed.

The most common cause of gastroenteritis in children in the UK is rotavirus

When assessing hydration status NICE advocates using normal, dehydrated or shocked categories rather than the traditional normal, mild, moderate or severe categories.

**Estimating dehydration (Paediatrics)**
***Clinical dehydration***
Decreased urine output
Sunken eyes
Dry mucous membranes
Tachycardia
Tachypnoea
Reduced skin turgor

***Clinical shock***
Decreased level of consciousness
Cold extremities
Pale or mottled skin
Tachycardia
Tachypnoea
Weak peripheral pulses
Prolonged capillary refill time
Hypotension

**Management**
If clinical shock → admit for intravenous rehydration
If just dehydrated → Oral rehydration solution would do

PLAB is unlikely to ask you to differentiate between clinical dehydration or clinical shock. But you must be able to recognize the signs and symptoms of dehydration.

**Q-78**

**A 3 year old boy who has had frequent urinary tract infections has recently been diagnosed with vesicouteral reflux. Which of the statements are correct?**

**A. Antibiotic prophylaxis is first line**
**B. Most children with vesicoureteral reflux will require surgery**
**C. Most children with vesicouretral reflux will have kidney scarring by age 5**
**D. Antibiotic use has not been show to reduce renal scarring**
**E. Surgical correction should be considered in patients with low-grade reflux**

ANSWER:
Antibiotic prophylaxis is first line

EXPLANATION:
Antibiotic prophylaxis should be given prior to considering surgery. When medical management fails to prevent recurrent urinary tract infections, or if the kidneys show progressive renal scarring then surgical interventions may be necessary. Surgical corrections are generally reserved for the higher grade refluxes (not low-grade). The main idea of antibiotic prophylaxis is to reduce risk of urinary tract infection and thus reduce renal scarring.

**Vesicoureteral reflux**
- Condition where urine flows retrograde from bladder into ureters/kidneys

**Presentation**
- Most children are asymptomatic
- Increases risk of urinary tract infection → Thus, symptoms of a UTI:
  - o Fever
  - o Dysuria
  - o Frequent urination
  - o Lower abdominal pain

**Diagnosis**
- Urinalysis, urine culture and sensitivity → initial investigation
- Renal ultrasound → initial investigation → might suggest the presence of VUR if

ureteral dilatation is present
- Micturating cystourethrogram → gold standard
- Technetium scan (DMSA) → for parenchymal damage (seen as cortical scars)

**Treatment**
- VUR grade I-IV - start with low dose antibiotics prophylaxis daily (i.e. trimethoprim)
- If above fails and/or parenchymal damage consider surgery - reimplantation of the ureters

The International Reflux Study has found that children can be managed nonsurgically with little risk of new or increased renal scarring, provided they are maintained infection free. Remember, the goal of treatment is to minimize infections, as it is infections that cause renal scarring and not the vesicoureteral reflux. Thus, the importance of continuous antibiotic prophylaxis outweighs surgery in most cases. Note that during early childhood, the kidneys are at higher risk of developing new scars. So it is particularly important to start parenteral antibiotic treatment for patients with vesicoureteral reflux before febrile breakthrough infections.

For patients with frequent breakthrough infections, definitive surgical or endoscopic correction is preferred. Surgical correction should also be considered in patients with persistent high-grade reflux (grades IV/V) or abnormal renal parenchyma.

**Q-79**

**A 3 year old male child is rushed to A&E. His mother says that he has been vomiting and having diarrhoea for the past two days. Upon examination, his dehydration status was assessed at 5% and he is unable to tolerate oral feeds. He has soiled just one diaper during the past two days. What is the SINGLE best maintenance fluid regime for this child?**

**A. 0.9% Normal saline**
**B. 0.9% Normal saline + 5% Dextrose**
**C. 0.45% Normal saline**
**D. 0.45% Normal saline + 5% Dextrose**
**E. Albumin**

ANSWER:
0.9%Normal saline + 5% Dextrose

EXPLANATION:
This child has features of dehydration. Although normal saline can be used for initial boluses in children, it is important to remember that 0.9% sodium chloride + 5% glucose is usually used as maintenance in children (excluding neonates). This question specifically asks for maintenance fluid regime, which should be 0.9% Normal saline + 5% Dextrose.

## Q-80

**You are working as a Foundation Year 2 (FY2) doctor in Accident & Emergency when you attend to a mother and a four year old boy. She complains that her child has a runny nose and sore throat which had rapidly become worse over the last three days. Shealso noted that he has a fever and states that the child has been refusing to eat. The mother has noticed a type of red rash which first started on her son's face and then spread all over his body. She admits that he has missed some of his vaccinations as she had read an article online that vaccinations cause autism in children but is unsure which vaccinations were omitted and when they were originally scheduled for. There is no history of any known drug allergies in the child. The mother says that her son has recently started going to nursery school and was happy and enjoying the new environment. There is no significant history based on the patient's past medical records. On examination, the child is alert but irritable. His temperature is 38 C and his chest is clinically clear. Examination of his throat reveals small, red spots, each with bluish-white specks in the centre. There is no cervical lymph node enlargement. On further examination of the body, there is a widespread maculopapular rash all over his body, causing discomfort and itchiness to the patient.**

**What is the SINGLE most likely treatment option for this patient?**

- **A. Topical antibiotics**
- **B. Topical steroids**
- **C. Reassurance**
- **D. Systemic antibiotics**
- **E. Oral steroids**

ANSWER:
Reassurance

EXPLANATION:
It is very important to remember a few critical points whenever there is a fever and a rash in a child to accurately reach a diagnosis.

First, determine what type of rash is present, i.e. macular, maculopapular, vesiculaer, purpuric etc.

Assess how severely ill the child is and if there are other systemic symptoms.

## Q-81

**A 4 year old boy is brought by his mother to the clinic as he has recently developed vesicles on his palms and soles of his feet. On examination, there are ulcers seen on the buccal mucosa. He has a temperature of 38.1 C. What is the SINGLE most likely organism causing this condition?**

- **A. Coxsackievirus**
- **B. Mumps virus**
- **C. Parvovirus**
- **D. Rubella virus**
- **E. Measles virus**

ANSWER:
Coxsackie virus

EXPLANATION:
Hand, foot and mouth disease is a viral illness which affects children. The lesions involve the hand, foot and mouth obviously. It is self limiting. It is commonly caused by Coxsackievirus A16 (CA16) and enterovirus 71 (EV71). It is very contagious among children.

**Clinical features**

- Low-grade fever
- Malaise and
- Loss of appetite
- Sore throat
- Oral ulcers – may be on buccal mucosa, tongue or hard palate
- Followed later by vesicles on the palms and soles of the feet
- Small erythematous macules on palms and soles of the feet which progress to grey vesicles and may last for up to 6 days

**Q-82**

**A 2 year old child is brought to the hospital by his mother with a barking cough. A few days ago he had a runny nose, cough and a sore throat. His chest sounds are normal and there are no signs of intercostal recession. He has a temperature of 38.7 C, respiratory rate of 34 breaths/minute, pulse rate of 150 beats/minute and his oxygen saturation on air is 98%. What is the SINGLE most appropriate management?**

**A. Oral dexamethasone**
**B. Oxygen**
**C. Nebulised salbutamol**
**D. Antibiotics**
**E. Nebulised adrenaline**

ANSWER:
Oral dexamethasone

EXPLANATION:
Barking cough is a clincher that tells you this is croup. Croup is a form of upper respiratory tract infection seen in infants and toddlers with peak incidence at 6 months to 3 years. Parainfluenza viruses account for the majority of cases (more than 80% of cases).

The illness usually last around 3 to 5 days involving features of stridor, barking cough, fever (mild temperature) and coryzal symptoms.

Giving a single dose of oral dexamethasone (0.15mg/kg) to all children regardless of severity is recommended. In this stem, it is clear that he has mild croup. Mild croup is largely self-limiting but treatment with a single dose of oral dexamethasone would be of benefit.

Emergency treatment of croup involves giving high-flow oxygen and nebulised adrenaline. In this stem, his oxygen saturation is not low and thus he will not benefit

from oxygen. Nebulised adrenaline (epinephrine) is usually reserved for patients in moderate-to-severe distress which in this stem the child is not.

## Q-83

**A 6 year old child is brought in by her mother with complaints of having a fever and a sore throat. She developed a rash which started on her torso and had spread to her extremities. Her tongue has an appearance of a strawberry. She has a temperature of 39 C. A diagnosis of scarlet fever is suspected. What is the SINGLE most likely organism causing her symptoms?**

- **A. Streptococcus aureus**
- **B. Streptococcus pyogenes**
- **C. Streptococcus pneumoniae**
- **D. Staphylococcus aureus**
- **E. Parvovirus**

ANSWER:
Streptococcus pyogenes

EXPLANATION:
Scarlet fever is caused by group A Streptococcus pyogenes

## Q-84

**A 2 yeare old boy was separated from his mother in a shopping mall. He got very upset and then fell down and became unconscious. He looked blue. He became conscious after 2 minutes and was back to his active self after an hour. His mother is extremely concerned. What is the SINGLE most appropriate next step?**

- **A. CT head**
- **B. Electroencephalogram (EEG)**
- **C. Full blood count**
- **D. Reassure**
- **E. Pulmonary function test**

ANSWER:
Reassure

EXPLANATION:
The diagnosis here is breath-holding spells

This usually occurs in young children when they are upset and can be precipitated by trauma or when separated from the parents.

Basically anything which may upset a child including injury from falling down

These children stop breathing for some time, they may turn blue or have little jerks of the limbs.
After a period of time they spontaneously start breathing. They become completely fine after an hour.

Treatment is not necessary. Usually just reassure parents

**Q-85**

**A 7 year old child presented with chronic cough and is also found to be jaundiced on examination. What is the SINGLE most likely diagnosis?**

A. **Congenital diaphragmatic hernia**
B. **Congenital cystic adenomatoid malformation**
C. **Bronchiolitis**
D. **Respiratory distress syndrome**
E. **Alpha 1 antitrypsin deficiency**

ANSWER:
Alpha 1 antitrypsin deficiency

EXPLANATION:
Jaundiced is a hint towards liver dysfunction. Together with respiratory symptoms are suggestive of alpha 1 antitrypsin deficiency

**Alpha-antitrypsin deficiency**
This is an inherited condition that is associated with the early development of emphysema

**Q-86**

**A 4 year old boy is brought to clinic by his worried mother complaining that he is still unable to keep dry at night. He wets his bed in the middle of the night and has daytime wetting as well. There was no period where he managed to stay dry during the night. The mother wants to know if anything can bedone to resolve this issue. What is the SINGLE most appropriate management?**

A. **Desmopressin**
B. **Reassurance**
C. **Behavioural therapy**
D. **Enuresis alarm**
E. **Referral to secondary care or enuresis clinic**

ANSWER:
Referral to secondary care or enuresis clinic

EXPLANATION:
Children older than 2 years of age with primary bedwetting and daytime symptoms should be managed in secondary care or enuresis clinic. Referral for further investigations and assessment is recommended because bedwetting with daytime symptoms is usually caused by disorders of the lower urinary tract.

**Q-87**

**A 7 year old girl is brought by her mother with bright red staining of her underpants. She gives a history that her daughter recently started taking horse riding lessons. What is the SINGLE next most appropriate action?**

A. **Examination of genitalia in clinic**
B. **Examination of genitalia under general anaesthesia**
C. **Reassure and discharge**
D. **Inform child protection services**
E. **Colposcopy**

ANSWER:
Examination of genitalia in clinic

EXPLANATION:
The likely diagnosis here is a perforated hymen given the history of horse riding. There is no need for a general anaesthesia at this point as she is only having red staining. One must remember that general anaesthesia has its own complications and should not be used without reason.

An attempt to examine in clinic without anaesthesia would be the prefered method. It is extremely important to reassure, explain the examination and show equipment as this will help diminish fears and anxiety of the child. Ensure the child's privacy and stop the examination at any time provided the child indicates discomfort or withdraws permission to continue. It is a good idea to examine small children while on their mother's lap or lying with her on a couch as to provide extra comfort.

**When should we consider general anaesthesia?**
If the child refuses the examination and conditions requiring medical attention, such as bleeding or a foreign body, are suspected.

**Q-88**

**A 4 week old male infant presents to the Accident & Emergency Department with vomiting after every feed. The mother describes the vomiting as projectile and non-bilious in nature. The child is also constipated and has not passed stool or flatus for 3 days. On examination, there is a right sided olive-sized abdominal mass on palpation. What is the SINGLE most appropriate next step of action to diagnose the condition?**

A. **Abdominal ultrasound**
B. **Abdominal X-ray**
C. **Intravenous fluids**
D. **Serum potassium level**
E. **Nasogastric tube insertion**

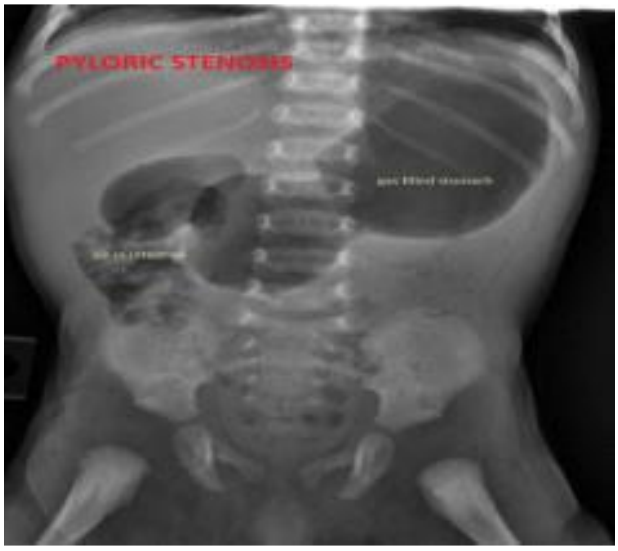
ANSWER:
Abdominal ultrasound

EXPLANATION:
**Pyloric Stenosis:**
Presentation:
Projectile non-bilious vomiting
Age group: 3-8 weeks
Olive sized abdominal mass
The child will feel hungry and want to feed despite constant vomiting

Diagnosis:
Abdominal ultrasound

Treatment:
Metabolic alkalosis – correct electrolyte imbalance + dehydration
Then referral to paediatric surgery (pyloromyotomy) + nasogastric tube

Occasionally, the exam may show an abdominal X-ray and ask you for the diagnosis. This is typically what an abdominal X-ray of an infant with pyloric stenosis will look like:




**Q-89**

**A 2 year old girl previously well is brought to A&E by her mother with a history of vomiting and diarrhoea for the last 2 days. She is unable to keep any food or liquid down in the past day. Her heart rate is 160 beats/minute and her respiratory rate is 30 breaths/minute. She weighs 9 kg. What is the SINGLE most suitable indication for intravenous fluids administration?**

A. **Capillary refill time > 4 seconds**
B. **Heart rate > 90 beats/minute**
C. **Respiratory rate > 25 breaths/minute**
D. **Passing of watery stools more than eight times a dy**
E. **Current weight < 10 kg**

ANSWER:
Capillary refill time > 4 seconds

EXPLANATION:
Normal capillary refill time is usually less than 2 seconds. Prolonged capillary refill time is a sign of clinical shock. Intravenous fluid should be started immediately.

A 2 year old child can have a heart rate anywhere between 80 to 120 beats per minute and so option B is wrong.

It is also normal to have a respiratory rate between 20 to 30 breaths per minute in a 2 year old child thus option C is wrong.

Passing large amount or increased frequency of watery stool is not a clinical sign of dehydration.

Weight has no role as an indication for IV fluids and has no relation as a clinical sign of dehydration.

| | No clinically detectable dehydration | Clinical dehydration | Clinical shock |
|---|---|---|---|
| **Symptoms (remote and face-to-face assessments)** | Appears well | Red flag Appears to be unwell or deteriorating | |
| | Alert and responsive | Red flag Altered responsiveness (for example irritable, lethargic) | Decreased level of consciousness |
| | Normal urine output | Decreased urine output | |
| | Skin colour unchanged | Skin colour unchanged | Pale or mottled skin |
| | Warm extremities | Warm extremities | Cold extremities |
| **Signs (face-to-face assessments)** | Alert and responsive | Red flag Altered responsiveness (for example, irritable, lethargic) | Decreased level of consciousness |
| | Skin colour unchanged | Skin colour unchanged | Pale or mottled skin |
| | Warm extremities | Warm extremities | Cold extremities |
| | Eyes not sunken | Red flag Sunken eyes | - |
| | Moist mucous membranes (except after a drink) | Dry mucous membranes (except for 'mouth breather') | - |
| | Normal heart rate | Red flat Tachycardia | Tachycardia |
| | Normal breathing pattern | Red flag Tachypnoea | Tachypnoea |
| | Normal peripheral pulses | Normal peripheral pulses | Weak peripheral pulses |
| | Normal capillary refill time | Normal capillary refill time | Prolonged capillary refill time |
| | Normal skin turgor | Red flag Reduced skin turgor | - |
| | Normal blood pressure | Normal blood pressure | Hypotension (decompensated shock) |

**Q-90**

**A 28 year old woman has a delivery of a term baby girl 8 hours ago. She was admitted initially for prolonged rupture of the membranes. The neonate develops a temperature of 38.5 C and has probems breathing. What is the SINGLE most likely causative organism?**

**A. Streptococcus agalactiae**
**B. Streptococcus pyogenes**
**C. Streptococcus pneumoniae**
**D. Staphylococcus aureus**
**E. Neisseria meningitides**

ANSWER:
Streptococcus agalactiae

EXPLANATION:
Group B streptococcus (GBS) infections are the commonest cause of early-onset neonatal infection. This is supported by the given risk factor of the prolonged rupture of membranes. Group B streptococcus is the infection caused by the bacterium Streptococcus agalactiae.

**Q-91**

**A 4 year old boy is brought to clinic by his worried mother complaining that he is still unable to keep dry at night. There was no period where he managed to stay dry during the night. The mother wants to know if anything can be done to resolve this issue. He is dry during the day. His medical history is insignificant and there is no history of recurrent urinary tract infections. What is the SINGLE most appropriate management?**

A. **Desmopressin**
B. **Reassurance**
C. **Behavioural therapy**
D. **Enuresis alarm**
E. **Referral to surgery**

ANSWER:
Reassurance

EXPLANATION:
Reassure the parents that many children younger than 5 years of age wet the bed, and this usually resolves without treatment. This is defined as primary noctural enuresis. Reassurance may be all that is required.

**Remember the definitions**

- Primary nocturnal enuresis refers to children that have never been dry for more than a 6-month period
- Secondary nocturnal enuresis refers to the re-emergence of bedwetting after a period of being dry for at least 6 months

**Q-92**

**A 5 year old girl is being investigated for renal failure. She has a history of urinary tract infections in the past. A congenital abnormalty of the insertion of ureters into the urinary bladder was seen on scan. What is the single most likely cause for renal failure in this patient?**

A. **Systemic Lupus Erythematosus**
B. **Polycystic kidney disease**
C. **Wilms' tumour**
D. **Acute tubular necrosis**
E. **Reflux nephropathy**

ANSWER:
Reflux nephropathy

EXPLANATION:
Reflux nephropathy is a progressive lesion caused by repeated kidney infections. It is due to urine flowing backwards from the bladder to kidneys (vesicoureteral reflux). It is almost always found in childhood in the context of an abnormal urinary tract like in this stem.

## Q-93

**A 2 week old female infant born at term has gradually become jaundiced over the past few days. Both mother and newborn were visited at home by her midwife who decided to refer the newborn back to the paediatric team in the hospital due to prolonged jaundice. Her mother has breastfed her exclusively since she was born. Besides the symptoms of jaundice, the newborn has been growing well and has normal yellow coloured stool. A split bilirubin test was performed which shows elevated levels of unconjugated bilirubin. What is the SINGLE most appropriate management?**

A. **Phototherapy**
B. **Exchange transfusion**
C. **Increased fluid intake**
D. **Continue breastfeeding**
E. **Stop breastfeeding completely**

ANSWER:
Continue breastfeeding

EXPLANATION:
Breast milk jaundice infants usually become jaundiced in the second week of life. They are usually well and the jaundice resolves within 6 weeks but may also continue up to 4 months. Breast milk jaundice is the most common cause of prolonged unconjugated hyperbilirubinaemia. It affects 15% of healthy breastfed infants.

The diagnosis and occasional treatment is to stop the breastfeeding (and give formula) for 24 hours. When bilirubin is checked again, a significant fall would help diagnose this condition, after which the infant may then be safely breastfed. Although interrupting breastfeeding for 24 hours (and given formula instead) is the most rapid way to reduce bilirubin levels, in majority of infants, interrupting breastfeeding is not necessary or advisable.

The best option in this scenario would be to continue breastfeeding.

## Q-94

**A 6 week old male baby attends the emergency department appearing extremely unwell. Mucous membranes are dry on examination with sunken eyes and sunken fontanelles. Skin turgor was reduced. His blood tests show:**

**Sodium 124 mmol/L**
**Potassium 2.8 mmol/L**

**What is the SINGLE most appropriate initial management?**

**A. 5% dextrose**
**B. 0.45% sodium chloride**
**C. 10% dextrose**
**D. 0.9% sodium chloride with potassium chloride**
**E. 7.5% sodium chloride**

ANSWER:
0.9% sodium chloride with potassium chloride

EXPLANATION:
In this case the main clinical concern is the profound dehydration of the poor baby. In fact there are multiple possible causes. The emphasis here is to ensure a safe INITIAL option as these cases will likely be cared for in neonatal intensive care unit. The possible causes include, sepsis and diabetic ketoacidosis.

Option D 0.9% sodium chloride with potassium chloride is the correct answer here as it is the safest option and addresses the potassium disturbance. At a foundation year 2 doctor level this would be a safe option provided the correct protocols are followed for prescribing fluids in neonates.

Opation A. 5% dextrose is incorrect as this would likely worsen the electrolyte disturbance by diluting the intravascular space from further electrolytes. Furthermore, if there is diabetic ketoacidosis going on then extra glucose will make this much worse.

Option B. 0.45% sodium chloride is incorrect as at the level you are expected to be working, you would never be in a position to start this. Only a senior colleague would be able to prescribe this. It may be helpful to know in principle/theory the reasons for giving this fluid in special cases, but at the level you are expected to work upto (Foundation Year 2), you would never do this.

Option C. 10% dextrose is incorrect for the same reason as option A.

Option E. 7.5% sodium chloride is incorrect for the same reason as option B.

**Q-95**

**A 9 year old boy has long arms, legs, fingers and toes. He is tall for his age and is noted to have scoliosis when examining his back. He started wearing glasses at a young age as he was not able to see distance. What is the SINGLE most likely syndrome?**

**A. Osteogenesis imperfecta**
**B. Prader-Willi syndrome**
**C. DiGeorge syndrome**
**D. Marfan's syndrome**
**E. Ehlers-Danlos syndrome**

ANSWER:
Marfan's syndrome

EXPLANATION:
***Please see Q-34***

## Q-96

**A 2 month old girl presents with jaundice and failure to thrive. She was delivered at term with a birth weight of 3 kg. The jaundice was first noticed in the first few weeks of life but her parents were not able to seek medical care. She has pale stools and dark urine. Her spleen is palable and her liver is enlarged and hard. What is the SINGLE most likely diagnosis?**

**A. Biliary atresia**
**B. Glucose-6-phosphate dehydrogenase (G6PD) deficiency**
**C. Hepatitis B**
**D. Spherocytosis**
**E. Rh incompatibility**

ANSWER:
Biliary atresia

EXPLANATION:
Jaundice in newborns is an important topic within the paediatric section for PLAB 1.

The signs and symptoms here along with prolonged jaundice is suggestive of biliary atresia. Biliary atresia causes obstructive picture where stools are pale and urine becomes dark which is exactly what is seen here.

Failure to thrive is a result of poor absorption of long-chain fats.

The spleen becomes palpable after the 3rd or 4th week in biliary atresia. The liver may become hard and enlarged as well.

Kasai procedure (hepatoportoenterostomy) has a good chance of restoring flow of bile to bowel but that is only if the procedure is done early. Late presentations like this one (e.g. more than 100 days), are unlikely to have a successful Kasai procedure due to advanced liver damage and cirrhosis. This baby would likely need a liver transplant in the first year of life.

## Q-97

**A week old infant presents with a 10 day history of non-bilious vomiting that has increased in frequency and forefulness. Despite feeding and looking well, the infant has lost weight. Abdominal ultrasound reveals a thickened pylorus. Which of the following is the SINGLE most appropriate definitive management?**

**A. Normal saline and 5% dextrose**
**B. Potassium chloride**
**C. Pyloromyotomy**
**D. Nasogastric tube insertion**
**E. Barium enema**

ANSWER:
Pyloromyotomy

EXPLANATION:
This is a diagnosis of pyloric stenosis. Note that the PLAB 1 clue does not always have to be “projectile vomiting”. It can also be described as “forceful” and is non-bilious. The abdominal ultrasound with a thickened pylorus or “an olive shaped mass” on palpation are other PLAB 1 clues. Note also the age range: the child usually would be older than 3 weeks. Pay attention to what the question is asking in PLAB 1. Here they would like to know the definitive (gold standard) for management. If they had asked what is the most appropriate “next step” then the answer would be options A and B (usually appear one or the other in answers, or combined).

**Pyloric stenosis**
**Presentation:**
- Projectile non-bilious vomiting
- Age group: 3-8 weeks
- Olive sized abdominal mass
- The child will feel hungry and want to feed despite constant vomiting

**Diagnosis:**
- Abdominal ultrasound

**Treatment:**
- Metabolic alkalosis – correct electrolyte imbalance + hydration
- Then referral to paediatric surgery (pyloromyotomy) - first line + nasogastric tube

**Q-98**

**A 6 year old boy is brought into the Emergency Department by his mother’s boyfriend with a fever of 37.8 C of 3 days duration. On examination, there are purple spots on his lower back and brownish discoloration on his left forearm with left shoulder dislocation. The child is quiet and makes no eye contact while in conversation. What is the SINGLE most appropriate action to be taken after attending his fever?**

**A. Discharge home with appropriate medications**
**B. Admit patient into general paediatrics ward**
**C. Refer to social services**
**D. Option B and C**
**E. None of the above**

ANSWER:
Option B and C

EXPLANATION:
This is a frequent paediatric topic on PLAB 1. This is a case of non-accidental injury. Since child abuse is suspected from the mother’s boyfriend, it is unsafe to let the boy remain in his care. Therefore, admit the child to ensure his safety and then refer to social services.

**Q-99**

**A 2 year old girl has had a temperature of 39 C, poor appetite, abdominal pain and urinary frequency for the last 3 days. What is the SINGLe most appropriate action?**

**A. Catheter specimen of urine for culture**
**B. Clean catch urine specimen for culture**
**C. Full blood count**
**D. KUB Ultrasound**
**E. Supra-pubic aspirate of urine for culture**

ANSWER:
Clean catch urine specimen for culture

EXPLANATION:
The clinical features described are consistent with urinary tract infection for which a clean catch of urine is the next best action.

Special arrangements may be needed for collecting a sample from a child. (Clean catch, catheter or suprapubic aspiration are methods used which reduce the risk of contamination)

Routine investigations that are done in urinary tract infection are:
- Dipstick analysis of urine - may treat as bacterial if there are positive results for nitrite and/or leukocytes
- Urine microscopy - leukocytes indicate presence of infection
- Urine culture

**Q-100**

**A 15 month old male infant arrives to clinic for his measles, mumps, rubella (MMR) vaccine. On examination, he has a temperature of 38.1 C and has acute otitis media. Therer is also a family history of egg allergy. What is the SINGLE most appropriate action?**

**A. Do not give the vaccine**
**B. Give half the vaccine dose**
**C. Give paracetamol followed by vaccine**
**D. Give paracetamol with future doses of vaccine**
**E. Defer vaccine until the child is well**

ANSWER:
Defer the vaccine until the child is well

EXPLANATION:
Paediatric immunization case stems would be similare to the one above. The history of a fever is the reason we should postpone the child's MMR vaccine. If the child had a minor illness without the fever, they could still go ahead with the vaccine.

**Q-101**

**A 10 year old boy presents to the Emergency Department having fallen from a height of 150 cm and hit his head while playing in the playground. There was no loss of consciousness and he is currently haemodynamically stable. GCS 15/15. On examination, he is oriented with a swelling and tenderness on his left cheek. You are the foundation year two doctor who first sees him. Which of the following is the most SINGLE most appropriate initial investigation?**

**A. Computed tomography of head**
**B. Magnetic resonance imaging of head**
**C. Electroencephalogram (EEG)**
**D. Facial x-ray**
**E. Fundoscopy**

ANSWER:
Facial x-ray

EXPLANATION:
In this case stem, the patient is showing no indication of neurological deficit and is asymptomatic. According to the revised NICE guidelines in 2014, CT nor MRI are necessary. By protocol, the child having fallen from such a height should be admitted and observed at least for 4 hours (NICE guidelines) in addition to the facial x-ray to rule out any zygoma fractures (due to swelling and tenderness in the cheek). For PLAB 1, if the child is doing well, asymptomatic, with GCS 15/15 and no changes in neurological functions within 1 hour of admission, go for the investigation with the least harm first.

**Head injuries in Paediatrics**
**Presentation:**
- Child playing or in an athletic match
- Head / facial trauma
- Swelling, bruising on the face only

**Diagnosis:**
- For this case stem: Facial x-ray (initial) – if fractures are detected then do CT
- CT head (definitive) - if on arrival scan within 1 hour if the child has GCS <14, neurological deficits according to NICE guidelines

**Treatment (for this case stem):**
- Observation
- Analgesia for pain

## Q-102

**A 6 year old boy is brought to clinic by his worried mother complaining that he is still unable to keep dry at night. He wets his bed in the middle of the night at least three times a week but he is without daytime symptoms. There was no period in the past where he managed to stay dry during the night. The mother has tried a star chart and awarded the child a star when the child gets up to change the sheets. She has previously visited another GP who has discussed that adequate fluid intake is important and not to restrict fluids for the child. She would like to know if there is any other method that can be done to resolve this issue. His medical history is insignificant and there is no history of recurrent urinary tract infections. What is the SINGLE most appropriate management?**

**A. Desmopressin**
**B. Reassurance**
**C. Behavioural therapy**
**D. Enuresis alarm**
**E. Referral to surgery**

ANSWER:
Enuresis alarm

EXPLANATION:
This child is 6 years old with primary bedwetting (without daytime symptoms). Treatment with an enuresis alarm (first-line treatment) in combination with positive reward systems (for example star charts) would be the most appropriate.

*Remember, rewards should be given for agreed behaviours such as helping change the sheets or urinating in the toilet before bed rather than having a dry night. What the mom is doing in this stem is absolutely correct.*

**Q-103**

**A mother who delivered a term infant 8 days ago is now diagnosed with varicella zoster. Her infant is currently afebrile, feeding well, passing stool and urinating without difficulty. Which of the following is the SINGLE most appropriate step in management?**

**A. Isolate the infant from the mother**
**B. Hospitalize the infant in the isolatiion ward**
**C. Administer aciclovir to the infant**
**D. Administer varicella-zoster immunoglobulin to the infant**
**E. Advise the mother to continue regular well-baby care for the infant.**

ANSWER:
Advise the mother to continue regular well-baby care for the infant

EXPLANATION:
According to Public Health England guidelines, if the mother's onset of rash is > 7 days before delivery or > 7 days post delivery, varicella zoster immunoglobulin (VZIG) and isolation is not necessary for the neonate; just observation

**Q-104**

**A 9 year old girl presents with arthralgia and purpura over her buttocks and extensor surfaces of the legs bilaterally. Laboratory results showed elevated IgA levels and creatinine. What is the SINGLE most likely diagnosis?**

**A. Non-accidental injury**
**B. Henoch-Schonlein purpura**
**C Bacterial meningitis**
**D. Haemolytic uraemic syndrome**
**E. Idiopathic thrombotic thrombocytopenic purpura**

ANSWER:
Henoch-Schonlein purpura

EXPLANATION:
This is a diagnosis of Henoch-Schonlein Purpura (HSP). Take note of the child's age: PLAB 1 will usually have their case stems present with less than 10 years of age (peak of 4-6 years). In haemolytic uraemic syndrome, the age group would be much younger 3 months to 3 years. Also be sure to be able to differentiate rashes for PLAB 1. In HSP,

the clue is purpura over extensor surfaces. For it to be idiopathic thrombocytopenic purpura, the case stem will provide clues to previous upper respiratory tract infection and/or low platelet count.

**Henoch-Schönlein purpura (HSP)**
**Presentation:**
- Purpura (non-blanching) over buttocks and extensor surfaces
- Arthralgia (especially in the knees and ankles)
- Abdominal pain

**Diagnosis:**
- Mainly a clinical diagnosis
- Look for elevated ESR, IgA
- Raised creatinine ; labs consistent with nephropathy

**Treatment:**
- Self-limiting; conservative management
- NSAIDs for arthralgic pain → beware of choosing this option if case stem has impaired renal involvement!
- Corticosteroids can improve associated arthralgia and the symptoms associated with gastrointestinal dysfunction

## Q-105

**A 9 month old infant is brought in by his mother to the paediatric clinic for a review as he is having worsening abdominal distention and a cough. His cough has been present for the past 3 weeks and it is associated with mild shortness of breath. On examination, there is an expiratory wheeze and inspiratory crackles. It is noted that he has a faltering growth and he now sits on below the 5$^{th}$ centile for weight his age. His oxygen saturation is 97%. His childhood immunisations are up to date. What is the SINGLE most likely diagnosis?**

**A. Heart failure**
**B. Pneumonia**
**C. Cystic fibrosis**
**D. Bronchiolitis**
**E. Primary ciliary dyskinesia**

ANSWER:
Cystic fibrosis

EXPLANATION:
Most of cystic fibroses are picked up on heel prick test. However, there is a minority like in this case where they present with clinical features later in infancy or even later in childhood. They would subsequently undergo a sweat test to confirm the diagnosis.

The symptoms vary from child to child, but as the condition gets worse over time, the lungs and digestive system becoming increasingly damanged. The abdominal distention occurs from the malabsorption. Faltering growth is seen with untreated cystic fibrosis. Once diagnosis is made and effective nutritional intake is given including enteric-coated pancreatic replacement therapy, their growth starts to pick up again.

Pneumonia is not entirely wrong as he is probably suffering from pneumonia as well. However, since cystic fibrosis often presents with recurrent and persistent bacterial chest infections and the stem clearly gives a history of abdominal distention and suboptimal growth, cystic fibrosis would be a better pick.

## Q-106

**An infant born at term, started to have jaundice when he was 2 days old. He is now 9 days old and the symptoms of jaundice have improved for the past 7 days. He is breastfed and is gaining weight within normal limits. What is the SINGLE most likely diagnosis?**

**A. Galactosaemia**
**B. Breast milk jaundice**
**C. Prolonged jaundice**
**D. Hypothyroidism**
**E. Physiological jaundice**

ANSWER:
Physiological jaundice

EXPLANATION:
This is typical of physiological jaundice. It begins at 2 to 3 days old and disappears towards the end of the first week (in this case day 9)

Breast milk jaundice usually presents in the first or second week of life, and can persist for as long as 12 weeks (usually up to 6 weeks) before spontaneous resolution. It is considered to be a form of physiological jaundice.

Galactosaemia and hypothyroidism usually has jaundice that lasts longer than 14 days.

Prolonged jaundice is a term used for jaundice lasting longer than 14 days.

## Q-107

**A 2 year old child presents to A&E department with drooling, sore throat and loss of voice. He has fever with a temp of 38.9 C. His parents tell you that he has not been immunised because they are afraid of the side effects of the vaccination. What is the SINGLE most appropriate immediate management?**

**A. Direct pharyngoscopy**
**B. Summon anaesthetist**
**C. IM epinephrine**
**D. IV fluids**
**E. Start antibiotics**

ANSWER:
Summon anaesthetist

EXPLANATION:
The clincher here is drooling of saliva. If you find any questions with a child with drooling of saliva, it is liekly that this is acute epiglottitis. Summon the most experienced anaesthetist to intubate before obstruction occurs.

## Q-108

**A 9 year old patient attends the outpatient department with complaints of fever, malaise, weight loss, anorexia and productive cough. Examination reveals a temperature of 39.1 C, and a pulse of 120 beats/minute. His mother says that he has a history of recurrent chest infections since young. What is the SINGLE most likely causative organism?**

**A. Pneumococcal pneumonia**
**B. Staphylococcal aureus**
**C. Mycobacterium tuberculosis**
**D. Pseudomonas aeruginosa**
**E. Pneumocystis pneumonia**

ANSWER:
Staphylococcus aureus

EXPLANATION:
This is a very vague question. The stem does give some hint of a diagnosis of cystic fibrosis given the history of the recurrent chest infections. It is important to note that the diagnosis of cystic fibrosis is usually made within the first 6 months of life, however over the past decade the diagnosis of cystic fibrosis later in life has been reported with increasing frequency.

Organisms which frequently colonise CF patients:
- Staphylococcus aureus
- Pseudomonas aeruginosa

While it is a known fact that Pseudomonas infections are known as opportunistic meaning the bacteria only cause infections when a person has CF or another condition that weakens the body's immune system, it is not actually the most frequent chest infection in cystic fibrosis patients. Pseudomonas is one of the most common bacteria found in people with CF but Staphylococcus aureus (SA) is the most prevalent organism infecting the respiratory tract of CF children, and remains the second most prevalent organism in CF adults.

***Cystic fibrosis in childhood and early teenage years***
- *Staphylococcus aureus most common*
- *Haemophilus influenza second most common*

***Cystic fibrosis in teenage years and adult life***
*Pseudomonas aeurginosa most common*

## Q-109

**A previously health 2 year old girl is brought to the Emergency Deparment by her mother after having witnessed the child's body suddenly going stiff followed by uncontrolled twitching of the arms and legs for about 5 minutes. There was frothing at the mouth and on examination now the child is drowsy. Temperature on admission was 38 C. This was a first time event. What is the SINGLE next appropriate management?**

**A. Paracetamol and observation**
**B. Diazepam per rectal**
**C. Lumbar puncture**
**D. CT brain**
**E. EEG**

ANSWER:
Paracetamol and observation

EXPLANATION:
This is a diagnosis of simple febrile seizure. Under current guidelines, this is a first occurrence and therefore only option A is needed. There are no indications that there is meningitis in the stem and also the patient is currently in a postictal state ("drowsy); therefore, lumbar puncture is not appropriate at this time. If this is only a first time event, both option D and E is not necessary unless there are indications pointing to a more serious pathology (haemorrhage, status epilepticus). Diazepam under current guidelines is useful as a preventative measure if febrile seizures were occurring frequently or if the seizure has not stopped while in Emergency.

Febrile seizures is a clinical diagnosis but other pathology needs to be ruled out. Other investigative steps include:
• Blood and urine test to rule out infection
• Consider lumbar puncture for meningitis if it is highly suspicious only

**Q-110**

**A 9 year old has just been diagnosed with insulin dependent diabetes mellitus. He refuses to take his insulin or to stick to the dietitician's advice. He is often sullen and withdrawn at home and his teacher complains that he has stopped associating with his friends at school. What is the SINGLE most appropriate referral for this patient?**

**A. Dietician**
**B. Social worker**
**C. Physician**
**D. Psychologist**
**E. Psychiatrist**

ANSWER:
Psychologist

EXPLANATION:
The main debatable point in this question is if we need to send this child to a child psychologist or a psychiatrist.

A psychiatrist is a person that has a medical degree and who can prescribe psychotropic medication. A psychiatrist would be involved in complicated care involing prescriptions and medication management.

Since this child is clearly in need of talk therapy to help him come to terms with his newly diagnosed and chronic disease, referring him to a psychologist is the correct choice.

## Q-111

**A 6 week old formula fed baby is found under the healthy child programme to be deeply jaundiced. He was born at term with a birthweight of 3.2 kg. The infant and mother were unfortunately lost to follow up by their midwife. His weight gain is poor. His stools are pale and urine colour is dark. A split bilirubin reveals increased levels of serum bilirubin of 170 micromol/L, with 150 micromol/L conjugated. What is the SINGLE most likely diagnosis?**

**A. Galactosaemia**
**B. Biliary atresia**
**C. Glucose-6-phosphate dehydrogenase (G6PD) deficiency**
**D. Rhesus incompatibility**
**E. Congenital viral infection**

ANSWER:
Biliary atresia

EXPLANATION:
The signs and symptoms here along with prolonged jaundice is suggestive of biliary atresia. Biliary atresia causes obstructive picture where stools are pale and urine becomes dark which is exactly what is seen here.

Galactosaemia may cause prolonged jaundice too but does not present as an obstructive picture with stools being pale and dark urine.

Glucose-6-phosphate dehydrogenase (G6PD) deficiency like the other haemolytic diseases has an onset of jaundice usually less than 24 hours

Haemolytic disease of the newborn (rhesus) and congenital viral infection usually has an early onset of jaundice and is not prolonged.

## Q-112

**An 18 month old female child is able to walk up steps, plays well with others in daycare, build blocks, and is able to hold crayons scribbling on paper. Her mother is concerned because despite her daughter having a vocabulary of more than 10 words, she is not able to speak in sentences nor is she able to run. What is the SINGLE best management strategy?**

**A. Arrange hearing test**
**B. Assess developmental milestones**
**C. Reassurance**
**D. Refer to speech therapist**
**E. Magnetic resonance imaging (MRI) of the brain**

ANSWER:
Reassurance

EXPLANATION:
For the exam, it is important to memorize the important developmental milestones. The questions that come up for development are similar to the one above. A scenario is presented where the mom is concerned and you would be told to give the best

advice/management. You must anwer accordingly depending on the scenario. This child is on par with her developmental milestones. While running and speaking in sentences start at 18 months, the child has up till at 2 years old to progress to that stage. If she still cannot perform these two tasks at 3-4 years old, then we would need to re-assess.

**Q-113**

**A 4 week old female infant presents to the Emergency Department with vomiting after every feed. The child is also constipated. On examination, there is a right sided olive-sized abdominal mass on palpation. What is the SINGLE most likely diagnosis?**

**A. Pyloric stenosis**
**B. Duodenal atresia**
**C. Malrotation**
**D. Coeliac disease**
**E. Gastro-oesophageal reflux disease**

ANSWER:
Pyloric stenosis

EXPLANATION:
This is a classic presentation of pyloric stenosis on PLAB1. “Olive-sized abdominal mass” is a classic phrase used in describing pyloric stenosis.

**Q-114**

**A 5 year old boy is brought by his mother to the GP surgery with a 3 day history of cough and fever. He has no medical history of relevance and his birth was uncomplicated. During the examination, a soft cardiac murmur is heard upon auscultation of his chest. The murmur can only be heard during systole and is 2/6 in intensity. It can be heard clearly when the patient is supine but disappears completely when he stands upright. What is the SINGLE most likely type of murmur in this patient?**

**A. Systolic ejection murmur**
**B. Late diastolic mumur**
**C. Innocent murmur**
**D. Machinery murmur**
**E. Pansystolic murmur**

ANSWER:
Innocent murmur

EXPLANATION:
This patient has an innocent murmur. Synonyms for an innocent murmur include functional murmur and physiologic murmur. It is a benign murmur that is inconsequential. It usually disappears as the child grows. Innocent heart murmurs are picked up between infancy and early childhood, most commonly between the ages 3 and 8 years. The chest wall of children is thinner and their great vesels are more angulated which results in murmurs becoming more audible. It is heard during routine check-ups or incidentally when the child presents for other issues. Acute illness, such

as fever, can increase the intensity of the innocent murmur since there is an increase in blood flow. This may well disappear when the child ahs recovered.

They are usually 1/6 or 2/6 in intensity, rarely they are 3/6 but never louder.

*There is a good mnemonic to remember for the hallmark of an innocent murmur. It can be represented by the letter **"S"** – Inno**S**ent murmur*

- *A**S**ymptomatic*
- ***S**oft blowing murmur*
- ***S**ystolic murmur*
- ***S**hort*
- *Left **S**ternal edge*

**Q-115**

**You are called by the neonatal ward nurse to assess a 5-day old infant with respiratory distress. He was born at 30 weeks gestation weighing 1050 g. His antenatal ultrasound scans were unremarkable. He was intubated immediately after delivery due to poor respiratory efforts. His condition improved over the past 4 days but had suddenly worsened today. Auscultation of his chest reveals a systolic murmur best audible at the left infraclavicular area. What is the SINGLE best description of the murmur?**

**A. Diastolic decrescendo**
**B. Machinery murmur**
**C. Musical murmur**
**D. Systolic rumble**
**E. Pansystolic murmur**

ANSWER:
Machinery murmur

EXPLANATION:
This infant has a ductus arteriosus that has not closed yet. The ductus arteriosus is a normal vascular connection during intrauterine life that connects the pulmonary artery to the descending aorta. It normally closes within 48 hours after birth in term babies. In preterm infants, such as in the above stem, the ductus arteriosus may remain open which is termed patent or persistent ductus arteriosus (PDA).

The type of murmur that is heard in a PDA is known as a machinery murmur. It is the hallmark physical finding of a PDA. A machinery murmur is a continuous murmur and is best heard in systole beneath the left clavicle. The murmur continues into diastole.

**Q-116**

**An 8 month old boy presents to the Paediatric Emergency Department with a high temperature, cough and shortness of breath. His mother is concerned as he has not been eating or drinking well for the past 24 hours. Over the past few hours, he ahs been responding less to social cues. On examination, his mucous membranes are dry and he is noted to have nasal flaring. He is seen grunting with a respiratory rate of 70 breaths/minute. His temperature is 38.9 C. Which is the SINGLE most worrying clinical feature?**

**A. Dry mucous membranes**
**B. Respiratory rate more than 60 breaths/minute**
**C. Responding less to social cues**
**D. Nasal flaring**
**E. Temperature more than 38 C**

ANSWER:
Respiratory rate more than 60 breaths/minute

EXPLANATION:
Knoweldge of the NICE traffic-light system is important. Any child with fever and any of the symptoms or signs in the red column should be recognised as being at high risk. In this stem, a respiratory rate of more than 60 breaths/minute is very concerning.

**Q-117**

**A 5 month old girl was admitted with fever and lethargy. Her mother reports poor feeding and offensive-smelling urine. A urine analysis at the time of admission showed leukocyte esterase negative and nitrites positive. The urine sample was sent for microscopy and culture and she was started on antibiotics. 2 days later, she is still febrile at 38.9 C and her symptoms have not improved. What is the SINGLE most appropriate investigation?**

**A. Ultrasound at 6 weeks**
**B. Micturating cystourethrogram (MCUG)**
**C. Urgent dimercaptosuccinic acid (DMSA) scan**
**D. Repeat mid-stream urine for culture and sensitivity**
**E. Intravenous urogram**

ANSWER:
Micturating cystourethrogram (MCUG)

EXPLANATION:
Micturating cystourethrogram (MCUG) should be organised as she has not responded to antibiotics within 48 hours. If MCUG is indicated, it is usually performed on the second day after prophylactic antibiotics have been given. Contrast dyes are introduced into the bladder through the urethral catheter to visualize the bladder, urethral anatomy and detect vesicoureteral reflux.

Ultrasound needs to be performed but this should be done as an urgent test rather than at 6 weeks.

Dimercaptosuccinic acid (DMSA) scan should also be requested. However, this is not done urgently and would be booked for 4 to 6 months after the acute infection.

There is no value of repeating a mid-stream urine for culture and sensitivity at this stage.