Foundation of Practice specimen paper – answers and reasoning

Question 1.1/ EMQ 6000a

Subject: Musculoskeletal

Answer D - Osgood-Schlatter disease

Reasoning:

Answer A - Discitis

Discitis is an infection in the intervertebral disc space. It can affect different age groups but does not present with swelling over tibial tuberosity.

Answer B – Enthesitis related arthritis

Enthesitis is inflammation of the entheses, the sites where tendons or ligaments insert into the bone. This is more common at the heel, particularly the Achilles tendon but can also occur at other sites, such as tibial tuberosity or iliac crest.

Answer C - Juvenile dermatomyositis

Juvenile dermatomyositis typically presents with a distinctive heliotrope rash involving the face, eyelids, hands and sometimes the skin above joints, including knees, knuckles and elbows. There is accompanying muscle inflammation and weakness.

Answer D - Osgood-Schlatter disease is the best answer

The clinical presentation is most consistent with Osgood–Schlatter disease. This common apophysitis is caused by traction forces at the insertion of the patellar tendon on the tibial tubercle. It typically presents with the complaint of pain and swelling over the tibial tubercle, which is tender to palpation. The examination of the knee joint itself is normal without any focal findings.

Answer E - Oligoarticular Juvenile idiopathic arthritis

Oligoarticular JIA presents with painful joint swelling and inflammation. This does not present with swelling over tibial tuberosity well outside the knee joint. Oligoarticular JIA is the most common of the JIA subtypes (70% of all cases) and carries the best prognosis. It most often presents between 4-10 years.

Answer F - Perthes disease

Perthes disease involves the hip due to avascular necrosis of the head of femur.

Answer G - Reactive arthritis

Typically, reactive arthritis occurs around 7–10 days after the acute illness and spontaneously remits within 2–3 weeks of onset; gastrointestinal infections may cause a reactive arthritis.

Answer H - Spondylolisthesis

Spondylolisthesis -symptoms are usually localized to the lower back but can also involve the buttocks and posterior thighs.

Answer I - Subluxed upper femoral epiphysis

Subluxed upper femoral epiphysis presents with painful limitation of hip motion and not a lump over the tibia.

Answer J - Transient synovitis of the hip

Transient synovitis of the hip (irritable hip) is unlikely to present with swelling over tibial tuberosity.

Further reading:

- Diagnosing arthritis in children Graeme Denman, Sharmila Jandial, Helen Foster Paediatrics and Child Health, Vol. 25, Issue 12, p541–548 Published online: November 13, 2015 Joint pain in children Asif Naveed, Peter Heinz Paediatrics and Child Health, Vol. 24, Issue 2, p45–50 Published in issue: February 2014

Question 1.2/ EMQ 6000b

Subject: Musculoskeletal

Answer I - Subluxed upper femoral epiphysis

Reasoning:

Answer A - Discitis

Discitis is an infection in the intervertebral disc space. It can affect different age groups but does not present with swelling over tibial tuberosity.

Answer B - Enthesitis related arthritis

Enthesitis is inflammation of the entheses, the sites where tendons or ligaments insert into the bone. This is more common at the heel, particularly the Achilles tendon but can also occur at other sites, such as tibial tuberosity or iliac crest.

Answer C - Juvenile dermatomyositis

Juvenile dermatomyositis typically presents with a distinctive heliotrope rash involving the face, eyelids, hands and sometimes the skin above joints, including knees, knuckles and elbows. There is accompanying muscle inflammation and weakness.

Answer D - Osgood-Schlatter disease

The clinical presentation is not consistent with Osgood–Schlatter disease. This common apophysitis is caused by traction forces at the insertion of the patellar tendon on the tibial tubercle. It typically presents with the complaint of pain and swelling over the tibial tubercle, which is tender to palpation. The examination of the knee joint itself is normal without any focal findings.

Answer E - Oligoarticular Juvenile idiopathic arthritis

Oligoarticular JIA presents with painful joint swelling and inflammation. This does not present with swelling over tibial tuberosity well outside the knee joint. Oligoarticular JIA is the most common of the JIA subtypes (70% of all cases) and carries the best prognosis. It most often presents between 4-10 years.

Answer F - Perthes disease

Perthes disease involves the hip due to avascular necrosis of the head of femur.

Answer G - Reactive arthritis

Typically, reactive arthritis occurs around 7–10 days after the acute illness and spontaneously remits within 2–3 weeks of onset; gastrointestinal infections may cause a reactive arthritis. Oligoarticular JIA is the most common of the JIA subtypes (70% of all cases) and carries the best prognosis. It most often presents between 4-10 years.

Answer H - Spondylolisthesis

Spondylolisthesis -symptoms are usually localized to the lower back but can also involve the buttocks and posterior thighs.

Answer I - Subluxed upper femoral epiphysis is the best answer

Slipped upper femoral epiphysis (SUFE) tends to occur in 10–15-year-old, often with body weight above the 90th centile. Boys are affected slightly more often than girls and nearly a quarter of patients have bilateral disease. There may or may not be a history of minimal trauma. Clinical features consistent with this diagnosis.

Answer J - Transient synovitis of the hip

Transient synovitis (irritable hip) usually affects children between 3 and 10 years of age. It is a common cause of acute hip pain and limp.

Further reading:

- Diagnosing arthritis in children Graeme Denman, Sharmila Jandial, Helen Foster Paediatrics and Child Health, Vol. 25, Issue 12, p541–548 Published online: November 13, 2015
- Joint pain in children Asif Naveed, Peter Heinz Paediatrics and Child Health, Vol. 24, Issue 2, p45–50 Published in issue: February 2014

Question 1.3/ EMQ 6000c
Subject: Musculoskeletal
Answer G - Reactive arthritis

Reasoning:

Answer A - Discitis

Discitis is an infection in the intervertebral disc space. It can affect different age groups but does not present with swelling over tibial tuberosity.

Answer B - Enthesitis related arthritis

Enthesitis is inflammation of the entheses, the sites where tendons or ligaments insert into the bone. This is more common at the heel, particularly the Achilles tendon but can also occur at other sites, such as tibial tuberosity or iliac crest.

Answer C - Juvenile dermatomyositis

Juvenile dermatomyositis typically presents with a distinctive heliotrope rash involving the face, eyelids, hands and sometimes the skin above joints, including knees, knuckles and elbows. There is accompanying muscle inflammation and weakness.

Answer D - Osgood-Schlatter disease

The clinical presentation is not consistent with Osgood–Schlatter disease. This common apophysitis is caused by traction forces at the insertion of the patellar tendon on the tibial tubercle. It typically presents with the complaint of pain and swelling over the tibial tubercle, which is tender to palpation. The examination of the knee joint itself is normal without any focal findings.

Answer E - Oligoarticular Juvenile idiopathic arthritis

Oligoarticular JIA presents with painful joint swelling and inflammation. Oligoarticular JIA is the most common of the JIA subtypes (70% of all cases) and carries the best prognosis. It most often presents between 4-10 years.

Answer F - Perthes disease

Perthes disease involves the hip due to avascular necrosis of the head of femur.

Answer G - Reactive arthritis is the best answer

This presentation is most consistent with reactive arthritis. Typically, reactive arthritis occurs around 7–10 days after the acute illness and spontaneously remits within 2–3 weeks of onset; gastrointestinal infections may cause a reactive arthritis. The arthritis is typically oligoarticular, with a predilection for lower extremities.

Answer H - Spondylolisthesis

Spondylolisthesis -symptoms are usually localized to the lower back but can also involve the buttocks and posterior thighs.

Answer I - Subluxed upper femoral epiphysis

Slipped upper femoral epiphysis (SUFE) tends to occur in 10–15-year-old, often with body weight above the 90th centile. Boys are affected slightly more often than girls and nearly a quarter of patients have bilateral disease. Dysuria, sore eye, and knee effusion is not consistent with SUFE.

Answer J - Transient synovitis of the hip

Transient synovitis is the most common cause of a limp in children. It is due to inflammation of the lining of the joint and usually affects the hip but can affect ankles or knees. The exact cause is unknown, although in some cases the child may have had a recent viral infection. It would not usually be associated with other systemic features as in this case.

Further reading:

- Diagnosing arthritis in children Graeme Denman, Sharmila Jandial, Helen Foster Paediatrics and Child Health, Vol. 25, Issue 12, p541–548 Published online: November 13, 2015
- Joint pain in children Asif Naveed, Peter Heinz Paediatrics and Child Health, Vol. 24, Issue 2, p45–50 Published in issue: February 2014

Question 2.1/ EMQ 032v2a
Subject: Haematology and Oncology
Answer I - Sickle cell disease

Reasoning:

Answer A - Acute lymphoblastic leukaemia

ALL can present in all age groups but 85% cases in children occur under 15 years (mostly 2-5). it can present with anaemia, purpuric spots or mucosal bleeding, tiredness, bone and joint pains but it is unusual to cause avascular necrosis of femoral head.

Answer B - Crohn's disease

Crohn's disease typically presents with abdominal pain, diarrhoea, weight loss. Bone and joint involvement affect between 2-3% cases but mostly with arthritis of spine and sacroiliac joints. It is unlikely to cause avascular necrosis of head of femur.

Answer C - Haemophilia A

Haemophilia typically presents in a boy at early age with haemarthrosis and deep muscle haematomas. A family history of haemophilia in men is often present. Children with this diagnosis are advised to avoid contact sports.

Answer D - Henoch-Schönlein purpura

HSP is a vasculitis and presents with a rash of raised red or purple spots. Children may present with knee, ankle and abdominal pain but usually do not have radiological signs due to avascular necrosis of femoral head.

Answer E - Juvenile idiopathic arthritis

Juvenile idiopathic arthritis is more common in girls. Polyarticular JIA affects small joints of hands. Oligoarticular JIA involves the knees, ankles and elbows. The hips and hip girdle are generally spared, and sacroilitis is not associated. AVN is unlikely to occur.

Answer F - Immune thrombocytopenic purpura

ITP presents with bruising and petechial rash, most prominent over the legs. Mucosal bleeding can occur. Child is otherwise clinically well apart from signs of bleeding. Hip joint involvement and AVN is unlikely.

Answer G - Meningococcal septicaemia

Meningococcal sepsis is serious acute condition. Child is typically unwell, presenting with disseminated purpuric rash and features of meningitis / circulatory compromise. AVN and hip involvement is unusual.

Answer H - Non-accidental injury

NAI is uncommon in 15 year old boy and not likely to lead to hip pain and AVN of femoral head.

Answer I - Sickle cell disease is the best answer.

The presentation is consistent with sickle cell disease with a history alluding to avascular necrosis of the femoral head in the context of haemolysis. Avascular necrosis (AVN) occurs at a higher rate among children with sickle cell anaemia than in the general population and is a source of both acute and chronic pain. Most commonly, the femoral head is affected. Painful episodes often affect the long bones in older children.

Answer J - von Willebrand disease

von Willebrand disease usually presents with nose bleeds, bleeding from gums, prolonged oozing from cuts, and increased bleeding after trauma. Hip involvement with AVN is unlikely.

Further reading:

- Nelson Textbook of Paediatrics 20th edition p2340

Question 2.2/ EMQ 032v2b
Subject: Haematology and Oncology
Answer F - Immune thrombocytopenic purpura

Reasoning:

Answer A - Acute lymphoblastic leukaemia

ALL can present in all age groups but 85% cases in children occur under 15 years (mostly 2-5). it can present with anaemia, purpuric spots or mucosal bleeding, tiredness, bone and joint pains. He has made complete recovery from sore throat without any treatment.

Answer B - Crohn's disease

Crohn's disease typically presents with abdominal pain, diarrhoea, weight loss. Bone and joint involvement affects between 2-3% cases but mostly with arthritis of spine and sacroiliac joints. It is unlikely to cause avascular necrosis of head of femur. It is unlikely to present with widespread petechial rash and ecchymotic patches.

Answer C - Haemophilia A

Haemophilia typically presents in a boy at early age with haemarthrosis and deep muscle haematomas. A family history of haemophilia in men is often present. Widespread petechial rash and ecchymotic patches point to a bleeding disorder and not clotting defect due to factor VIII deficiency.

Answer D - Henoch-Schönlein purpura

HSP is a vasculitis and presents with a rash of raised red or purple spots. Purpuric rash in HSP is palpable as it is caused by vasculitis and these are more prominently distributed over legs and buttocks.

Answer E - Juvenile idiopathic arthritis

Juvenile idiopathic arthritis is more common in girls. Polyarticular JIA affects small joints of hands. Oligoarticular JIA involves the knees, ankles and elbows. The hips and hip girdle are generally spared, and sacroilitis is not associated. Rash of systemic onset JIA is evanescent, recurrent in nature with pale, red-pink macules, often with central pallor. Children will have high-grade fever and they are systemically unwell. This child has recovered from sore throat without any treatment and remains clinically well.

Answer F - Immune thrombocytopenic purpura is the best answer

Classical presentation: most children presenting between the age of 2 and 6 years with the acute onset of purpura and a history of a recent febrile illness. ITP rather than HSP in view of petechiae over all body rather than just on lower limbs and buttocks. ITP presents with bruising and petechial rash. Mucosal bleeding can occur. Child is otherwise clinically well apart from signs of bleeding.

Answer G - Meningococcal septicaemia

Meningococcal sepsis is serious acute condition. Child is typically unwell, presenting with disseminated purpuric rash and features of meningitis / circulatory compromise. This 15 year old is otherwise well and has recovered from sore throat without any treatment.

Answer H - Non-accidental injury

NAI is uncommon in 15 year old boy and not likely to lead to diffuse, widespread petechial rash.

Answer I - Sickle cell disease

The presentation is consistent with sickle cell disease with a history alluding to avascular necrosis of the femoral head in the context of haemolysis. Avascular necrosis (AVN) occurs at a higher rate among children with sickle cell anaemia than in the general population and is a source of both acute and chronic pain. Most commonly, the femoral head is affected. Painful episodes often affect the long bones in older children.

Answer J - von Willebrand disease

von Willebrand disease usually presents with nose bleeds, bleeding from gums, prolonged oozing from cuts, and increased bleeding after trauma. Hip involvement with AVN is unlikely.

Further reading:

- Nelson Textbook of Paediatrics 20th edition p2402

Question 2.3/ EMQ 032v2c
Subject: Haematology and Oncology
Answer A – Acute lymphoblastic leukaemia

Reasoning:

Answer A - Acute lymphoblastic leukaemia is best answer

History of unwell child with anaemia, bruising fever and painful legs indicative of ALL.

Answer B - Crohn's disease

Crohn's disease typically presents with abdominal pain, diarrhoea, weight loss. Bone and joint involvement affect between 2-3% cases but mostly with arthritis of spine and sacroiliac joints. It is unlikely to cause avascular necrosis of head of femur. It is unlikely to present with widespread petechial rash and ecchymotic patches.

Answer C - Haemophilia A

Haemophilia typically presents in a boy at early age with haemarthrosis and deep muscle haematomas. A family history of haemophilia in men is often present. Bruising of trunk, legs and petechiae over palate point to a bleeding disorder.

Answer D - Henoch-Schönlein purpura

HSP is a vasculitis and presents with a rash of raised red or purple spots. Purpuric rash in HSP is palpable as it is caused by vasculitis and these are more prominently distributed over legs and buttocks.

Answer E - Juvenile idiopathic arthritis

Juvenile idiopathic arthritis is more common in girls. Polyarticular JIA affects small joints of hands. Oligoarticular JIA involves the knees, ankles and elbows. The hips and hip girdle are generally spared, and sacroilitis is not associated. Rash of systemic onset JIA is evanescent, recurrent in nature with pale, red-pink macules, often with central pallor. Children will have high-grade fever and they are systemically unwell. This child is unwell and does not have joint swelling but has pain in the legs.

Answer F - Immune thrombocytopenic purpura

Most children with ITP present between the age of 2 and 6 years with the acute onset of purpura and a history of a recent febrile illness. ITP rather than HSP in view of petechiae over all body rather than just on lower limbs and buttocks. ITP presents with bruising and petechial rash. Mucosal bleeding can occur. Child is otherwise clinically well apart from signs of bleeding. This child is febrile with temp of 38.8 and unwell.

Answer G - Meningococcal septicaemia

Meningococcal sepsis is serious acute condition. Child is typically unwell, presenting with disseminated purpuric rash and features of meningitis / circulatory compromise. This 15 year old is pyrexial and unwell but with a 3 week preceeding history and clinically anaemic.

Answer H - Non-accidental injury

NAI is uncommon in 15 year old boy and not likely to lead to diffuse, widespread petechial rash.

Answer I - Sickle cell disease

Sickle cell disease is unlikely to present with bruising of trunk and legs. This presentation is chronic with 3 weeks history and he is pyrexial with temperature of 38.8.

Answer J - von Willebrand disease

von Willebrand disease usually presents with nose bleeds, bleeding from gums, prolonged oozing from cuts, and increased bleeding after trauma. Children are usually not unwell and pyrexial.

Further reading:

- Nelson Textbook of Paediatrics 20th edition p2347

Question 3.1/ EMQ 074a
Subject: Respiratory Medicine with ENT
Answer G - Subglottic haemangioma

Reasoning:

Answer A - Allergic rhinitis

This does not present in neonates nor with stridor.

Answer B - Asthma

This does not present in neonates nor with stridor.

Answer C - Bilateral vocal cord paralysis

This is a possible diagnosis but is rare and presents at birth. The cry is usually weak.

Answer D - Epiglottitis

There is no evidence of infection in this case and this usually affects children aged 2 years and over.

Answer E - Laryngotracheomalacia

This is possible but is not typically biphasic

Answer F - Mycoplasma pneumoniae infection

This can very rarely cause neonatal pneumonia but would not present with stridor.

Answer G - Subglottic haemangioma is the best answer

These can occur but particularly when multiple naevi are present over upper body.

Answer H - Subglottic stenosis

Subglottic stenosis is less likely in view of the short history of neonatal ventilation and no immediate post extubation problems.

Answer I - Vascular ring

These cause stridor but are uncommon and present with a biphasic stridor from birth.

Answer J - Viral croup

This child is the wrong age for this condition which usually presents from 6 months and following a viral prodrome.

Further reading:

- Evaluation and management of upper airway obstruction Robert Primhak Paediatrics and Child Health, Vol. 23, Issue 7, p301–306 Published in issue: July 2013
- Nelson Textbook of Paediatrics 20th edition p2037-2041

Question 3.2/ EMQ 074b
Subject: Respiratory Medicine with ENT
Answer E – Laryngotracheomalacia

Reasoning:

Answer A - Allergic rhinitis

This does not present in 1 month olds or with stridor

Answer B - Asthma

This does not present in 1 month olds or with stridor

Answer C - Bilateral vocal cord paralysis

This is rare and presents at birth. The cry is usually weak.

Answer D - Epiglottitis

There is no evidence of infection in this case and this usually affects children aged 2 years and over.

Answer E - Laryngotracheomalacia is the best answer

He has persistent stridor which in view of his age, is most likely to be due to a congenital abnormality. Laryngotracheomalacia accounts for at least 90% of cases and the history of symptoms worsening with agitation and feeding is typical.

Answer F - Mycoplasma pneumoniae infection

This can very rarely cause infection at this age and would not present with stridor.

Answer G - Subglottic haemangioma

Rare in the absence of multiple haemangiomas on the skin.

Answer H - Subglottic stenosis

There is no history to suggest a congenital form (which would be present from birth), nor risk factors for an acquired form (e.g. prolonged intubation).

Answer I - Vascular ring

These cause stridor but are uncommon and present with a biphasic stridor from birth.

Answer J - Viral croup

This child is the wrong age for this condition which usually presents from 6 months. It would not persist as in this case.

Further reading:

- Evaluation and management of upper airway obstruction Robert Primhak Paediatrics and Child Health, Vol. 23, Issue 7, p301–306 Published in issue: July 2013
- The Science of paediatrics MRCPCH Mastercourse 2017 p 331

Question 3.3/ EMQ 074c
Subject: Respiratory Medicine with ENT
Answer J - Viral croup

Reasoning:

Answer A - Allergic rhinitis

This does not present with stridor

Answer B - Asthma

This does not present with stridor

Answer C - Bilateral vocal cord paralysis

This is rare, usually congenital and present from birth.

Answer D - Epiglottitis

These usually affects children aged 2 years and over who appear acutely unwell.

Answer E - Laryngotracheomalacia

This is an acute presentation. Laryngotracheomalacia is a chronic condition presenting in early life which usually improves with time.

Answer F - Mycoplasma pneumoniae infection

This does not present with acute onset of stridor.

Answer G - Subglottic haemangioma

These can occur but more usually where there are multiple haemangiomas on the skin and would be a congenital condition from birth.

Answer H - Subglottic stenosis

There is no history to suggest a congenital form (which would be present from birth), nor risk factors for an acquired form (e.g. prolonged intubation).

Answer I - Vascular ring

These cause stridor but are uncommon and present with a biphasic stridor from birth.

Answer J - Viral croup is the best answer

Croup is by far the commonest reason for acute upper airways obstruction in children is viral laryngo-tracheo-bronchitis, or croup, which accounts for at least 98% of cases of stridor caused by infection. Typically, the child has a prodromal coryzal illness and develops a barking cough, a hoarse voice and stridor.

Further reading:

- Evaluation and management of upper airway obstruction Robert Primhak Paediatrics and Child Health, Vol. 23, Issue 7, p301–306 Published in issue: July 2013
- Paediatrics and Child Health Rudolf and Levene 3rd edition p139

Question 4.1/ EMQ 040a
Subject: Dermatology
Answer D - Intravenous aciclovir

Reasoning:

Answer A - Demonstration and education in the use of emollients

This is eczema herpeticum and this whilst important for chronic management this will not manage the acute infection.

Answer B - Provide an explanatory leaflet about topical treatment

This is eczema herpeticum and this whilst important for chronic management this will not manage the acute infection.

Answer - Hypoallergenic diet C

There is no history of allergy and this will not manage the acute infection.

Answer D - Intravenous aciclovir is the best answer

History of maternal cold sore points to diagnosis of eczema herpeticum which can be a severe and possibly life-threatening infection. The most important treatment is aciclovir and in view of his age and temperature he should be admitted for intravenous treatment.

Answer E - Intravenous antibiotics

History of maternal cold sore points to diagnosis of eczema herpeticum rather than bacterial infection.

Answer F - Oral aciclovir

This is not appropriate in a child who is this age with a severe exacerbation. An older child who is not unwell and who does not have extensive involvement could be treated with oral acyclovir.

Answer G - Oral antibiotics

History of maternal cold sore points to diagnosis of eczema herpeticum rather than bacterial infection.

Answer H - Oral antihistamines

These are used occasionally to manage itch but will not treat the infection.

Answer I - Topical tacrolimus ointment

These are licensed as second/third line treatments in those over 2 years old for chronic management of eczema.

Answer J - Wet wraps

Can be used to occlude topical treatments but not appropriate in eczema herpeticum

Further reading

- NICE guideline CG 57 Atopic eczema in children from birth up to the age of 12 years https://www.nice.org.uk/guidance/CG57/chapter/1-Guidance#treatment
- Clinical cases for MRCPCH Foundation of Practice ed Dewhurst C. 2017 p79-80

Question 4.2/ EMQ 040b
Subject: Dermatology
Answer A - Demonstration and education in the use of emollients

Reasoning:

Answer A - Demonstration and education in the use of emollients is best answer

All children with eczema should be prescribed unperfumed emollients to use every day for moisturising, washing and bathing. This should be suited to the child's needs and preferences, and may include a combination of products or one product for all purposes. Leave-on emollients should be prescribed in large quantities (250–500 g weekly) and easily available to use at nursery, pre-school or school. They are the most appropriate treatment to be prescribed at this stage.

Answer B - Provide an explanatory leaflet about topical treatment

This is important to support management but is not the best answer here as the treatment needs to be prescribed and used optimally.

Answer C - Hypoallergenic diet

There is no history of allergy here.

Answer D - Intravenous aciclovir

There is no history of infection.

Answer E - Intravenous antibiotics

There is no history of infection.

Answer F - Oral aciclovir

There is no history of infection.

Answer G - Oral antibiotic

There is no history of infection.

Answer H - Oral antihistamines

These are used occasionally to manage itch, but not in isolation but only with appropriate topical treatment.

Answer I - Topical tacrolimus ointment

These are licensed as second/third line treatments in those over 2 years old for chronic management of eczema. This is a first presentation in a young child and therefore not appropriate.

Answer I - Wet wraps

Can be used to occlude topical treatments but not appropriate for community management in a first presentation.

Further reading:

- NICE guideline CG 57 Atopic eczema in children from birth up to the age of 12 years: BNF-C
- Clinical cases for MRCPCH Foundation of Practice ed Dewhurst C. 2017 p 80-81

Question 4.3/ EMQ 040c
Subject: Dermatology
Answer E - Intravenous antibiotics

Reasoning:

Answer A - Demonstration and education in the use of emollients

This is bacterial infection with staphylococcus and/or streptococcus and whilst important for chronic management this will not manage the acute infection.

Answer B - Provide an explanatory leaflet about topical treatment

This is bacterial infection with staphylococcus and/or streptococcus and whilst important for chronic management this will not manage the acute infection.

Answer C - Hypoallergenic diet

There is no history of allergy and this will not manage the acute infection.

Answer D - Intravenous aciclovir

This is more likely a bacterial infection and not eczema herpeticum.

Answer E - Intravenous antibiotics is the best answer

This young child with eczema is presenting with symptoms and signs of bacterial infection with staphylococcus and/or streptococcus which include weeping, pustules, crusts, failure to respond to usual therapy, rapidly worsening atopic eczema, fever and malaise. Therefore, the appropriate management is admission and treatment with intravenous antibiotics.

Answer F - Oral aciclovir

This is more likely a bacterial infection, not eczema herpeticum.

Answer G - Oral antibiotics

Given the severity of symptoms and age of the child, intravenous rather than oral antibiotics are a better choice of treatment.

Answer H - Oral antihistamines

These are used occasionally to manage itch but will not treat the infection.

Answer I - Topical tacrolimus ointment

These are licensed as second/third line treatments in those over 2 years old for chronic management of eczema.

Answer J - Wet wraps

Can be used to occlude topical treatments but not appropriate in infection.

Further reading:

- NICE guideline CG 57 Atopic eczema in children from birth up to the age of 12 years 2007 - reviewed 2016 and no changes made to guidance
- Fever in under 5s: assessment and initial management Clinical guideline [CG160] Published date: May 2013 Last updated: August 2017

Question 5/ BO5 290 v2

Subject: Endocrinology and Growth

Answer C - Enlargement of the testes

Reasoning:

The first sign of normal puberty in boys is the development of 4 ml testicular volumes, followed shortly thereafter by the development of pubic hair and genital changes, which can be progressively documented through puberty using the Tanner staging methodology. The pubertal growth spurt is a feature of the second half of puberty in boys.

Answer A - Accelerated linear growth

Accelerated linear growth (growth spurt) is a feature of the second half of puberty in boys.

Answer B - Enlargement of the penis

Enlargement of penis follows increase in testicular volume and not precede.

Answer C - Enlargement of the testes is the best answer

The first sign of normal puberty in boys is the development of 4 ml testicular volumes, followed shortly after by pubic hair and genital changes.

Answer D - Growth of axillary hair

Axillary hair growth follows increase in testicular volume.

Answer E - Growth of pubic hair

Pubic hair growth follows increase in testicular volume.

Further reading:

- The Science of Paediatrics MRCPCH Mastercourse 2017 Ed Lissaeur T Carroll W p226

Question 6/ BO5 1112
Subject: Nephro-urology
Answer B – Hydrocoele

Reasoning:

Answer A - Scrotal oedema

Epididymitis and epididymo-orchitis are uncommon causes of acute testicular pain in neonatal boys. Epididymo-orchitis may be associated with urinary tract infections or reflux of urine predisposed to by an underlying anomaly.

Answer B - Hydrocoele is the best answer

This presentation is most consistent with a hydrocoele as on examination the swelling is soft and non-tender. Between 1% and 2% of neonates have a hydrocoele and in most the hydrocoele is non-communicating. In such cases, the hydrocele fluid disappears by 1 year of age.

Answer C - Incarcerated inguinal hernia

An infant with an incarcerated inguinal hernia is likely to have associated findings suggesting intestinal obstruction, such as colicky abdominal pain, abdominal distention, vomiting, and cessation of stool which are absent in this case.

Answer D - Varicocoele

A varicocele is a congenital condition in which there is abnormal dilation of the pampiniform plexus in the scrotum, often described as a “bag of worms” and is rarely diagnosed under the age of 10 years.

Answer E - Torsion of the testis

Neonatal or intrauterine torsion of the testicle usually presents as a swollen testicle at birth. The scrotum is often red and oedematous and may be tender on examination.

Further Reading:

- Rennie and Roberton’s Textbook of Neonatology 5th edition Rennie J Churchill Livingstone 2012: Chapter 35: Genitourinary Tract anomalies
- Nelson Textbook of Paediatrics 20th Edition. Kliegman RM et al. Elsevier. Philadelphia 2016: Chapter 545 – Disorders of the Scrotum: Chapter 346 Inguinal Hernias

Question 7/ BO5 6008
Subject: Neurodevelopment and Neurodisability
Answer B - Autism spectrum disorder

Reasoning:

Answer A - Attention deficit hyperactivity disorder

For a diagnosis of ADHD, symptoms of hyperactivity/impulsivity and/or inattention should cause at least moderate psychological, social and/or educational or occupational impairment. This child has good skills in reading and numeracy.

Answer B - Autism spectrum disorder is the best answer

Speech and language and social interaction difficulties consistent with autism. Good academic progress in the context of communication difficulties indicate autism is more likely than ADHD in this scenario.

Answer C - Conduct disorder

Children with conduct disorder have a repetitive and persistent pattern of aggressive, defiant or antisocial behaviour and do not specifically have language difficulties.

Answer D - Dyslexia

Social interaction difficulties are not a specific feature of dyslexia and a specific reading difficulty would be present.

Answer E - Specific language impairment

Specific language impairment is a significant language difficulty in the absence of an identified aetiological factor such as learning disability, hearing impairment, global delay, emotional, behavioural or neurological difficulties, or autism.

Further Reading:

- Autism spectrum disorder in under 19s: Recognition, referral and diagnosis: NICE Clinical guideline [CG128] Published date: September 2011 last updated: December 2017
- Attention deficit hyperactivity disorder: Diagnosis and management: NICE Clinical guideline [NG87] Published date: March 2018
- Conduct disorders in children and adolescents Karen Baker Paediatrics and Child Health, Vol. 26, Issue 12, p534–539:2016
- Communication disorders in preschool children: Vicky Slonims, Greg Pasco: Paediatrics and Child Health, Vol. 19, Issue 10, p453–456:2009
- O'Hare A. Dyslexia: What do paediatricians need to know? Paediatrics and Child Health 2010 20(7) 338-343.

Question 8/ BO5 6019

Subject: Gastroenterology and Hepatology

Answer A – Advise mother to remove dairy products from her diet

Reasoning:

The possibility of food allergy should be considered in children who have one or more of the relevant signs and symptoms including blood in the stools. History of atopic disease should be sought. Breast feeding mothers of babies and young children with suspected allergy to cows' milk protein should be offered food avoidance advice.

Answer A - Advise mother to remove dairy products from her diet is the best answer

In a fully breast fed infant in whom the history and examination is suggestive of cow's milk protein allergy then the first line treatment is maternal exclusion of dairy from her diet.

Answer B - Commence formula milk

Formula milk is derived from cow's milk and thus would not offer dairy exclusion from the infant's diet.

Answer C - Commence extensively hydrolysed milk

For the formula fed infant with mild to moderate symptoms suggestive of cow's milk protein allergy an extensively hydrolysed formula would be first line.

Answer D - Commence amino acid formula milk

Amino acid-based formulas are considered in the formula fed infant whose mild to moderate symptoms do not improve with extensively hydrolysed formulas or if the infant has severe symptoms.

Answer E - Commence soya milk

Soya milk should not be considered as a treatment option for cow's milk allergy because of the concomitant risk of soya allergy in those suspected of cow's milk protein allergy. They also contain isoflavones which have weak oestrogenic action that can lead to high serum concentrations in infants.

Further reading:

- Food allergy in under 19s: assessment and diagnosis NICE guidelines [CG116] Published date: February 2011
- Practical guide to dietary management of cow's milk allergy Siân Evans, David Tuthill Paediatrics and Child Health, Vol. 23, Issue 8, p367–369 Published in issue: August 2013

Question 9/ BO5 466
Subject: Musculoskeletal
Answer A - Creatine kinase (CK)

Reasoning:

While bottom shufflers tend to walk later (at around 17-24 months) assessment is still recommended for children who are not walking by 18 months to consider pathological causes. Although bottom shuffling can be familial, it may be due to an underlying problem such as hypotonia, muscle weakness or structural malformation.

Answer A - Creatine kinase (CK) is the best answer

Failure of a boy to walk by 18 months is a red flag indicator and creatine kinase should be checked urgently. It is important to identify Duchenne dystrophy promptly to enable treatment.

Answer B - MRI of spine

There are no specific features suggestive of a spinal lesion and MRI of spine would not be the initial investigation with this presentation.

Answer C - Vitamin D levels

There is nothing in the history to suggest rickets and therefore Vitamin D levels are not indicated.

Answer D - MRI brain and spine scan

There are no specific features of e.g. a neurodegenerative disorder or physical abnormalities therefore MRI scan would not be the initial investigation of choice.

Answer E - Comparative genomic hybridization (CGH) microarray

This child does not have global development impairment where CGH microarray may be useful where the diagnosis remains uncertain after history and examination.

Further Reading:

- The Science of Paediatrics MRCPCH Mastercourse Lissaeur T Carroll W Elsevier 2017 p 45-77: Normal Child Development
- Clinical cases for MRCPCH Foundation of Practice Dewhurst C. RCPCH 2017 p101-104: A bottom shuffling boy
- Clinical Review Developmental assessment of children BMJ 2013; 346 doi: https://doi.org/10.1136/bmj.e8687 (Published 15 January 2013) Bellman M et

Question 10/ BO5 871
Subject: Cardiology
Answer D - Pulmonary stenosis

Reasoning:

If the murmur is not localised, the presence of the upper left sternal border thrill gives the clue to the diagnosis of pulmonary stenosis.

Answer A - Aortic stenosis

This typically presents with an ejection systolic murmur localised to the upper right sternal edge with a carotid thrill.

Answer B - Arial septal defect

An ejection murmur at the upper left sternal edge can be due to pulmonary stenosis or ASD but a thrill indicates the diagnosis of pulmonary stenosis.

Answer C - Persistent arterial duct (patent ductus arteriosus)

This classically presents with a continuous machinery murmur best heard at the infraclavicular area.

Answer D - Pulmonary stenosis is the best answer

The presence of a thrill at the upper left sternal edge is indicative of pulmonary stenosis.

Answer E - Ventricular septal defect

This presents with a pansystolic murmur at the lower left sternal edge (the louder the murmur, the smaller the hole).

Further reading:

- Paediatrics and Child Health Rudolf and Levene 2nd edition p237
- The Science of Paediatrics MRCPCH Mastercourse 2017 p37-38

Question 11/ BO5 109

Subject: Infection, Immunology and Allergy

Answer C - She can have her MMR vaccine next month as normal in the community

Reasoning:

Answer A - Her 13 month MMR vaccine should be postponed until she has been investigated for egg allergy

Egg allergy is not a contraindication to MMR vaccination.

Answer B - Postpone her MMR vaccine until she is 3 years old, by which time there is a good chance she will have outgrown her egg allergy

Egg allergy is not a contraindication to MMR vaccination.

Answer C - She can have her MMR vaccine next month as normal in the community is the best answer

All children with egg allergy should receive the MMR vaccination as a routine procedure in primary care. The MMR vaccine is grown on cultured embryo chick fibroblasts and therefore free of hen's egg protein.

Answer D - She should have single antigen mumps and rubella vaccines next month and the measles vaccine can be given later

There is no benefit of separating the vaccines in this way.

Answer E - She should be referred to the local hospital to have her MMR vaccine

There is no indication for hospital based vaccination

Further reading:

- Green Book; Immunisation against infectious disease https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/147968/Green-Book-Chapter-21-v2_0.pdf

Question 12/ BO5 6074
Subject: Respiratory Medicine with ENT
Answer E - Obstructive sleep apnoea

Reasoning:

Answer A - Absence epilepsy

Absense epilepsy is incorrect because it could cause inattention and poor school progress but not the other night time symptoms.

Answer B - Narcolepsy

Narcolepsy is incorrect as choking is not a feature and narcolepsy much less common than obstructive sleep apnoea

Answer C - Nightmares

Nightmares is incorrect as it happens in the later hours of REM sleep and is just a bad dream with no signs of apnoea.

Answer D - Night terrors

Night terrors is incorrect. A child having night terrors may scream and crash around and may not recognise you if you try to confront them.

Answer E - Obstructive sleep apnoea is the best answer

Obstructive sleep apnoea is the correct answer. No features of night terrors and generally seen in younger children. Disturbed sleep with altered respiratory pattern at night and inattentiveness by day indicate diagnosis of obstructive sleep apnoea.

Further reading:

- Sleep apnoea in children: Donald S. Urquhart, Nicola Starritt Paediatrics and Child Health, Vol. 23, Issue 7, p307–314 Published in issue: July 2013 Pitfalls in the diagnosis and misdiagnosis of epilepsy Manali Chitre
- Paediatrics and Child Health, Vol. 23, Issue 6, p237–242 PuSleep apnoea in children: Donald S. Urquhart, Nicola Starritt Paediatrics and Child Health, Vol. 23, Issue 7, p307–314 Published in issue: July 2013 Pitfalls in the diagnosis and misdiagnosis of eblished in issue: June 2013

Question 13/ BO5 37:2 SUR
Subject: Neurodevelopment and Neurodisability
Answer C – Developmental coordination disorder

Reasoning:

Answer A - Becker muscular dystrophy

No progressive symptoms to suggest Becker.

Answer B - Congenital myopathy

No muscular weakness to suggest myopathy.

Answer C - Developmental coordination disorder (dyspraxia) is the best answer

Developmental coordination disorder (DCD) is associated with difficulties in motor planning and execution. The prevalence is around 5-6% of school-age children and is more common in boys than in girls. Its diagnosis is made on clinical history and examination providing evidence that a child's motor performance is significantly impaired relative to chronological age, and that it impacts upon daily functioning.

Answer D - Spastic diplegia

Slightly exaggerated reflexes do not indicate neurological disorder.

Answer E - Friedreich's ataxia

Cardinal features of Friedrich's ataxia are the combination of gait ataxia, areflexia, extensor plantar responses. Cerebellar signs evolve, and many people develop diabetes and hypertrophic cardiomyopathy.

Further reading:

- The Science of Paediatrics MRCPCH Mastercourse 2017 p76-77
- Nelson Textbook of Paediatrics 20th edition p 193
- The clumsy child: juggling diagnosis and signposting to management. Rajib Lodh, Joanna Coghill and Helen E Foster. Paediatrics and Child Health. 27(6), 2017, p. 276-280.
- Neurological gait disorders in childhood. Martin Smith and Manju A Kurian. Paediatrics and Child Health. [Available Online 7 Sept 2018].

Question 14/ BO5 6141

Subject: Emergency Medicine

Answer D - Give 5 blows to the centre of her back

Reasoning:

When a foreign body enters the airway, the child reacts immediately by coughing in an attempt to expel it. A spontaneous cough is likely to be more effective and safer than any manoeuvre a rescuer might perform. However, if coughing is absent or ineffective, and the object completely obstructs the airway, the child will become asphyxiated rapidly. Active interventions to relieve choking are therefore required only when coughing becomes ineffective, but they then must be commenced rapidly and confidently.

Answer A - Immediately telephone emergency services

Any delay, for example by telephoning emergency services will result in a more prolonged period of hypoxia. ALSG guidance would suggest a single rescuer should provide a minute of basic life support prior to telephoning emergency services.

Answer B - Try to remove the grape from her mouth

Trying to remove the grape from the mouth is likely to result in it being pushed further into the oropharynx thus causing even more significant obstruction

Answer C - Sit her up and support her to cough

Sitting her up and supporting coughing might have been effective initially but this infant has become quiet and cyanosed demonstrating that her cough is no longer effective. In this situation giving 5 back blows is the most appropriate immediate action.

Answer D - Give 5 blows to the centre of her back is the best answer

The infant is cyanosed therefore her cough if still present is ineffective. She is still conscious therefore starting CPR is not appropriate. An immediate back blow may rectify this and result in immediate improvement in oxygenation.

Answer E - Perform the Heimlich manoeuvre

The Heimlich manoeuvre is not a useful strategy in this age group (under 1 year) and is not part of the guidance. The Infants intra-abdominal organs lie high and anterior and could be injured by this manoeuvre.

Further Reading:

- UK Resuscitation Guideline: Paediatric basic life support
- https://www.resus.org.uk/resuscitation-guidelines/paediatric-basic-life-support/

Question 15/ BO5 310
Subject: Respiratory Medicine with ENT
Answer E - Prone sleep position

Reasoning:

Sudden infant death syndrome (SIDS) is defined as the sudden, unexpected death of an infant that is unexplained by a thorough post-mortem examination, which includes a complete autopsy, investigation of the scene of death, and review of the medical history. Declines of 50% or more in rates of SIDS around the world have occurred following national education campaigns directed at reducing risk factors associated with SIDS.

Answer A - Overheating

Overheating has been associated with increased risk for SIDS based on indicators such as higher room temperature, a febrile history, sweating, and excessive clothing or bedding. However, it is not the most significant modifiable factor.

Answer B - Maternal smoking

There is a major association between intrauterine exposure to cigarette smoking and risk for SIDS. The incidence of SIDS is approximately 3 times greater among infants of mothers who smoke. However, it is not the most significant modifiable factor.

Answer C - Co-sleeping

Several studies have implicated bed sharing as a risk factor for SIDS. Bed sharing is particularly hazardous when the parent is sleeping with an infant on a couch or other soft or confining sleeping surface, and when the mother smokes. However, it is not the most significant modifiable factor.

Answer D - Formula feeding

It is currently believed that there is a protective effect of breastfeeding on SIDS, after taking into account confounding factors. However, it is not the most significant modifiable factor.

Answer E - Prone sleep position is the best answer

All options are known to increase risk for SIDS. However, the prone sleeping position is the strongest modifiable risk factor for SIDS. In case-control studies, odds ratios for the risk of prone sleeping or non-supine sleeping range between 2.3 and 13.1. Additional support for this association comes from the decreased rate of SIDS in various countries following recommendations to place infants on their back or side to sleep.

Further Reading:

- Nelson Textbook of Pediatrics 20th edition
- Kliegman RM et al. Elsevier. Philadelphia 2016: Chapter 375: Sudden Infant Death Syndrome

Question 16/ BO5 741:2
Subject: Dermatology
Answer B – Herpes simplex infection

Reasoning:

Herpes gingivostomatitis is the commonest childhood HSV infection there is malaise, fever and small vesicles which may affect the all areas of the mouth, lips and peri-orally. Lesions are painful resulting in poor fluid intake. Complications include spread of HSV infection to other areas by autoinoculation.

Answer A - Aphthous ulceration

Temperature and rash on trunk do not accompany aphthous ulcers.

Answer B - Herpes simplex infection is the best answer

HSV skin infection is characterised by pain, redness and swelling followed by vesiculopustules which rupture and crust over.

Answer C - Measles

Measles does not cause ulceration and the child does not have a maculopapular rash.

Answer D - Scarlet fever

Scarlet fever typically presents with a scarlatiniform rash, circumoral pallor and a white coated tongue which eventually gives way to a red appearance.

Answer E - Stevens-Johnson syndrome

Unlikely SJS as very short history and only one mucosal site involvement and no skin involvement and no precipitating cause e.g. drugs.

Further reading:

- Rash with a fever in children: a clinical approach. Paediatrics and Child Health. Karthikeyini Sujay Manoharan, Kanagaraj Ramasamy and Peter Heinz. 27(4), 2017, p. 196-201.
- Treatment if Group A streptococcal infections. Thomas Snelling and Jonathan Carapetis. Paediatrics and Child Health. 20 (11), 2010, p. 513-520.

Question 17/ BO5 857
Subject: Ethics and Law
Answer D – The father

Reasoning:

Legal frameworks pertaining to consent are complex. Reference to published national guidance should always be considered but this reflects the situation in the UK.

Answer A - The boy

It is unlikely that the child will be assessed as having enough understanding in order to make up their own mind about the benefits and risks of treatment i.e. be Gillick competent

Answer B - The consultant surgeon in the child's best interest

A consultant surgeon can act in the child's best interests, but treatment must be limited to what is reasonably required to deal with the emergency situation. This does not apply in this instance where no emergency exists and a person with parental responsibility is present.

Answer C - The duty social worker

The child is not a subject to a care or supervision order and so the local authority does not have parental responsibility.

Answer D - The father is the best answer

A father acquires parental responsibility if he is married to the mother at the time of the child's birth or subsequently. Parents do not lose parental responsibility if they divorce – nor can a separated or divorced parent relinquish responsibility.

Answer E - The mother by telephone

The law requires doctors to have consent from only one person in order to lawfully provide treatment. In practice, however, it would also be good practice to contact the mother by telephone. Sometimes there is disagreement between parents and discussion should be aimed at reaching consensus. If a child lacks the capacity to consent, you should ask for their parents' consent. It is usually sufficient to have consent from one parent.

Further reading:

- 0-18 years guidance: Children and young people who lack capacity to consent http://www.gmc-uk.org/guidance/ethical_guidance/children_guidance_27_28_lack_capacity.asp

Question 18/ BO5 132
Subject: Neurology
Answer C – Daydreaming

Reasoning:

Daydreaming episodes usually occur during periods of inactivity or when a child finds the activity less interesting. Children during daydreaming tend to ignore verbal stimulation, but usually respond to tactile stimulation.

For children referred for staring episodes, only absence and complex partial seizures need to be considered in the epileptic category.

Answer A - Classical generalized childhood absence seizures

Absence seizures tend to be less than 20 seconds in duration.

Answer B - Complex partial seizures

Complex partial seizures last for more than a minute and are associated with post ictal drowsiness which this child does not have.

Answer C - Daydreaming is the best answer

Daydreaming in children is common. Those children who are referred for evaluation are more likely to have comorbid conditions such as attention deficit hyperactivity disorder (ADHD), learning difficulties and Tourette syndrome.

Answer D - Juvenile absence epilepsy

Juvenile absence epilepsy usually presents after 9 years of age and frequent and severe typical absences are the characteristics and defining seizures.

Answer E - Lennox Gastaut syndrome

Lennox-Gastaut syndrome includes multiple seizure types.

Further reading:

- Evaluation of staring episodes in children Arif Khan, Nahin Hussain, William P Whitehouse Arch Dis Child Educ Pract Ed 2012;97:6 202-207 -http://dx.doi.org/10.1136/archdischild-2011-301111
- Paediatrics and Child Health Rudolf and Levene 3nd edition p210-211
- Nelson Textbook of Paediatrics 20th edition p2863

Question 19/ BO5 6097
Subject: Safeguarding
Answer C - non-accidental injury

Reasoning:

Children under the age of two years are at an increased risk of serious physical abuse.

Abusive bruises are often located away from bony prominences and are found predominantly over soft tissue areas. Petechiae in association with bruising are a strong predictor of abusive injury.

Answer A - Acute lymphoblastic leukaemia

Acute lymphoblastic leukaemia could present with reluctance to weight bear bruising and petechiae. However, there is no organomegaly, no indication of lymphadenopathy and no other relevant history such as recurrent infection

Answer B - Idiopathic thrombocytopenia

ITP not usually associated with joint symptoms.

Answer C - Non-accidental injury is the best answer

Features of a withdrawn thin child with petechiae and bruising away from bony prominences and reluctance to weight bear highly suggestive of non-accidental injury.

Answer D - Septic arthritis

In a child with septic arthritis would expect fever. Bruising and petechiae would not be present.

Answer E - Henoch-Schönlein purpura

Henoch-Schönlein purpura can cause arthritis and therefore reluctance to weight bear but is associated with palpable purpura and not petechiae or bruising. There is often a history of a recent viral illness which is not present in this case.

Further Reading:

- Clinical cases for MRCPCH Foundation of Practice Dewhurst C RCPCH 2017: A child with a limp and a swollen joint
- RCPCH Child Protection Companion: RCPCH website

Question 20/ BO5 34 SUR
Subject: Neonatology
Answer E – Septicaemia

Reasoning:

A total serum bilirubin level >250 µmol/l by 48 hours of life is indicative of a pathological cause such as isoimmunisation, sepsis, glucose-6-phosphate dehydrogenase deficiency or galactosaemia.

Answer A - ABO incompatibility

ABO incompatibility arises when a mother with blood type O has a fetus with a different blood type (type A, B, or AB). This is not the case here where the infant's blood group is O and the mother's is A.

Answer B - Dehydration

The neonatal jaundice commonly seen in the breastfed baby during the first week of life can be exacerbated by dehydration due to inadequate intake of breast milk but is unlikely to be associated with such profound hyperbilirubinaemia.

Answer C - Galactosaemia

The signs and symptoms produced by inborn errors of metabolism such as galactosaemia are non-specific and most are shared by many other more common neonatal disorders, especially serious generalised infections and septicaemia is a frequent secondary event in galactosaemia. However diagnostic pointers such as significant hepatomegaly, and vomiting are absent and conjugated bilirubin would be expected to be higher. Sepsis alone is more likely than galactosaemia + sepsis.

Answer D - Glucose-6-phosphate dehydrogenase deficiency

This is the most common cause of severe neonatal jaundice and kernicterus worldwide. Due to its X-linked inheritance, males are mainly affected, however carrier females may have a milder form. Those affected tend to be Mediterranean or Middle or Far Eastern or African in origin. This is a Caucasian girl making this diagnosis unlikely.

Answer E - Septicaemia is the best answer

This scenario describes an unwell poorly perfused child in whom the most likely cause is septicaemia.

Further reading:

- The Science of Paediatrics MRCPCH Mastercourse ed. Lissaeur T Carroll W Elsevier 2017: Chapter 11 Jaundice
- https://www.nice.org.uk/guidance/cg98/resources/treatment-threshold-graphs-excel-544300525