Infectious Diseases

1) DIARRHOEA
A. Coeliac disease 
B. Crohns disease 
C. Ulcerative colitis 
D. Cows milk protein intolerance 
E. Toddlers diarrhoea 
F. Cystic fibrosis 
G. Lactose intolerance 
H. Irritable bowel syndrome 
I. Abdominal migraine 
J. Haemolytic uraemic syndrome

For the following children presenting with diarrhoea which is the most likely diagnosis:

1) An 11 month infant presents with chronic diarrhoea and failure to thrive since breast feeding was discontinued at 9 months. He has been treated by his GP with antibiotics on two occasions for chest infections. Initial investigations reveal low serum potassium, chloride and metabolic alkalosis.

   F. Cystic fibrosis

Note:
Failure to thrive, chest infections and diarrhoea (the latter results from failure of pancreatic exocrine function) are indicative of CF. The abnormal biochemistry is caused by salt loss and may be described as pseudo-bartters syndrome

2) A 15 year old boy presents with delayed puberty and short stature. He gives a history of intermittent abdominal pain and diarrhoea. He recently presented to his family doctor with a painful red swelling on his shin which has now resolved.

   B. Crohns disease

Note:
Crohn’s disease may present in this way, the skin lesions are erythema nodosum which are associated with inflammatory bowel disease.

3) A 8 month old infant has recurrent diarrhoea. Mother dates the start of symptoms from the an episode of gastroenteritis. The diarrhoea is explosive in nature.

   G. Lactose intolerance

Note:
Secondary lactose intolerance is a known sequelae of viral gastroenteritis. It is not prevented by regrading milk following the episode of viral infection.

2) Contra-indications to Vaccines
A. BCG 
B. Diphtheria Tetanus Polio 
C. Hepatitis B 
D. Haemophilus Influenzae B 
E. Influenza 
F. Measles Mumps Rubella 
G. Polio 
H. Rubella 
I. Tetanus 
J. Tuberculin

Which of the vaccines listed above would be contra-indicated in the following scenarios:
1) Contra-indication if known to have a hypersensitive reaction to egg.  

E. Influenza

**Note:**
relates to hypersensitivity to egg, which contra-indicates the Influenza vaccine as there is residual egg protein present.

2) Contra-indication if known to have an allergy to gelatin.  

F. Measles Mumps Rubella

**Note:**
refers to contra-indications to MMR, which include children with allergies to Gelatin, Neomycin or kanamycin as well as children with untreated malignant disease or altered immunity. Those receiving immuno-suppressive drugs or radiotherapy are also contraindicated. Children who have received another live vaccine by injection within 3 weeks should not be given MMR vaccine. MMR should also not be given within 3 months of receiving an Immunoglobulin injection.

3) Contra-indication if known to have an allergy to kanamycin.  

F. Measles Mumps Rubella

**Note:**
refers to contra-indications to MMR, which include children with allergies to Gelatin, Neomycin or kanamycin as well as children with untreated malignant disease or altered immunity. Those receiving immuno-suppressive drugs or radiotherapy are also contraindicated. Children who have received another live vaccine by injection within 3 weeks should not be given MMR vaccine. MMR should also not be given within 3 months of receiving an Immunoglobulin injection.

3) **Childhood chest infections**

A. Chlamydia  
B. Cytomegalovirus  
C. Group B Streptococcus  
D. Haemophilus Influenza  
E. Mycoplasma pneumonia  
F. Parainfluenza  
G. Respiratory syncytial virus  
H. Rhinovirus  
I. Staphylococcus aureus  
J. Ureaplasma

Select the most appropriate pathogen from the above list that would account for the following presentations:

1) The commonest cause of pneumonia in the 2 month - 6 month age group.  

G. Respiratory syncytial virus

2) A 9 year old boy presents with a cough and fever. Chest x-ray demonstrates a reticular nodular pattern with high adenopathy and a small pleural effusion.  

E. Mycoplasma pneumonia

3) A 5 year old boy presents with painful red swellings of his shins. Examination of his throat reveals an exudative tonsillitis.
Comments:
The commonest cause of pneumonia in the 2 month – 6 month age group is Respiratory syncytial virus, which results in bronchiolitis and occurs in epidemics. Mycoplasma pneumonia mainly affects older children (between 5 and 15 years) resulting in community acquired pneumonias. Tonsillitis can occur at any age although is frequently seen in the 4-7 age group. The majority of episodes are caused by viruses although beta haemolytic streptococcal infection is also responsible and has systemic reactions such as erythema nodosum, rheumatic fever and glomerular nephritis.

4) Childhood Diarrhoea
A. Adenovirus
B. Cytomegalovirus
C. Epstein-Barr virus
D. E. Coli
E. Giardia Lamblia
F. Hepatitis A
G. Norwalk virus
H. Rotavirus
I. Salmonella species
J. Staphylococcus aureus

Select one option from the list above that is most suitable for the following patients

1) Accepted as the most common cause of infectious diarrhoea in children in the developed society.

Note:
Rotavirus is the most common virus responsible for diarrhoea worldwide. It is a double stranded RNA virus, especially prevalent in the winter months. It causes fever and watery diarrhoea.

2) Can follow ingestion of dust containing dried faecal material.

Note:
Hepatitis A is an RNA virus typically transmitted by the faecal-oral route.

3) Attaches the small intestinal border and releases exotoxin.

Note:
E-coli and enteropathogen is one of the bacterial causes of diarrhoea. Many of its effects are a consequence of an exotoxin. It should be suspected if there is a history of travel or a history of ingestion of poorly prepared food. Bacterial diarrhoea usually results in bloody diarrhoea.
5) Urinary Tract Disease
A. Haemolytic uraemic syndrome
B. Henoch Schonlein purpura
C. Nephrotic syndrome
D. Polycystic kidneys
E. Pyelonephritis
F. Renal Calculi
G. Renal tubular acidosis
H. Renal vein thrombosis
I. Systemic lupus erythematosus
J. Wilm's tumour

Select the most appropriate diagnosis from the above list of options that would best explain the following cases:

1) A 2 year old boy is admitted with a history of bloody diarrhoea, abdominal pain and puffiness around his eyes. He is found to be slightly jaundiced. His urea is 12.6 and Creatinine 163 mmol / liter.
   A. Haemolytic uraemic syndrome

Note: describes a child with haemolytic uraemic syndrome, which is of unknown aetiology. Various agents have been implicated including E.coli (0157) Salmonella, Shigella and viruses. It usually presents with a prodromal symptoms of an upper respiratory tract infection or gastroenteritis and later develops into pallor, oliguria and hypertension. Laboratory investigations may reveal microangiopathic haemolytic anaemia, thrombocytopenia and urinalysis may reveal proteinuria.

2) A 9 day old baby is admitted with a 2 day history of vomiting and diarrhoea. During the admission haematuria is noted and he has had 2 convulsions. A mass is palpable in the left hypochondrium.
   H. Renal vein thrombosis

Note: describes a child with renal vein thrombosis. In neonates it is associated with dehydration, asphyxia, shock or sepsis. Manifestations include sudden onset of haematuria and identification of an enlarged kidney. If both kidneys are involved it may result in acute renal failure.

3) A 5 year old girl presents with puffiness around the eyes. Urinalysis confirms proteinuria with a trace of blood.
   C. Nephrotic syndrome

Note: relates to a child with Nephrotic syndrome. This occurs when there is proteinuria resulting in hypoalbuminaemia and oedema with an unknown aetiology. Peri-orbital or dependant oedema is usually noted first. There may also be a history of abdominal pain, vomiting and diarrhoea. The child needs to be monitored carefully as hypovolaemia and circulatory collapse. Steroids are the treatment of choice with careful management of fluids.

6) NEONATAL JAUNDICE
A. Physiological jaundice
B. Biliary atresia
C. Hypothyroidism
D. Rhesus incompatibility
E. Congenital spherocytosis
F. Congenital cytomegalovirus infection
G. Galactosaemia
H. Glucose-6-phosphate dehydrogenase deficiency
I. Cystic fibrosis
J. Fructose intolerance
For each of the following jaundiced babies, select the most likely cause:

1) A 13 day old infant who was noted to have an umbilical hernia and has very dry skin presents with jaundice. She is a floppy baby. Her bilirubin is checked and is found to be elevated and mainly unconjugated. The community midwife has been unable to gain access to the home for the last week.

   C. Hypothyroidism

Note:
Umbilical hernia, dry skin, hypotonia and jaundice are features of congenital hypothyroidism.

2) A caucasian infant has required surgery at the regional neonatal unit for meconium ileus and has developed jaundice. The serum conjugated bilirubin is 65 micromol/L. The diagnosis is eventually confirmed from the neonatal screening tests.

   I. Cystic fibrosis

Note:
Meconium ileus and jaundice may be presenting features of CF in the neonatal period. The screening test is immunoreactive trypsin.

3) A 12 day old male baby has a conjugated and unconjugated hyperbilirubinaemia. He is breast fed and has become more disinterested in feeds. He was investigated for sepsis and blood cultures demonstrated E-coli septicaemia, urine cultures were clear. His clotting is deranged.

   G. Galactosaemia

Note:
Galactosaemia typically presents around 2 weeks of age with jaundice. E coli septicaemia is a feature. Treatment is by removing galactose from the diet. Cataracts are a later feature even if treatment instituted early.

7) Viral infections
A. Measles
B. Rubella
C. Chicken Pox
D. Herpes Simplex
E. Mumps
F. Glandular fever
G. Pertussis
H. Polio myelitis
I. Hepatitis A

For each description below choose the single most likely viral infection from the list of options.

1) May result in Giant cell pneumonia.

   A. Measles

Note:
Measles infection is uncommon due to world-wide immunisation. A child with measles usually has a fever, upper respiratory tract symptoms and a morbilliform rash. Serious complications include a giant cell pneumonia and encephalitis (SSPE).

2) May result in a Keratoconjunctivitis.

   D. Herpes Simplex
Herpes simplex infection may be transmitted verdantly to an infant from their mother’s genital tract. It may cause isolated skin lesions, a Keratoconjunctivitis or a paronychia. More seriously it is also responsible for encephalitis.

3) Caused by an RNA virus with no known carrier state.  

**I. Hepatitis A**

**Note:**
Hepatitis A, which is caused by an RNA virus, is usually transmitted by the oral route. It has an incubation period of between 15-50 days and treatment is usually symptomatic only.

**8) Urinary Tract Disease**

A. Haemolytic uraemic syndrome  
B. Henoch Schonlein purpura  
C. Nephrotic syndrome  
D. Polycystic kidneys  
E. Pyelonephritis  
F. Renal Calculi  
G. Renal tubular acidosis  
H. Renal vein thrombosis  
I. Systemic lupus erythematosus  
J. Wilms' tumour

Select the most appropriate diagnosis from the above list of options that would best explain the following cases:

1) An 11 year old with a previous history of chronic glomerulonephritis presents with bruising and epistaxis. A full blood count confirms a pancytopenia.  

**I. Systemic lupus erythematosus**

**Note:**
describes a child with glomerulonephritis and bone marrow failure suggestive of a connective tissue disease such as SLE.

2) A 14 year old boy with a history of recurrent urinary tract infections present with severe abdominal pain radiating to his back. Dysuria and haematuria.

**F. Renal Calculi**

**Note:**
relates to Urolithiasis, Renal Calculi. Children present with abdominal pain, voiding abnormalities, dysuria, haematuria may be present. Avoidance of dehydration is important. Treatment may require lithotripsy.

3) A 1 year old girl with a 3 month history of vomiting is investigated for failure to thrive. She is found to be mildly acidotic.

**G. Renal tubular acidosis**

**Note:**
Renal tubular acidosis is the answer to Item 3. It is a clinical state of systemic hyperchloeraemic acidosis resulting from impaired urinary acidification. Three types exist. Type 1 distal RTA, type 2 proximal RTA and type 4 mineralocorticoid deficiency. Type 3 is thought to be a variant of type 1. Types 1, 2 and 4 each have several causes. Children with isolated forms of proximal or distal commonly present with
growth failure; gastrointestinal symptoms are also common. Nephro-calcinosis and hypercalciuria may complicate distal RTA and goals of treatment are to correct the acidosis and to maintain normal Bicarbonate and Potassium levels.

9) Mucocutaneous infections and infestations
A. Enterobiasis vermicularis
B. Chlamydia
C. Candidiasis
D. Tinea pedis
E. Pityriasis rosea
F. Scabies
G. Ringworm
H. Lichen sclerosis
I. Napkin dermatitis
J. Lichen planus

For each of the following children who present with an itch, select the most appropriate diagnosis from the list of options:

1) A child complains of an itchy rash over his arms. His brother and sister have similar symptoms.

F. Scabies

Note:
Scabies is caused by the mite Sarcoptes scabiei hominis. Transmission is through close body contact, the adult mites lay their eggs in burrows in the skin and it results in an eczematous rash with parotitis skin.

2) A baby has an excoriated perineal rash involving the flexures.

C. Candidiasis

Note:
Candidiasis is caused by Candida albicans (yeast). In babies it presents as a perineal rash which usually affects the flexures. Satellite lesions may also be seen.

3) A boy has an itchy rash over the trunk with a solitary large oval lesion on the back.

E. Pityriasis rosea

Note:
Pityriasis rosea is a benign condition of the skin resulting in oval pink / brown scaly lesions over the trunk, which are usually preceded by a herald patch (a solitary large lesion usually between 1 –10cm). No treatment is required.

10) Childhood respiratory diseases
A. Asthma
B. Bronchiolitis
C. Croup
D. Cystic fibrosis
E. Diphtheria
F. Epiglottis
G. Pneumonia
H. Influenza
I. Retropharyngeal abscess
J. Whooping cough

For each patient below, choose the SINGLE most probable diagnosis from the above list of
options. Each option may be used once, more than once or not at all.

1) A six month old baby presents with high fever, breathlessness, cough and feeding difficulties. Chest examination reveals dull percussion note over the right base posteriorly with bronchial breath sounds on auscultation.

G. Pneumonia

Note:
Pneumonia may occur at any age. Patients present with fever, tachypnoea, feeding difficulties and cyanosis. Examination reveals bronchial breath sounds and crepitations. Chest X ray may show consolidation. Common organisms are pneumococcus, haemophilus, staphylococcus, mycoplasma, TB and viruses.

2) A 1 year old baby boy is wheezy, coughing, cyanosed and breathless with intercostal recession.

B. Bronchiolitis

Note:
Acute bronchiolitis is very common in infancy. In winter epidemics of respiratory syncytial virus infection are the commonest cause. Wheeze, cough, fever and respiratory distress are common. Chest X ray shows hyperinflation.

3) A 4 year old non immunized boy presents with bouts of coughing ending in vomiting. He has an absolute lymphocytosis.

J. Whooping cough

Note:
Whooping cough is caused by Bordetella pertussis infection. Bouts of coughing ending in vomiting, especially at night and after feeding suggest the diagnosis. The characteristic whoop, forced inspiration through a closed glottis may or may not be present. Absolute lymphocytosis is common. Complications include CNS haemorrhages, rectal prolapse and bronchiectasis.

4) A nine month old baby girl is upset and has stridor. Her voice is hoarse and has a barking cough. She has a low grade fever.

C. Croup

Note:
Croup usually occurs in epidemics in autumn or spring. Causative viruses are Parainfluenza (types 1, 2, or 3), respiratory syncytial viruses and measles virus. Onset is over a few days; stridor is harsh and occurs only when child is upset. A barking cough, harsh voice and ability to swallow secretions are typical.

5) A 2 year old boy is very unwell. His temperature is 39°C and he is unable to swallow his secretions.

F. Epiglottis

Note:
Acute epiglottitis is due to Haemophilus influenza type B infection. It is characterised by sudden onset, high fever, continuous stridor and drooling of secretions. Intravenous antibiotics, anaesthetic support are usually indicated.
11) Treatment of infectious disease
A. Acyclovir
B. Acyclovir plus Cefotaxime
C. Ampicillin plus Gentamicin
D. Benzylpenicillin
E. Ceftriaxone
F. Ciprofloxacin
G. Flucloxacinilin
H. Netilmicin
I. Symptomatic treatment
J. Teicoplanin

For each case of infectious disease described below choose the single best treatment option from the list.

1) A 4 year old with a 3 day history of vomiting and diarrhoea.
   I. Symptomatic treatment

Note:
A child with a history of gastroenteritis is a very common childhood illness. Conservative treatment only is required.

2) A 2 year old child with an immune deficiency develops Chicken Pox.
   A. Acyclovir

Note:
A child who is immuno-deficient and therefore must be provided with Zoster Immune Globulin if exposed to Chicken pox through contact. If the Chicken pox develops, treatment with Acyclovir is required.

3) A 7 year old child with widespread impetigo.
   G. Flucloxacinilin

Note:
Impetigo is a common staphylococcal skin manifestation, which is highly contagious. Most frequent sites being nostrils and the peri-oral area. Flucloxacinilin is the treatment of choice.

12) Exanthem
A. Staphylococcal scalded skin syndrome
B. Rubella
C. Measles
D. Kawasaki’s disease
E. Impetigo
F. Scarlatina
G. Infectious mononucleosis
H. Henoch – Schonlein purpura
I. Meningococcal infection
J. Stills disease (systemic onset juvenile chronic arthritis)

Match the following descriptions of rash with the illness for which they are the most typical exanthem

1) A 5 year old boy has a bright, red, punctate, erythematous rash which blanches on pressure, beginning in the axillae with some perioral pallor and relative facial sparing. The skin feels like “sandpaper”. The rash fades and desquamates on the hands and feet. A thick white exudate develops on the tongue which peels leaving a “strawberry tongue” with prominent papillae.
   F. Scarlatina (scarlet fever)
Note:
This description is typical of Scarlatina i.e. beta haemolytic streptococcal infection. The rash may be confused with that of Kawasaki disease. However, desquamation occurs in late in Kawasaki’s disease.

2) A maculopapular rash develops in a child with sore throat and fever who has been treated with ampicillin.  
   G. Infectious mononucleosis

Note:
This is a known effect of giving ampicillin during EBV infection.

3) A 3 year old child presents with high fever for 7 days, conjunctival injection, fissuring of the lips and strawberry tongue, erythema followed by desquamation of the hands and feet, and a macular rash over the trunk with cervical lymphadenopathy.  
   D. Kawasaki’s disease

Note:
There are major and minor features of Kawasaki disease. High fever and desquamation are typical.

13) Presentation of infectious disease in childhood
A. Chicken Pox  
B. Herpes simplex  
C. Infectious mononucleosis  
D. Measles  
E. Mumps  
F. Mycoplasma  
G. Pertussis  
H. Rubella  
I. Tuberculosis

For each presentation of infectious disease choose the single most likely diagnosis from the list of options.

1) May be complicated by cerebellar ataxia.  
   A. Chicken Pox

Note:
Chicken pox is a common childhood illness caused by Varicella. Vesicles usually appear as crops over the trunk. Viral cerebellitis is a complication.

2) May present with apnoeas during infancy.  
   G. Pertussis

Note:
Pertussis is caused by Bordetella pertussis. In infancy it can be dangerous often presenting with apnoeas. Signs of an upper respiratory tract infection are also common with a paroxysmal cough (whoop). Babies may also present with vomiting and cyanosis. A blood count will reveal a lymphocytosis. Complications include broncho-pneumonia and bronchiectasis as sequelae is also associated though uncommon.

3) Associated with a maculo-papular rash that typically starts on face and extends to rest of body  
   H. Rubella
Note:
Rubella infection is uncommon now due to widespread MMR vaccination. Typically causes a mild illness which may go undetected in 25-50% of cases. Typical symptoms are transient macular papular rash that starts on the face and extends to body and a low grade fever. Complications include arthritis, encephalitis and thrombocytopenia.

14) RASHES
A. Staphylococcal scalded skin syndrome
B. Rubella
C. Measles
D. Kawasaki's disease
E. Impetigo
F. Scarlatina
G. Infectious mononucleosis
H. Henoch – Schönlein purpura
I. Meningococcal infection
J. Still's disease (systemic onset juvenile chronic arthritis)

Match the following descriptions of rash with the illness for which they are the most typical exanthem.

1) A salmon-coloured, reticulate macular rash develops mainly over the extensor surfaces of the limbs in a 5 year old boy with swinging temperature; hot, swollen, painful knees and left elbow and palpable spleen. The ESR is 95. The blood count, C-reactive protein and chest X-ray are normal.
   J. Still's disease (systemic onset juvenile chronic arthritis)

Note:
"Salmon-coloured" is the description used to describe the rash of Still’s disease. The distribution is not that of HSP which covers typically the buttocks and limbs and is a purpuric rash.

2) A 12 year old boy develops petechiae and papules, some of which become purpuric over his buttocks and legs, associated with painful swollen knees. There is microscopic haematuria on testing. The platelet count is normal.
   H. Henoch – Schönlein purpura

Note:
This is a description of HSP and the well recognised complication of HSP nephritis. A proportion of these patients will develop progressive nephritis and end stage renal failure.

3) A 5 day old girl has a high temperature and is irritable. She has areas of desquamation over her finger tips and in the axillae. Her carer notices that her skin blisters easily following minimal contact.
   A. Staphylococcal scalded skin syndrome

Note:
SSSS results from infection with staphylococci with the exfoliative toxin A and B. These exotoxins cause disruption to the epidermal layer by interfering with intercellular junctions. Mortality is up to 3% in children. A positive Nikolsky sign (slippage of the superficial layer of the epithelium on gentle pressure) The desquamation occurs concomitantly with the illness unlike Kawasaki disease and Kawasaki disease does not occur in this age group. There may be a history of minimal skin trauma which provides a port of entry for the organism.
15) **DIARRHOEA**

A. Coeliac disease  
B. Crohns disease  
C. Ulcerative colitis  
D. Cows milk protein intolerance  
E. Toddlers diarrhoea  
F. Cystic fibrosis  
G. Lactose intolerance  
H. Irritable bowel syndrome  
I. Abdominal migraine  
J. Haemolytic uraemic syndrome

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**For the following children presenting with diarrhoea which is the most likely diagnosis:**

1) A 6 year old boy with Downs’s syndrome has between 3 and 4 loose stools a day. He is pale but otherwise the examination is unremarkable. When plotting his growth on a chart specific for Downs syndrome children it is clear that both height and weight have fallen across 2 centiles.

   A. Coeliac disease

   **Note:**  
   **Coeliac disease** is more occurs more frequently in Downs’s syndrome. To screen, anti-TTG antibodies taken with serum IgA must be evaluated.

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2) A 3 year old has intermittent diarrhoea with stools of varying consistency and sometimes undigested food particles. His growth is satisfactory. His mother had tried to reduce his intake of dairy produce but dietary manipulation has had no impact on the symptoms.

   E. Toddlers diarrhoea

   **Note:**  
   Toddler diarrhoea (thought to be a normal variant) occurs mainly in preschool children and is evidenced by undigested food observed in the faeces in a well child. Poor growth would indicate a likely pathological cause.

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3) A 4 month baby girl has severe atopic eczema and is regularly reviewed in the paediatric clinic. She had now developed diarrhoea and her weight has been static in recent weeks. A full blood count shows a slight eosinophilia.

   D. Cows milk protein intolerance

   **Note:**  
   CMPI is associated with eczema and eosinophilia. Cow’s milk should be excluded from the diet and reintroduced between 1-2 years if tolerated. An alternative milk source such as soy milk can be used until this is done.
16) Childhood infections
A. Adenovirus
B. Cytomegalovirus
C. Epstein-Barr virus
D. Escherichia coli
E. Giardia lamblia
F. Haemophilus influenzae type B
G. Listeria monocytogenes
H. Mycobacterium tuberculosis
I. Mycoplasma pneumoniae
J. Neisseria meningitidis
K. Pseudomonas aeruginosa
L. Pneumocystis carinii
M. Respiratory syncytial virus
N. Rotavirus
O. Staphylococcus aureus
P. Staphylococcus epidermidis
Q. Streptococcus agalactiae
R. Streptococcus pneumoniae
S. Streptococcus pyogenes
T. Toxoplasma gondii

All of the infectious diseases described below occur in children. For each one, select the most likely underlying causative agent from the list of options

1) A 3 year old boy is referred to hospital with a two day history of lethargy, irritability and poor feeding. On examination, he is pyrexial, drowsy and has a purpuric rash on his trunk and extremities. CSF obtained from a lumbar puncture is cloudy and contains 540 white cells/mm$^3$ (90% polymorphs) and 5 red blood cells/mm$^3$.

J. Neisseria meningitidis

2) A 6 year old girl presents with a one week history of febrile illness with sore throat and headache. One day prior to hospital admission, the patient awoke with pain and swelling in the right ankle. On examination, she has a warm swollen right ankle and a systolic heart murmur, consistent with mitral regurgitation.

S. Streptococcus pyogenes

3) A new born infant is found to be lethargic and has a distended abdomen immediately after birth. On examination, the infant is jaundiced and has hepatosplenomegaly. A cranial CT scan reveals periventricular calcification.

B. Cytomegalovirus

4) A 7 year old male child is referred to hospital by the general practitioner with acute renal failure. The child had bloody diarrhoea and a low grade fever a week ago; both resolved with rehydration.

D. Escherichia coli

5) A 4 month old female infant is brought to the hospital with severe respiratory distress. Five days previously, she had a cough and rhinitis. On examination her temperature is 38.9 °C, pulse 180/min and the respiratory rate 80/min. She had subcostal retractions and nasal flaring. On auscultation, there are rhonchi and wheezes all over her chest.

M. Respiratory syncytial virus

Comments:
1. The diagnosis of Meningococcal meningitis is clear. 2. Rheumatic fever results from immune-mediated post Group A streptococcal infection, Streptococcus pyogenes being a common pathogen. 3. Congenital CMV infection is associated with petechiae, choroidoretinitis, hepatosplenomegaly, intracerebral calcification which may lead to CNS damage with long term sequelaes. 4. E. coli infection has resulted in Haemolytic Uraemic Syndrome with renal failure. 5. Respiratory Syncytial Virus is the commonest cause of lower respiratory tract infections in children worldwide, and is the leading cause of bronchiolitis and pneumonia in children.
17) Viral infections
A. Measles
B. Rubella
C. Chicken Pox
D. Herpes Simplex
E. Mumps
F. Glandular fever
G. Pertussis
H. Polio myelitis
I. Hepatitis A

For each description below choose the single most likely viral infection from the list of options

1) Caused by a gram negative pleomorphic bacillus
   G. Pertussis

2) Is caused by a paramyxovirus.
   E. Mumps

3) This infection is often followed by a transient immuno-deficiency.
   F. Glandular fever

Comments:
Whooping cough is not uncommon in infancy. It typically presents with apnoeic episodes or cyanotic episodes during infancy. In the older child upper respiratory tract infections and a paroxysmal cough with a whoop is characteristic. Mumps is caused by a paramyxovirus. Glandular fever virus infects the B lymphocytes which results in an immuno-deficiency which is usually self limiting.

18) Childhood Diarrhoea
A. Adenovirus
B. Cytomegalovirus
C. Epstein-Barr virus
D. E. Coli
E. Giardia Lamblia
F. Hepatitis A
G. Norwalk virus
H. Rotavirus
I. Salmonella species
J. Staphylococcus aureus

Select one option from the list above that is most suitable for the following patients

1) Causes diarrhoea by invading the brush border of the small intestine and causes vacuolation.
   I. Salmonella species

Note:
Salmonella may contaminate foods improperly foods cooked or stored and invades the brush border of the small intestine. Symptoms include nausea, vomiting and diarrhoea approximately between 1-8 hours after ingestion.

2) Spread is due to personal contact as well as by contaminated water supply.
   E. Giardia Lamblia

Note:
Giardia Lamblia is a protozoa and may contaminate water or be transmitted by the faecal or oral route or person to person contact. Children are often asymptomatic however diarrhoea and cramps and weight loss may be features of the disease.

3) An organism which is not only associated with gastroenteritis but is also the most common cause of osteomyelitis and arthritis in children. J. Staphylococcus aureus

Note:
Staphylococcus aureus is a gram positive coccus and the most common cause of osteo-myelitis and arthritis in children. It may contaminate skin resulting in impetigo, cellulitis, folliculitis and furunculosis. It may cause pneumonias and may contaminate food resulting in enterotoxins being released in to the intestinal tract.

19) Contra-indications to Vaccines
A. BCG
B. Diphtheria Tetanus Pertussis
C. Hepatitis B
D. Haemophilus Influenzae B
E. Influenza
F. Measles Mumps Rubella
G. Polio
H. Rubella
I. Tetanus
J. Tuberculin

Which of the vaccines listed above would be contra-indicated in the following scenarios:

1) Contra-indicated if known to be allergic to Neomycin. F. Measles Mumps Rubella

Note:
refers to contra-indications to MMR, which include children with allergies to Gelatin, Neomycin or kanamycin as well as children with untreated malignant disease or altered immunity. Those receiving immuno-suppressive drugs or radiotherapy. Children who have received another live vaccine by injection within 3 weeks and children should not be given MMR within 3 months of an Immunoglobulin injection.

2) Contra-indicated in HIV positive patients. A. BCG

Note:
relates to vaccines in HIV infection. The department of health has advised that HIV positive subjects with or with out symptoms should not receive BCG, yellow fever or typhoid vaccinations.

3) Contra-indicated in subjects with progressive neurological conditions. B. Diphtheria Tetanus Pertussis

Note:
relates to DTP (and the pertussis component) which should not be given to subjects with any progressive neurological disorder particularly epilepsy and immunisation should be delayed until the condition is stable.
20) CHILDHOOD RESPIRATORY DISEASES
A. Asthma
B. Bronchiolitis
C. Croup
D. Cystic fibrosis
E. Diphtheria
F. Epiglottis
G. Pneumonia
H. Influenza
I. Retropharyngeal abscess
J. Whooping cough

For each patient below, choose the SINGLE most probable diagnosis from the above list of options. Each option may be used once, more than once or not at all.

1) A six month old baby presents with high fever, breathlessness, cough and feeding difficulties. Chest examination reveals dull percussion note over the right base posteriorly with bronchial breath sounds on auscultation.

G. Pneumonia

Note:
Pneumonia may occur at any age. Patients present with fever, tachypnoea, feeding difficulties and cyanosis. Examination reveals bronchial breath sounds and crepitations. Chest X ray may show consolidation. Common organisms are pneumococcus, haemophilus, staphylococcus, mycoplasma, TB and viruses.

2) A 1 year old baby boy is wheezy, coughing, cyanosed and breathless with intercostal recession.

B. Bronchiolitis

Note:
Acute bronchiolitis is very common in infancy. In winter epidemics of respiratory syncytial virus infection are the commonest cause. Wheeze, cough, fever and respiratory distress are common. Chest X ray shows hyperinflation.

3) A 4 year old non immunized boy presents with bouts of coughing ending in vomiting. He has an absolute lymphocytosis.

J. Whooping cough

Note:
Whooping cough is caused by Bordetella pertussis infection. Bouts of coughing ending in vomiting, especially at night and after feeding suggest the diagnosis. The characteristic whoop, forced inspiration through a closed glottis may or may not be present. Absolute lymphocytosis is common. Complications include CNS haemorrhages, rectal prolapse and bronchiectasis.

4) A nine month old baby girl is upset and has stridor. Her voice is hoarse and has a barking cough. She has a low grade fever.

C. Croup

Note:
Croup usually occurs in epidemics in autumn or spring. Causative viruses are Parainfluenza (types 1, 2, or 3), respiratory syncytial viruses and measles virus. Onset is over a few days; stridor is harsh and occurs only when child is upset. A barking cough, harsh voice and ability to swallow secretions are typical.

5) A 2 year old boy is very unwell. His temperature is 39oC and he is unable to swallow his secretions.

F. Epiglottis

Note:
Acute epiglottis is due to Haemophilus influenza type B infection. It is characterised by sudden onset, high fever, and continuous stridor and drooling of secretions. Intravenous antibiotics, anaesthetic support are usually indicated.
21) CONGENITAL AND NEONATAL DEFECTS DUE TO MATERNAL INFECTIONS

A. AIDS  
B. Cytomegalovirus (CMV)  
C. Coxsackie group B  
D. Hepatitis B  
E. Herpes simplex  
F. Listeriosis  
G. Rubella  
H. Syphilis  
I. Toxoplasmosis  
J. Varicella

For each patient below, choose the SINGLE most probable diagnosis from the above list of options. Each option may be used once, more than once or not at all.

1) A newborn baby presents with rudimentary digits, limb hypoplasia and convulsions.

   J. Varicella

   Note:
   Chicken pox infection within the first 20 weeks of pregnancy may result in the congenital varicella syndrome. This is characterised by cerebral cortical and cerebellar hypoplasia, microcephaly, convulsions, limb hypoplasia and rudimentary digits. Prevention is by administering varicella vaccine even before pregnancy. Varicella immunoglobulin is administered to pregnant women who are exposed to infection. Infection during pregnancy is treated with acyclovir.

2) A six week old baby is confirmed to have cataracts, cardiac abnormalities, thrombocytopenia and cerebral calcification.

   G. Rubella

   Note:
   This baby has congenital rubella. It occurs in children of non immunised women. Symptoms are absent in 50% of mothers. The foetus is most vulnerable in the first 16 weeks of pregnancy. Cataracts are associated with infections in weeks 8-9, deafness at 5-7 weeks and cardiac lesions from 5-10 weeks. Diagnosis is based on rising antibody titres in blood taken 10 days apart and the presence of IGM antibodies at 4-5 weeks from incubation period.

3) A pre term neonate has multi-organ disease with granulomas on his skin. His mother had a special liking for soft cheese during her pregnancy.

   F. Listeriosis

   Note:
   Maternal listeriosis is usually a mild infection but transplacental infection and premature labour may occur in about 5% of cases. Avoidance of partially cooked meats, soft cheeses and unpasteurised milk should avoid this infection. Treatment is with ampicillin and gentamicin. Neonatal infection is usually multi-organ and granulomas may be found on the skin and the pharynx.

4) A two week old baby has microcephaly, seizures and chorioretinitis.

   I. Toxoplasmosis

   Note:
   Maternal and foetal toxoplasma infection may be avoided by advising pregnant women to wear gloves when gardening or handling cat litter and to thoroughly cook meat. Affected babies are treated with pyrimethamine, sulphadiazine and folic acid.

5) A new born baby is very unwell with jaundice, hepatosplenomegaly and microcephaly.

   B. Cytomegalovirus (CMV)

   Note:
   Maternal CMV infection is usually mild and asymptomatic. 5 in 1000 live births are affected, 5% will develop cytomegalic inclusion disease. The foetus is most at risk in early pregnancy. There is no effective prevention.
22) **Childhood chest infections**
A. Chlamydia  
B. Cytomegalovirus  
C. Group B Streptococcus  
D. Haemophilus Influenza  
E. Mycoplasma pneumonia  
F. Parainfluenza  
G. Respiratory syncytial virus  
H. Rhinovirus  
I. Staphylococcus aureus  
J. Ureaplasma

Select the most appropriate pathogen from the above list that would account for the following presentations:

1) A 4 year old boy presents with a rapid history of high fever and drooling. 
   ________________  
   D. Haemophilus Influenza

2) A 4 year old girl presents with a 24 hour history of rhinitis, a barking cough and hoarseness. 
   ________________  
   F. Parainfluenza

3) The commonest cause of pneumonia in the neonate. 
   ________________  
   C. Group B Streptococcus

Comments:  
Item 1 describes a child with acute epiglottitis. This is a rare infection mainly caused by Haemophilus influenza. Airway obstruction can develop rapidly due to oedema around the epiglottis. Item 2 describe a child with croup. Acute laryngotracheal bronchitis. It is almost exclusively viral in origin. Mainly Parainfluenza. Streptococcus pneumonia is a common pathogen in the lung and the commonest cause of pneumonia in the neonate.

23) **Mucocutaneous infections and infestations**
A. Enterobiasis vermicularis  
B. Chlamydia  
C. Candidiasis  
D. Tinea pedis  
E. Pityriasis rosea  
F. Scabies  
G. Ringworm  
H. Lichen sclerosus  
I. Napkin dermatitis  
J. Lichen planus

For each of the following children who present with an itch, select the most appropriate diagnosis from the list of options:

1) A child has itching in the vulva region mostly at night. 
   ________________  
   A. Enterobiasis vermicularis

   **Note:**  
Enterobiasis vermicularis is also known as threadworms. It is a common infestation in children and present with nocturnal anal pruritus and a perianal irritation.

2) A child presents with annular regions over the trunk. 
   ________________  
   G. Ringworm
**Note:**
Ringworm also known as tinea corporis presents with plaques of scaling eczema which are characteristically itchy.

3) A diabetic child presents with a vulva rash.  

**Note:**
Candidiasis is caused by Candida albicans (yeast). In babies it presents as a perineal rash which usually affects the flexures. Satellite lesions may also be seen.

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### 24) Presentation of infectious disease in childhood

A. Chicken Pox  
B. Herpes simplex  
C. Infectious mononucleosis  
D. Measles  
E. Mumps  
F. Mycoplasma  
G. Pertussis  
H. Rubella  
I. Tuberculosis

For each presentation of infectious disease choose the single most likely diagnosis from the list of options.

1) Commonly causes an acute gingivostomatitis.  

**Note:**
Herpes simplex - the majority of children have benign manifestations of primary infection with Herpes simplex, for example a gingival stomatitis. The virus is readily spread by direct contact especially to damaged skin e.g. eczema.

2) Causing an acute parotitis  

**Note:**
Mumps infection is now uncommon due to the vaccination. It is caused by a paramyxovirus and usually causes minimal symptoms. The most common manifestation being an acute parotitis although severe infection with mumps may result in meningoencephalitis plus deafness.

3) Causing an exudative tonsillitis.  

**Note:**
Glandular fever is also called infectious mononucleosis. It is caused by Epstein-Barr virus and usually presents with an exudative pharyngitis or tonsillitis and cervical lymphadenopathy. It may cause a transient impairment of cellular and humeral immunity, which is usually self limiting.
25) **Childhood respiratory infections**
A. Allergic Bronchopulmonary aspergillosis  
B. Aspergilloma  
C. Bordetella pertussis  
D. Chlamydia  
E. Coxsackie B  
F. Klebsiella pneumonia  
G. Mycoplasma pneumonia  
H. Pneumocystis carinii  
I. Pseudomonas aeruginosa  
J. Tuberculosis

**From the list above, select the most appropriate diagnosis for the following presentations:**

1) A 5 year old boy with cystic fibrosis undergoes a routine chest x-ray which reveals an apical round lesion on the left of his chest.  

   B. Aspergilloma

**Note:**  
Aspergilloma is a fungus which may complicate conditions such as asthma and cystic fibrosis. Children present with a cough and wheeze and there may be a positive skin test to aspergillus with an eosinophilia and an elevated IgE. Chest x-ray may reveal an apical round mass.

2) A 5 year old girl with a high temperature presents with painful blisters on the palms and soles of her feet  

   E. Coxsackie B

**Note:**  
describes a child with hand foot and mouth, which is typically caused by Coxsackie B. Characteristically individuals develop papules which then progress to vesicles. They are painful and pruritic and typically affect acral areas. It is often associated with a high temperature.

3) A 14 year old boy presents with fever, anorexia and loss of weight of 3 months duration. Scattered crepitations are heard over both lungs. Chest x-ray is abnormal with generalised mottling.  

   J. Tuberculosis

**Note:**  
TB- Mycobacterium Tuberculosis is a primary infection which may occur in the lung, gut or skin. The local infection spreads to the surrounding lymph nodes, which constitutes the primary complex in the lungs. Progression of the primary complex may result in bronchopneumonia or bronchial obstruction secondary to enlargement of the lymph nodes. Pleural effusions may also occur as well as cavitations. Primary TB may spread to the blood stream resulting in TB. Examination may reveal hepatosplenomegaly and fundoscopy may reveal choroid tubercles.

26) **Treatment of infectious disease**
A. Acyclovir  
B. Acyclovir plus Cefotaxime  
C. Ampicillin plus Gentamicin  
D. Benzylpenicillin  
E. Ceftriaxone  
F. Ciprofloxacin  
G. Flucloxacillin  
H. Netilmicin  
I. Symptomatic treatment  
J. Teicoplanin
For each case of infectious disease described below choose the single best treatment option from the list.

1) A 7 year old child develops an exudative tonsillitis and lethargy, monospot is positive

**Note:**
Glandular fever where the treatment is symptomatic / conservative only.

2) A 1 year old child presents with neck stiffness and a purpuric rash.

**Note:**
A child with meningococcaemia presented to the surgery and Benzylpenicillin needs to be given urgently prior to transfer to hospital.

3) A 4 year old child presents with encephalopathy. The EEG shows high amplitude, abnormal waveforms. The MRI scan is also abnormal. A diagnosis of encephalitis is made.

**Note:**
A child with encephalitis. The majority of cases are secondary to viruses although toxic and metabolic causes need to be considered. Of the viruses Herpes simplex is the most common agent causing encephalitis. When encephalitis is suspected both antibiotics and Acyclovir must be commenced immediately.

27) Cutaneous manifestations of infectious disease

A. Rheumatic fever  
B. TB  
C. Lyme’s disease  
D. Chicken pox  
E. Histoplasmosis  
F. Cat scratch disease  
G. Measles  
H. Parvovirus  
I. Hepatitis B  
J. Herpes simplex

For each cutaneous manifestation described below choose the single most likely associated infectious disease.

1) Erythema infectiosum.

**Note:**
*Erythema infectiosum* also known as Fifths disease caused by human parvovirus, often results in a low grade temperature, slapped cheek appearance to the face and a reticular lacy rash to the arms.

2) Gianotti-Crosti.

**Note:**
*Gianotti-Crosti* is a syndrome of non-pruritic erythematous papules on the face, buttocks and extremities. Characteristically related to Hepatitis B infection although other viruses for example EBV may be associated.

3) Koplik spots.

**Note:**
*Koplik spots* are white coarse granules found on the buccal mucosa opposite the back molars and is pathognomonic for measles.
28) **Congenital and neonatal defects due to maternal infection**

A. AIDS  
B. Coxsackie group B  
C. Cytomegalovirus (CMV)  
D. Hepatitis B  
E. Rubella  
F. Herpes simplex  
G. Listeriosis  
H. Syphilis  
I. Varicella  
J. Toxoplasmosis

For each patient below, choose the SINGLE most probable diagnosis from the above list of options. Each option may be used once, more than once or not at all.

1) A newborn baby presents with rudimentary digits, limb hypoplasia and convulsions.  
   I. Varicella

2) A six week old baby is confirmed to have cataracts, cardiac abnormalities, thrombocytopenia and cerebral calcification.  
   E. Rubella

3) A pre term neonate has multi-organ disease with granulomas on his skin. His mother had a special liking for soft cheese during her pregnancy.  
   G. Listeriosis

4) A two week old baby has microcephaly, seizures and chorioretinitis.  
   J. Toxoplasmosis

5) A new born baby is very unwell with jaundice, hepatospleno-gemal and microcephaly.  
   C. Cytomegalovirus (CMV)

Comments:
Rudimentary digits and limb hypoplasia suggest congenital chicken pox infection. The presence of cataracts, cardiac abnormalities, thrombocytopenia and cerebral calcification suggest a diagnosis of Congenital rubella. The presence of Chorio-retinitis strongly suggests a diagnosis of Toxoplasmosis. The baby born with granulomas and whose mother has a special liking for soft cheese suggests Listeria Monocytogenes infection. Chorio-retinitis suggests The presence of Jaundice, HSM and microcephaly suggests CMV infection.

29) **CHILDHOOD VIRAL INFECTIONS**

A. Adenovirus  
B. Coxsackie  
C. Cytomegalovirus  
D. Epstein barr  
E. Measles  
F. Molluscum contagiosum  
G. Mumps  
H. Rotavirus  
I. Rubella  
J. Vancella

For each patient with the group of symptoms listed below, choose the SINGLE most probable causative agent from the above list of options. Each option may be used once, more than once or not at all.
1) A two year old infant boy is admitted to hospital with vomiting, none bloody watery diarrhoea and is dehydrated. It emerges other children from his play group have developed a similar illness.  

**H. Rotavirus**

**Note:**
Rotavirus is the most common cause of severe viral gastroenteritis worldwide. Infection is via the faeco-oral route and often occurs in children aged between six months to six years. This RNA virus replicates in the intestinal mucosal cells damages transport mechanisms leading to salt and water depletion which results in diarrhoea and vomiting. Diagnosis is made from clinical features and culture of virus from stools and also by Polymerase chain reaction techniques. Treatment is mainly rehydration and correction of any electrolyte imbalance.

2) A two year old boy is mildly unwell. His mother has noticed vesicles in his mouth, palms and soles of his feet.  

**B. Coxsackie**

**Note:**
Coxsackie A16 virus is the cause of hand, foot and mouth disease characterized by fever, sore throat and ulcerating vesicles in palms, oropharynx and on soles. Incubation period is 5-7 days and these heal without crusting. Treatment is symptomatic.

3) A three-year baby girl presents with a macular confluent rash which appeared initially behind the ears and is spreading. Over the previous five days she has had a low grade fever, catarrh and conjunctivitis. Her mother is vague about her immunization history.  

**E. Measles**

**Note:**
Measles is caused by and RNA paramyxovirus and occurs worldwide. Outbreaks are common in areas with high numbers of non immunized children. Infection is transmitted via respiratory droplets and incubation period is 10-21 days. The prodromal stage fever conjunctivitis, runny nose and coughing lasts for five days. Koplik’s spots are bright red lesions with a central white dot which appear on the buccal mucosa. These are virtually diagnostic. The typical macular confluent rash appears on the face from day 3-5 and spreads to the rest of the body. Diagnosis is made from clinical features, viral culture from lesions and a greater than 4-fold rise in antibody titre. Otitis media, pneumonia, meningitis and very rarely several years after primary infection subacute sclerosing panencephalitis (SSPE).

4) A ten year old girl develops an itchy rash on her body which is spreading to her body. She traveled to see her grandmother who was unwell with a painful rash three weeks ago.  

**J. Varicella**

**Note:**
Varicella (Chicken pox) is transmitted by respiratory droplets and contact with somebody with shingles. Incubation period is 14-21 days and following a brief period of malaise, an itchy papulovesicular rash appears on trunk and spreads to the head and the extremities. The rash evolves from papules to vesicles, pustules and finally crusts. Antiviral therapy is reserved for systemic disease in the immunocompromised.

5) The four month old baby daughter of an HIV positive mother is admitted to hospital with seizures. She has neonatal jaundice and microcephaly.  

**C. Cytomegalovirus**

**Note:**
Cytomegalovirus inclusion disease is the result of infection of the foetus. Many organs may be affected and congenital abnormalities result. Microcephaly, seizures, neonatal jaundice, hepatosplenomegaly, deafness and mental retardation are some of the features that may occur.
30) Cutaneous manifestations of infectious disease
A. Rheumatic fever
B. TB
C. Lyme's disease
D. Chicken pox
E. Histoplasmosis
F. Cat scratch disease
G. Measles
H. Parvovirus
I. Hepatitis B
J. Herpes simplex

For each cutaneous manifestation described below choose the single most likely associated infectious disease.

1) Erythema nodosum in presence of abnormal chest x-ray.  
   B. TB

Note: Erythema nodosum may be associated with streptococcal reactions, rheumatic fever and Tuberculosis. In the presence of an abnormal chest X-ray TB is the most likely answer.

2) Erythema marginatum  
   A. Rheumatic fever

Note: Erythema marginatum is one of the five major criteria to make a diagnosis of rheumatic fever. It is a pink rash with pale centres and a serpiginous margin, found on the trunk and proximal limbs.

3) Erythema chronicum migrans.  
   C. Lyme's disease

Note: Erythema chronicum migrans found in Lyme's disease. A febrile illness caused by Borrelia burgdorferi transmitted by bites of animal tic. The rash is characterised by red margins and central clearing.