**Question 1**

Which of the following bacterial infections causes a sunburn like rash that evolves into bullae?

A Staph Aureus

B Listeria monocytogenes

C Steptococcal pyogenes

D Enterococci

Explanation A

This question can present as an EMQ

Staphylococcal scalded skin syndrome, also called Ritter’s disease, occurs most frequently in children with S. aureus infection of the nasopharynx or skin. There is a sunburn liker ash that spread over the entire body and evolves into fragile bullae that leads to partial or total skin loss. The desquamation occurs at the level granulosa layer of the epidermis. This is different to toxic epidermal necrolysis, which is secondary to drug hypersensitivity and causes desquamation at the level of the epidermal junction

**Question 2**

Which of the following bacterial infections are related to dairy products, cause abortions in pregnancy?

A Listeria monocytogenes

B Mycobacterium Leprae

C Anthrax

D Bordetella pertussis

Explanation A

This question can present as an EMQ

Listeria monocytogenes is a gram positive bacillus that causes severe food borne infections. Outbreaks have been linked to dairy products, chicken and hotdogs. Pregnant women, neonates, older adults and immunosuppressed patients are susceptible to listeria infections.

In pregnant women, infection causes amnionitis resulting in abortion, stillbirth or neonatal sepsis. In neonates and immunosuppressed the infections results in exudative meningitis and can result in disseminated disease (granulomatosis infantiseptica of the newborn)

Other stem options: Staph Aureus, Staph pyogenes, TB

**Question 3**

Which of the following diseases cause high fevers, swollen gums and lymph node enlargement in children?

A Takayasu arteritis

B Thromboangitis obliterans

C Kawasaki Disease

D Infective vasculitis

Explanation C

This question can be in an EMQ format

Kawasaki disease

Self-limiting childhood acute febrile illness. (80% occur in <4yrs old)

Associated with arteritis affecting large to medium sized and even small vessels.

Clinical picture: conjunctival and oral erythema with blistering. Oedema of the hand and feet. Erythema of palms and soles. Cervical lymph enlargement. 20% of untreated patient developed cardiac sequel ranging form asymptomatic coronary arteritis, to coronary ectasia, to giant coronary aneurysms leading to rupture , thrombosis, myocardial infarction and death.

If disease is identified early, treatment with aspirin and immunoglobulin sharply reduces the risk of coronary artery disease.

Note: there is no mention of gums disease in the current prescribed textbook

Other stem options include:

Takayasu arteritis, Wegeners granulomatisis, Churg-strass syndrome and microscopic polyangitis

**Question 4**

Which of the following dieases cause fatigue and loss of vision in one eye?

A Giant cell arteritis

B Infectious vasculitis

C Polyarteritis nodosa

D Thromboangitis obliterans

Explanation A

This question can be in an EMQ format

Giant cell (temporal) arteritis is rare before age 50.

Symptoms:

Vague, constitutional- fever, fatigue and weight loss.

Facial or head pain along the course of the superficial temporal artery, painful to palpation

Ocular symptoms: (involvement of the ophthalmic artery) appear abruptly in 50% of people. The symptoms range from diplopia to acute vison loss. Diagnose depends on biopsy and histologic confirmation

Treatment: corticosteroids or anti-TNF therapies are usually effective

Other stem options include:

Takayasu arteritis, Wegeners granulomatisis, Churg-strass syndrome and microscopic polyangitis

**Question 5**

Which if the following group of people should get a Hepatitis B vaccination?

A A child at the age of 4 months, receiving their first vaccination as per the Australia schedule

B All persons who is high risk of attracting hepatitis A

C Day care workers

D All persons receiving a blood transfusion

Explanation C

Hepatitis vaccination program should occur at ages: 0, 2, 4 , 6 months

Hepatitis A is faecal oral spread (water-food). There is an increase of attracting hepatitis E

Blood products are heavily screened in Australia and the risk in negligible

Horizontal spread of hepatitis B can occur through minor breaks in the skin and mucous membranes. Therefore, healthcare workers, day care workers, sexual workers are all at increased risk and should be immunized.

I have left the answer as day care workers. The recommendation to get vaccinated following blood transfusions or risk of hepatitis A exposure does not apply to every one

Extra: form QLD health

People who work with children All people working with children, including: staff and students working in early childhood education and care correctional staff working where infants/children cohabitate with mothers school teachers (including student teachers) outside school hours carers child counselling services workers youth services workers Influenza Measles Mumps Rubella (German measles) Whooping cough (pertussis) Chickenpox (varicella) Staff working in early childhood education and care As above plus hepatitis A

Extra: form immunise.health.gov.au

This further reduces the residual risk of hepatitis B transmission through transfusion in Australia, to approximately 1 in 982 000 per unit transfused. However, persons with clotting disorders who receive blood product concentrates, persons with recurrent transfusion requirements, and persons with underlying immunocompromise have an elevated risk of hepatitis B virus infection, and should therefore be vaccinated.

Combination hepatitis A/hepatitis B vaccines should be considered for susceptible persons in whom both hepatitis A and hepatitis B vaccines are recommended, including:

travelers to, and expatriates living in, moderately to highly endemic areas for hepatitis A and B

persons whose lifestyle puts them at increased risk of hepatitis A and hepatitis B (sexually active men who have sex with men, sex industry workers, persons who inject drugs and inmates of correctional facilities)

persons who attend or work at residential or non-residential facilities for people with developmental disabilities

persons with occupational risks of exposure to both hepatitis A and hepatitis B

persons with chronic liver disease and/or hepatitis C

solid organ transplant liver recipients or solid organ transplant recipients who have chronic liver disease

**Question 6**

What is the route of transmission of Hepatitis E?

A Respiratory droplet

B Injection-blood borne

C Faecal-oral

D Sexual intercourse

Explanation C

Hepatitis E is an enterically transmitted water-borne infection that occurs primarily in young to middle aged adults. HEV is a zoonotic disease with animal reservoirs: monkeys, cats, pigs and dogs.

**Question 7**

A 6yr female presents to the ED with gingivostomatitis. Which of the following viruses is the likely cause?

A Herpes simplex virus

B Varicella-Zoster virus

C Cytomegalovirus

D Epstein-Barr virus

Explanation A

Most orofacial herpetic infections are caused by herpes simplex virus type 1 (HSV-1), with the remainder being caused by HSV-2 (genital herpes). With changing sexual practices, oral HSV-2 is increasingly common. Primary infections typically occur in children between 2 and 4 years of age and are often asymptomatic. However, in 10% to 20% of cases the primary infection manifests as acute herpetic gingivostomatitis, with abrupt onset of vesicles and ulcerations throughout the oral cavity. Most adults harbor latent HSV-1, and the virus can be reactivated, resulting in a so-called “cold sore” or recurrent herpetic stomatitis.

**Question 8**

An intravenous drug user presents to the emergency department with suspected osteomyelitis of the ankle

Which organism is frequently isolated in this type of patient?

A E.Coli

B Staphylococcus

C Salmonella

D H.influenzae

Explanation A

Staph. aureus is responsible for 80-90% of cases of pyogenic osteomyelitis. IVDU and patients with genitourinary tract infections often have E.Coli, Pseudomonas and Klebsiella as the causative organisms. In the neonatal period, H.influenzae and group B streptococci are most commonly found and in sickle cell disease, salmonella in prevalent.

The above explanation is form the prescribed text book, but review from an ortho study 2010: Microbiology of bone and joint infections in injecting drug abusers: (I would stick with the original answer)

RESULTS: Cultures yielded predominately Gram-positive bacteria: Staphylococcus aureus in 52% and coagulase-negative Staphylococcus in 20%. The proportion of oxacillin-resistant S aureus among S aureus infections increased from 21% in 1998 to 73% in 2005. Gram-negative organisms were present in 19% of infections and anaerobes in 13%. Patients with osteomyelitis had a higher prevalence of polymicrobial infections (46% versus 15%), infections due to Gram-negative organisms (24% versus 9%), and anaerobic infections (19% versus 6%) compared to patients with septic arthritis.

**Question 9**

An unimmunised patient presents to the ED with a measles rash. Which of the following statements is true?

A Rash is classically described as a generalised vesicular erythematous rash

B Conjunctivitis is an uncommon feature associate with the measles rash

C The rash starts on the head and trunk before spreading to cover most of the body.

D Ulcerated mucosal lesions near the ducts of Stenson are not pathognomonic of measles

Explanation C

The characteristic measles rash is classically described as a generalised maculopapular erythematous rash. It starts on the head and trunk before spreading to cover most of the body.

Morphology: The blotch reddish brown rash of measles is produced by dilated skin vessels, oedema, and a moderate nonspecific mononuclear perivascular infiltrate. In the mouth-Koplik spots- are ulcerated mucosal lesions near the duct of Stensen are marked by necrosis, neutrophilic exudate and neovascularization.-pathognomonic of measles.

Classic signs and symptoms of measles include four-day fevers and the three Cs- cough, coryza and conjuctivitis along with fever and rashes

Extra: measles is a single stranded RNA virus of the paramyxovirus family. There is only one serotype. It is spread by respiratory droplets. Antibody-mediated immunity to the virus prevents reinfection. Measles can also produce severe immunosupression in patients resulting in secondary bacterial and viral infections responsible for much of the measles related morbidity and mortality.

**Question 10**

Which is incorrect regarding Campylobacter Jejuni?

A Extra intestinal manifestations includes Guillain Barre Syndrome.

B Campylobacter Jejuni is the most common bacterial enteric pathogen is developed countries

C Dysentery develops in 15% of patients

D Patients do not shed bacteria following clinical resolution

Explanation D

Campylobacter Jejuni is the most common bacterial enteric pathogen is developed countries and is an important cause of traveller’s diarrhoea. Most infections are associated with improperly cooked chicken but can occur due to unpasteurised milk and contaminated water.

Campylobacter has 4 major virulence properties: motility, adherence, toxin production and invasion.

It contains flagella that allow it to be motile. This facilitates adherence and colonisation, which is necessary for mucosal invasion

Extra intestinal manifestations include: arthritis, Guillain Barre Syndrome.

Clinical: ingestion of as little as 500 C. Jejuni can cause disease. Incubation period up to 8 days. Watery diarrhoea with or following acute prodrome flu like illness is the primary symptom and dysentery develops in 15% of patients. Patients may shed bacteria up to one month following clinical resolution. Antibiotics are generally not required

**Question 11**

Which is true concerning enterocolitis?

A Campylobactor is the most common bacterial enteric pathogen in developed countries

B Salmonella cause fevers which lasts for 5 days, but diarrhoea can persist for 2 weeks.

C Salmonella cannot survive in gastric contents

D Shigella has 3 major recognised strains

Explanation A

Campylobactor is the most common bacterial enteric pathogen is developed countries and is an important cause of traveller’s diarrhoea. Most infections are associated with improperly cooked chicken but can occur due to unpasteurised milk and contaminated water.

Shigella has 4 major recognised strains. Shigella are unencapsulated non motile facultative anaerobes.

Salmonella cause fevers which lasts for 2 days, but diarrhoea can persist for 2 weeks.

S.Typhi causes typhoid fever endemically, but S. Paratyphi is more common amongst travellers, probably due to the vaccine against S.Typhi. Salmonella can survive in gastric contents

**Question 12**

Regarding secondary syphilis, which of the following statements is correct?

A Occurs 5 - 12 months post primary infection

B Lesions spare palms and soles

C Lesions are infectious because they contain spirochetes

D Lesions on genitals are painful

Explanation C

Secondary syphilis occur on the palms and soles. The lesions on the genitalia, mucous membranes, palms and soles are painless. It occurs 2-10 weeks post primary infection

**Question 13**

Regarding hepatitis B, which of the following statements is correct?

A IgG represents a recent infection

B HBeAG indicates an active replication

C Anti-HBe signifies an acute active infection

D Surface antigen occurs after symptoms

Explanation B

HBsAG appears before the onset of symptoms. Anti-HBe AG is detectable only after the disappearance of the HBeAg implying that acute infection has peaked and is on the wane. Anti-HBe AG occurs as an adaptive response to infection. IgG appears after acute infections (after IgM) and persists for life, representing life long immunity

Extra: The panel of tests suggested by the RACGP is actually: HBsAG, Anti HBs and Anti HBc

**Question 14**

Which of the following is rarely transmitted by arthropods?

A Rocky mountain spotted fever

B Scrub typhus

C Q fever

D Lyme disease

Explanation C

Q fever is disease caused by infection with Coxiella burnettii, a bacterium that affects humans and other animals . This organism is uncommon, but may be found in cattle, sheep and goats and other domestic mammals, including cats and dogs The infection results from inhilation of a spore-like small cell variant, and from contact with the milk, urine, feces, vaginal mucus, or semen of infected animals. Rarely, the disease is tick borne. The other dieases are commonly spread by ticks. Lymes disease is the most common tick borne disease in the northern hemisphere.

**Question 15**

Aschoff bodies are classically seen in which of the following conditions?

A Thalassemia major

B Rheumatic fever

C Acute myeloid leukemia (AML)

D Non-Hodgkins lymphoma

Explanation

Aschoff bodies are nodules found in the hearts of individuals with acute rheumatic fever. They result from inflammation in the heart muscle. They are rarely seen in chronic rheumatic fever.

**Question 16**

Regarding Hepatitis E, which of the following statements is correct?

A Causes chronic hepatitis

B Mortality of 20% in pregnant females

C Occurs primarily in children

D Incubation of 5 days

Explanation B

Hepatitis E incubation period is 6 weeks. It is an enterically transmitted, water borne disease (faecal-oral). It is not associated with chronic liver disease. It occurs primarily in young to middel aged adults; sporadic infection and overt illness in children are rare. Symptoms resolve in 2-4 weeks during which the IgM is replaced with a persistent IgG anti-HEV titre. Mortality in pregnant women approaches 20%

**Question 17**

Which of the following conditions can be caused by staphylococcus infection?

A Rheumatic fever

B Food poisoning

C Scarlet fever

D Dental infections

Explanation B

Streptococcus causes tonsillitis, scarlet fever, impetigo and RF. Dental infections are caused by Strep Viridans. Remeber that staphylococcal infection can also cause impetigo, pneumonia, toxic shock syndrome, tonsillitis and sepsis, endocarditis and osteomyelitis. It seems that the jury is still out about stalococci dental infections. Some endodontists have reported case studies of staf dental infections bu tthe majority still hold that it is an unlikely source of dental infections

**Question 18**

All of the following are DNA viruses, with the exception of?

A Varicella zoster virus (VZV)

B Epstein-Barr virus (EBV)

C Human immunodeficiency virus (HIV)

D Cytomegalovirus (CMV)

Explanation C

DNA viruses include: adenovirus, Hepatitis B, herpes symplex virus (HSV), human papillomavirus (HPV), molluscum virus and the John Cunningham (JC) virus

HIV is a lentivirus, which is a subgroup of retroviridae, which are RNA viruses

**Question 19**

What is the most common primary site for tuberculosis (TB)?

A In the lower part of the lower lobe

B Sub pleural

C In the upper part of the lower lobe

D Near the apical pleura

Explanation C

Primary TB occurs in the lower part of the upper lobe or the upper part of the lower lobe usually close to th epleura. Secondary TB occurs near the apical pleura.

Most common Extra-Pulmonary involvement = Lymph nodes: cervical, supraclavicular, axillary

**Question 20**

Which of the following is an RNA virus?

A Epstein-Barr virus (EBV)

B Human immunodeficiency virus (HIV)

C Varicella zoster virus (VZV)

D Herpes simplex virus (HSV)

Explanation B

RNA viruses include: echovirus, coxsackie, rhinovirus, influenza, RSV, mumps, hepatitis A D C E, human T-lymphotropic virus (HTLV) 1 and 2, dengue, yellow fever, rabies and Colorado tick

Common DNA Viruses include 1)Herpesviridae ( HSV, VZV, EBV, CMV and 2) HBV

**Question 21**

Regarding Rickettsial infections, which of the following statements is correct?

A Produce significant toxins

B Involve the endothelial cells

C Commonly infect the liver

D Infect the smooth muscle cells

Explanation B

Rickettsial bacteria are vector borne obligate intracellular organisms. Rickettsial bacteria infect (replicate within membrane-bound vacuoles in vascular endothelial cells) the vascular endothelial cells, especially those of the brain and lungs. They have an endotoxin but lack secreted toxins. T lymphocyte mediated immunity is most important for clearing Rickettsial infections. Innate immunity with NK > IFN-gamma > reduce proliferation. Multiple organs are involved (SEVERE manifestations are due to vascular leakage secondary to endothelial cell damage), however, the liver and spleen, less common

NOTE: Chlamydia are similar but divide within epithelial cells

Epidemic typhus (Rickettsia prowazekii)

Scrub typhus (Orienta tsutsugamushi)

Rocky mountain spotted fevers (Rickettsia rickettsii) -dog tick vector

Gram NEGATIVE rod, though stain poorly

DIAGNOSIS

immunostaining of organisms, or serological detection of Abs

**Question 22**

Which of the following statements is correct regarding the polio virus?

A It causes symptoms in 40% of people

B It is a RNA paramyxovirus

C It causes a viraemia before spreading to the spinal cord and brainstem

D It lives in the dorsal root ganglion

Explanation C

Polio is a picornaviridae (RNA) virus. It infects humans only. It replicates in the anterior motor unit of the spinal cord or brain stem. It causes symptoms in 1% of infected people. Although it is clear that antiviral antibodies control the disease in most cases, it is not known why some individuals fail to control the virus. Viral spread to the nervous system may be secondary to viraemia or occurs by retrograde transport of the virus along axons of the motor neurons. Unfortunately, rare cases of polio after vaccination has been reported and is due to mutations of the attenuated viruses to wild form types.

**Question 23**

Regarding staphylococcus aureus, which of the following staements is correct?

A All of the above

B Has enterotoxins which stimulate emetic receptors in the abdominal viscera

C Has a capsule that allows it to attach to artificial materials

D Has a lipase which degrades lipids on the skin surface

Explanation A

Staphylococcus aureus is a pyogenic gram +ve coccus which form clusters like bunches of grapes. These bacteria cause a myriad of skin lesions as well as abscess, sepsis, osteomyelitis, pneumonia, endocarditis, food poisoning and toxic shock syndrome. S. aureus possess a multitude of virulence factors, which include surface proteins involved in adherence, secreted enzymes that degrade proteins and secreted toxins that damage host cells. The lipase of S. aureus degrades lipids on the skin surface, and thus has the ability to produce skin infections. S. aureus infecting prosthetic valves and catheters have a polysaccharide capsule that allows them to attach to the artificial material and to resist artificial host cell phagocytosis. Staphylococcal enterotoxins (SEs) are exotoxins produced by Staphylococcus aureus that cause staphylococcal food poisoning in humans. However, little is known about the mechanisms of the emetic activity of SEs.

**Question 24**

Staphylococcus aureus can cause all of the following, with the exception of?

A Osteomyelitis

B Scalded skin syndrome

C Carbuncles

D Scarlet fever

Explanation D

Streptococcus causes tonsillitis (more commonly), scarlet fever (group a haemolytic streptococcus-strep pyogenes), impetigo and rheumatic fever. Remember that staphylococcal infection can cause boils, carbuncles, impetigo, pneumonia, toxic shock syndrome and sepsis, endocarditis, scalded skin syndrome (production of exotoxin enzyme protease) and osteomyelitis. Less commonly, staf aureus can cause tonsillitis

**Question 25**

In regards to hepatitis B, which of the following statements is correct?

A The majority of cases of persistent infection result in cirrhosis

B Acute infection causes sub-clinical disease in 65% of cases

C HBsAg appears soon after overt disease

D Anti-HBs appears soon after HBsAg

Explanation B

HBsAG appears before the onset of symptoms. Anti-HBe is detectable only after the disappearance of the HBeAg implying that acute infection has peaked and is on the wane. IgG appears after acute infections and persists for life and represents life long immunity.

In acute infection-

65% of cases result in subclinical disease, 100% of these will recover.

25% will develop acute hepatitis. 99% of these cases will recover, 1% will develop fulminant hepatitis

5-10% will develop chronic hepatitis.

Of those patients developing chronic hepatitis, 20-30% will develop cirrhosis and/0r 2-3% will develop hepatocellular carcinoma. 70% will recover

Note: There is a window period of couple of weeks, between disappearance of HbsAg and appearance of Anti-Hbs, conferring protective immunity.

**Question 26**

Which of the following statements is correct in regards to hepatitis C?

A Causes chronic hepatitis at a higher rate than hepatitis B

B Is acquired by faecal-oral transmission

C Exposure confers effective immunity to subsequent infection

D Has its highest prevelance in heamodialysis patients

Explanation A

The main routes of transmission are inoculations and blood transfusion. The groups considered at higher risk are homosexuals, haemodialysis patients, haemophiliacs and IV drug abusers. (The IV drug users have a risk of 50-90%). In contrast to hepatitis B (HBV), hepatitis C (HCV) has a higher rate of progression to chronic disease and cirrhosis, exceeding 50%. Elevated anti-HCV IgG occurring after an acute infection does not confer effective immunity. A characteristic infection of HCV is therefore repeated bouts of hepatic damage, the result of reactivation of a pre-existing infection or emergence of an endogenous newly mutated strain.

**Question 27**

In relation to hepatitis C infection which of the following options is correct?

A It is aquired by fecal-oral transmission

B It is primarily associated with sexual transmission

C Transmission increases in pregnancy

D More than 50% become chronic

Explanation D

The main routes of transmission are inoculations and blood transfusion. The groups considered higher risk are homosexuals, haemodialysis patients, haemophiliacs and IV drug abusers. (The IV drug users have a risk of 50-90%). In contrast to hepatitis B (HBV), hepatitis C (HCV) has a higher rate of progression to chronic disease and cirrhosis, exceeding 50%. Elevated anti-HCV IgG occurring after an acute infection does not confer effective immunity. A characteristic infection of HCV is therefore repeated bouts of hepatic damage, the result of reactivation of a pre-existing infection or emergence of an endogenous newly mutated strain

**Question 28**

Regarding clostridium species, which of the following options is correct?

A C.botulinum toxin blocks serotonin and dopamine receptors

B They are all spore producing

C Vaccination against C.tetani is not very effective

D C.tetani produces an endotoxin which causes muscle spasm

Explanation B

Clostridium are GRAM POSITIVE spore producing bacteria which grow in anaerobic conditions. C.tetani produces tetanospasmin which is a potent neurotoxin causing muscle spasm. C. Botulinum produces a neurotoxin which blocks synaptic release of Acetylcholine. C. perfringens causes wound infections 1-3 days after injury. Tetanus toxoid as part of the DPT (diptheria, pertussis, tetanus) immunisations given to children have greatly reduced the incidence of tetanus in developed and developing countries.

Extra: Tetanospasmin (and botulinum toxin) are exotoxins - that is, they are excreted by the bacterial cells. This is in contrast to endotoxins which are bacterial cell components (e.g. lipopolysaccharide).

**Question 29**

Which of the following major infections are not associated with splenomegaly?

A Leprosy

B Typhoid fever

C Toxoplasmosis

D Tuberculosis

Explanation A

Other infective causes of splenomegaly include: infective mononucleosis, TB, typhoid fever, toxoplasmosis, trypanosomiasis, brucellosis, cytomegalovirus (CMV), syphilis, malaria, histoplasmosis, schistosomiasis, leishmaniasis, echinococcosis and kala-azar

Note: the list comes from the current textbook. Leprosy is not mentioned but it infact can lead to splenomegaly. It does not appear to be a major cause

**Question 30**

With regards to bacterial endotoxin, which of the following options is correct?

A It is the outer cell wall of gram positive bacteria

B It is exemplified by streptokinase

C It induces the production of tumour necrotic factor (TNF)

D It is the cause of the severe form of diphtheria infection

Explanation C

Bacterial endotoxin is a lipopolysaccharide (LPS) that is a structural component in the outer cell wall of a gram-negative bacterium. LPS are thought to play an important role in septic shock, ARDS and DIC mainly through the induction of excessive levels of cytokines such as tumour necrosis factor (TNF) and interleukin IL-1. Streptokinase is a protein secreted by several species of streptococci (gram positive) that can bind and activate human plaminogen, it is an exotoxin. Diphtheria is a gram positive organism and therefore produces an exotoxin.

**Question 31**

Regarding aseptic meningitis, which of the following statements is correct?

A The glucose in the cerebrospinal fluid (CSF) is raised

B Microscopically there is a large infiltration of neutrophils

C The most commonly identified agent is an enterovirus

D There is a more fulminant course than bacterial meningitis

Explanation C

Aseptic meningitis is a term used clinically to designate an illness comprising of meningeal irritation, fever and alteration in consciousness of relatively acute onset, generally of viral -but rarely of bacterial or other- aetiology. The clinical course is less fulminant and the CSF finding is different from pyogenic meningitis. There is a lymphocyte pleocytosis, the protein is only moderately elevated and the sugar is nearly always normal. The infection is self-limiting. In 70% of cases the pathogen most commonly identified is an enterovirus.

Note: multiple searches reveal that Coxsackie or Echovirus groups of enteroviruses are the most common cause of viral meningitis. (Including Australia meningitis websites)

Chemical meningitis, CSF results may be similar to aseptic meningitis except that there is a neutrophil pleocytosis

**Question 32**

Regarding mechanisms of bacterial injury, which of the following statements is correct?

A Bacterial adhesions, which bind bacteria to host cells, have a narrow range of host cell specificity

B Bacterial exotoxins are components of the bacterial cell

C Innate host immune defenses include NK cells, phagocytic cells, plasma proteins

D Bacterial endotoxins are lipopolysaccharide secreted by the bacteria to cause disease

Explanation C

Infectious agents establish infections and damage tissues by three mechanisms:

They can contact or enter host cells and directly cause damage, they may release toxins, they can induce a host immune response directed against the agent but causing additional disease.

Bacterial endotoxin is a lipopolysaccharide that is a structural component in the outer cell wall of a gram-negative bacterium.

Bacterial exotoxins are secreted protiens that cause cellular injury and disease. They include: enzymes, toxins that alter intrasignaling pathways, neurotoxins and superantigens

Bacterial adhesions that bind bacteria to host cells are limited in type, but have broad range of host cell specificity. In contrast to viruses, which can infect a wide range of host cells, facultative intracellular bacteria infect mainly epithelial cells, macrophages or both

Innate host defenses include physical barriers, NK cells, phagocytic cells and plasma proteins.

Adaptive host defenses include T and B lymphocytes and their products

**Question 33**

Which of the following options is correct in relation to malaria?

A Plasmodium falciparum initially causes hepatomegaly

B Plasmodium vivax causes severe anaemia

C Innoculated sporozoites immediately invade the spleen

D Parasites mature in red blood cells

Explanation C

Plasmodium Falciparum causes severe anaemia. Innoculated sporozoites immediately invade the liver. P. Falcipirum causes splenomeagly. Cerebral malaria is caused by the blockage of vessels by the paratisized red cells

**Question 34**

The incubation period of Hepatitis B is

A 18-160 days

B 6-120 days

C 10-140 days

D 14-180 days

Explanation D

Incubation periods

Hepatitis A: 2-6 weeks

Hepatitis B: 2-26 weeks (mean 8w)

Hepatitis C: 4-26 weeks (mean 9w)

Hepatitis D: 2-26 weeks (mean 8w)

Hepatitis E: 4-5 weeks

**Question 35**

Which of the following regarding Chlamydial infections is FALSE?

A Amplified nucleic acid tests have surpassed cultures in testing for the disease

B Chlamydia is the most common sexually transmitted bacterial disease in the world

C Lymphogranuloma venereum is a genital infection caused by the L serotype of C. trachomatis

D Chlamydia is a gram postive bacterium that is an obligate intracellular parasite

Explanation D

Chlamydial is the most common sexually transmitted bacterial disease in the world. Chlamydia is the most frequent infectious cause of female infertility and blindness (chronic conjuctival scarring). It is a gram negative bacterium that is an obligate intracellular parasite. Lymphogranuloma venereum is a genital infection caused by the L serotype of C. trachomatis. It is a chronic ulcerative disease of the genitalia. It is sporadic in the USA but endemic in parts of Africa, Asia, Caribbean and South America. PCR tests are more sensitive than cultures. Different serotypes cause different diseases: L types-lymphogranuloma venereum. D to K types- urogenital and conjuctival infections. A, B and C- occular infectionsof children (trachoma)

**Question 36**

Regarding bacterial septic arthritis

A Joints are affected more commonly by direct inoculation

B The main causative organism in adults is gonococcus

C The different causative organisms affects men and women equally

D The joint most affected in non-gonococcal septic arthritis is the knee

Explanation D

In bacterial septic arthritis the bacteria usually seed the joint during an episode of bacteraemia. Joints can become infected by direct inoculation or from contiguous spread from a soft tissue abscess or focus of osteomyelitis. H. influenza arthritis predominates in children <2yrs. Staf is the main causative agent in older children and adults. Gonococcus is prevalent during late adolescence and young adulthood. Those with sickle cell anaemia are prone to infection with SALMONELLA at any age. These joint infections affect the sexes equally except for gonococcus which is seen mainly in sexually active women. In 90% of non-gonococcal cases, the infection involves only a single joint, usually the knee followed in frequency by the hip, shoulder, elbow, wrist and sternoclavicular joints.

**Question 37**

In which part of the CNS does polio not affect?

A Cranial motor nuclei

B Dorsal root ganglion

C Posterior horn of the spinal cord

D Anterior horn of the spinal cord

Explanation B

Polio invades the CNS and replicates in the motor neurons of the spinal cord and brainstem. Commonly the anterior horn motor neurons of the spinal cord are involved. The posterior horns of the spinal cord and the cranial motor nuclei are sometimes involved.

It does not involve the dorsal root ganglion = Trunk ganglion which is located adjacent to the spine on a dorsal root and contains the cell bodies of afferent sensory nerves.

**Question 38**

Which of the following is characteristic of the rash of measles?

A "Slapped cheek" appearance and lacy reticular pattern.

B Painful vesicles in a dermatomal distribution.

C Pustules on an erythematous base.

D Maculopapular eruption starting on upper trunk and spreading downward.

E Begins as a maculopapular rash, then becomes vesicular.

Explanation D

The characteristic measles rash is classically described as a generalised maculopapular erythematous rash. It starts on the head and trunk before spreading to cover most of the body. Morphology: The blotch reddish brown rash of measles is produced by dilated skin vessels, oedema, and a moderate nonspecific mononuclear perivascular infiltrate. In the mouth-Koplik spots- are ulcerated mucosal lesions near the duct of Stensen are marked by necrosis, neutrophilic exudate and neovascularization.

Extra: measles is a single stranded RNA virus of the paramyxovirus family. There is only one serotype. It is spread by respiratory droplets. Antibody-mediated immunity to the virus prevents reinfection. Measles can also produce severe immunosupression in patients resulting in secondary bacterial and viral infections responsible for much of the measles related morbidity and mortality.

Note: Measles - Maculopapular eruption starting on upper trunk and spreading downward. Erythema toxicum neonatorum-pustules on an erythematous base. Chickenpox begins as a maculopapular rash, then becomes vesicular. Shingles appear as painful vesicles in a dermatomal distribution. Human parvovirus B19 (fifth disease or erytherma infectiosum) has a "slapped cheek" appearance and lacy reticular pattern.

**Question 39**

The disease of anthrax, which is correct?

A It produces an exo-toxin containing 2 subunits: A and B

B Bacteraemia and death is common following the cutaneous anthrax infection

C There are only two clinical manifestations of the disease: cutaneous and inhalational

D It is a large, spore forming gram negative rod bacterium

Explanation A

Bacillus anthracis is a large, spore forming gram + rod bacterium. Common in farm and wild animals that come into soil contaminated with the bacteria spores. B. anthracis is typically acquired through exposure to animal or animal products like wool or hide. 3 major anthrax syndromes occur: cutaneous anthrax, inhalational anthrax and gastrointestinal anthrax.

Cutaneous anthrax- makes up 95% of infections. Begins as a vesicle which ruptures and is then covered by a black eschar. It dires and falls off. Bacteraemia is rare.

Inhalational anthrax- fever cough and hypoxia, bacteraemia develops which leads to shock and frequently death. Menigitis can develop form the bacteraemia.

GIT anthrax: uncommon. After exposure to uncooked meat. Severe bloody diarrhoea develops which leads to death in 50% of cases.

The exo-toxin is potent and has an A and B subunit.

**Question 40**

Which is the most most common infection to complicate burns?

A Clostridium perfringens

B Staf Aureus

C Pseudomonas aeruginosa.

D Candida

Explanation C

A burn site is ideal for growth of microorganisms. The serum and debris provide nutrients and the burn injury compromises blood flow, blocking effective inflammatory responses. As a result, almost all burn become colonised. Infections of the burn site is defined by the presence of greater than 105 bacteria per gram of tissue. The most common offender is Pseudomonas aeruginosa, but antibiotic resistant strains of other common hospital acquired bacteria e.g. S. aureus and fungi particularly Candida may also be involved.

**Question 41**

The diagnosis of Epstein-Barr Virus depends on all EXCEPT?

A Abnormal liver function tests

B Lymphocytosis

C Heterophilic antibodiy reaction

D Specific antibodies for EBV antigens

Explanation A

The diagnosis of Epstein-Barr virus depends on the following findings (in increasing order of specificity)

1-Lymphocytosis with the characteristic atpical lymphocytes in the peripheral blood. 2-Monospot test +=heterophile antibody reaction. 3-Specific antibodies for EBV antigens (viral capsid antigens, early antigens, nuclear antigens).

In most patients EBV resolves in 4-6weeks, but in some, fatigue lasts longer.

**Question 42**

Which of the following illnesses are NOT associated with EBV infection?

A Leukaemia

B Nasopharyngeal Ca

C Lymphoma

D Pneumonitis

Explanation A

The outcome of EBV infection in a normal immune-competent patient is either asymptomatic or mononucleosis-pneumonitis, hepatitis, splenitis, meningitis and encephalitis. In the setting of immunodeficiency, EBV is implicated in the development of EBV positive tumours (which are usually but not always derived form B cells) nasopharyngeal Ca, Hodgkin and non-Hodgkin lymphomas and Burkitt lymphoma.

**Question 43**

A 70yr male presents to the emergency department with trismus and sustained spasm of the facial muscles. What is the most likely causative agent?

A Clostridium botulinum

B Clostridium difficile

C Clostridium tetani

D Clostridium perfringens

Explanation C

Clostridial infections, including clostridium botulinum and clostridium tetani, produce muscle paralysis.

Clostridium botulinum, botulism toxin, eaten in contaminated foods or absorbed from foods, binds gangliosides on motor neurons and is transported into the cell. The toxin cleaves a protein, synaptobrevin, which prevents the release of Ach at the neuromuscular junction. This results in FLACCID PARALYSIS.

Clostridium tetani, tetanus toxin, is similar to that of the botulism toxin, but tetanus toxin causes a violent SPASTIC PARALYSIS by blocking the release of γ-aminobutyric acid, a neurotransmitter that inhibits motor neurons.