



UNIVERSITY OF JAFFNA, SRI LANKA
SECOND EXAMINATION FOR MEDICAL DEGREES PART (I)

October 2024

Academic Year 2019/2020

Microbiology - Paper I

Date: 09.10.2024

1.30 pm to 3.00 pm. (1½ hours)

Answer all 30 questions

1. Sharps bins
 - a) should be available at the point of care
 - b) should have a large opening to avoid accidental needle stick injury while using it
 - c) are used to dispose of blood stained cotton wool balls
 - d) should be disposed of by incineration
 - e) are used to dispose of used syringes with needles
2. Standard precautions include
 - a) hand hygiene by healthcare workers when coming into contact with any patients
 - b) following cough etiquette by healthcare workers
 - c) isolation of patients when suspecting certain infections
 - d) following safe injection practices
 - e) vaccinating healthcare workers against hepatitis B
3. B- cells
 - a) recognize the antigens presented on MHC II molecules
 - b) are phagocytes
 - c) are important components of cell mediated immune response
 - d) play a major role in combating infections with intracellular pathogens
 - e) do not produce memory cells
4. Live attenuated vaccines
 - a) should be avoided in pregnancy
 - b) if given parenterally and not administered concurrently, a minimum gap of four weeks should be kept between immunizations
 - c) if administered by the oral route, will interfere with each other if given simultaneously
 - d) should not be given within three months of a person receiving immunoglobulin
 - e) cannot be given within four weeks of receiving an inactivated vaccine
5. Co-amoxiclav
 - a) can be given orally
 - b) covers anaerobic bacteria

- c) can be used in the treatment of infections with methicillin resistant *Staphylococcus aureus* (MRSA)
 - d) covers *Pseudomonas aeruginosa*
 - e) is excreted poorly in the urine
6. Azithromycin can be used in the treatment of
- a) infections with *Bacteroides fragilis*
 - b) enterococcal infections
 - c) gonorrhoea
 - d) infections with *Mycoplasma pneumoniae*
 - e) infections with *Acinetobacter spp.*
7. Antibiotics used for the treatment of leptospirosis include
- a) penicillin
 - b) gentamicin
 - c) ceftriaxone
 - d) vancomycin
 - e) metronidazole
8. Consequences of antimicrobial resistance include
- a) treatment failure
 - b) the need to prescribe more toxic antibiotics
 - c) increased duration of hospital stay
 - d) increased healthcare costs
 - e) spread of resistant organism in healthcare settings and in the community
9. Pityriasis versicolor
- a) is a zoonotic infection
 - b) is caused by *Malassezia furfur*
 - c) occurs more in immunocompromised than in otherwise healthy people
 - d) presents with itchy annular lesions with raised erythematous margin
 - e) is treated with amphotericin B
10. Subcutaneous fungal infections include
- a) eumycotic mycetoma
 - b) aspergilloma
 - c) sporotrichosis
 - d) pneumocystosis
 - e) chromoblastomycosis

11. Nystatin

- a) has good oral bioavailability
- b) is available in the form of ointments and pessaries
- c) can be used in the treatment of oral candidiasis
- d) can be used in the empirical treatment of invasive aspergillosis
- e) can be used in the treatment of invasive candidiasis

12. *Streptococcus pneumoniae*

- a) colonization occurs in the nasopharynx
- b) is transmitted by droplet transmission
- c) is a common causative agent of nosocomial infections
- d) cannot be cultured in routine clinical microbiology laboratories
- e) infections can be treated with penicillin

13. Stool culture report of a five-year-old child revealed growth of *Shigella* spp. Common ways by which this child could have acquired this infection include

- a) from endogenous gut flora
- b) person to person transmission by fingers while playing with another infected child
- c) eating undercooked poultry
- d) drinking unpasteurized milk
- e) drinking contaminated water

14. *Chlamydia*

- a) spp. are obligate intracellular bacteria
- b) *trachomatis* can cause urethritis
- c) *pneumoniae* is acquired from animal sources
- d) spp. can be cultured in routine clinical microbiology laboratories
- e) infections are treated with doxycycline

15. *Helicobacter pylori*

- a) is a microaerophilic bacterium
- b) produces urease enzyme
- c) infection is associated with increased risk of oesophageal reflux
- d) infection can be confirmed by culturing endoscopic biopsy specimen
- e) asymptomatic colonization is an indication for eradication therapy

16. *Haemophilus influenzae*

- a) is a strict human pathogen
- b) type b causes severe invasive disease in the unvaccinated
- c) causes otitis media
- d) cannot be cultured in routine clinical microbiology laboratories
- e) infections can be treated with penicillin

17. Human immunodeficiency virus (HIV)
- a) can be transmitted through intact skin
 - b) can be acquired from people shedding the virus asymptotically
 - c) infection is common in men having sex with men
 - d) Ag/Antibody ELISA test is positive in the majority of patients within one week of exposure
 - e) infection immunological staging is based on the CD4 T cell count of the patient
18. A pregnant mother developed malaise and generalised vesiculopustular rash with erythematous base in successive crops which healed with crust formation. She delivered the baby three days after the onset of rash. The
- a) most possible diagnosis is chickenpox
 - b) most possible causative organism is herpes simplex virus (HSV)
 - c) portal of entry of the causative organism can be the conjunctiva
 - d) pregnant mother should have been given specific immunoglobulin as soon as she developed the rash
 - e) infection can be prevented in the baby by vaccinating the baby soon after birth.
19. A 24-year-old man presented with a history of dog bite on the tip of his fingers by the neighbour's dog one day ago. The dog was not vaccinated and died the day after the bite. He said that the wound was bleeding soon after the bite. Regarding rabies, this
- a) patient should be considered as having had minor exposure
 - b) patient should be given rabies immunoglobulin and anti-rabies vaccine immediately
 - c) patient's wounds should have been washed with soap and running water for five minutes
 - d) patient's saliva should be sent immediately for rabies PCR test
 - e) dog's head should be sent to the MRI for rabies tests
20. A two-year-old child was brought to the hospital with a history of barking cough and stridor for two days. It started with runny nose five days ago. The doctor noticed that the child had hoarseness of voice. Her temperature was 37.4°C and respiratory examination findings were unremarkable. Regarding this patient
- a) the most probable diagnosis is atypical pneumonia
 - b) the most common causative agent is parainfluenza virus
 - c) airway obstruction in the subglottic region can be the reason for stridor
 - d) PCR test from a nasopharyngeal/throat swab is mandatory for the diagnosis of this infection
 - e) antivirals are useful in the treatment of this infection
21. An 11-year-old otherwise healthy child was brought to the OPD with a history of productive cough for a week. Her sputum was yellow in colour. It started with runny nose, nasal congestion and mild fever. She did not have any other complaints. Her temperature was 37.5°C and respiratory system examination was normal except for occasional rhonchi. State whether the following are true or false regarding this infection.
- a) The most probable diagnosis is acute bronchitis.
 - b) This patient could have acquired the causative organism through direct contact with infected secretions.

- c) Leukocyte migration can be the reason for purulent sputum in this patient.
 - d) Sputum culture/ABST should be done in this patient.
 - e) Co-amoxiclav and azithromycin should be started immediately for this patient.
22. A 58-year-old lady presented with dysuria, frequency of micturition and haematuria for three days. She had similar illness twice during this year. She did not have any other significant symptoms or signs. Her urine full report revealed occasional red cells and pus cells 20-30/HPF. State whether the following are true or false regarding this infection.
- a) The most probable diagnosis is acute pyelonephritis.
 - b) *E. coli* is the most common causative organism of this infection.
 - c) Blood culture is not necessary in this patient.
 - d) Midstream urine culture should be done in this patient.
 - e) Empirical antibiotic is not necessary for this patient.
23. A seven-year-old child with poor immunization history developed discrete maculopapular rash. Measles was suspected in this patient. Measles
- a) is transmitted by airborne transmission
 - b) has an incubation period of 1 – 4 days
 - c) usually presents with a prodrome of high fever, runny nose and red eyes
 - d) can be confirmed by specific IgM antibody in serum
 - e) can be complicated by otitis media
24. Intra-partum ampicillin/penicillin is given to pregnant mothers to prevent neonatal group B streptococcal (GBS) infection if
- a) the previous baby had invasive GBS infection
 - b) the mother had GBS bacteriuria during the previous pregnancy
 - c) delivery is before 37 weeks' gestation
 - d) duration of ruptured membrane is more than eight hours
 - e) intra-partum temperature is more than 38°C
25. A 69-year-old woman admitted with diabetic ketoacidosis developed fever on the third day of admission. Healthcare associated infection (HAI) was suspected as the reason for fever in this patient. HAIs
- a) are defined as infections developed within 48 hours of admission to the healthcare setting
 - b) include infections incubating at the time of hospital admission
 - c) do not develop from the normal flora of the patient
 - d) can be acquired from the hospital environment
 - e) can be minimised by hand hygiene

26. Rotavirus

- a) is a major cause of infantile diarrhoea in Sri Lanka
- b) infections induce severe inflammatory reactions in the gut
- c) infections are confirmed by the detection of rotaviral IgM antibodies
- d) infections are best treated with antiviral drugs
- e) vaccination is in the National immunization programme of Sri Lanka

27. State whether the following are true or false regarding oncoviruses.

- a) Oncoviruses can cause cancer only in immunocompromised individuals.
- b) Human papillomavirus types 16 and 18 are strongly associated with cervical cancer.
- c) Epstein-Barr virus is primarily associated with the development of skin cancer.
- d) Human T-cell lymphotropic virus type 1 is primarily associated with Kaposi's sarcoma.
- e) Yellow fever virus is associated with the development of hepatocellular carcinoma.

28. State whether the following are true or false regarding the Hepatitis viruses.

- a) Hepatitis B virus can be effectively transmitted through breast milk.
- b) Hepatitis A virus infection is diagnosed by detecting antigen in stool specimens.
- c) Hepatitis E virus is primarily transmitted percutaneously.
- d) There is no vaccine available for Hepatitis C virus.
- e) Chronic infection is commonly associated with Hepatitis A virus.

29. Prion diseases

- a) are caused by abnormally folded DNA
- b) have a long incubation period
- c) can be transmitted by casual contact with infected animals
- d) result in rapidly progressive dementia
- e) can be confirmed by serological testing

30. Cellulitis

- a) is commonly caused by *Streptococcus pyogenes*
- b) typically presents with a well-defined, raised border around the affected area
- c) is an infection and inflammation of the deep dermis and subcutaneous tissue
- d) can be associated with regional lymphadenopathy
- e) is best diagnosed aetiologically by blood culture