

# Opportunistics

Jamal's Comprehensive Guide with 400+ Questions on  
Mycology, Parasitology & Virology

**Jamal Dhafer Alrobaiee**

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## **Acknowledgment**

I would like to thank my parents for their encouragement, my family for their constant support, and colleagues for their professional insights and inspiration.

## **About the Author**

My name is Jamal, and I am a dedicated professional in the field of microbiology. Although I do not hold advanced degrees, I have gained extensive practical experience working in clinical laboratory. My hands-on work has given me deep insights into bacteriology, mycology, virology, and parasitology.



I am proud to be board-certified by the American Society for Clinical Pathology (ASCP) and an active member of the American Society for Microbiology (ASM). These affiliations reflect my commitment to staying updated with advancements in microbiology and contributing to the professional community.

Opportunistics is my second book, following "Jamal's Bacteriology MCQ Marathon". This book covers a broader range of microbiology topics with clear and well-organized questions that focus on important concepts. It is meant to be a helpful resource for students and professionals who want to improve their knowledge and thinking skills in microbiology.

My goal remains the same: to provide an affordable, high-quality resource that supports students and professionals in their studies and careers. I hope this book serves as a valuable companion in your journey to mastering microbiology.

## **Preface**

Writing *Opportunistics* has been a personal journey, driven by curiosity and a desire to make learning microbiology accessible and engaging for everyone. This book is packed with over 400 multiple-choice questions covering Mycology, Parasitology, and Virology, aimed at helping students, interns, and professionals dive deeper into the world of infectious agents.

Microbiology is more than just a subject; it's about understanding a hidden universe that influences our health and our world in countless ways. The questions in this book are designed to make complex concepts easier to grasp, with a focus on practical knowledge and real-life application. I wanted this to be a resource where readers can test themselves, learn actively, and build confidence along the way.

My experience working in clinical lab taught me the challenges of mastering microbiology, and that's why I wrote *Opportunistics*: to provide a straightforward, useful tool for studying and understanding these fascinating microorganisms. I hope you find it helpful in your studies and career, and that it sparks your interest in this incredible field as much as it has for me.

*Jamal Dhafer Alrobaiee*

## **Introduction**

Opportunistics is divided into several sections, each designed to help you build a comprehensive understanding of key topics in microbiology: Mycology, Parasitology, and Virology. The book is structured to provide a logical progression through these topics, allowing readers to focus on each area in depth while also seeing the bigger picture of how these organisms impact health.

Each section begins with a brief overview of the topic, setting the context for the questions that follow. The multiple-choice questions are grouped to cover specific organisms, their clinical significance, diagnostic features, and treatment options. This approach ensures that readers can systematically work through the material, testing their knowledge and identifying areas where they may need further study.

The questions are designed not just for rote memorization but to encourage critical thinking and application. You'll encounter real-world scenarios that challenge you to think like a microbiologist analyzing symptoms, considering differential diagnoses, and making informed decisions. The answers and explanations provided will help reinforce learning and provide clarity on complex topics.

Whether you're a student preparing for exams, a laboratory intern gaining hands-on experience, or a professional looking to refresh your skills, Opportunistics offers a practical, focused approach to mastering microbiology. By working through each section, you'll gain the confidence and understanding needed to navigate the fascinating world of infectious agents and their role in human health.

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# **Mycology**

**Candida spp.**

**1. What is the primary morphological form of *Candida* species in human infections?**

- a) Yeast
- b) Mold
- c) Dimorphic
- d) Spherule

**2. Which species is the most common cause of candidiasis?**

- a) *Candida glabrata*
- b) *Candida albicans*
- c) *Candida tropicalis*
- d) *Candida parapsilosis*

**3. *Candida* can form structures known as pseudohyphae. What is the significance of pseudohyphae in diagnosis?**

- a) They indicate a nonpathogenic strain
- b) They suggest invasive infection
- c) They are only present in culture
- d) They indicate antibiotic resistance

**4. What is a common clinical manifestation of oropharyngeal candidiasis?**

- a) White patches on the tongue and oral mucosa
- b) Persistent cough

- c) Abdominal pain
- d) Joint pain

**5. Invasive candidiasis is most commonly seen in which patient population?**

- a) Healthy individuals
- b) Immunocompromised patients
- c) Pediatric patients
- d) Elderly individuals without underlying conditions

**6. Which laboratory test is often used to diagnose candidemia?**

- a) Blood culture
- b) Stool culture
- c) Urine culture
- d) Sputum culture

**7. *Candida* species can form biofilms. What is a key characteristic of these biofilms?**

- a) They are easily eradicated with antibiotics
- b) They increase resistance to antifungal treatments
- c) They prevent all forms of drug penetration
- d) They are found only in laboratory cultures

**8. What is the preferred diagnostic test for *Candida esophagitis*?**

- a) Endoscopy with biopsy
- b) Chest Xray
- c) Stool analysis
- d) Skin scraping

**9. In addition to *Candida albicans*, which other *Candida* species is known for increasing incidence in nosocomial infections due to antifungal resistance?**

- a) *Candida glabrata*
- b) *Candida krusei*
- c) *Candida tropicalis*
- d) *Candida lusitanae*

**Aspergillus spp.****10. What is the primary morphological form of *Aspergillus* species in the environment?**

- a) Yeast
- b) Mold
- c) Dimorphic
- d) Spherule

**11. Which species of *Aspergillus* is the most common cause of invasive aspergillosis?**

- a) *Aspergillus fumigatus*

- b) *Aspergillus niger*
- c) *Aspergillus flavus*
- d) *Aspergillus terreus*

**12. What is the common route of transmission for *Aspergillus* infections?**

- a) Inhalation of spores
- b) Ingestion of contaminated food
- c) Direct skin contact
- d) Sexual contact

**13. Which patient population is most at risk for developing invasive aspergillosis?**

- a) Immunocompromised patients
- b) Healthy adults
- c) Pediatric patients
- d) Elderly individuals without underlying conditions

**14. What is a common clinical manifestation of chronic pulmonary aspergillosis?**

- a) Persistent cough and hemoptysis
- b) Abdominal pain
- c) Skin rash
- d) Urinary frequency

**15. What type of infection can *Aspergillus* cause in immunocompetent individuals with asthma or cystic fibrosis?**

- a) Allergic bronchopulmonary aspergillosis (ABPA)
- b) Chronic pulmonary aspergillosis
- c) Invasive aspergillosis
- d) Cutaneous aspergillosis

**16. Aspergilloma, also known as a "fungus ball," typically forms in which anatomical location?**

- a) Preexisting lung cavities
- b) Sinuses
- c) Skin wounds
- d) Gastrointestinal tract

**17. What characteristic structure is observed in *Aspergillus* species under the microscope?**

- a) Hyaline septate hyphae
- b) None-septate hyphae
- c) Yeast cells
- d) Arthroconidia

### **Histoplasma capsulatum**

**18. *Histoplasma capsulatum* primarily causes which type of infection?**

- a) Gastroenteritis
- b) Respiratory infections
- c) Urinary tract infections
- d) Skin infections

**19. What is the primary environmental reservoir for *Histoplasma capsulatum*?**

- a) Soil contaminated with bird or bat droppings
- b) Freshwater lakes
- c) Decaying plant material
- d) Human skin

**20. What is the characteristic microscopic feature of *Histoplasma capsulatum* in tissue samples?**

- a) Budding yeast cells within macrophages
- b) Septate hyphae with conidia
- c) Spherules containing endospores
- d) Pseudohyphae formation

**21. Which clinical condition is commonly associated with *Histoplasma capsulatum* infection?**

- a) Acute pulmonary histoplasmosis
- b) Chronic gastritis
- c) Cutaneous candidiasis
- d) Cryptococcal meningitis

**22. *Histoplasma capsulatum* is classified as a:**

- a) Yeast
- b) Mold
- c) Dimorphic fungus
- d) Bacterium

**23. What is a common symptom of disseminated histoplasmosis in immunocompromised individuals?**

- a) Fever and weight loss
- b) Rash and joint pain
- c) Diarrhea and abdominal pain
- d) Headache and confusion

**24. Histoplasma capsulatum is endemic to which type of environment?**

- a) Cave systems and bird roosts
- b) Urban areas with high pollution
- c) Sandy deserts
- d) Coastal regions with high humidity

### **Blastomyces dermatitidis**

**25. Blastomyces dermatitidis primarily causes which type of infection?**

- a) Pulmonary infections
- b) Gastrointestinal infections
- c) Urinary tract infections
- d) Skin infections

**26. What is the characteristic feature of Blastomyces dermatitidis in tissue samples?**

- a) Broad-based budding yeast
- b) Narrow-necked budding yeast
- c) Spherules with endospores

d) Septate hyphae

**27. Which clinical manifestation is common in blastomycosis?**

- a) Skin lesions
- b) Chronic diarrhea
- c) Hematuria
- d) Oral thrush

**28. What is the primary mode of transmission for Blastomyces dermatitidis?**

- a) Inhalation of airborne spores
- b) Ingestion of contaminated water
- c) Direct contact with infected individuals
- d) Vectorborne transmission

**29. Blastomyces dermatitidis is classified as a:**

- a) Yeast
- b) Mold
- c) Dimorphic fungus
- d) Filamentous bacterium

**30. Which diagnostic method is commonly used to confirm a Blastomyces dermatitidis infection?**

- a) Culture and histopathology
- b) Serological testing
- c) ELISA

d) Hematoxylin and eosin staining

**31. Which antifungal medication is typically used for the treatment of blastomycosis?**

- a) Itraconazole
- b) Fluconazole
- c) Voriconazole
- d) Amphotericin B

**32. Which population is most at risk for severe blastomycosis?**

- a) Immunocompromised individuals
- b) Healthy children
- c) Young athletes
- d) Elderly individuals

**33. What is a common complication of disseminated blastomycosis?**

- a) Osteomyelitis
- b) Meningitis
- c) Hepatitis
- d) Carditis

### **Cryptococcus neoformans**

**34. Which primary body system is most commonly affected by Cryptococcus neoformans infection?**

- a) Gastrointestinal system
- b) Central nervous system
- c) Respiratory system
- d) Cardiovascular system

**35. Which patient population is at the highest risk for Cryptococcus neoformans infection?**

- a) Healthy adults
- b) Immunocompromised patients, especially those with HIV/AIDS
- c) Pediatric patients
- d) Elderly individuals

**36. What is the preferred initial diagnostic test for Cryptococcal meningitis?**

- a) Blood culture
- b) Serum cryptococcal antigen test
- c) Lumbar puncture with India ink staining
- d) Skin biopsy

**37. Which antifungal agent is typically used as the first-line treatment for cryptococcal meningitis?**

- a) Fluconazole
- b) Voriconazole
- c) Amphotericin B plus flucytosine
- d) Caspofungin

**38. What is the primary environmental reservoir for *Cryptococcus neoformans*?**

- a) Soil enriched with bird droppings
- b) Freshwater lakes
- c) Decaying plant material
- d) Human skin

### **Dermatophytes**

**39. Which of the following is a common clinical manifestation of dermatophyte infection?**

- a) Onychomycosis
- b) Oral thrush
- c) Cryptococcal meningitis
- d) Candidemia

**40. Dermatophytes primarily infect which part of the body?**

- a) Mucosal surfaces
- b) Keratinized tissues, such as skin, hair, and nails
- c) Lungs
- d) Central nervous system

**41. Which of the following genera is NOT classified as a dermatophyte?**

- a) Trichophyton
- b) Microsporium
- c) Epidermophyton
- d) Penicillium

**42. What is the preferred diagnostic method for detecting dermatophyte infections?**

- a) Blood culture
- b) Skin scraping with potassium hydroxide (KOH) preparation
- c) Lumbar puncture
- d) Chest X-ray

**43. Which of the following is a common cause of tinea pedis (athlete's foot)?**

- a) *Trichophyton rubrum*
- b) *Candida albicans*
- c) *Cryptococcus neoformans*
- d) *Aspergillus fumigatus*

### **Penicillium**

**44. Which *Penicillium* species is known to cause systemic infections, especially in immunocompromised individuals?**

- a) *Penicillium notatum*
- b) *Penicillium marneffei*
- c) *Penicillium chrysogenum*
- d) *Penicillium camemberti*

**45. What is a distinctive characteristic of *Penicillium marneffei* in culture?**

- a) Production of a red pigment
- b) Formation of black colonies
- c) Production of yellow pigment

d) Presence of arthroconidia

**46. Which of the following clinical manifestations is associated with *Penicillium marneffei* infection?**

- a) Skin lesions resembling molluscum contagiosum
- b) Diarrhea and abdominal pain
- c) Joint pain and swelling
- d) Cough and hemoptysis

**47. Which diagnostic method is most commonly used to confirm *Penicillium marneffei* infection?**

- a) Serology
- b) Culture and histopathology
- c) PCR for fungal DNA
- d) Skin biopsy

### **Trichosporon**

**48. Which clinical condition is most commonly associated with *Trichosporon* infection in immunocompromised patients?**

- a) Trichosporonosis (fungemia and disseminated infection)
- b) Tinea capitis
- c) Chronic bronchitis
- d) Histoplasmosis

**49. *Trichosporon* species are known to produce which characteristic structures under the microscope?**

- a) Hyphae and arthroconidia
- b) Spherules with endospores
- c) Broad-based budding yeast
- d) Narrow-necked budding yeast

**50. Which laboratory test is most commonly used to diagnose *Trichosporon* infection?**

- a) Blood culture
- b) Skin biopsy
- c) KOH preparation of skin scrapings
- d) Urine culture

**51. Which patient population is most at risk for severe *Trichosporon* infection?**

- a) Healthy adults
- b) Immunocompromised individuals, especially those with hematologic malignancies
- c) Pediatric patients
- d) Elderly individuals without underlying conditions

**52. Which antifungal agent is typically preferred for the treatment of *Trichosporon* infections?**

- a) Fluconazole
- b) Amphotericin B

- c) Voriconazole
- d) Caspofungin

### **Malassezia**

**53. Malassezia species are most commonly associated with which type of infection?**

- a) Superficial skin infections, such as tinea versicolor
- b) Systemic candidiasis
- c) Invasive aspergillosis
- d) Histoplasmosis

**54. Which unique characteristic is associated with Malassezia species in culture?**

- a) Requires lipid supplementation for growth
- b) Produces red pigment
- c) Forms hyaline septate hyphae
- d) Exhibits dimorphic growth

**55. Which clinical condition is commonly associated with Malassezia in neonates?**

- a) Neonatal sepsis due to lipid-based parenteral nutrition
- b) Oral thrush
- c) Candidemia
- d) Chronic bronchitis

**56. Which diagnostic test is most commonly used to identify Malassezia infections?**

- a) Skin scraping with KOH preparation
- b) Blood culture on standard media
- c) Chest X-ray
- d) PCR for fungal DNA

**57. Which patient population is most at risk for Malassezia fungemia?**

- a) Patients receiving parenteral lipid nutrition
- b) Healthy adults
- c) Patients with cystic fibrosis
- d) Pregnant women

**Answer Key**

1	A	31	D
2	B	32	A
3	B	33	A
4	A	34	B
5	B	35	B
6	A	36	C
7	B	37	C
8	A	38	A
9	A	39	A
10	B	40	B
11	A	41	D
12	A	42	B
13	A	43	A
14	A	44	B
15	A	45	A
16	A	46	A
17	A	47	B
18	B	48	A
19	A	49	A
20	A	50	A
21	A	51	B
22	C	52	C
23	A	53	A
24	A	54	A
25	A	55	A
26	A	56	A
27	A	57	A
28	A		
29	C		
30	A		

1. A) *Candida* species primarily exist as yeast cells in human infections. They are oval-shaped and reproduce by budding. This yeast form is typically seen in clinical specimens from infected individuals.
2. B) *Candida albicans* is the most common cause of candidiasis, responsible for the majority of fungal infections in humans. It can cause various types of infections, including oral thrush, vaginal yeast infections, and systemic candidiasis.
3. B) Pseudohyphae are elongated yeast cells that resemble hyphae and are often associated with invasive forms of candidiasis. Their presence in clinical samples, such as tissue biopsies or blood cultures, suggests that the *Candida* infection may be invasive rather than superficial.
4. A) Oropharyngeal candidiasis, also known as thrush, is characterized by white, creamy patches on the tongue and other parts of the mouth. These patches are often accompanied by redness and soreness and are a hallmark of *Candida* overgrowth in the oral cavity.
5. B) Invasive candidiasis occurs when *Candida* enters the bloodstream and spreads to various organs. This serious infection is most commonly seen in immunocompromised individuals, such as those undergoing chemotherapy, organ transplants, or those with HIV/AIDS, as their immune systems are less capable of controlling the spread of *Candida*.
6. A) Blood cultures are the primary laboratory test used to diagnose candidemia, which is a bloodstream infection caused by *Candida* species. Identifying *Candida* in the blood is crucial for initiating appropriate antifungal therapy.
7. B) *Candida* species can form biofilms on medical devices and tissues, which contribute to increased resistance to antifungal treatments. Biofilms provide a protective environment for the fungi, making them more difficult to eradicate.
8. A) Endoscopy with biopsy is the preferred diagnostic method for *Candida* esophagitis. The procedure allows for direct visualization and sampling of the affected areas, which can then be examined microscopically for the presence of *Candida*.
9. A) *Candida glabrata* is increasingly recognized as a significant cause of nosocomial (hospital-acquired) infections due to its resistance to common antifungal agents like fluconazole. It is particularly concerning in immunocompromised patients.
10. B) *Aspergillus* species primarily exist as molds in the environment. They produce conidia (spores) that can become airborne and cause respiratory infections when inhaled by susceptible individuals.
11. A) *Aspergillus fumigatus* is the most common species responsible for invasive

aspergillosis, particularly in immunocompromised patients. This species is well-adapted to human hosts and can grow at body temperature.

12. A) The most common route of transmission for *Aspergillus* infections is the inhalation of airborne spores. These spores are ubiquitous in the environment, particularly in soil, decaying vegetation, and dust.

13. A) Immunocompromised patients, such as those with neutropenia, hematologic malignancies, or undergoing organ transplantation, are at the highest risk for developing invasive aspergillosis due to their weakened immune systems.

14. A) Chronic pulmonary aspergillosis is characterized by symptoms such as a persistent cough and hemoptysis (coughing up blood). This condition typically occurs in individuals with pre-existing lung disease, such as tuberculosis or chronic obstructive pulmonary disease (COPD).

15. A) Allergic bronchopulmonary aspergillosis (ABPA) is a hypersensitivity reaction that occurs in immunocompetent individuals, particularly those with asthma or cystic fibrosis. It is caused by an allergic response to *Aspergillus* spores in the lungs.

16. A) Aspergilloma, also known as a "fungus ball," typically forms in pre-existing lung cavities, such as those caused by

tuberculosis or sarcoidosis. These cavities provide a suitable environment for the growth of *Aspergillus* species.

17. A) *Aspergillus* species are characterized by hyaline septate hyphae under the microscope. These hyphae are transparent (hyaline) and contain regular cross-walls (septa), which are key features used in the identification of *Aspergillus*.

18. B) *Histoplasma capsulatum* primarily causes respiratory infections. When the spores are inhaled, they settle in the lungs and can lead to a range of conditions, from asymptomatic infection to severe pneumonia.

19. A) The primary environmental reservoir for *Histoplasma capsulatum* is soil contaminated with bird or bat droppings. The fungus thrives in these environments, particularly in caves, chicken coops, and areas with high levels of organic material.

20. A) In tissue samples, *Histoplasma capsulatum* is identified by its characteristic appearance as small, oval budding yeast cells within macrophages. This feature is a hallmark of histoplasmosis, especially in biopsy samples from affected tissues.

21. A) Acute pulmonary histoplasmosis is a common clinical condition associated with *Histoplasma capsulatum* infection. Symptoms may include fever, cough, and

chest pain, resembling those of pneumonia or influenza.

22. C) *Histoplasma capsulatum* is classified as a dimorphic fungus, meaning it can exist in two forms: as a mold in the environment and as a yeast in human tissues. This dimorphism is temperature-dependent, with the yeast form predominating at body temperature.

23. A) Fever and weight loss are common symptoms of disseminated histoplasmosis in immunocompromised individuals. The infection can spread to multiple organs, leading to a systemic illness that can be life-threatening if not treated promptly.

24. A) *Histoplasma capsulatum* is endemic to environments such as cave systems and bird roosts, where the soil is rich in organic material and conducive to the growth of the fungus. These areas are common sources of exposure to the spores.

25. A) *Blastomyces dermatitidis* primarily causes pulmonary infections. The fungus is inhaled as spores and can cause a range of respiratory illnesses, from mild respiratory symptoms to severe pneumonia.

26. A) In tissue samples, *Blastomyces dermatitidis* is identified by its characteristic broad-based budding yeast. This appearance is a key diagnostic feature that distinguishes it from other fungi.

27. A) Skin lesions are a common clinical manifestation of blastomycosis, particularly when the infection disseminates from the lungs to the skin. These lesions may appear as ulcers, verrucous plaques, or subcutaneous nodules.

28. A) The primary mode of transmission for *Blastomyces dermatitidis* is the inhalation of airborne spores. The spores are released from soil and decaying organic matter, especially in areas with high humidity and dense vegetation.

29. C) *Blastomyces dermatitidis* is classified as a dimorphic fungus. Like *Histoplasma*, it exists as a mold in the environment and as a yeast in human tissues, depending on the temperature.

30. A) Culture and histopathology are commonly used to confirm a *Blastomyces dermatitidis* infection. These methods allow for the visualization of the characteristic yeast forms and the growth of the fungus from clinical specimens.

31. D) Amphotericin B is typically used for the treatment of severe blastomycosis, particularly in immunocompromised individuals. This antifungal agent is effective against the yeast form of the fungus.

32. A) Immunocompromised individuals, such as those with HIV/AIDS or undergoing immunosuppressive therapy, are most at risk

for severe blastomycosis. The infection can spread beyond the lungs to other organs, leading to serious complications.

33. A) Osteomyelitis is a common complication of disseminated blastomycosis. The infection can spread to the bones, causing chronic inflammation and bone destruction, which may require long-term antifungal therapy and surgical intervention.

34. B) Central nervous system - *Cryptococcus neoformans* commonly affects the central nervous system, causing cryptococcal meningitis, particularly in immunocompromised patients. This fungus can cross the blood-brain barrier, leading to severe neurological symptoms.

35. B) Immunocompromised patients, especially those with HIV/AIDS - Individuals with compromised immune systems, especially those with HIV/AIDS, are highly susceptible to *Cryptococcus neoformans* infection due to their reduced ability to fight off opportunistic pathogens.

36. C) Lumbar puncture with India ink staining - For diagnosing cryptococcal meningitis, a lumbar puncture with India ink staining is preferred, as it allows visualization of the encapsulated yeast cells in cerebrospinal fluid, a hallmark of *Cryptococcus*.

37. C) Amphotericin B plus flucytosine - This combination is the first-line treatment

for cryptococcal meningitis, providing potent antifungal effects to control the infection in its early stages, especially in immunocompromised patients.

38. A) Soil enriched with bird droppings - *Cryptococcus neoformans* is commonly found in soil contaminated with bird droppings, particularly from pigeons, making this environment a primary reservoir for the fungus.

39. A) Onychomycosis - Dermatophytes commonly cause onychomycosis, a fungal infection of the nails, as well as other infections of keratinized tissues like skin and hair.

40. B) Keratinized tissues, such as skin, hair, and nails - Dermatophytes specifically infect keratinized tissues, as they utilize keratin for growth, causing infections in skin, hair, and nails but not in deeper tissues or organs.

41. D) *Penicillium* - *Penicillium* is not classified as a dermatophyte. Dermatophytes typically belong to the genera *Trichophyton*, *Microsporum*, and *Epidermophyton*.

42. B) Skin scraping with potassium hydroxide (KOH) preparation - KOH preparation of skin scrapings is a preferred diagnostic method as it dissolves skin cells, making fungal elements like hyphae and spores easier to see under a microscope.

43. A) *Trichophyton rubrum* - *Trichophyton rubrum* is the most common cause of tinea pedis, or athlete's foot, infecting the skin of the feet, especially between the toes.

44. B) *Penicillium marneffei* - *Penicillium marneffei* is the only *Penicillium* species known to cause systemic infections, particularly in immunocompromised individuals, such as those with HIV/AIDS.

45. A) Production of a red pigment - *Penicillium marneffei* is distinct in that it produces a characteristic red pigment when cultured, which helps in its identification.

46. A) Skin lesions resembling molluscum contagiosum - *Penicillium marneffei* infections can cause skin lesions that look like molluscum contagiosum, a key clinical sign especially in immunocompromised patients.

47. B) Culture and histopathology - To confirm a *Penicillium marneffei* infection, culture and histopathology are used to identify characteristic fungal structures and pigment production in tissue samples.

48. A) Trichosporonosis (fungemia and disseminated infection) - Trichosporonosis, characterized by bloodstream and systemic infection, is commonly associated with *Trichosporon* in immunocompromised patients, especially those with weakened immune systems.

49. A) Hyphae and arthroconidia - *Trichosporon* species produce both hyphae and arthroconidia, which are distinctive microscopic structures helpful in diagnosis.

50. A) Blood culture - Blood culture is commonly used to diagnose *Trichosporon* infections as this organism often causes bloodstream infections, especially in immunocompromised patients.

51. B) Immunocompromised individuals, especially those with hematologic malignancies - *Trichosporon* infections primarily affect immunocompromised individuals, particularly those with blood cancers, due to their vulnerable immune status.

52. C) Voriconazole - Voriconazole is typically preferred for treating *Trichosporon* infections, as it has been shown to be effective against this fungus, especially in patients with fungemia.

53. A) Superficial skin infections, such as tinea versicolor - *Malassezia* species are primarily associated with superficial skin infections, like tinea versicolor, which causes patches of discolored skin.

54. A) Requires lipid supplementation for growth - *Malassezia* species uniquely require lipid supplementation in culture media to grow, as they are lipid-dependent fungi.

55. A) Neonatal sepsis due to lipid-based parenteral nutrition - In neonates, *Malassezia* can cause sepsis, especially in those receiving intravenous lipid-based nutrition, as the organism thrives in lipid-rich environments.

56. A) KOH preparation of skin scrapings is a common diagnostic method for *Malassezia* infections, allowing for the detection of characteristic yeast cells.

57. A) Patients receiving parenteral lipid nutrition - Patients on intravenous lipid nutrition, especially neonates, are at higher risk for *Malassezia* fungemia due to the organism's lipid dependency.

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# Parasitology

**Plasmodium (Malaria)**

**1. What is the definitive host of Plasmodium species?**

- a) Humans
- b) Anopheles mosquitoes
- c) Birds
- d) Monkeys

**2. Which stage of the Plasmodium life cycle is injected into humans by the mosquito vector?**

- a) Merozoite
- b) Sporozoite
- c) Trophozoite
- d) Gametocyte

**3. The Plasmodium parasite replicates in which cells during the human liver stage?**

- a) Red blood cells
- b) White blood cells
- c) Hepatocytes
- d) Intestinal cells

**4. Which diagnostic test is considered the gold standard for malaria diagnosis?**

- a) Rapid diagnostic test (RDT)
- b) PCR
- c) Microscopic examination of blood smear

d) Serological tests

**5. Which Plasmodium species can cause relapses due to dormant liver forms?**

- a) Plasmodium falciparum
- b) Plasmodium malariae
- c) P.vivax & P.ovale
- d) None of the above

**6. What is the most common clinical symptom of malaria?**

- a) Hemorrhage
- b) High fever with chills
- c) Skin rash
- d) Neurological impairment

**7. Which antimalarial drug is commonly used for the treatment of Plasmodium falciparum malaria?**

- a) Chloroquine
- b) Artemisininbased combination therapies (ACTs)
- c) Metronidazole
- d) Ivermectin

**8. What is the primary mechanism of action of artemisinin in treating malaria?**

- a) Inhibiting folate synthesis
- b) Interfering with DNA replication
- c) Producing reactive oxygen species

d) Blocking protein synthesis

**9. Which Plasmodium species is known to cause severe cerebral malaria?**

- a) Plasmodium malariae
- b) Plasmodium falciparum
- c) Plasmodium vivax
- d) Plasmodium ovale

**10. The use of insecticide treated bed nets (ITNs) is a preventive measure against malaria. What is the primary purpose of these nets?**

- a) Repel mosquitoes
- b) Trap mosquitoes
- c) Kill mosquitoes
- d) Prevent mosquito bites

### **Entamoeba histolytica**

**11. Entamoeba histolytica primarily causes which type of infection?**

- a) Respiratory
- b) Gastrointestinal
- c) Neurological
- d) Dermatological

**12. Which form of Entamoeba histolytica is responsible for transmitting the infection?**

- a) Trophozoite
- b) Cyst
- c) Sporozoite
- d) Oocyst

**13. What is the most common clinical manifestation of an Entamoeba histolytica infection?**

- a) Asymptomatic carrier state
- b) Acute dysentery
- c) Chronic constipation
- d) Severe headache

**14. How does Entamoeba histolytica primarily invade the intestinal mucosa?**

- a) Via phagocytosis
- b) Through production of proteolytic enzymes
- c) By forming pseudopods
- d) By disrupting tight junctions

**15. Which of the following is a serious extraintestinal complication of amoebiasis?**

- a) Lung abscess
- b) Liver abscess
- c) Brain abscess
- d) Pancreatitis

**16. What is the preferred diagnostic method for detecting *Entamoeba histolytica* in stool samples?**

- a) Stool culture
- b) Stool microscopy for trophozoites and cysts
- c) Blood serology
- d) PCR

**17. Which of the following is a key difference between *Entamoeba histolytica* and nonpathogenic *Entamoeba* species like *Entamoeba dispar*?**

- a) Presence of ingested erythrocytes
- b) Size of the cyst
- c) Number of nuclei in the cyst
- d) Shape of the trophozoite

**18. Which drug is commonly used to treat invasive amoebiasis caused by *Entamoeba histolytica*?**

- a) Metronidazole
- b) Chloroquine
- c) Ciprofloxacin
- d) Ivermectin

**19. What preventive measure is effective against the spread of *Entamoeba histolytica*?**

- a) Avoiding raw seafood
- b) Drinking treated water

- c) Wearing insect repellent
- d) Getting vaccinated

**20. In which organ does *Entamoeba histolytica* most commonly cause abscesses?**

- a) Liver
- b) Spleen
- c) Brain
- d) Lung

### **Giardia lamblia**

**21. *Giardia lamblia* causes which type of gastrointestinal condition?**

- a) Dysentery
- b) Giardiasis
- c) Salmonellosis
- d) Amoebiasis

**22. What is the main mode of transmission for *Giardia lamblia*?**

- a) Airborne
- b) Fecaloral route
- c) Vectorborne
- d) Direct skin contact

**23. *Giardia lamblia* attaches to the intestinal mucosa using which structure?**

a) Pseudopodia

b) Flagella

c) Ventral adhesive disk

d) Cilia

a) Metronidazole

b) Albendazole

c) Mebendazole

d) Chloroquine

**24. What is the characteristic feature of *Giardia lamblia*'s trophozoite stage?**

a) Oval shape with a single nucleus

b) Pearshaped with two nuclei

c) Round with multiple flagella

d) Spindleshaped with cyst wall

**28. *Giardia lamblia* is most likely to be found in which type of water source?**

a) Treated municipal water

b) Untreated surface water

c) Saltwater oceans

d) Bottled spring water

**25. What is a common symptom of giardiasis?**

a) Bloody diarrhea

b) Constipation

c) Watery, foulsmelling diarrhea

d) High fever

**29. What preventive measure is recommended for travelers to endemic areas for *Giardia lamblia*?**

a) Boiling water before drinking

b) Avoiding fresh fruits and vegetables

c) Taking prophylactic antibiotics

d) Wearing protective clothing

**26. The diagnostic method of choice for *Giardia lamblia* infection is:**

a) Blood culture

b) Stool microscopy for cysts and trophozoites

c) Urinalysis

d) PCR of blood samples

**30. Which animal is often a reservoir for *Giardia lamblia*, potentially contaminating water sources?**

a) Cattle

b) Dogs

c) Beavers

d) Birds

**27. Which treatment is most commonly used for giardiasis?**

**Trichomonas vaginalis**

**31. What disease is caused by *Trichomonas vaginalis*?**

- a) Malaria
- b) Trichomoniasis
- c) Giardiasis
- d) Amebiasis

**32. Which organ system is primarily affected by *Trichomonas vaginalis*?**

- a) Respiratory system
- b) Digestive system
- c) Reproductive system
- d) Nervous system

**33. *Trichomonas vaginalis* is typically transmitted through:**

- a) Contaminated water
- b) Mosquito bites
- c) Sexual contact
- d) Airborne droplets

**34. Which diagnostic method is commonly used to detect *Trichomonas vaginalis* infection?**

- a) Blood culture
- b) Wet mount microscopy
- c) PCR testing

d) Stool examination

**35. The characteristic symptom of *Trichomonas vaginalis* infection in women is:**

- a) Itching and burning sensation
- b) Diarrhea
- c) Cough
- d) Rash

**36. *Trichomonas vaginalis* primarily affects which gender?**

- a) Men
- b) Women
- c) Both equally
- d) Children

**37. The typical treatment for *Trichomonas vaginalis* infection is:**

- a) Antiviral medication
- b) Antifungal therapy
- c) Metronidazole or tinidazole
- d) Antibiotic treatment

**38. What is the morphology of *Trichomonas vaginalis* under the microscope?**

- a) Cyst
- b) Flagellated trophozoite
- c) Sporozoite

d) Ciliate

**39. Trichomonas vaginalis infection is associated with an increased risk of:**

- a) HIV infection
- b) Influenza
- c) Tuberculosis
- d) Malaria

**40. Men infected with Trichomonas vaginalis are often:**

- a) Symptomatic
- b) Asymptomatic
- c) Severely ill
- d) Immune

### **Toxoplasma gondii**

**41. What disease does Toxoplasma gondii cause?**

- a) Toxoplasmosis
- b) Malaria
- c) Giardiasis
- d) Amebiasis

**42. The definitive host for Toxoplasma gondii is:**

- a) Humans
- b) Dogs

c) Cats

d) Birds

**43. Toxoplasma gondii is commonly transmitted to humans through:**

- a) Contaminated water
- b) Undercooked meat
- c) Mosquito bites
- d) Person-to-person contact

**44. Which form of Toxoplasma gondii is infectious to humans?**

- a) Sporozoite
- b) Tachyzoite
- c) Bradyzoite
- d) Oocyst

**45. Toxoplasma gondii can be particularly severe in:**

- a) Children
- b) Elderly individuals
- c) Immunocompromised individuals
- d) Athletes

**46. Congenital toxoplasmosis occurs when the infection is transmitted:**

- a) Through breast milk
- b) During childbirth
- c) Across the placenta

d) Via contaminated water

**47. Which diagnostic method is commonly used for detecting *Toxoplasma gondii* infection?**

- a) Blood culture
- b) Serological testing
- c) PCR testing
- d) Stool examination

**48. The treatment for *Toxoplasma gondii* infection often includes:**

- a) Metronidazole
- b) Antifungal therapy
- c) Pyrimethamine and sulfadiazine
- d) Antibiotics

**49. *Toxoplasma gondii* infection can cause which ocular condition?**

- a) Conjunctivitis
- b) Retinitis
- c) Glaucoma
- d) Cataract

**50. The dormant form of *Toxoplasma gondii* in tissues is known as:**

- a) Sporozoite
- b) Tachyzoite
- c) Bradyzoite

d) Oocyst

**Trypanosoma spp.**

51. *Trypanosoma brucei* causes which disease?

- a) Chagas disease
- b) Leishmaniasis
- c) Sleeping sickness
- d) Malaria

**52. The vector for *Trypanosoma cruzi* is:**

- a) Tsetse fly
- b) Sandfly
- c) Reduviid bug
- d) Mosquito

**53. The chronic phase of Chagas disease primarily affects the:**

- a) Lungs
- b) Heart
- c) Kidneys
- d) Skin

**54. *Trypanosoma brucei* is transmitted by:**

- a) Mosquito bites
- b) Tsetse fly bites

- c) Contaminated food
- d) Blood transfusion

**55. Which diagnostic method is commonly used to detect *Trypanosoma* infection?**

- a) Stool examination
- b) Blood smear microscopy
- c) PCR testing
- d) Chest X-ray

**56. The acute phase of Chagas disease is often:**

- a) Asymptomatic
- b) Symptomatic with high fever
- c) Fatal
- d) Chronic and progressive

**57. *Trypanosoma cruzi* can cause enlargement of the:**

- a) Spleen
- b) Liver
- c) Colon
- d) Heart

**58. The characteristic sign of *Trypanosoma brucei* infection in the early stage is:**

- a) Rash
- b) Chagoma

- c) Winterbottom's sign
- d) Jaundice

**59. The main method of preventing *Trypanosoma brucei* infection is:**

- a) Vaccination
- b) Vector control
- c) Antibiotic prophylaxis
- d) Avoiding contaminated water

**60. *Trypanosoma cruzi* can cause which condition characterized by the swelling of the eyelid?**

- a) Romana's sign
- b) Winterbottom's sign
- c) Koplik spots
- d) Hutchinson's triad

### **Leishmania spp.**

**61. *Leishmania donovani* is the causative agent of:**

- a) Cutaneous leishmaniasis
- b) Mucocutaneous leishmaniasis
- c) Visceral leishmaniasis
- d) American leishmaniasis

**62. *Leishmania* is transmitted by:**

- a) Mosquito bites

- b) Sandfly bites
- c) Tick bites
- d) Flea bites

**63. The reservoir for *Leishmania* spp. includes:**

- a) Cats
- b) Dogs
- c) Birds
- d) Fish

**64. The cutaneous form of leishmaniasis primarily affects the:**

- a) Liver
- b) Skin
- c) Lungs
- d) Eyes

**65. Which diagnostic method is commonly used for detecting *Leishmania* infection?**

- a) Blood smear
- b) Skin biopsy
- c) Serological testing
- d) PCR testing

**66. The characteristic lesion in cutaneous leishmaniasis is known as:**

- a) Chancre

- b) Ulcer
- c) Nodule
- d) Plaque

**67. Visceral leishmaniasis is also known as:**

- a) Black fever
- b) Dumdum fever
- c) Kala-azar
- d) Sleeping sickness

**68. Which species of *Leishmania* causes mucocutaneous leishmaniasis?**

- a) *Leishmania donovani*
- b) *Leishmania braziliensis*
- c) *Leishmania tropica*
- d) *Leishmania mexicana*

**69. The primary target cells for *Leishmania* parasites are:**

- a) Red blood cells
- b) Hepatocytes
- c) Macrophages
- d) Neurons

**70. The treatment for *Leishmania* infections often includes:**

- a) Antimalarial drugs
- b) Antibiotics

- c) Antimonial compounds
- d) Antifungal therapy

- b) Chlorine disinfection
- c) Freezing
- d) UV light

### **Cryptosporidium spp.**

**71. Cryptosporidium causes which disease?**

- a) Malaria
- b) Giardiasis
- c) Cryptosporidiosis
- d) Toxoplasmosis

**72. The primary symptom of cryptosporidiosis is:**

- a) Fever
- b) Diarrhea
- c) Rash
- d) Cough

**73. Cryptosporidium is commonly transmitted through:**

- a) Contaminated food and water
- b) Airborne droplets
- c) Sexual contact
- d) Vector bites

**74. The oocyst stage of Cryptosporidium is resistant to:**

- a) Heat

**75. Which diagnostic method is commonly used to detect Cryptosporidium infection?**

- a) Blood smear
- b) Stool examination with acid-fast staining
- c) Serological testing
- d) Chest X-ray

**76. Cryptosporidium infections can be particularly severe in:**

- a) Children
- b) Immunocompromised individuals
- c) Athletes
- d) Travelers

**77. The treatment for Cryptosporidium infection often includes:**

- a) Antiviral therapy
- b) Nitazoxanide
- c) Antibiotics
- d) Antifungal therapy

**78. Cryptosporidium infection is commonly associated with outbreaks in:**

- a) Schools

- b) Healthcare settings
- c) Water parks and swimming pools
- d) Airports

**79. Which form of *Cryptosporidium* is infectious?**

- a) Trophozoite
- b) Cyst
- c) Oocyst
- d) Sporocyst

**80. The main preventive measure against *Cryptosporidium* infection is:**

- a) Vector control
- b) Avoiding undercooked meat
- c) Water treatment and good hygiene
- d) Vaccination

### **Ascaris lumbricoides**

**81. *Ascaris lumbricoides* is commonly known as:**

- a) Pinworm
- b) Whipworm
- c) Roundworm
- d) Hookworm

**82. The primary mode of transmission for *Ascaris lumbricoides* is:**

- a) Inhalation of airborne eggs
- b) Ingestion of contaminated food or water
- c) Skin penetration
- d) Person-to-person contact

**83. Which stage of *Ascaris lumbricoides* is infectious to humans?**

- a) Larva
- b) Egg
- c) Adult
- d) Cyst

**84. The primary site of infection for *Ascaris lumbricoides* is:**

- a) Lungs
- b) Liver
- c) Intestines
- d) Skin

**85. Which diagnostic method is commonly used to detect *Ascaris lumbricoides* infection?**

- a) Blood smear
- b) Stool examination
- c) Serological testing
- d) Chest X-ray

**86. *Ascaris lumbricoides* can cause which complication in the lungs?**

- a) Pneumonia
- b) Asthma
- c) Loeffler's syndrome
- d) Tuberculosis

- a) Anemia
- b) Intestinal obstruction
- c) Malnutrition
- d) All of the above

**87. The treatment for *Ascaris lumbricoides* infection often includes:**

- a) Antiviral therapy
- b) Antifungal therapy
- c) Anthelmintic drugs like albendazole or mebendazole
- d) Antibiotics

**88. The adult *Ascaris lumbricoides* worm can grow up to:**

- a) 5 cm
- b) 10 cm
- c) 15 cm
- d) 30 cm

**89. *Ascaris lumbricoides* infection is most common in:**

- a) Temperate regions
- b) Tropical and subtropical regions
- c) Polar regions
- d) Desert areas

**90. Heavy infection with *Ascaris lumbricoides* can lead to:**

### **Trichuris Trichiura**

91. *Trichuris trichiura* is commonly known as:

- a) Pinworm
- b) Whipworm
- c) Hookworm
- d) Roundworm

**92. The primary mode of transmission for *Trichuris trichiura* is:**

- a) Inhalation of airborne eggs
- b) Ingestion of contaminated food or water
- c) Skin penetration
- d) Vector bites

**93. Which stage of *Trichuris trichiura* is infectious to humans?**

- a) Larva
- b) Egg
- c) Adult
- d) Cyst

**94. Trichuris trichiura primarily infects which part of the body?**

- a) Lungs
- b) Liver
- c) Large intestine
- d) Skin

**95. Which diagnostic method is commonly used to detect Trichuris trichiura infection?**

- a) Blood smear
- b) Stool examination
- c) Serological testing
- d) Chest X-ray

**96. Trichuris trichiura infection can cause which gastrointestinal symptom?**

- a) Constipation
- b) Diarrhea
- c) Vomiting
- d) Heartburn

**97. The treatment for Trichuris trichiura infection often includes:**

- a) Antiviral therapy
- b) Antifungal therapy
- c) Anthelmintic drugs like albendazole or mebendazole
- d) Antibiotics

**98. Heavy infection with Trichuris trichiura can lead to:**

- a) Rectal prolapse
- b) Liver enlargement
- c) Skin rash
- d) Lung damage

**99. The characteristic appearance of Trichuris trichiura eggs includes:**

- a) Round shape with a thick shell
- b) Oval shape with polar plugs
- c) Elongated shape with spines
- d) Crescent shape with a smooth surface

**100. Trichuris trichiura infection is commonly associated with:**

- a) Anemia
- b) Skin rashes
- c) Respiratory symptoms
- d) Neurological symptoms

### **Enterobius vermicularis**

**101. Enterobius vermicularis is commonly known as:**

- a) Whipworm
- b) Roundworm
- c) Pinworm
- d) Hookworm

**102. The primary mode of transmission for *Enterobius vermicularis* is:**

- a) Inhalation of airborne eggs
- b) Ingestion of contaminated food or water
- c) Person-to-person contact
- d) Skin penetration

**103. The most common symptom of *Enterobius vermicularis* infection is:**

- a) Abdominal pain
- b) Itching around the anus
- c) Diarrhea
- d) Cough

**104. Which diagnostic method is commonly used to detect *Enterobius vermicularis* infection?**

- a) Blood smear
- b) Stool examination
- c) Tape test
- d) Chest X-ray

**105. The primary site of infection for *Enterobius vermicularis* is:**

- a) Lungs
- b) Liver
- c) Intestines
- d) Skin

**106. *Enterobius vermicularis* eggs are commonly found in:**

- a) Stool
- b) Blood
- c) Urine
- d) Perianal region

**107. The treatment for *Enterobius vermicularis* infection often includes:**

- a) Antiviral therapy
- b) Antifungal therapy
- c) Anthelmintic drugs like mebendazole or pyrantel pamoate
- d) Antibiotics

**108. *Enterobius vermicularis* infection is most common in:**

- a) Adults
- b) Children
- c) Elderly individuals
- d) Pregnant women

**109. *Enterobius vermicularis* can cause which secondary symptom due to scratching?**

- a) Bacterial infection
- b) Viral infection
- c) Fungal infection
- d) Parasitic infection

**110. The adult female *Enterobius vermicularis* worm primarily lays eggs:**

- a) In the intestines
- b) In the liver
- c) On the skin around the anus
- d) In the lungs

**Hookworms (*Ancylostoma duodenale* and *Necator americanus*)**

**111. Hookworms are primarily transmitted through:**

- a) Ingestion of contaminated food
- b) Skin penetration by larvae
- c) Inhalation of airborne eggs
- d) Person-to-person contact

**112. The primary symptom of hookworm infection is:**

- a) Cough
- b) Abdominal pain
- c) Anemia
- d) Skin rash

**113. Hookworms attach to the host's intestines using:**

- a) Suckers
- b) Hooks
- c) Adhesive pads

d) Tentacles

**114. Which diagnostic method is commonly used to detect hookworm infection?**

- a) Blood smear
- b) Stool examination
- c) Serological testing
- d) Skin biopsy

**115. The larval stage of hookworms migrates through the host's body to reach:**

- a) The liver
- b) The lungs
- c) The heart
- d) The brain

**116. The treatment for hookworm infection often includes:**

- a) Antiviral therapy
- b) Antifungal therapy
- c) Anthelmintic drugs like albendazole or mebendazole
- d) Antibiotics

**117. The adult hookworms reside in which part of the host's body?**

- a) Small intestine
- b) Large intestine

- c) Stomach
- d) Liver

**118. Hookworm infection is most commonly associated with:**

- a) Respiratory symptoms
- b) Gastrointestinal bleeding
- c) Skin rashes
- d) Anemia

**119. The hookworm *Ancylostoma duodenale* differs from *Necator americanus* in its:**

- a) Geographic distribution
- b) Mode of transmission
- c) Size
- d) Lifecycle

**120. Severe hookworm infections can lead to:**

- a) Neurological symptoms
- b) Liver cirrhosis
- c) Heart failure
- d) Protein deficiency and malnutrition

### **Strongyloides stercoralis**

**121. Which stage of *Strongyloides stercoralis* is infective to humans?**

- a) Rhabditiform larva
- b) Filariform larva
- c) Adult worm
- d) Egg

**122. What is the common mode of transmission for *Strongyloides stercoralis*?**

- a) Ingestion of contaminated food
- b) Skin penetration by filariform larvae
- c) Vector-borne transmission
- d) Inhalation of cysts

**123. What is the diagnostic method of choice for *Strongyloides stercoralis* infection?**

- a) Stool examination for eggs
- b) Blood smear
- c) Serological testing for antibodies
- d) Stool examination for larvae

**124. What condition is often associated with hyperinfection syndrome in strongyloidiasis?**

- a) Immunosuppression
- b) Chronic lung disease
- c) Diabetes
- d) Gastroenteritis

**125. Which organ system is primarily affected by *Strongyloides stercoralis* hyperinfection?**

- a) Respiratory system
- b) Gastrointestinal system
- c) Nervous system
- d) Cardiovascular system

**126. What is the recommended treatment for *Strongyloides stercoralis* infection?**

- a) Albendazole
- b) Praziquantel
- c) Ivermectin
- d) Mebendazole

**127. Which of the following is a major clinical manifestation of chronic strongyloidiasis?**

- a) Dermatitis
- b) Chronic diarrhea
- c) Hemoptysis
- d) Anemia

**128. *Strongyloides stercoralis* can complete its life cycle without leaving the host. This phenomenon is known as:**

- a) Autoinfection
- b) Direct transmission
- c) Parasitic cycle
- d) External transmission

**129. In which regions is *Strongyloides stercoralis* endemic?**

- a) Tropical and subtropical regions
- b) Temperate regions only
- c) Arctic regions
- d) All regions

**130. What is the primary prevention method for strongyloidiasis?**

- a) Avoiding undercooked meat
- b) Wearing shoes to prevent skin contact with soil
- c) Drinking boiled water
- d) Vaccination

### **Taenia solium and Taenia saginata**

**131. Which intermediate host is associated with *Taenia solium*?**

- a) Cattle
- b) Pigs
- c) Fish
- d) Dogs

**132. What is the primary clinical manifestation of *Taenia saginata* infection?**

- a) Epilepsy
- b) Intestinal obstruction
- c) Cysticercosis

d) Mild gastrointestinal symptoms

d) Lungs

**133. Taenia solium can cause cysticercosis in humans when they ingest:**

- a) Tapeworm eggs
- b) Cysticerci in undercooked pork
- c) Adult tapeworms
- d) Larvae in contaminated water

**137. Which drug is commonly used to treat taeniasis?**

- a) Praziquantel
- b) Albendazole
- c) Mebendazole
- d) Ivermectin

**134. What is the definitive host for both Taenia solium and Taenia saginata?**

- a) Humans
- b) Pigs
- c) Cattle
- d) Fish

**138. What condition is associated with the consumption of raw or undercooked beef?**

- a) Taeniasis saginata
- b) Taeniasis solium
- c) Trichinosis
- d) Diphyllbothriasis

**135. Which diagnostic method is used to confirm Taenia solium neurocysticercosis?**

- a) Stool examination
- b) Blood smear
- c) MRI or CT scan
- d) Serological testing

**139. In cysticercosis, the larval form of Taenia solium primarily affects:**

- a) The liver
- b) The eyes
- c) The muscles and brain
- d) The lungs

**136. The adult stage of Taenia saginata resides primarily in the:**

- a) Small intestine
- b) Large intestine
- c) Liver

**140. What prevention measure is most effective in reducing the incidence of taeniasis and cysticercosis?**

- a) Freezing pork before consumption
- b) Regular deworming of pets
- c) Ensuring proper cooking of meat

d) Using mosquito nets

### **Diphyllobothrium latum**

**141. Diphyllobothrium latum, the fish tapeworm, can cause which deficiency in humans?**

- a) Vitamin D deficiency
- b) Vitamin B12 deficiency
- c) Iron deficiency
- d) Calcium deficiency

**142. The life cycle of Diphyllobothrium latum requires how many intermediate hosts?**

- a) One
- b) Two
- c) Three
- d) None

**143. Humans acquire Diphyllobothrium latum infection by consuming:**

- a) Undercooked beef
- b) Undercooked fish
- c) Undercooked pork
- d) Contaminated water

**144. The adult stage of Diphyllobothrium latum resides in the:**

- a) Small intestine

b) Large intestine

c) Stomach

d) Liver

**145. Which diagnostic method is used to confirm Diphyllobothrium latum infection?**

- a) Stool examination for eggs
- b) Blood smear
- c) Serological testing
- d) MRI or CT scan

**146. What is the definitive host for Diphyllobothrium latum?**

- a) Fish
- b) Humans
- c) Birds
- d) Mammals

**147. Which drug is commonly used to treat Diphyllobothrium latum infection?**

- a) Praziquantel
- b) Albendazole
- c) Mebendazole
- d) Ivermectin

**148. Diphyllobothrium latum is also known as:**

- a) Beef tapeworm

- b) Pork tapeworm
- c) Fish tapeworm
- d) Dog tapeworm

**149. What is the primary prevention measure for *Diphyllobothrium latum* infection?**

- a) Avoiding raw fish consumption
- b) Boiling drinking water
- c) Using insect repellents
- d) Regular deworming

**150. What condition is associated with the consumption of raw or undercooked freshwater fish?**

- a) Taeniasis
- b) Diphyllbothriasis
- c) Trichinosis
- d) Cysticercosis

### **Echinococcus spp.**

**151. *Echinococcus granulosus* causes which disease in humans?**

- a) Cystic echinococcosis
- b) Alveolar echinococcosis
- c) Hydatid disease
- d) Both a and c

**152. Humans acquire *Echinococcus* infection by:**

- a) Ingesting eggs from contaminated food or water
- b) Skin penetration
- c) Bites from infected insects
- d) Inhaling larvae

**153. The definitive host for *Echinococcus* spp. is:**

- a) Humans
- b) Sheep
- c) Dogs
- d) Pigs

**154. Which organ is most commonly affected by *Echinococcus* cysts?**

- a) Liver
- b) Lungs
- c) Brain
- d) Heart

**155. What diagnostic imaging is commonly used to detect *Echinococcus* cysts?**

- a) X-ray
- b) MRI
- c) Ultrasound
- d) CT scan

**156. Which of the following is a major complication of ruptured Echinococcus cysts?**

- a) Anaphylactic shock
- b) Intestinal obstruction
- c) Respiratory distress
- d) Cardiac arrest

**157. The primary prevention method for echinococcosis involves:**

- a) Vaccination
- b) Proper hygiene and avoiding contact with dog feces
- c) Wearing insect repellent
- d) Cooking meat thoroughly

**158. Echinococcus multilocularis causes which form of echinococcosis?**

- a) Cystic echinococcosis
- b) Alveolar echinococcosis
- c) Both a and b
- d) None of the above

**159. What is the recommended treatment for Echinococcus cysts?**

- a) Albendazole
- b) Surgery
- c) Praziquantel
- d) Both a and b

**160. Echinococcus infections are primarily a concern in which geographic regions?**

- a) Arctic regions
- b) Temperate regions
- c) Tropics
- d) Endemic areas with close human-dog contact

**Schistosoma spp.**

**161. Schistosoma haematobium is primarily associated with which type of schistosomiasis?**

- a) Intestinal schistosomiasis
- b) Hepatic schistosomiasis
- c) Urogenital schistosomiasis
- d) Cerebral schistosomiasis

**162. The intermediate host for Schistosoma spp. is:**

- a) Snails
- b) Fish
- c) Crustaceans
- d) Mammals

**163. Humans acquire schistosomiasis through:**

- a) Ingestion of contaminated water
- b) Skin penetration by cercariae

- c) Inhalation of cysts
- d) Ingestion of infected fish

- c) Heart
- d) Brain

**164. Which of the following is a common symptom of acute schistosomiasis (Katayama fever)?**

- a) Abdominal pain
- b) Hematuria
- c) Skin rash
- d) Fever

**168. What is the primary prevention strategy for schistosomiasis?**

- a) Vaccination
- b) Avoiding contact with freshwater in endemic areas
- c) Boiling drinking water
- d) Using insect repellent

**165. What diagnostic method is used to detect *Schistosoma* eggs in urine or stool?**

- a) PCR
- b) Microscopy
- c) ELISA
- d) Culture

**169. Which drug is commonly used to treat schistosomiasis?**

- a) Praziquantel
- b) Ivermectin
- c) Albendazole
- d) Mebendazole

**166. *Schistosoma japonicum* is known to cause which form of schistosomiasis?**

- a) Urogenital schistosomiasis
- b) Intestinal schistosomiasis
- c) Cerebral schistosomiasis
- d) Hepatosplenic schistosomiasis

**170. *Schistosoma mansoni* is primarily found in which regions?**

- a) Africa and the Middle East
- b) South America and the Caribbean
- c) Southeast Asia
- d) Both a and b

**167. Which organ is commonly affected by chronic schistosomiasis?**

- a) Lungs
- b) Liver

**Sarcoptes scabiei (Scabies Mite)**

**171. *Sarcoptes scabiei* is the causative agent of which condition?**

- a) Lice infestation
- b) Scabies
- c) Tick paralysis
- d) Flea allergy dermatitis

**172. What is the primary mode of transmission for *Sarcoptes scabiei*?**

- a) Airborne droplets
- b) Direct skin-to-skin contact
- c) Ingestion of contaminated food
- d) Vector-borne transmission

**173. What is the characteristic symptom of a scabies infestation?**

- a) Itchy, red bumps
- b) Hair loss
- c) Fever
- d) Swollen lymph nodes

**174. Which diagnostic method is used to confirm scabies infestation?**

- a) Blood test
- b) Skin scraping and microscopy
- c) Urine test
- d) Stool examination

**175. The typical burrows caused by *Sarcoptes scabiei* are found in which area of the body?**

- a) Scalp
- b) Between the fingers
- c) Sole of the foot
- d) Abdomen

**176. What is the recommended treatment for scabies?**

- a) Oral antibiotics
- b) Antiviral medication
- c) Topical permethrin cream
- d) Antifungal ointment

**177. *Sarcoptes scabiei* infestation is often referred to as:**

- a) Norwegian scabies
- b) Bed bug bites
- c) Mange
- d) Dermatophytosis

**178. Which population is at higher risk for severe scabies, also known as crusted scabies?**

- a) Children
- b) Immunocompromised individuals
- c) Elderly
- d) Travelers

**179. The life cycle of *Sarcoptes scabiei* takes approximately how long to complete?**

- a) 24 hours
- b) 1 week
- c) 2 weeks
- d) 6 weeks

**180. What preventive measure is important in controlling scabies outbreaks in institutional settings?**

- a) Isolation of affected individuals
- b) Vaccination
- c) Frequent handwashing
- d) Use of insect repellents

### **Pediculus humanus capitis (Head Lice)**

**181. Pediculus humanus capitis primarily infests which part of the body?**

- a) Pubic area
- b) Body
- c) Scalp
- d) Feet

**182. The primary symptom of a head lice infestation is:**

- a) Rash
- b) Fever
- c) Itching
- d) Pain

**183. How are head lice most commonly transmitted?**

- a) Airborne droplets
- b) Direct head-to-head contact
- c) Ingestion of contaminated food
- d) Contact with contaminated soil

**184. What is the recommended treatment for head lice infestation?**

- a) Antibiotics
- b) Antiviral medication
- c) Topical insecticides (e.g., permethrin)
- d) Antifungal cream

**185. Which stage of the lice life cycle is responsible for infesting the host?**

- a) Egg
- b) Nymph
- c) Adult
- d) All stages

**186. The eggs of head lice are commonly known as:**

- a) Nits
- b) Pupae
- c) Larvae
- d) Spores

**187. Head lice can survive without a human host for how long?**

- a) 1-2 hours
- b) 1-2 days
- c) 1 week
- d) 2 weeks

**188. What is a common method for detecting head lice infestation?**

- a) Blood test
- b) Visual inspection and combing
- c) Skin biopsy
- d) X-ray

**189. Which age group is most commonly affected by head lice?**

- a) Infants
- b) School-aged children
- c) Adults
- d) Elderly

**190. Which preventive measure is recommended to avoid head lice infestation?**

- a) Avoiding shared headgear and combs
- b) Regular use of insect repellent
- c) Daily hair washing with medicated shampoo
- d) Isolation of infected individuals

### **Pthirus pubis (Pubic Lice)**

**191. Pthirus pubis is commonly known as:**

- a) Bed bug
- b) Body lice
- c) Pubic lice or crab lice
- d) Head lice

**192. The primary mode of transmission for Pthirus pubis is:**

- a) Sexual contact
- b) Ingestion of contaminated food
- c) Contact with contaminated water
- d) Airborne droplets

**193. Which body area is most commonly infested by Pthirus pubis?**

- a) Scalp
- b) Pubic area
- c) Underarms
- d) Feet

**194. The eggs of Pthirus pubis are referred to as:**

- a) Nits
- b) Pupae
- c) Larvae
- d) Spores

**195. What is the primary symptom of a Pthirus pubis infestation?**

- a) Rash
- b) Itching in the affected area
- c) Fever
- d) Hair loss

**196. Which diagnostic method is used to confirm Pthirus pubis infestation?**

- a) Visual inspection
- b) Blood test
- c) Skin biopsy
- d) Urine test

**197. Pthirus pubis can infest which other areas of the body besides the pubic region?**

- a) Eyelashes and eyebrows
- b) Scalp
- c) Hands and feet
- d) Back and chest

**198. Which treatment is recommended for Pthirus pubis infestation?**

- a) Oral antibiotics
- b) Topical insecticides (e.g., permethrin)
- c) Antifungal cream
- d) Antiviral medication

**199. Pthirus pubis infestation is also known as:**

- a) Scabies
- b) Pediculosis corporis
- c) Pediculosis pubis
- d) Mange

**200. Which preventive measure can help reduce the risk of Pthirus pubis infestation?**

- a) Frequent washing and ironing of clothing and bed linens
- b) Avoiding public swimming pools
- c) Using insect repellent on the body
- d) Wearing protective clothing in infested areas

### **Cimex lectularius (Bed Bugs)**

**201. Cimex lectularius is commonly known as:**

- a) Bed bugs
- b) Fleas
- c) Ticks
- d) Mites

**202. Bed bugs primarily feed on:**

- a) Human blood
- b) Animal blood

- c) Plant sap
- d) Decaying organic matter

**203. Which symptom is commonly associated with bed bug bites?**

- a) Intense itching
- b) Hair loss
- c) Blisters
- d) Muscle pain

**204. Bed bugs are typically active during:**

- a) Daytime
- b) Nighttime
- c) Morning
- d) Afternoon

**205. What is a common sign of a bed bug infestation in a dwelling?**

- a) Blood stains on sheets
- b) Loud noises at night
- c) Pleasant floral scent
- d) Visible eggs on walls

**206. Which method is most effective for confirming the presence of bed bugs?**

- a) Blood test
- b) Visual inspection
- c) UV light examination
- d) X-ray

**207. Bed bugs can survive without a blood meal for:**

- a) 1-2 days
- b) 1-2 weeks
- c) Several months
- d) 1 year

**208. Which control measure is recommended for eradicating bed bugs?**

- a) Regularly washing bedding at high temperatures
- b) Using insect repellents on the skin
- c) Installing mosquito nets
- d) Spraying air fresheners

**209. Which insecticide is commonly used to treat bed bug infestations?**

- a) Permethrin
- b) Neonicotinoids
- c) Pyrethroids
- d) Both a and c

**210. Bed bug infestations are more likely to occur in:**

- a) Clean and well-maintained homes
- b) Cluttered and densely populated areas
- c) Dry and arid climates
- d) Cold and uninhabited regions

1	B	46	C	91	B	136	A	181	C
2	B	47	B	92	B	137	A	182	C
3	C	48	C	93	B	138	A	183	B
4	C	49	B	94	C	139	C	184	C
5	C	50	C	95	B	140	C	185	D
6	B	51	C	96	B	141	B	186	A
7	B	52	C	97	C	142	B	187	B
8	C	53	B	98	A	143	B	188	B
9	B	54	B	99	B	144	A	189	B
10	D	55	B	100	A	145	A	190	A
11	B	56	A	101	C	146	B	191	C
12	B	57	D	102	C	147	A	192	A
13	B	58	C	103	B	148	C	193	B
14	B	59	C	104	C	149	A	194	A
15	B	60	A	105	C	150	B	195	B
16	B	61	C	106	D	151	D	196	A
17	A	62	B	107	C	152	A	197	A
18	A	63	B	108	B	153	C	198	B
19	B	64	B	109	A	154	A	199	C
20	A	65	B	110	C	155	C	200	A
21	B	66	B	111	B	156	A	201	A
22	B	67	C	112	C	157	B	202	A
23	C	68	B	113	B	158	B	203	A
24	B	69	C	114	B	159	D	204	B
25	C	70	C	115	B	160	D	205	A
26	B	71	C	116	C	161	C	206	B
27	A	72	B	117	A	162	A	207	C
28	B	73	A	118	D	163	B	208	A
29	A	74	B	119	A	164	D	209	D
30	C	75	B	120	D	165	B	210	B
31	B	76	B	121	B	166	B		
32	C	77	B	122	B	167	B		
33	C	78	C	123	D	168	B		
34	B	79	C	124	A	169	A		
35	A	80	C	125	B	170	D		
36	B	81	C	126	C	171	B		
37	C	82	B	127	B	172	B		
38	B	83	B	128	A	173	A		
39	A	84	C	129	A	174	B		
40	B	85	B	130	B	175	B		
41	A	86	C	131	B	176	C		
42	C	87	C	132	D	177	C		
43	B	88	D	133	A	178	B		
44	D	89	B	134	A	179	C		
45	C	90	D	135	C	180	A		

1. B) The definitive hosts are Anopheles mosquitoes, where the sexual reproduction of the parasite occurs.
2. B) The sporozoite stage is the infective form injected by mosquitoes into humans, starting the infection process in the host.
3. C) In the liver stage, Plasmodium parasites replicate within hepatocytes, preparing to enter the bloodstream and infect red blood cells.
4. C) Microscopic examination of blood smears remains the gold standard, as it allows for direct visualization of the parasite in red blood cells, confirming malaria diagnosis.
5. C) Plasmodium vivax and Plasmodium ovale can form dormant liver stages, known as hypnozoites, leading to relapses in patients.
6. B) High fever with chills is the most common symptom, resulting from the release of merozoites into the bloodstream, triggering an immune response.
7. B) Artemisinin-based combination therapies (ACTs) are widely used for treatment, as they effectively clear the parasite from the bloodstream, especially for Plasmodium falciparum.
8. C) Artemisinin works by generating reactive oxygen species, damaging the parasite's cell structures and effectively killing it.
9. B) Plasmodium falciparum is associated with cerebral malaria, a severe complication that affects the central nervous system and can be fatal.
10. D) Insecticide-treated bed nets (ITNs) provide a barrier that prevents mosquito bites, thereby reducing the transmission of malaria.
11. B) Entamoeba histolytica primarily causes gastrointestinal infections, leading to symptoms in the digestive system.
12. B) The cyst form is the infective stage responsible for transmission, as it can survive in the environment and is ingested through contaminated food or water.
13. B) Acute dysentery is the most common clinical manifestation, marked by severe diarrhea with blood and mucus.
14. B) Entamoeba histolytica invades the intestinal mucosa by producing proteolytic enzymes, which break down tissue and allow the parasite to penetrate.
15. B) A serious extraintestinal complication of amoebiasis is a liver abscess, where the

parasite migrates from the intestine to the liver, forming pus-filled cavities.

16. B) Stool microscopy is preferred for detecting trophozoites and cysts, as it allows for direct visualization of the parasite forms in stool samples.

17. A) *Entamoeba histolytica* can be distinguished from nonpathogenic species by the presence of ingested erythrocytes within its cytoplasm, which is a pathogenic characteristic.

18. A) Metronidazole is commonly used to treat invasive amoebiasis, as it effectively targets the trophozoite stage of *Entamoeba histolytica*.

19. B) Drinking treated water helps prevent infection, as the cysts can be present in contaminated water sources and are killed by proper water treatment.

20. A) The liver is the most common site for abscess formation in amoebiasis, as the parasite often migrates from the intestine to this organ.

21. B) Giardiasis is the gastrointestinal condition caused by *Giardia lamblia*, characterized by symptoms affecting the digestive tract.

22. B) The fecal-oral route is the primary mode of transmission, typically through ingestion of contaminated food or water.

23. C) *Giardia lamblia* attaches to the intestinal mucosa using a ventral adhesive disk, allowing it to adhere to the surface and absorb nutrients.

24. B) The trophozoite stage is pear-shaped with two nuclei, a distinctive feature under microscopic examination.

25. C) Watery, foul-smelling diarrhea is a common symptom of giardiasis, caused by the parasite's interference with nutrient absorption in the intestines.

26. B) Stool microscopy for cysts and trophozoites is the diagnostic method of choice, as it allows for visualization of both forms in stool samples.

27. A) Metronidazole is commonly used to treat giardiasis, as it is effective against *Giardia lamblia*.

28. B) Untreated surface water is a common source of *Giardia* contamination, as the cysts can survive in natural water bodies.

29. A) Boiling water before drinking is recommended for travelers, as it kills *Giardia* cysts and prevents infection in endemic areas.

30. C) Beavers are a known reservoir for *Giardia lamblia*, and they can contaminate water sources with cysts, leading to infection in humans.

31. B) Trichomoniasis is the disease caused by *Trichomonas vaginalis*, primarily affecting the reproductive system.

32. C) The reproductive system is primarily affected by *Trichomonas vaginalis*, causing symptoms in the genital tract.

33. C) Sexual contact is the primary mode of transmission, as *Trichomonas vaginalis* is a sexually transmitted parasite.

34. B) Wet mount microscopy is commonly used for detection, allowing for visualization of the motile, flagellated parasite in vaginal or urethral discharge samples.

35. A) Itching and burning sensation are characteristic symptoms in women with *Trichomonas vaginalis* infection, often accompanied by vaginal discharge.

36. B) Women are primarily affected, as the infection typically causes symptoms in the female reproductive tract, though men can be carriers.

37. C) Metronidazole or tinidazole is the typical treatment, as both are effective in eliminating the parasite.

38. B) *Trichomonas vaginalis* appears as a flagellated trophozoite under the microscope, a key identifying feature.

39. A) Infection with *Trichomonas vaginalis* increases the risk of HIV, likely due to genital inflammation that facilitates viral transmission.

40. B) Men are often asymptomatic carriers of *Trichomonas vaginalis*, which can lead to undetected spread of the infection.

41. A) Toxoplasmosis is the disease caused by *Toxoplasma gondii*, which can lead to various health complications, especially in certain populations.

42. C) Cats are the definitive hosts for *Toxoplasma gondii*, where the sexual reproduction of the parasite occurs, allowing it to spread.

43. B) *Toxoplasma gondii* is commonly transmitted to humans through undercooked meat, as cysts can survive in animal tissues.

44. D) The oocyst form is infectious to humans, often found in contaminated soil or food, leading to infection upon ingestion.

45. C) Immunocompromised individuals, such as those with HIV/AIDS, are at high risk for severe complications, including encephalitis and other systemic issues.

46. C) Congenital toxoplasmosis occurs when the infection is transmitted across the placenta, posing severe risks to the fetus.

47. B) Serological testing is commonly used to detect antibodies against *Toxoplasma gondii*, indicating exposure or infection status.

48. C) Pyrimethamine and sulfadiazine are often used in treatment, particularly for severe cases, as they work together to inhibit parasite growth.

49. B) Retinitis is an ocular condition associated with *Toxoplasma gondii* infection, leading to vision problems if untreated.

50. C) The bradyzoite is the dormant form of *Toxoplasma gondii* in tissues, allowing it to persist in the host for long periods.

51. C) Sleeping sickness, also known as African trypanosomiasis, is caused by *Trypanosoma brucei*, which affects the central nervous system and can be fatal if untreated.

52. C) The vector for *Trypanosoma cruzi*, which causes Chagas disease, is the reduviid bug, also known as the "kissing bug."

53. B) The chronic phase of Chagas disease primarily affects the heart, leading to cardiomyopathy and other severe complications over time.

54. B) *Trypanosoma brucei* is transmitted by the tsetse fly, which injects the parasite into the bloodstream through its bite.

55. B) Blood smear microscopy is commonly used to detect *Trypanosoma* infections, allowing visualization of the parasite in the bloodstream.

56. A) The acute phase of Chagas disease is often asymptomatic, making it difficult to detect early without specific testing.

57. D) *Trypanosoma cruzi* can cause enlargement of the heart, a characteristic symptom of chronic Chagas disease.

58. C) Winterbottom's sign, the swelling of lymph nodes, is an early indicator of *Trypanosoma brucei* infection, often observed in the cervical area.

59. B) Vector control, such as reducing exposure to tsetse flies, is essential in preventing *Trypanosoma brucei* infections.

60. A) Romana's sign, characterized by swelling of the eyelid, is a typical sign of *Trypanosoma cruzi* infection in the acute stage.

61. C) *Leishmania donovani* is the causative agent of visceral leishmaniasis, also known as kala-azar, which affects internal organs.

62. B) Sandfly bites are the primary mode of transmission for *Leishmania* species, which transmit the parasite through their bite.

63. B) Dogs serve as reservoirs for *Leishmania* spp., contributing to the parasite's transmission cycle in endemic areas.

64. B) The cutaneous form of leishmaniasis primarily affects the skin, causing characteristic lesions at the site of the sandfly bite.

65. B) Skin biopsy is commonly used to detect *Leishmania* infection, allowing for microscopic examination of the parasite in skin tissues.

66. B) The characteristic lesion in cutaneous leishmaniasis is an ulcer, which can vary in severity depending on the species involved.

67. C) Kala-azar is another name for visceral leishmaniasis, a severe form of the disease that affects internal organs.

68. B) *Leishmania braziliensis* causes mucocutaneous leishmaniasis, a form that can result in destructive lesions affecting mucous membranes.

69. C) Macrophages are the primary target cells for *Leishmania* parasites, which survive and replicate within these immune cells.

70. C) Antimonial compounds are often used to treat *Leishmania* infections, particularly in cases of visceral and mucocutaneous leishmaniasis.

71. C) Cryptosporidiosis is the disease caused by *Cryptosporidium*, primarily affecting the gastrointestinal system and leading to diarrhea.

72. B) Diarrhea is the primary symptom of cryptosporidiosis, resulting from the parasite's effect on the intestinal lining.

73. A) *Cryptosporidium* is commonly transmitted through contaminated food and water, especially in areas with poor sanitation.

74. B) The oocyst stage of *Cryptosporidium* is resistant to chlorine disinfection, making

it difficult to eliminate in treated water supplies.

75. B) Stool examination with acid-fast staining is commonly used for detecting *Cryptosporidium* oocysts, as they appear as red-stained structures.

76. B) Immunocompromised individuals are at higher risk of severe cryptosporidiosis, as their weakened immune systems struggle to control the infection.

77. B) Nitazoxanide is often used to treat *Cryptosporidium* infection, particularly in immunocompetent individuals, as it reduces symptoms.

78. C) *Cryptosporidium* infection is commonly associated with outbreaks in water parks and swimming pools, where the parasite can survive chlorination.

79. C) The oocyst form of *Cryptosporidium* is the infectious stage, allowing it to spread through contaminated water and food sources.

80. C) Water treatment and good hygiene are primary preventive measures, as they help reduce the risk of infection from contaminated sources.

81. C) Roundworm is the common name for *Ascaris lumbricoides*, a large intestinal nematode that infects humans.

82. B) Ingestion of contaminated food or water containing *Ascaris* eggs is the primary transmission method for this roundworm.

83. B) The egg stage of *Ascaris lumbricoides* is infectious to humans, as it can survive in the environment until ingested.

84. C) The primary site of infection is the intestines, where the adult worms live and cause symptoms by competing for nutrients.

85. B) Stool examination is commonly used to detect *Ascaris lumbricoides*, allowing for identification of eggs under a microscope.

86. C) Loeffler's syndrome, a transient pulmonary reaction, is a complication of larval migration through the lungs.

87. C) Anthelmintic drugs like albendazole or mebendazole are often prescribed to treat *Ascaris lumbricoides* infections effectively.

88. D) Adult *Ascaris* worms can grow up to 30 cm in length, making them some of the largest intestinal parasites in humans.

89. B) *Ascaris lumbricoides* infections are most common in tropical and subtropical regions, where poor sanitation facilitates transmission.

90. D) Heavy infections can lead to anemia, malnutrition, and even intestinal obstruction due to the worm burden in the intestines.

91. B) Whipworm is the common name for *Trichuris trichiura*, named for its whip-like appearance in its adult form.

92. B) Ingestion of contaminated food or water is the main transmission route for *Trichuris trichiura*, which involves ingestion of eggs.

93. B) The egg stage is infectious to humans, as it survives in soil and is ingested with contaminated food or water.

94. C) *Trichuris trichiura* primarily infects the large intestine, where it attaches to the mucosa and causes symptoms.

95. B) Stool examination is the diagnostic method of choice for detecting *Trichuris trichiura*, as eggs can be visualized under a microscope.

96. B) Diarrhea is a common symptom, especially in heavy infections, due to the parasite's presence in the large intestine.

97. C) Anthelmintic drugs like albendazole or mebendazole are commonly used for treating *Trichuris trichiura* infections.

98. A) Heavy infections with *Trichuris trichiura* can lead to rectal prolapse, especially in children, due to severe intestinal inflammation.

99. B) The characteristic appearance of *Trichuris trichiura* eggs includes an oval shape with polar plugs, which aids in identification.

100. A) *Trichuris trichiura* infection is often associated with anemia due to chronic blood loss from the intestinal mucosa.

101. C) Pinworm is the common name for *Enterobius vermicularis*, a small parasitic worm that infects the human intestine.

102. C) Person-to-person contact, especially among children, is the primary mode of transmission, as the eggs can be spread through direct contact or contaminated surfaces.

103. B) Itching around the anus is the most common symptom, occurring primarily at night when female worms lay their eggs.

104. C) The tape test is commonly used to diagnose *Enterobius vermicularis*, as it can collect eggs from the perianal area for microscopic examination.

105. C) The primary site of infection is the intestines, where adult worms live and lay eggs around the anus.

106. D) *Enterobius vermicularis* eggs are typically found in the perianal region, where they are deposited by female worms during the night.

107. C) Anthelmintic drugs like mebendazole or pyrantel pamoate are commonly used to treat *Enterobius vermicularis* infections.

108. B) Children are most commonly affected by *Enterobius vermicularis*, as close contact and poor hygiene practices facilitate transmission.

109. A) Bacterial infection can occur as a secondary complication due to scratching, which can lead to skin breaks and allow bacterial entry.

110. C) The adult female worm primarily lays eggs on the skin around the anus, which causes the characteristic itching symptom.

111. B) Hookworms are primarily transmitted through skin penetration by

larvae in contaminated soil, often when people walk barefoot.

112. C) Anemia is a primary symptom of hookworm infection, as the adult worms feed on blood in the intestines.

113. B) Hookworms attach to the host's intestinal wall using hook-like structures, allowing them to feed on blood from the intestinal mucosa.

114. B) Stool examination is used to detect hookworm eggs, which are excreted in feces and can be observed under a microscope.

115. B) The larval stage migrates through the bloodstream to the lungs, where it can cause respiratory symptoms before moving to the intestines.

116. C) Anthelmintic drugs like albendazole or mebendazole are commonly used to treat hookworm infections.

117. A) The adult hookworms reside in the small intestine, where they attach to the mucosa and feed on blood.

118. D) Anemia is a common consequence of hookworm infection due to chronic blood loss from the intestinal wall.

119. A) *Ancylostoma duodenale* and *Necator americanus* differ in geographic distribution, with each species being prevalent in different regions.

120. D) Severe hookworm infections can lead to protein deficiency and malnutrition due to prolonged blood loss and nutrient competition.

121. B) The filariform larva is the infective stage of *Strongyloides stercoralis*, which penetrates the skin to initiate infection.

122. B) Skin penetration by filariform larvae is the common mode of transmission, typically when individuals come into contact with contaminated soil.

123. D) Stool examination for larvae is the diagnostic method of choice for detecting *Strongyloides stercoralis*, as larvae can be seen under a microscope.

124. A) Immunosuppression is often associated with hyperinfection syndrome, as a weakened immune system allows uncontrolled replication of the parasite.

125. B) The gastrointestinal system is primarily affected by hyperinfection, leading to severe symptoms and potential complications in immunocompromised patients.

126. C) Ivermectin is the recommended treatment for *Strongyloides stercoralis* infection, especially for chronic and hyperinfection cases.

127. B) Chronic diarrhea is a major clinical manifestation of strongyloidiasis, as the parasite affects the gastrointestinal system.

128. A) Autoinfection allows *Strongyloides stercoralis* to complete its life cycle within the host, resulting in long-term, persistent infection.

129. A) *Strongyloides stercoralis* is endemic in tropical and subtropical regions, where conditions are suitable for its transmission.

130. B) Wearing shoes helps prevent skin contact with soil, reducing the risk of infection from larvae in contaminated areas.

131. B) Pigs are the intermediate hosts associated with *Taenia solium*, as they can carry cysticerci, the larval form of the parasite.

132. D) Mild gastrointestinal symptoms are the primary clinical manifestation of *Taenia saginata* infection, as it typically remains localized in the intestines.

133. A) Cysticercosis occurs when humans ingest *Taenia solium* eggs, which develop

into cysts in tissues, leading to serious complications.

134. A) Humans are the definitive hosts for both *Taenia solium* and *Taenia saginata*, where the adult tapeworms reside in the intestines.

135. C) MRI or CT scan is used to diagnose neurocysticercosis, allowing for visualization of cysts in the brain and other tissues.

136. A) The adult stage of *Taenia saginata* resides primarily in the small intestine, where it attaches to the intestinal wall.

137. A) Praziquantel is commonly used to treat taeniasis, effectively targeting the adult tapeworm in the intestines.

138. A) Consumption of raw or undercooked beef can lead to *Taeniasis saginata*, as it may contain cysticerci of *Taenia saginata*.

139. C) In cysticercosis, the larval form of *Taenia solium* primarily affects the muscles and brain, leading to various clinical complications.

140. C) Ensuring proper cooking of meat is the most effective prevention measure against taeniasis and cysticercosis.

141. B) *Diphyllobothrium latum*, the fish tapeworm, can cause vitamin B12 deficiency in humans due to its ability to absorb large amounts of this nutrient.

142. B) The life cycle of *Diphyllobothrium latum* requires two intermediate hosts, typically small crustaceans and fish, before reaching humans.

143. B) Humans acquire *Diphyllobothrium latum* infection by consuming undercooked fish that contains the parasite's larval stage.

144. A) The adult stage of *Diphyllobothrium latum* resides in the small intestine, where it can grow to considerable lengths.

145. A) Stool examination for eggs is used to confirm *Diphyllobothrium latum* infection, as eggs are released in the feces.

146. B) Humans are the definitive hosts for *Diphyllobothrium latum*, as the adult tapeworm reaches maturity and reproduces in the human intestine.

147. A) Praziquantel is the treatment of choice for *Diphyllobothrium latum* infection, effectively eliminating the adult tapeworm.

148. C) *Diphyllobothrium latum* is also known as the fish tapeworm, reflecting its primary transmission route through undercooked fish.

149. A) Avoiding raw fish consumption is a primary prevention measure, as it reduces the risk of ingesting infectious larvae.

150. B) Diphyllobothriasis is associated with the consumption of raw or undercooked freshwater fish, which can harbor the parasite's infectious form.

151. D) *Echinococcus granulosus* causes both cystic echinococcosis and hydatid disease, forming cysts in various organs in humans.

152. A) Humans acquire *Echinococcus* infection by ingesting eggs from contaminated food or water, often due to poor hygiene practices.

153. C) Dogs are the definitive hosts for *Echinococcus* spp., carrying the adult stage of the parasite and shedding eggs in their feces.

154. A) The liver is most commonly affected by *Echinococcus* cysts, which can grow large and cause complications.

155. C) Ultrasound is commonly used to detect *Echinococcus* cysts, as it can visualize fluid-filled structures in organs.

156. A) A major complication of ruptured *Echinococcus* cysts is anaphylactic shock, which occurs due to the release of cyst contents into the body.

157. B) The primary prevention method involves practicing proper hygiene and avoiding contact with dog feces to prevent ingestion of *Echinococcus* eggs.

158. B) *Echinococcus multilocularis* causes alveolar echinococcosis, a more invasive and serious form of the disease, often affecting the liver.

159. D) The recommended treatment for *Echinococcus* cysts includes both albendazole and surgery, depending on cyst size and location.

160. D) *Echinococcus* infections are primarily a concern in regions where humans have close contact with dogs and livestock, especially in endemic areas.

161. C) *Schistosoma haematobium* is primarily associated with urogenital schistosomiasis, which affects the urinary system and can cause hematuria.

162. A) Snails serve as the intermediate hosts for *Schistosoma* spp., where the parasite undergoes part of its life cycle before infecting humans.

163. B) Humans acquire schistosomiasis through skin penetration by cercariae, the infective larvae that emerge from freshwater snails.

164. D) Fever is a common symptom of acute schistosomiasis (Katayama fever), as the body reacts to the initial infection.

165. B) Microscopy is used to detect *Schistosoma* eggs in urine or stool, which helps confirm the diagnosis based on species and infection site.

166. B) *Schistosoma japonicum* is known to cause intestinal schistosomiasis, which primarily affects the intestines and nearby organs.

167. B) Chronic schistosomiasis commonly affects the liver, leading to hepatomegaly and other complications due to prolonged infection.

168. B) Avoiding contact with freshwater in endemic areas is the primary prevention strategy, as the cercariae are present in contaminated water sources.

169. A) Praziquantel is commonly used to treat schistosomiasis, as it is effective against all major species of *Schistosoma*.

170. D) *Schistosoma mansoni* is primarily found in Africa, the Middle East, South America, and the Caribbean, where the intermediate snail hosts are present.

171. B) *Sarcoptes scabiei* is the causative agent of scabies, a condition characterized by intense itching and a skin rash.

172. B) Direct skin-to-skin contact is the primary mode of transmission for *Sarcoptes scabiei*, making it highly contagious in close-contact environments.

173. A) Itchy, red bumps are a characteristic symptom of scabies, caused by the mite burrowing into the skin and laying eggs.

174. B) Skin scraping and microscopy are used to confirm scabies infestation, allowing visualization of mites, eggs, or fecal material.

175. B) The typical burrows caused by *Sarcoptes scabiei* are found between the fingers, as well as in other warm, moist areas of the body.

176. C) Topical permethrin cream is the recommended treatment for scabies, as it

effectively kills the mites when applied to the skin.

177. C) *Sarcoptes scabiei* infestation is often referred to as "mange," especially when it affects animals.

178. B) Immunocompromised individuals are at higher risk for severe scabies, also known as crusted scabies, which is highly contagious and difficult to treat.

179. C) The life cycle of *Sarcoptes scabiei* takes approximately 2 weeks to complete, from egg to adult mite.

180. A) Isolation of affected individuals is important in controlling scabies outbreaks, particularly in institutional settings like hospitals or care facilities.

181. C) *Pediculus humanus capitis* primarily infests the scalp, feeding on blood and laying eggs (nits) on hair shafts.

182. C) Itching is the primary symptom of head lice infestation, caused by an allergic reaction to lice bites.

183. B) Head lice are most commonly transmitted through direct head-to-head contact, especially among children in close-contact settings.

184. C) Topical insecticides, such as permethrin, are recommended for treating head lice infestation, effectively killing the lice and nymphs.

185. D) All stages (egg, nymph, and adult) of the head lice life cycle are capable of infesting the host and continuing the infestation.

186. A) The eggs of head lice are commonly known as nits, which are attached to the base of hair shafts near the scalp.

187. B) Head lice can survive without a human host for 1–2 days, after which they typically die from lack of food.

188. B) Visual inspection and combing are common methods for detecting head lice, as it allows for the identification of live lice and nits.

189. B) School-aged children are most commonly affected by head lice, as close-contact activities increase the risk of transmission.

190. A) Avoiding shared headgear and combs is recommended to prevent head lice infestation, as lice can transfer through shared items.

191. C) *Pthirus pubis* is commonly known as pubic lice or crab lice, infesting the pubic area and causing intense itching.

192. A) Sexual contact is the primary mode of transmission for *Pthirus pubis*, as it infests areas of close skin contact.

193. B) The pubic area is the most commonly infested body region, but lice can also spread to other areas with coarse hair.

194. A) The eggs of *Pthirus pubis* are called nits, which are attached to hair and hatch to continue the infestation cycle.

195. B) Itching in the affected area is the primary symptom, caused by an allergic reaction to the lice's saliva.

196. A) Visual inspection is used to confirm a *Pthirus pubis* infestation, allowing for the identification of lice or nits on hair.

197. A) Besides the pubic region, *Pthirus pubis* can infest eyelashes and eyebrows, particularly in heavy infestations.

198. B) Topical insecticides, such as permethrin, are recommended for treating *Pthirus pubis* infestations effectively.

199. C) *Pthirus pubis* infestation is also known as pediculosis pubis, referring to lice in the pubic region.

200. A) Frequent washing and ironing of clothing and bed linens are effective preventive measures to reduce the risk of infestation.

201. A) *Cimex lectularius* is commonly known as bed bugs, small insects that feed on human blood, especially at night.

202. A) Bed bugs primarily feed on human blood, which they obtain by biting exposed skin while people are asleep.

203. A) Intense itching is a common symptom associated with bed bug bites, often appearing in clusters or lines on the skin.

204. B) Bed bugs are typically active during nighttime, coming out to feed on hosts when they are less likely to be disturbed.

205. A) Blood stains on sheets are a common sign of a bed bug infestation, resulting from crushed bugs or bites on the host.

206. B) Visual inspection is an effective method for confirming bed bugs, as their presence can be identified by finding live bugs, shed skins, or fecal spots.

207. C) Bed bugs can survive for several months without a blood meal, making them resilient and challenging to eliminate.

208. A) Regularly washing bedding at high temperatures is recommended to help control bed bugs, as heat can kill both bugs and their eggs.

209. D) Both permethrin and pyrethroids are commonly used insecticides to treat bed bug infestations effectively.

210. B) Bed bug infestations are more likely in cluttered and densely populated areas, where they can easily spread and hide.

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# **Virology**

## **Herpes Simplex Virus (HSV)**

### **1. Which family does Herpes Simplex Virus belong to?**

- a) Adenoviridae
- b) Herpesviridae
- c) Flaviviridae
- d) Retroviridae

### **2. What are the main two types of HSV?**

- a) HSV-1 and HSV-3
- b) HSV-1 and HSV-2
- c) HSV-2 and HSV-3
- d) HSV-3 and HSV-4

### **3. HSV-1 is most commonly associated with which type of infection?**

- a) Genital herpes
- b) Oral herpes
- c) Respiratory infections
- d) Gastrointestinal infections

### **4. HSV-2 is most commonly associated with which type of infection?**

- a) Genital herpes
- b) Oral herpes
- c) Respiratory infections
- d) Central nervous system infections

### **5. How is HSV primarily transmitted?**

- a) Respiratory droplets
- b) Direct contact with infected lesions
- c) Blood transfusion
- d) Fecal-oral route

### **6. HSV establishes latency in which type of cells?**

- a) Neurons
- b) Epithelial cells
- c) Lymphocytes
- d) Red blood cells

### **7. What is the primary symptom of an HSV reactivation?**

- a) Fever
- b) Headache
- c) Painful blisters or sores
- d) Nausea

### **8. What is the name of the condition caused by HSV-1 that affects the eye?**

- a) Herpetic whitlow
- b) Herpes gladiatorum
- c) Herpes keratitis
- d) Herpes labialis

### **9. Neonatal herpes is most commonly caused by which HSV type?**

- a) HSV-1
- b) HSV-2
- c) HSV-3
- d) HSV-4

- a) HSV-1
- b) Epstein-Barr virus
- c) Varicella-Zoster Virus
- d) Cytomegalovirus

### **Varicella-Zoster Virus (VZV)**

**10. Varicella-Zoster Virus causes which two main diseases?**

- a) Measles and mumps
- b) Chickenpox and shingles
- c) Smallpox and cowpox
- d) Rabies and influenza

**11. What is the primary mode of transmission for VZV?**

- a) Blood transfusion
- b) Direct contact with lesions
- c) Respiratory droplets
- d) Fecal-oral route

**12. Chickenpox is primarily a disease of which age group?**

- a) Infants
- b) Children
- c) Adults
- d) Elderly

**13. Shingles is a reactivation of which virus?**

**14. What is a common complication of shingles?**

- a) Postherpetic neuralgia
- b) Myocarditis
- c) Nephritis
- d) Hepatitis

**15. What type of vaccine is used to prevent chickenpox?**

- a) Inactivated vaccine
- b) Subunit vaccine
- c) Live attenuated vaccine
- d) mRNA vaccine

**16. What is the primary symptom of shingles?**

- a) Fever
- b) Rash
- c) Painful skin blisters
- d) Sore throat

**17. VZV establishes latency in which type of cells?**

- a) Epithelial cells

- b) Neurons
- c) Lymphocytes
- d) Hepatocytes

**18. What is the characteristic rash of chickenpox?**

- a) Vesicular rash
- b) Maculopapular rash
- c) Petechial rash
- d) Bullous rash

### **Epstein-Barr Virus (EBV)**

**19. Epstein-Barr Virus is also known as:**

- a) Varicella-Zoster Virus
- b) Cytomegalovirus
- c) Human herpesvirus 4
- d) Herpes simplex virus 2

**20. Which disease is commonly associated with EBV infection?**

- a) Chickenpox
- b) Infectious mononucleosis
- c) Shingles
- d) Cold sores

**21. EBV primarily infects which type of cells?**

- a) Neurons
- b) Epithelial cells
- c) B lymphocytes
- d) Hepatocytes

**22. How is EBV primarily transmitted?**

- a) Sexual contact
- b) Respiratory droplets
- c) Saliva
- d) Blood transfusion

**23. What is a common symptom of infectious mononucleosis?**

- a) Rash
- b) Sore throat
- c) Diarrhea
- d) Jaundice

**24. EBV is associated with which type of cancer?**

- a) Lung cancer
- b) Burkitt's lymphoma
- c) Breast cancer
- d) Osteosarcoma

**25. Which test is commonly used to diagnose infectious mononucleosis?**

- a) PCR for EBV DNA

b) Heterophile antibody test (Monospot test)

c) ELISA for EBV antibodies

d) Viral culture

**26. EBV establishes latency in which type of cells?**

a) T cells

b) Epithelial cells

c) B cells

d) Neurons

**27. What is the incubation period for EBV?**

a) 1-2 days

b) 1-2 weeks

c) 4-6 weeks

d) 6-8 weeks

**28. Which syndrome is associated with EBV reactivation in immunocompromised individuals?**

a) Kaposi's sarcoma

b) Hairy leukoplakia

c) Guillain-Barré syndrome

d) Reye's syndrome

## **Cytomegalovirus (CMV)**

**29. Cytomegalovirus is also known as:**

a) Human herpesvirus 5

b) Epstein-Barr Virus

c) Herpes simplex virus 1

d) Varicella-Zoster Virus

**30. CMV is most commonly transmitted through:**

a) Respiratory droplets

b) Saliva

c) Blood transfusion

d) Sexual contact

**31. Which population is most at risk for severe CMV disease?**

a) Healthy adults

b) Immunocompromised individuals

c) Children

d) Elderly

**32. CMV establishes latency in which type of cells?**

a) Epithelial cells

b) Neurons

c) Monocytes/macrophages

d) Hepatocytes

**33. Which congenital infection is associated with CMV?**

- a) Congenital rubella syndrome
- b) Congenital cytomegalovirus infection
- c) Congenital varicella syndrome
- d) Congenital toxoplasmosis

**34. What is a common method for diagnosing CMV infection?**

- a) PCR
- b) ELISA for CMV antibodies
- c) Culture on selective media
- d) Chest X-ray

**35. CMV can cause retinitis in which population?**

- a) Healthy adults
- b) Pregnant women
- c) Immunocompromised individuals
- d) Neonates

**36. What is the characteristic histological finding in CMV infection?**

- a) Cowdry type A inclusions
- b) Owl's eye inclusions
- c) Negri bodies
- d) Syncytia

**Adenovirus****37. Adenoviruses primarily cause infections in which body systems?**

- a) Respiratory and gastrointestinal tracts
- b) Nervous and endocrine systems
- c) Genitourinary and integumentary systems
- d) Cardiovascular and musculoskeletal systems

**38. Adenoviruses belong to which viral family?**

- a) Herpesviridae
- b) Papillomaviridae
- c) Adenoviridae
- d) Poxviridae

**39. What is the primary mode of transmission for adenoviruses?**

- a) Sexual contact
- b) Vector-borne transmission
- c) Respiratory droplets and fecal-oral route
- d) Direct contact with lesions

**40. What is a common clinical manifestation of adenovirus infection in children?**

- a) Conjunctivitis
- b) Diarrhea

- c) Bronchiolitis
- d) Hepatitis

**41. Adenovirus can cause which condition in the eye?**

- a) Keratitis
- b) Uveitis
- c) Epidemic keratoconjunctivitis
- d) Retinitis

**42. Adenovirus can establish latency in which type of cells?**

- a) Epithelial cells
- b) Neurons
- c) Lymphocytes
- d) Red blood cells

**43. Which organ system is most affected in adenovirus-induced hemorrhagic cystitis?**

- a) Respiratory system
- b) Gastrointestinal system
- c) Genitourinary system
- d) Nervous system

### **Human Papillomavirus (HPV)**

**44. HPV belongs to which viral family?**

- a) Adenoviridae

- b) Herpesviridae
- c) Papillomaviridae
- d) Poxviridae

**45. Which types of HPV are most commonly associated with cervical cancer?**

- a) HPV-6 and HPV-11
- b) HPV-16 and HPV-18
- c) HPV-1 and HPV-2
- d) HPV-45 and HPV-52

**46. How is HPV primarily transmitted?**

- a) Respiratory droplets
- b) Sexual contact
- c) Blood transfusion
- d) Fecal-oral route

**47. Which HPV types are commonly associated with genital warts?**

- a) HPV-1 and HPV-2
- b) HPV-16 and HPV-18
- c) HPV-6 and HPV-11
- d) HPV-31 and HPV-33

**48. What is a common screening method for cervical cancer caused by HPV?**

- a) PCR for HPV DNA
- b) Pap smear

- c) Serological testing
- d) Viral culture

**49. HPV can cause which condition on the hands and feet?**

- a) Herpetic whitlow
- b) Plantar warts
- c) Impetigo
- d) Molluscum contagiosum

**50. HPV establishes latency in which type of cells?**

- a) Epithelial cells
- b) Neurons
- c) Lymphocytes
- d) Hepatocytes

**51. HPV infection is associated with which head and neck cancer?**

- a) Laryngeal cancer
- b) Nasopharyngeal cancer
- c) Oropharyngeal cancer
- d) Thyroid cancer

### **Smallpox (Variola)**

**52. Smallpox is caused by which virus?**

- a) Vaccinia virus

- b) Varicella-Zoster Virus
- c) Variola virus
- d) Coxsackievirus

**53. Smallpox belongs to which viral family?**

- a) Poxviridae
- b) Herpesviridae
- c) Adenoviridae
- d) Papillomaviridae

**54. How is smallpox primarily transmitted?**

- a) Sexual contact
- b) Fecal-oral route
- c) Respiratory droplets
- d) Blood transfusion

**55. What is a characteristic symptom of smallpox?**

- a) Vesicular rash
- b) Maculopapular rash
- c) Pustular rash
- d) Erythematous rash

### **Influenza Viruses (Influenza A&B)**

**56. Which of the following influenza viruses is known to cause pandemics?**

- a) Influenza A
- b) Influenza B
- c) Influenza C
- d) All of the above

**57. Which protein on the surface of influenza viruses is responsible for binding to host cell receptors?**

- a) Hemagglutinin (HA)
- b) Neuraminidase (NA)
- c) Matrix protein (M)
- d) Nucleoprotein (NP)

**58. Influenza viruses belong to which viral family?**

- a) Coronaviridae
- b) Paramyxoviridae
- c) Orthomyxoviridae
- d) Flaviviridae

**59. What is the primary mode of transmission for influenza viruses?**

- a) Fecal-oral route
- b) Sexual contact
- c) Respiratory droplets
- d) Blood transfusion

**60. Which subtype of influenza virus is characterized by antigenic shift?**

- a) Influenza A
- b) Influenza B
- c) Influenza C
- d) All of the above

### **Human Immunodeficiency Virus (HIV)**

**61. HIV primarily targets which type of immune cells?**

- a) B cells
- b) T helper cells (CD4+)
- c) Cytotoxic T cells (CD8+)
- d) Macrophages

**62. HIV belongs to which viral family?**

- a) Retroviridae
- b) Flaviviridae
- c) Herpesviridae
- d) Picornaviridae

**63. What is the primary mode of HIV transmission?**

- a) Respiratory droplets
- b) Fecal-oral route
- c) Blood and sexual contact
- d) Vector-borne transmission

**64. The period between HIV infection and the appearance of detectable antibodies is known as the:**

- a) Latent phase
- b) Acute phase
- c) Window period
- d) Chronic phase

**65. Which of the following is a common opportunistic infection in AIDS patients?**

- a) Tuberculosis
- b) Influenza
- c) Dengue fever
- d) Hepatitis A

**66. What is the main goal of antiretroviral therapy (ART) in HIV-infected individuals?**

- a) Cure the infection
- b) Suppress viral load to undetectable levels
- c) Eradicate latent reservoirs
- d) Enhance viral replication

**67. Which diagnostic test is commonly used for early detection of HIV?**

- a) Western blot
- b) PCR for HIV RNA
- c) ELISA for HIV antibodies
- d) Rapid antigen test

**SARS-CoV-2 (COVID-19), SARS, MERS**

**68. SARS-CoV-2, the virus responsible for COVID-19, belongs to which viral family?**

- a) Coronaviridae
- b) Flaviviridae
- c) Picornaviridae
- d) Filoviridae

**69. The primary receptor for SARS-CoV-2 entry into host cells is:**

- a) ACE2 (Angiotensin-converting enzyme 2)
- b) CD4 receptor
- c) CXCR4 receptor
- d) ICAM-1 receptor

**70. SARS-CoV-2 is primarily transmitted through:**

- a) Fecal-oral route
- b) Sexual contact
- c) Respiratory droplets and aerosols
- d) Blood transfusion

**71. What is a common clinical manifestation of COVID-19?**

- a) Rash
- b) Gastroenteritis

- c) Respiratory distress
- d) Jaundice

**72. Which type of vaccine is used for COVID-19?**

- a) Live attenuated vaccine
- b) Inactivated vaccine
- c) mRNA vaccine
- d) DNA vaccine

**73. SARS-CoV-2 can cause severe illness, particularly in which population group?**

- a) Young adults
- b) Elderly individuals
- c) Children
- d) Athletes

**74. SARS-CoV and MERS-CoV are primarily associated with which symptom?**

- a) Gastrointestinal symptoms
- b) Neurological symptoms
- c) Severe acute respiratory illness
- d) Dermatological symptoms

**75. Which diagnostic test is commonly used for the detection of SARS-CoV-2?**

- a) ELISA for antibodies
- b) PCR for viral RNA

- c) Rapid antigen test
- d) Viral culture

**76. MERS (Middle East Respiratory Syndrome) is primarily associated with which animal reservoir?**

- a) Bats
- b) Civet cats
- c) Camels
- d) Pigs

### **Dengue**

**77. Dengue virus belongs to which viral family?**

- a) Flaviviridae
- b) Togaviridae
- c) Picornaviridae
- d) Coronaviridae

**78. What is the primary vector for the transmission of dengue virus?**

- a) Anopheles mosquitoes
- b) Aedes mosquitoes
- c) Culex mosquitoes
- d) Sandflies

**79. Dengue fever is also known as:**

- a) Yellow fever
- b) Breakbone fever
- c) West Nile fever
- d) Rift Valley fever

**80. Which clinical syndrome is associated with severe dengue?**

- a) Dengue hemorrhagic fever (DHF)
- b) Dengue shock syndrome (DSS)
- c) Both A and B
- d) Dengue encephalitis

**81. Which laboratory test is commonly used to diagnose dengue infection?**

- a) Hemagglutination inhibition test
- b) PCR for viral RNA
- c) Rapid antigen test
- d) Viral culture

**82. The primary clinical presentation of dengue includes:**

- a) High fever, severe headache, pain behind the eyes, joint and muscle pain
- b) Rash, cough, sore throat
- c) Gastrointestinal symptoms, jaundice, and ascites
- d) Neurological symptoms and paralysis

**83. Dengue virus can cause complications such as:**

- a) Severe bleeding
- b) Organ damage
- c) Both A and B
- d) None of the above

**84. A second infection with a different dengue serotype can lead to:**

- a) Increased immunity
- b) Reduced immunity
- c) Enhanced severity of the disease
- d) No effect on the disease severity

**85. Dengue virus has how many serotypes?**

- a) 2
- b) 4
- c) 6
- d) 8

### **Zika Virus**

**86. Zika virus belongs to which viral family?**

- a) Flaviviridae
- b) Togaviridae
- c) Picornaviridae
- d) Coronaviridae

**87. What is the primary mode of transmission for Zika virus?**

- a) Respiratory droplets
- b) Sexual contact
- c) Mosquito bites
- d) Blood transfusion

**88. Which mosquito species is primarily responsible for the transmission of Zika virus?**

- a) Anopheles mosquitoes
- b) Aedes mosquitoes
- c) Culex mosquitoes
- d) Sandflies

**89. Which congenital condition is associated with Zika virus infection during pregnancy?**

- a) Microcephaly
- b) Anencephaly
- c) Spina bifida
- d) Hydrocephalus

**90. Zika virus can also be transmitted through:**

- a) Breastfeeding
- b) Organ transplantation
- c) Sexual contact
- d) All of the above

**91. The primary clinical presentation of Zika virus infection includes:**

- a) Fever, rash, joint pain, and conjunctivitis
- b) Cough, sore throat, and runny nose
- c) Gastrointestinal symptoms and jaundice
- d) Neurological symptoms and paralysis

**92. Zika virus has been associated with which neurological disorder in adults?**

- a) Guillain-Barré syndrome
- b) Multiple sclerosis
- c) Alzheimer's disease
- d) Parkinson's disease

**93. Which diagnostic test is commonly used for the detection of Zika virus?**

- a) PCR for viral RNA
- b) ELISA for antibodies
- c) Viral culture
- d) Rapid antigen test

### **West Nile Virus**

**94. West Nile virus belongs to which viral family?**

- a) Flaviviridae
- b) Togaviridae
- c) Picornaviridae

d) Coronaviridae

**95. What is the primary mode of transmission for West Nile virus?**

- a) Respiratory droplets
- b) Mosquito bites
- c) Fecal-oral route
- d) Sexual contact

**96. Which mosquito species is primarily responsible for the transmission of West Nile virus?**

- a) Aedes mosquitoes
- b) Anopheles mosquitoes
- c) Culex mosquitoes
- d) Sandflies

**97. West Nile virus is primarily maintained in nature through a cycle involving:**

- a) Humans and mosquitoes
- b) Birds and mosquitoes
- c) Mammals and mosquitoes
- d) Amphibians and mosquitoes

**98. What is the primary clinical manifestation of West Nile virus infection?**

- a) Hemorrhagic fever
- b) Neurological symptoms

c) Respiratory distress

d) Gastrointestinal symptoms

**99. Which population is at the highest risk for severe illness from West Nile virus?**

- a) Young children
- b) Pregnant women
- c) Elderly individuals and immunocompromised individuals
- d) Travelers

**100. West Nile virus can cause severe neurological complications, including:**

- a) Encephalitis
- b) Meningitis
- c) Both A and B
- d) Myelitis

**101. The diagnosis of West Nile virus infection is commonly confirmed by:**

- a) PCR for viral RNA
- b) Serological testing for antibodies
- c) Viral culture
- d) Rapid antigen test

**102. West Nile virus can also be transmitted through:**

- a) Blood transfusion
- b) Organ transplantation

- c) Breastfeeding
- d) All of the above

- b) 2-21 days
- c) 3-5 days
- d) 21-30 days

## **Ebola Virus**

**103. Ebola virus belongs to which viral family?**

- a) Flaviviridae
- b) Filoviridae
- c) Togaviridae
- d) Paramyxoviridae

**104. What is the primary mode of transmission for Ebola virus?**

- a) Respiratory droplets
- b) Mosquito bites
- c) Direct contact with bodily fluids
- d) Ingestion of contaminated food

**105. Ebola virus primarily targets which type of cells in the body?**

- a) Epithelial cells
- b) Neurons
- c) Endothelial cells
- d) Hepatocytes

**106. The incubation period for Ebola virus infection typically ranges from:**

- a) 1-2 days

**107. Which clinical feature is most characteristic of Ebola virus disease?**

- a) Rash and fever
- b) Severe hemorrhagic symptoms
- c) Neurological symptoms
- d) Joint pain

**108. Ebola virus can be diagnosed using which of the following tests?**

- a) PCR for viral RNA
- b) Hemagglutination inhibition test
- c) Viral culture
- d) Rapid antigen test

**109. What is the case fatality rate for Ebola virus disease?**

- a) 5-10%
- b) 25-50%
- c) 50-90%
- d) 100%

**110. Which animal is considered a natural reservoir for the Ebola virus?**

- a) Bats
- b) Rodents

- c) Primates
- d) Birds

**111. What is the main preventive measure for Ebola virus disease during an outbreak?**

- a) Vaccination
- b) Quarantine and isolation
- c) Antibiotic treatment
- d) Vector control

**112. Which of the following symptoms is often associated with the later stages of Ebola virus disease?**

- a) Jaundice
- b) Diarrhea
- c) Bleeding from mucous membranes
- d) Persistent cough

### **Measles**

**113. Measles virus belongs to which viral family?**

- a) Flaviviridae
- b) Filoviridae
- c) Togaviridae
- d) Paramyxoviridae

**114. What is the primary mode of transmission for the measles virus?**

- a) Respiratory droplets
- b) Mosquito bites
- c) Direct contact with blood
- d) Ingestion of contaminated food

**115. Which clinical feature is characteristic of measles?**

- a) Rash starting at the head and spreading downward
- b) Hemorrhagic symptoms
- c) Muscle pain
- d) Gastrointestinal bleeding

**116. Measles can lead to which of the following complications?**

- a) Pneumonia
- b) Otitis media
- c) Encephalitis
- d) All of the above

**117. What is the typical incubation period for measles?**

- a) 1-2 days
- b) 7-14 days
- c) 14-21 days
- d) 21-28 days

**118. Which serological marker indicates a recent measles infection?**

- a) IgM antibodies
- b) IgG antibodies
- c) IgA antibodies
- d) IgE antibodies

**119. The measles vaccine is a:**

- a) Live attenuated vaccine
- b) Inactivated vaccine
- c) Subunit vaccine
- d) Toxoid vaccine

**120. Which of the following is a characteristic oral manifestation of measles?**

- a) Koplik spots
- b) Herpangina
- c) White patches on the tongue
- d) Blisters

**121. Measles is most infectious during which period?**

- a) Before the rash appears
- b) After the rash disappears
- c) During the recovery phase
- d) All of the above

**122. The most effective method of preventing measles is:**

- a) Antibiotic treatment
- b) Vaccination
- c) Quarantine
- d) Use of antiviral medications

## **Mumps**

**123. Mumps virus belongs to which viral family?**

- a) Flaviviridae
- b) Filoviridae
- c) Togaviridae
- d) Paramyxoviridae

**124. The primary mode of transmission for mumps is:**

- a) Respiratory droplets
- b) Mosquito bites
- c) Direct contact with blood
- d) Ingestion of contaminated food

**125. What is the most common clinical feature of mumps?**

- a) Parotitis (swelling of the parotid glands)
- b) Rash
- c) Hemorrhagic symptoms
- d) Gastrointestinal symptoms

**126. Which complication is associated with mumps infection?**

- a) Orchitis (inflammation of the testes)
- b) Myocarditis
- c) Meningitis
- d) All of the above

**127. Mumps is diagnosed using which laboratory test?**

- a) PCR for viral RNA
- b) Viral culture
- c) Serology for IgM antibodies
- d) All of the above

**128. What is the typical incubation period for mumps?**

- a) 1-2 days
- b) 7-14 days
- c) 14-21 days
- d) 21-28 days

**129. Mumps is most infectious during which period?**

- a) Before the onset of parotitis
- b) After parotitis resolves
- c) During the recovery phase
- d) All of the above

**130. Which of the following is NOT a symptom of mumps?**

- a) Fever
- b) Headache
- c) Sore throat
- d) Skin rash

**131. The most effective method of preventing mumps is:**

- a) Antibiotic treatment
- b) Vaccination
- c) Quarantine
- d) Use of antiviral medications

### **Hepatitis A**

**132. Hepatitis A virus (HAV) belongs to which viral family?**

- a) Hepadnaviridae
- b) Flaviviridae
- c) Picornaviridae
- d) Hepeviridae

**133. The primary mode of transmission for hepatitis A is:**

- a) Blood transfusion
- b) Sexual contact
- c) Fecal-oral route
- d) Respiratory droplets

**134. Which clinical feature is commonly associated with hepatitis A?**

- a) Jaundice
- b) Chronic liver disease
- c) Neurological symptoms
- d) Hemorrhagic symptoms

**135. The incubation period for hepatitis A typically ranges from:**

- a) 2-6 days
- b) 15-50 days
- c) 1-2 weeks
- d) 3-4 months

**136. Hepatitis A is diagnosed using which laboratory test?**

- a) PCR for viral RNA
- b) Serology for anti-HAV IgM antibodies
- c) Viral culture
- d) Rapid antigen test

**137. Hepatitis A infection is generally:**

- a) Acute and self-limiting
- b) Chronic
- c) Latent
- d) Recurrent

**138. Which of the following is NOT a common symptom of hepatitis A?**

- a) Fatigue
- b) Nausea
- c) Abdominal pain
- d) Skin rash

**139. Hepatitis A can be prevented by:**

- a) Vaccination
- b) Antibiotics
- c) Quarantine
- d) Antiviral drugs

**140. Which of the following groups is most at risk for hepatitis A infection?**

- a) Travelers to endemic areas
- b) Healthcare workers
- c) Elderly individuals
- d) All of the above

### **Hepatitis B**

**141. Hepatitis B virus (HBV) belongs to which viral family?**

- a) Hepadnaviridae
- b) Flaviviridae
- c) Picornaviridae
- d) Hepeviridae

**142. The primary mode of transmission for hepatitis B is:**

- a) Fecal-oral route
- b) Blood and body fluids
- c) Respiratory droplets
- d) Contaminated water

**143. Which of the following is a common marker for chronic hepatitis B infection?**

- a) HBsAg (Hepatitis B surface antigen)
- b) Anti-HBs (Hepatitis B surface antibody)
- c) IgM anti-HBc (Hepatitis B core antibody)
- d) Anti-HAV IgM

**144. Hepatitis B is associated with an increased risk of:**

- a) Liver cirrhosis
- b) Liver cancer
- c) Chronic hepatitis
- d) All of the above

**145. What is the incubation period for hepatitis B?**

- a) 1-2 weeks
- b) 4-6 weeks
- c) 6-8 weeks
- d) 1-6 months

**146. Which of the following is NOT a symptom of acute hepatitis B infection?**

- a) Jaundice
- b) Fever
- c) Fatigue
- d) Chronic joint pain

**147. Which of the following markers indicates immunity to hepatitis B?**

- a) HBsAg
- b) Anti-HBc IgM
- c) Anti-HBs
- d) HBeAg

**148. What is the main preventive measure for hepatitis B transmission?**

- a) Antibiotic treatment
- b) Vaccination
- c) Quarantine
- d) Use of antiviral medications

**149. What is the most common route of vertical transmission of Hepatitis B?**

- a) During delivery
- b) Breastfeeding
- c) In utero
- d) Postpartum exposure

**150. Which liver enzyme is most often elevated in acute Hepatitis B infection?**

- a) Alkaline phosphatase (ALP)
- b) Gamma-glutamyl transferase (GGT)
- c) Aspartate aminotransferase (AST)

d) Alanine aminotransferase (ALT)

d) All of the above

## **Hepatitis C**

**151. Hepatitis C virus (HCV) belongs to which viral family?**

- a) Hepadnaviridae
- b) Flaviviridae
- c) Picornaviridae
- d) Hepeviridae

**152. The primary mode of transmission for hepatitis C is:**

- a) Fecal-oral route
- b) Blood and body fluids
- c) Respiratory droplets
- d) Contaminated water

**153. Hepatitis C is most commonly diagnosed using which laboratory test?**

- a) PCR for HCV RNA
- b) Serology for anti-HCV antibodies
- c) Liver biopsy
- d) Viral culture

**154. Chronic hepatitis C infection is associated with an increased risk of:**

- a) Liver cirrhosis
- b) Liver cancer
- c) Chronic hepatitis

**155. What is the incubation period for hepatitis C?**

- a) 1-2 weeks
- b) 4-6 weeks
- c) 6-8 weeks
- d) 2-26 weeks

**156. Which of the following is NOT a risk factor for hepatitis C infection?**

- a) Intravenous drug use
- b) Blood transfusion
- c) Sexual contact
- d) Consumption of contaminated food

**157. The presence of which marker indicates active hepatitis C infection?**

- a) Anti-HCV antibodies
- b) HCV RNA
- c) HBsAg
- d) Anti-HBs

**158. What is the main preventive measure for hepatitis C transmission?**

- a) Antibiotic treatment
- b) Vaccination
- c) Use of antiviral medications
- d) Avoidance of high-risk behaviors

## **Hepatitis D**

**159. Hepatitis D virus (HDV) requires the presence of which virus for its replication?**

- a) Hepatitis A virus
- b) Hepatitis B virus
- c) Hepatitis C virus
- d) Hepatitis E virus

**160. The primary mode of transmission for hepatitis D is:**

- a) Fecal-oral route
- b) Blood and body fluids
- c) Respiratory droplets
- d) Contaminated water

**161. Hepatitis D infection can lead to which severe liver condition?**

- a) Acute liver failure
- b) Chronic liver disease
- c) Liver cirrhosis
- d) All of the above

**162. What is the incubation period for hepatitis D?**

- a) 1-2 weeks
- b) 3-7 weeks
- c) 8-12 weeks
- d) 13-24 weeks

**163. Hepatitis D is most commonly diagnosed using which laboratory test?**

- a) PCR for HDV RNA
- b) Serology for anti-HDV antibodies
- c) Liver biopsy
- d) Viral culture

**164. Hepatitis D infection is prevented by vaccination against which virus?**

- a) Hepatitis A virus
- b) Hepatitis B virus
- c) Hepatitis C virus
- d) Hepatitis E virus

**165. Which of the following is NOT a risk factor for hepatitis D infection?**

- a) Intravenous drug use
- b) Blood transfusion
- c) Sexual contact
- d) Consumption of contaminated food

**166. The presence of which marker indicates active hepatitis D infection?**

- a) Anti-HDV antibodies
- b) HDV RNA
- c) HBsAg
- d) Anti-HBs

## **Hepatitis E**

**167. Hepatitis E virus (HEV) belongs to which viral family?**

- a) Hepadnaviridae
- b) Flaviviridae

- c) Hepeviridae
- d) Picornaviridae

**168. The primary mode of transmission for hepatitis E is:**

- a) Fecal-oral route
- b) Blood and body fluids
- c) Respiratory droplets
- d) Sexual contact

**169. Hepatitis E is most commonly associated with which population?**

- a) Pregnant women
- b) Children under 5
- c) Elderly individuals
- d) Immunocompromised patients

**170. Which of the following is a common symptom of hepatitis E infection?**

- a) Jaundice
- b) Rash
- c) Neurological symptoms
- d) Gastrointestinal bleeding

**171. The incubation period for hepatitis E typically ranges from:**

- a) 1-2 weeks
- b) 2-8 weeks
- c) 1-3 months
- d) 3-6 months

**172. Hepatitis E is diagnosed using which laboratory test?**

- a) PCR for HEV RNA
- b) Serology for anti-HEV antibodies
- c) Liver biopsy
- d) Viral culture

**173. Which of the following is NOT a common transmission route for hepatitis E?**

- a) Contaminated water
- b) Undercooked pork or deer meat
- c) Fecal-oral route
- d) Respiratory droplets

**174. Which of the following is NOT a risk factor for severe hepatitis E infection?**

- a) Pregnancy
- b) Chronic liver disease
- c) Elderly age
- d) Gender (being male)

**175. The most effective prevention strategy for hepatitis E is:**

- a) Vaccination
- b) Avoidance of contaminated water and food
- c) Use of antiviral medications
- d) Quarantine

1	B	46	B	91	A	136	B
2	B	47	C	92	A	137	A
3	B	48	B	93	A	138	D
4	A	49	B	94	A	139	A
5	B	50	A	95	B	140	A
6	A	51	C	96	C	141	A
7	C	52	C	97	B	142	B
8	C	53	A	98	B	143	A
9	B	54	C	99	C	144	D
10	B	55	C	100	C	145	D
11	C	56	A	101	B	146	D
12	B	57	A	102	D	147	C
13	C	58	C	103	B	148	B
14	A	59	C	104	C	149	A
15	C	60	A	105	C	150	D
16	C	61	B	106	B	151	B
17	B	62	A	107	B	152	B
18	A	63	C	108	A	153	A
19	C	64	C	109	C	154	D
20	B	65	A	110	A	155	D
21	C	66	B	111	B	156	D
22	C	67	C	112	C	157	B
23	B	68	A	113	D	158	D
24	B	69	A	114	A	159	B
25	B	70	C	115	A	160	B
26	C	71	C	116	D	161	D
27	C	72	C	117	B	162	B
28	B	73	B	118	A	163	A
29	A	74	C	119	A	164	B
30	C	75	B	120	A	165	D
31	B	76	C	121	B	166	B
32	C	77	A	122	B	167	C
33	B	78	B	123	D	168	A
34	A	79	B	124	A	169	A
35	C	80	C	125	A	170	A
36	B	81	B	126	D	171	B
37	A	82	A	127	D	172	B
38	C	83	C	128	C	173	D
39	C	84	C	129	A	174	D
40	C	85	B	130	D	175	B
41	C	86	A	131	B		
42	C	87	C	132	C		
43	C	88	B	133	C		
44	C	89	A	134	A		
45	B	90	D	135	B		

1. b) Herpesviridae: Herpes Simplex Virus belongs to the Herpesviridae family, known for its ability to establish lifelong latent infections in host cells, primarily neurons.

2. b) HSV-1 and HSV-2: The main two types of HSV are HSV-1, primarily causing oral infections, and HSV-2, usually responsible for genital infections, both capable of causing recurrent outbreaks.

3. b) Oral herpes: HSV-1 is most commonly linked with oral herpes, manifesting as cold sores or blisters around the mouth and lips, typically following stress or immunosuppression.

4. a) Genital herpes: HSV-2 is associated with genital herpes, characterized by painful sores and ulcers in the genital or anal area, often accompanied by fever and body aches during primary infection.

5. b) Direct contact with infected lesions: HSV is mainly transmitted through direct contact with infected mucous membranes or broken skin, such as during kissing, sexual activity, or childbirth.

6. a) Neurons: HSV establishes latency in sensory neurons, remaining dormant in nerve cells until reactivated by triggers like stress, illness, or weakened immunity, leading to recurrent infections.

7. c) Painful blisters or sores: A hallmark of HSV reactivation is painful blisters or sores at the site of previous infection, which may be preceded by tingling or itching in the affected area.

8. c) Herpes keratitis: Herpes keratitis, caused by HSV-1, affects the cornea, potentially leading to severe eye damage, visual impairment, or even blindness if not promptly treated.

9. b) HSV-2: Neonatal herpes, typically caused by HSV-2, can occur during childbirth if the mother has an active infection, leading to severe complications in newborns, including CNS involvement.

10. b) Chickenpox and shingles: Varicella-Zoster Virus causes chickenpox during primary infection, characterized by an itchy vesicular rash, and shingles upon reactivation, presenting as a painful localized rash.

11. c) Respiratory droplets: VZV spreads through respiratory droplets, particularly in the early stages of chickenpox, and can also be transmitted via direct contact with the rash of an infected individual.

12. b) Children: Chickenpox predominantly affects children, causing a widespread itchy rash, fever, and malaise. It usually resolves without complications, but vaccination is recommended for prevention.

13. c) Varicella-Zoster Virus: Shingles is a reactivation of the dormant Varicella-Zoster Virus in sensory ganglia, often triggered by stress or immunosuppression, causing painful rash along a nerve path.

14. a) Postherpetic neuralgia: Postherpetic neuralgia, a common complication of shingles, is characterized by persistent and often debilitating nerve pain in the affected area, lasting months or even years.

15. c) Live attenuated vaccine: A live attenuated vaccine, such as the varicella vaccine for chickenpox and the zoster vaccine for shingles, provides effective protection against primary and recurrent VZV infections.

16. c) Painful skin blisters: Shingles typically presents as painful, fluid-filled blisters confined to a single dermatome, reflecting the virus's spread along a specific nerve.

17. b) Neurons: VZV remains latent in the sensory neurons of dorsal root ganglia and cranial nerve ganglia, where it can reactivate later in life, leading to shingles.

18. a) Vesicular rash: Chickenpox is marked by a vesicular rash that starts on the face and trunk, spreading to the extremities, evolving from macules to papules to vesicles before crusting over.

19. c) Human herpesvirus 4: Epstein-Barr Virus, also known as Human herpesvirus 4, is a member of the Herpesviridae family and is the primary cause of infectious mononucleosis, characterized by fever and sore throat.

20. b) Infectious mononucleosis: EBV is the causative agent of infectious mononucleosis, a self-limiting illness characterized by fever, pharyngitis, and lymphadenopathy, commonly affecting adolescents and young adults.

21. c) B lymphocytes: EBV primarily infects B lymphocytes, where it establishes a lifelong latent infection. This interaction can contribute to the development of certain cancers like Burkitt's lymphoma and nasopharyngeal carcinoma.

22. c) Saliva: EBV is transmitted through saliva, often referred to as the "kissing disease," but can also spread through sharing drinks or utensils, making it highly contagious in close-contact settings.

23. b) Sore throat: A sore throat is a common symptom of infectious mononucleosis, often accompanied by tonsillar exudates and swollen lymph nodes, which may mimic streptococcal pharyngitis.

24. b) Burkitt's lymphoma: EBV is associated with Burkitt's lymphoma, a highly aggressive form of non-Hodgkin lymphoma most prevalent in Africa,

particularly in children, and often linked to malaria co-infection.

25. b) Heterophile antibody test (Monospot test): The Monospot test detects heterophile antibodies produced during EBV infection and is commonly used for diagnosing infectious mononucleosis, especially in symptomatic patients.

26. c) B cells: EBV establishes latency in B cells, where it can persist indefinitely. Reactivation can occur in immunocompromised individuals, leading to various EBV-associated diseases.

27. c) 4-6 weeks: The incubation period for EBV is typically 4-6 weeks, during which the virus replicates and spreads before the onset of symptoms like fever, sore throat, and fatigue.

28. b) Hairy leukoplakia: Hairy leukoplakia is a white, hairy-appearing lesion on the tongue caused by EBV reactivation, primarily in immunocompromised individuals such as those with HIV/AIDS.

29. a) Human herpesvirus 5: Cytomegalovirus, also known as Human herpesvirus 5, is a widespread virus in the Herpesviridae family, typically causing asymptomatic infections but severe disease in immunocompromised individuals.

30. c) Blood transfusion: CMV is transmitted through bodily fluids such as blood, saliva, urine, and breast milk, making it a concern in blood transfusions and organ transplants, especially for immunocompromised patients.

31. b) Immunocompromised individuals: Immunocompromised individuals, such as organ transplant recipients or those with HIV, are at high risk for severe CMV disease, which can involve the lungs, liver, and eyes.

32. c) Monocytes/macrophages: CMV establishes latency in monocytes and macrophages, where it can persist without causing symptoms. Reactivation can occur during periods of immunosuppression, leading to symptomatic disease.

33. b) Congenital cytomegalovirus infection: Congenital CMV infection occurs when the virus is transmitted from a mother to her fetus, potentially causing hearing loss, vision impairment, and developmental delays in the newborn.

34. a) PCR: PCR testing is a sensitive method for diagnosing active CMV infection by detecting viral DNA in blood or tissue samples, particularly useful for monitoring immunocompromised patients.

35. c) Immunocompromised individuals: CMV can cause retinitis, leading to vision loss in immunocompromised individuals,

particularly those with AIDS, if not treated promptly with antiviral medications.

36. b) Owl's eye inclusions: CMV infection is characterized histologically by "owl's eye" intranuclear inclusions in infected cells, a hallmark finding in tissue biopsies or cytology specimens.

37. a) Respiratory and gastrointestinal tracts: Adenoviruses primarily cause infections in the respiratory and gastrointestinal tracts, leading to conditions like pharyngitis, pneumonia, and gastroenteritis, especially in children.

38. c) Adenoviridae: Adenoviruses belong to the Adenoviridae family, characterized by their double-stranded DNA and ability to cause a variety of infections, including conjunctivitis and respiratory illnesses.

39. c) Respiratory droplets and fecal-oral route: Adenoviruses are transmitted via respiratory droplets and the fecal-oral route, making them highly contagious in settings like daycare centers and military barracks.

40. c) Bronchiolitis: In children, adenovirus infection often presents as bronchiolitis, characterized by inflammation of the small airways, leading to cough, wheezing, and difficulty breathing, similar to respiratory syncytial virus (RSV) infections.

41. c) Epidemic keratoconjunctivitis: Adenovirus can cause epidemic keratoconjunctivitis, a highly contagious eye infection characterized by redness, tearing, and photophobia, often spreading in healthcare and community settings.

42. c) Lymphocytes: Adenoviruses can establish latent infections in lymphoid tissue, such as the tonsils and adenoids, where they may remain dormant and reactivate, especially under conditions of immunosuppression.

43. c) Genitourinary system: Adenovirus-induced hemorrhagic cystitis primarily affects the genitourinary system, causing hematuria and dysuria, particularly in immunocompromised individuals, including bone marrow transplant recipients.

44. c) Papillomaviridae: HPV belongs to the Papillomaviridae family, known for causing various warts and cancers, particularly cervical cancer in women and oropharyngeal cancers in both genders.

45. b) HPV-16 and HPV-18: HPV-16 and HPV-18 are the most common high-risk types associated with cervical cancer, accounting for approximately 70% of cases. Vaccination against these types is crucial for prevention.

46. b) Sexual contact: HPV is primarily transmitted through sexual contact, including vaginal, anal, and oral sex, making

it one of the most common sexually transmitted infections globally.

47. c) HPV-6 and HPV-11: HPV-6 and HPV-11 are commonly associated with genital warts, which are benign growths on the genital and anal areas but can be disfiguring and cause discomfort.

48. b) Pap smear: Pap smears are a routine screening test for cervical cancer, detecting abnormal cells in the cervix caused by high-risk HPV infection, allowing for early intervention and treatment.

49. b) Plantar warts: HPV can cause plantar warts, which are hard, grainy growths on the soles of the feet, often painful and difficult to treat, typically resulting from walking barefoot in public places.

50. a) Epithelial cells: HPV establishes latency in epithelial cells of the skin and mucous membranes, where it can persist and reactivate, potentially leading to the formation of warts or cancerous lesions.

51. c) Oropharyngeal cancer: HPV infection, particularly with high-risk types like HPV-16, is associated with oropharyngeal cancer, affecting the back of the throat, base of the tongue, and tonsils, often linked to oral sex.

52. c) Variola virus: Smallpox is caused by the Variola virus, which leads to a severe and often fatal disease characterized by

fever, malaise, and a distinctive vesicular-pustular rash covering the entire body.

53. a) Poxviridae: Variola virus belongs to the Poxviridae family, known for its large, complex DNA structure and its ability to cause severe diseases such as smallpox, which has been eradicated through vaccination.

54. c) Respiratory droplets: Smallpox spreads primarily through respiratory droplets, requiring close contact for transmission. It can also spread via contaminated bedding and clothing, contributing to its high contagiousness.

55. c) Pustular rash: The characteristic rash of smallpox progresses from macules to papules, then to vesicles and pustules, eventually forming scabs that leave pitted scars, often affecting the face and limbs prominently.

56. a) Influenza A: Influenza A is known to cause pandemics due to its ability to undergo antigenic shift, which results in significant changes in its surface proteins, leading to new strains that can evade pre-existing immunity.

57. a) Hemagglutinin (HA): Hemagglutinin is a surface glycoprotein of the influenza virus responsible for binding to sialic acid receptors on host cells, facilitating viral entry and subsequent infection.

58. c) Orthomyxoviridae: Influenza viruses belong to the Orthomyxoviridae family, characterized by their segmented, single-stranded RNA genome, allowing for genetic reassortment, which contributes to the emergence of new viral strains.

59. c) Respiratory droplets: Influenza is primarily transmitted through respiratory droplets released when an infected person coughs or sneezes, making it highly contagious in close-contact environments like schools and offices.

60. a) Influenza A: Antigenic shift, a process of genetic reassortment, occurs in Influenza A viruses, resulting in new subtypes that can cause pandemics, as the population lacks immunity to these novel strains.

61. b) T helper cells (CD4+): HIV primarily targets CD4+ T helper cells, leading to their gradual depletion. This results in immune system impairment, increasing susceptibility to opportunistic infections and certain cancers.

62. a) Retroviridae: HIV belongs to the Retroviridae family, characterized by its use of reverse transcriptase to convert its RNA genome into DNA, which integrates into the host cell's genome for viral replication.

63. c) Blood and sexual contact: HIV is transmitted through the exchange of infected bodily fluids, including blood, semen, vaginal fluids, and breast milk, making it a

major concern for unprotected sexual activity and needle sharing.

64. c) Window period: The window period is the time between HIV infection and the appearance of detectable antibodies, during which traditional antibody tests may return false-negative results, highlighting the importance of early testing with PCR.

65. a) Tuberculosis: Tuberculosis is a common opportunistic infection in AIDS patients due to their weakened immune system, often presenting as a severe form and requiring careful management and treatment.

66. b) Suppress viral load to undetectable levels: The main goal of antiretroviral therapy (ART) is to reduce the HIV viral load to undetectable levels, thereby improving immune function and reducing the risk of transmission and disease progression.

67. c) ELISA for HIV antibodies: ELISA is a common initial screening test for HIV, detecting antibodies to the virus. Positive results are usually confirmed with a more specific test like Western blot or PCR for accurate diagnosis.

68. a) Coronaviridae: SARS-CoV-2, the virus responsible for COVID-19, belongs to the Coronaviridae family, which includes other coronaviruses like SARS and MERS,

all characterized by their crown-like spike proteins.

69. a) ACE2 (Angiotensin-converting enzyme 2): SARS-CoV-2 enters host cells by binding to the ACE2 receptor, which is expressed in various tissues, including the respiratory tract, facilitating viral entry and infection.

70. c) Respiratory droplets and aerosols: SARS-CoV-2 is transmitted primarily through respiratory droplets and aerosols expelled by infected individuals, making mask-wearing and physical distancing key measures for reducing spread.

71. c) Respiratory distress: COVID-19 commonly presents with respiratory symptoms, including difficulty breathing and hypoxia, particularly in severe cases, and can progress to acute respiratory distress syndrome (ARDS).

72. c) mRNA vaccine: The mRNA vaccines for COVID-19, such as those developed by Pfizer-BioNTech and Moderna, encode the viral spike protein, eliciting an immune response that provides protection against the virus.

73. b) Elderly individuals: Elderly individuals are at a higher risk for severe COVID-19 illness due to age-related immune system decline and the higher prevalence of comorbidities, such as cardiovascular and respiratory diseases.

74. c) Severe acute respiratory illness: Both SARS-CoV and MERS-CoV are associated with severe acute respiratory illness, characterized by fever, cough, and dyspnea, and can lead to high mortality rates, especially in vulnerable populations.

75. b) PCR for viral RNA: PCR testing for SARS-CoV-2 detects viral RNA in respiratory specimens, providing a reliable method for diagnosing active infections, especially in symptomatic and exposed individuals.

76. c) Camels: MERS (Middle East Respiratory Syndrome) is primarily associated with camels, which serve as a reservoir for the virus, facilitating zoonotic transmission to humans, particularly in the Middle East.

77. a) Flaviviridae: Dengue virus belongs to the Flaviviridae family, which includes other arboviruses like Zika and Yellow Fever, transmitted primarily by Aedes mosquitoes and causing a range of illnesses from mild fever to severe hemorrhagic disease.

78. b) Aedes mosquitoes: Dengue virus is primarily transmitted by Aedes mosquitoes, particularly Aedes aegypti and Aedes albopictus, which are active during the day and thrive in tropical and subtropical regions.

79. b) Breakbone fever: Dengue fever is often referred to as "breakbone fever" due to

the severe joint and muscle pain it causes, along with fever, headache, and rash, leading to significant morbidity in affected individuals.

80. c) Both A and B: Severe dengue can lead to complications such as Dengue Hemorrhagic Fever (DHF) and Dengue Shock Syndrome (DSS), characterized by plasma leakage, hemorrhage, and shock, requiring intensive medical care.

81. b) PCR for viral RNA: PCR is the preferred diagnostic method for detecting dengue virus during the early stages of infection, as it can identify viral RNA in blood samples before the development of antibodies.

82. a) High fever, severe headache, pain behind the eyes, joint and muscle pain: These are hallmark symptoms of dengue fever, often accompanied by rash and mild bleeding tendencies, such as nosebleeds or gum bleeding.

83. c) Both A and B: Dengue virus can cause severe bleeding and organ damage, particularly in severe cases like DHF and DSS, which may lead to shock, multi-organ failure, and death if not promptly managed.

84. c) Enhanced severity of the disease: A second infection with a different dengue serotype can lead to antibody-dependent enhancement (ADE), increasing the risk of

severe disease, including DHF and DSS, due to an exaggerated immune response.

85. b) 4: Dengue virus has four distinct serotypes (DEN-1, DEN-2, DEN-3, and DEN-4). Infection with one serotype provides lifelong immunity to that serotype but not to the others, posing a risk for severe disease upon subsequent infections.

86. a) Flaviviridae: Zika virus is a member of the Flaviviridae family, related to dengue, yellow fever, and West Nile viruses, and is primarily transmitted by Aedes mosquitoes, causing mild to severe neurological complications.

87. c) Mosquito bites: Zika virus is primarily spread through the bite of infected Aedes mosquitoes, particularly Aedes aegypti, which are active during the day and breed in standing water found near human habitations.

88. b) Aedes mosquitoes: Aedes mosquitoes, especially Aedes aegypti and Aedes albopictus, are the primary vectors for Zika virus transmission, capable of spreading the virus to humans through their bites.

89. a) Microcephaly: Zika virus infection during pregnancy can lead to microcephaly, a severe birth defect where a baby's head is significantly smaller than expected, often resulting in developmental and neurological challenges.

90. d) All of the above: Zika virus can be transmitted not only by mosquito bites but also through sexual contact, organ transplantation, and blood transfusion, expanding its potential routes of transmission beyond vector-borne spread.

91. a) Fever, rash, joint pain, and conjunctivitis: These are common symptoms of Zika virus infection, often mild and self-limiting, but of particular concern for pregnant women due to the risk of congenital malformations in the fetus.

92. a) Guillain-Barré syndrome: Zika virus has been associated with Guillain-Barré syndrome, a rare neurological disorder causing muscle weakness and paralysis, typically occurring after an infection or vaccination.

93. a) PCR for viral RNA: PCR testing is the most accurate method for detecting Zika virus, especially during the acute phase of infection when the viral RNA is present in blood or urine, aiding in early diagnosis and management.

94. a) Flaviviridae: West Nile virus is part of the Flaviviridae family, which includes other mosquito-borne viruses like dengue and Zika, causing a range of symptoms from mild febrile illness to severe neurological disease.

95. b) Mosquito bites: West Nile virus is primarily transmitted through the bite of

infected Culex mosquitoes, which become infected when they feed on birds carrying the virus, then transmit it to humans and other animals.

96. c) Culex mosquitoes: Culex mosquitoes, particularly Culex pipiens and Culex quinquefasciatus, are the primary vectors for West Nile virus, feeding primarily at dusk and dawn and breeding in stagnant water sources.

97. b) Birds and mosquitoes: West Nile virus is maintained in nature through a transmission cycle between birds and mosquitoes, with humans and other mammals considered incidental or dead-end hosts in the transmission chain.

98. b) Neurological symptoms: Severe West Nile virus infection can lead to neurological symptoms such as encephalitis and meningitis, presenting with headache, high fever, neck stiffness, and altered mental status, especially in older adults.

99. c) Elderly individuals and immunocompromised individuals: These groups are at the highest risk for severe West Nile virus disease due to their weakened immune systems, which can lead to complications such as encephalitis or meningitis.

100. c) Both A and B: West Nile virus can cause severe neurological complications, including encephalitis (inflammation of the

brain) and meningitis (inflammation of the membranes covering the brain and spinal cord), potentially leading to long-term neurological deficits.

101. b) Serological testing for antibodies: Serological testing detects IgM and IgG antibodies against West Nile virus, confirming recent or past infection, particularly useful in diagnosing encephalitis or meningitis caused by the virus.

102. d) All of the above: West Nile virus can also be transmitted through blood transfusion, organ transplantation, and possibly breastfeeding, highlighting the need for careful screening in endemic areas.

103. b) Filoviridae: Ebola virus is a member of the Filoviridae family, known for causing severe hemorrhagic fevers with high fatality rates, characterized by their filamentous shape and ability to infect various cell types.

104. c) Direct contact with bodily fluids: Ebola virus is transmitted through direct contact with the blood, secretions, or other bodily fluids of infected individuals, as well as contaminated objects like needles and syringes.

105. c) Endothelial cells: Ebola virus targets endothelial cells lining the blood vessels, leading to vascular damage and increased permeability, contributing to the severe hemorrhagic symptoms seen in Ebola virus disease.

106. b) 2-21 days: The incubation period for Ebola virus infection ranges from 2 to 21 days, during which the virus replicates and spreads, with symptoms appearing suddenly, including fever, fatigue, and severe hemorrhagic manifestations.

107. b) Severe hemorrhagic symptoms: Ebola virus disease is characterized by severe hemorrhagic symptoms, including internal and external bleeding, due to widespread damage to blood vessels and impaired clotting mechanisms.

108. a) PCR for viral RNA: PCR testing is the gold standard for diagnosing Ebola virus infection, detecting viral RNA in blood or tissue samples, particularly useful for early diagnosis and containment of outbreaks.

109. c) 50-90%: The case fatality rate for Ebola virus disease ranges from 50% to 90%, depending on the viral strain and quality of medical care available, making it one of the deadliest viral diseases known to affect humans.

110. a) Bats: Bats are considered the natural reservoir for the Ebola virus, harboring the virus without showing symptoms, and transmitting it to other animals and humans through their saliva, feces, or consumption of contaminated food.

111. b) Quarantine and isolation: Quarantine and isolation of infected individuals are the main preventive measures during an Ebola

outbreak, along with strict infection control practices to prevent transmission to healthcare workers and the community.

112. c) Bleeding from mucous membranes: In the later stages of Ebola virus disease, patients often present with bleeding from mucous membranes, such as the eyes, nose, and gums, due to severe disruption of the body's clotting system.

113. d) Paramyxoviridae: Measles virus belongs to the Paramyxoviridae family, which includes other respiratory viruses like mumps and respiratory syncytial virus (RSV), known for causing highly contagious infections with significant morbidity and mortality.

114. a) Respiratory droplets: Measles is transmitted through respiratory droplets when an infected person coughs or sneezes, making it extremely contagious and capable of spreading rapidly in unvaccinated populations.

115. a) Rash starting at the head and spreading downward: The characteristic rash of measles typically starts on the face and then spreads downwards to the rest of the body, accompanied by fever, cough, and conjunctivitis.

116. d) All of the above: Measles can lead to serious complications such as pneumonia, otitis media, and encephalitis, especially in young children and immunocompromised

individuals, underscoring the importance of vaccination.

117. b) 7-14 days: The incubation period for measles ranges from 7 to 14 days, during which the virus replicates before symptoms appear, starting with a high fever followed by the characteristic rash.

118. a) IgM antibodies: Detection of IgM antibodies to the measles virus in the blood indicates a recent infection, useful for diagnosing acute cases, especially during outbreaks or in unvaccinated individuals.

119. a) Live attenuated vaccine: The measles vaccine is a live attenuated vaccine that provides long-lasting immunity. It is typically administered as part of the MMR (measles, mumps, rubella) vaccine in childhood immunization programs.

120. a) Koplik spots: Koplik spots are small, white lesions on the buccal mucosa that appear before the rash and are pathognomonic for measles, helping to differentiate it from other viral exanthems.

121. a) Before the rash appears: Measles is most contagious during the prodromal phase, which occurs before the appearance of the rash, highlighting the importance of early isolation to prevent transmission.

122. b) Vaccination: Vaccination is the most effective method for preventing measles,

providing immunity and reducing the spread of the virus in the community, contributing to herd immunity.

123. d) Paramyxoviridae: Mumps virus is part of the Paramyxoviridae family, sharing characteristics with other respiratory viruses like measles, and is known for causing swelling of the parotid glands and potential complications in unvaccinated individuals.

124. a) Respiratory droplets: Mumps is transmitted via respiratory droplets from the saliva of infected individuals, making it highly contagious in crowded settings such as schools and dormitories.

125. a) Parotitis (swelling of the parotid glands): Parotitis, the painful swelling of the parotid glands, is the hallmark symptom of mumps, often accompanied by fever, headache, and muscle aches, and can lead to complications such as orchitis or meningitis.

126. d) All of the above: Mumps can cause complications like orchitis, myocarditis, and meningitis, particularly in adolescents and adults, leading to potential long-term effects such as infertility or hearing loss.

127. d) All of the above: Mumps is diagnosed using PCR for viral RNA, viral culture, and serological testing for IgM antibodies, providing a comprehensive approach to confirm the infection and guide management.

128. c) 14-21 days: The incubation period for mumps ranges from 14 to 21 days, during which the virus replicates silently, and symptoms appear, starting with fever and progressing to parotitis.

129. a) Before the onset of parotitis: Mumps is most infectious just before the onset of parotitis, making it crucial to identify and isolate cases early to prevent transmission, especially in outbreak settings.

130. d) Skin rash: Skin rash is not a typical symptom of mumps; the disease primarily affects the salivary glands and can also lead to complications like orchitis and meningitis.

131. b) Vaccination: Vaccination is the most effective preventive measure against mumps, typically administered as part of the MMR vaccine, which protects against measles, mumps, and rubella.

132. c) Picornaviridae: Hepatitis A virus (HAV) is a member of the Picornaviridae family, which includes enteroviruses like poliovirus, and is known for causing acute liver inflammation through fecal-oral transmission.

133. c) Fecal-oral route: Hepatitis A is primarily transmitted through the fecal-oral route, often via contaminated food or water, and is a common cause of viral hepatitis outbreaks in areas with poor sanitation.

134. a) Jaundice: Jaundice, or yellowing of the skin and eyes, is a common symptom of hepatitis A, indicating liver inflammation and impaired bilirubin processing, often accompanied by fatigue and abdominal pain.

135. b) 15-50 days: The incubation period for hepatitis A typically ranges from 15 to 50 days, during which the virus replicates in the liver before symptoms such as fever, nausea, and jaundice appear.

136. b) Serology for anti-HAV IgM antibodies: Diagnosis of hepatitis A is confirmed by detecting anti-HAV IgM antibodies in the blood, indicating a recent infection, especially in symptomatic individuals or during outbreaks.

137. a) Acute and self-limiting: Hepatitis A infection is usually acute and self-limiting, with most individuals recovering fully without long-term liver damage, unlike hepatitis B and C, which can lead to chronic infections.

138. d) Skin rash: Skin rash is not commonly associated with hepatitis A. The infection primarily affects the liver, causing symptoms like jaundice, fatigue, and gastrointestinal discomfort.

139. a) Vaccination: Vaccination is the best way to prevent hepatitis A, providing long-term protection and significantly reducing the risk of outbreaks, especially in high-risk groups like travelers and food handlers.

140. a) Travelers to endemic areas: Travelers to regions where hepatitis A is endemic are at higher risk of infection due to exposure to contaminated food and water, making vaccination and preventive measures essential.

141. a) Hepadnaviridae: Hepatitis B virus (HBV) is part of the Hepadnaviridae family, characterized by its partially double-stranded DNA genome and unique replication cycle involving reverse transcription.

142. b) Blood and body fluids: Hepatitis B is transmitted through contact with infected blood and body fluids, such as through unprotected sex, needle sharing, or from mother to child during birth, leading to both acute and chronic infections.

143. a) HBsAg (Hepatitis B surface antigen): The presence of HBsAg in the blood indicates an active hepatitis B infection, either acute or chronic, and is used as a primary marker for diagnosing and monitoring the infection.

144. d) All of the above: Chronic hepatitis B infection increases the risk of liver cirrhosis, liver cancer, and chronic hepatitis, making early detection and management crucial to prevent long-term complications.

145. d) 1-6 months: The incubation period for hepatitis B ranges from 1 to 6 months, during which the virus replicates in the liver

before symptoms such as jaundice, fatigue, and abdominal pain appear.

146. d) Chronic joint pain: Chronic joint pain is not typically associated with acute hepatitis B infection, which more commonly presents with jaundice, fatigue, nausea, and abdominal pain.

147. c) Anti-HBs: The presence of anti-HBs indicates immunity to hepatitis B, either from vaccination or recovery from a past infection, signifying protection against future HBV infections.

148. b) Vaccination: Vaccination is the primary method of preventing hepatitis B infection, providing long-term immunity and reducing the incidence of chronic liver disease and liver cancer associated with the virus.

149. a) During delivery: Vertical transmission of hepatitis B occurs most commonly during delivery when the newborn is exposed to infected maternal blood and body fluids, highlighting the importance of perinatal vaccination.

150. d) Alanine aminotransferase (ALT): ALT is the liver enzyme most often elevated in acute hepatitis B infection, reflecting liver cell injury and inflammation, and is used to monitor the extent of liver damage.

151. b) Flaviviridae: Hepatitis C virus (HCV) belongs to the Flaviviridae family, which also includes other medically significant viruses like dengue and West Nile virus. It primarily affects the liver and can lead to chronic infection.

152. b) Blood and body fluids: Hepatitis C is mainly transmitted through exposure to infected blood, such as through intravenous drug use, blood transfusions before screening protocols, and needle-stick injuries.

153. a) PCR for HCV RNA: Polymerase chain reaction (PCR) for HCV RNA is the preferred diagnostic test for detecting active hepatitis C infection, as it directly measures the viral load in the blood.

154. d) All of the above: Chronic hepatitis C can lead to severe complications such as liver cirrhosis, hepatocellular carcinoma, and chronic liver inflammation, making early detection and treatment essential to prevent these outcomes.

155. d) 2-26 weeks: The incubation period for hepatitis C ranges from 2 to 26 weeks, during which the virus replicates in the liver before symptoms such as jaundice, fatigue, and abdominal pain appear.

156. d) Consumption of contaminated food: Hepatitis C is not transmitted through contaminated food. It spreads primarily through blood-to-blood contact, unlike

hepatitis A and E, which are transmitted via the fecal-oral route.

157. b) HCV RNA: The presence of HCV RNA in the blood confirms active hepatitis C infection, which is essential for diagnosing current infection and monitoring the effectiveness of antiviral therapy.

158. d) Avoidance of high-risk behaviors: Avoiding high-risk behaviors, such as intravenous drug use and unprotected sex with multiple partners, is the most effective way to prevent hepatitis C transmission, as there is no vaccine available.

159. b) Hepatitis B virus: Hepatitis D virus (HDV) requires the presence of hepatitis B virus (HBV) for its replication because it uses HBV's surface antigen (HBsAg) to assemble its viral particles, making co-infection or superinfection with HBV necessary.

160. b) Blood and body fluids: Hepatitis D is transmitted through blood and body fluids, similar to hepatitis B. It is often contracted through needle sharing, unprotected sex, or from mother to child during birth.

161. d) All of the above: Hepatitis D infection can result in severe liver complications, including acute liver failure, chronic liver disease, and cirrhosis, especially when co-infected with hepatitis B, increasing morbidity and mortality.

162. b) 3-7 weeks: The incubation period for hepatitis D is generally 3 to 7 weeks, during which the virus replicates before causing symptoms like jaundice, abdominal pain, and fatigue.

163. a) PCR for HDV RNA: PCR for HDV RNA is the definitive diagnostic test for detecting active hepatitis D infection, allowing for direct measurement of the viral load and confirmation of the presence of the virus.

164. b) Hepatitis B virus: Hepatitis D infection can be prevented by vaccination against hepatitis B, as HDV requires HBV for its replication. The hepatitis B vaccine provides indirect protection against hepatitis D.

165. d) Consumption of contaminated food: Consumption of contaminated food is not a risk factor for hepatitis D infection, as it is primarily transmitted through blood and body fluids, unlike hepatitis A and E, which are transmitted via the fecal-oral route.

166. b) HDV RNA: The presence of HDV RNA in the blood indicates active hepatitis D infection, confirming the replication of the virus and its role in ongoing liver damage, especially in patients co-infected with hepatitis B.

167. c) Hepeviridae: Hepatitis E virus (HEV) belongs to the Hepeviridae family, which is distinct from the Hepadnaviridae,

Flaviviridae, and Picornaviridae families that include hepatitis B, C, and A viruses, respectively.

168. a) Fecal-oral route: Hepatitis E is primarily transmitted through the fecal-oral route, usually via consumption of contaminated water or food, similar to hepatitis A, and is a major cause of outbreaks in areas with poor sanitation.

169. a) Pregnant women: Hepatitis E poses a significant risk to pregnant women, particularly in the third trimester, where it can lead to severe complications such as fulminant hepatitis, preterm delivery, and even maternal and fetal death.

170. a) Jaundice: Jaundice, or yellowing of the skin and eyes, is a common symptom of hepatitis E, indicating liver inflammation and impaired bile excretion, often accompanied by fatigue, nausea, and abdominal pain.

171. b) 2-8 weeks: The incubation period for hepatitis E ranges from 2 to 8 weeks, during which the virus replicates in the liver before symptoms appear, making it essential to monitor at-risk populations for early signs of infection.

172. b) Serology for anti-HEV antibodies: Hepatitis E is diagnosed by detecting anti-HEV antibodies in the blood, indicating either current or past infection, especially in

individuals presenting with symptoms of acute hepatitis.

173. d) Respiratory droplets: Respiratory droplets are not a common transmission route for hepatitis E. The virus is primarily transmitted through the fecal-oral route, usually via contaminated water or food.

174. d) Gender (being male): Gender is not a risk factor for severe hepatitis E infection. The most significant risk factors include pregnancy, chronic liver disease, and advanced age, which can lead to more severe outcomes.

175. b) Avoidance of contaminated water and food: The most effective prevention strategy for hepatitis E is avoiding contaminated water and food, especially in endemic areas, as there is currently no widely available vaccine for HEV.

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