

Microbiology revision



Summaries & MCQs

- Additional Notes
- Important
- Explanation
- Examples

	Transmission	Clinical presentation	Diagnosis	Treatment
Toxoplasmosis	<ul style="list-style-type: none"> - Higher transmission rate in 3rd trimester - More dangerous if it happens in 1st trimester 	<ul style="list-style-type: none"> - Chorioretinitis - Hydrocephalus - Intracranial calcification. 	<ul style="list-style-type: none"> - Culture - Serology - PCR 	<ul style="list-style-type: none"> - Spiramycin - Pyrimethamine - Sulfadiazine
Syphilis	<ul style="list-style-type: none"> - Mother with primary or secondary syphilis - Typically occurs during second half of pregnancy 	<ul style="list-style-type: none"> - Pseudoparalysis - Retinopathy - Radiolucent bone disease - Congenital heart disease 	<ul style="list-style-type: none"> - Culture - Serology (treponemal or non-treponemal tests) 	<ul style="list-style-type: none"> Penicillin G Screening
Rubella	<ul style="list-style-type: none"> - 12 weeks 70% - 13-16 weeks 20% - rare >16 weeks 	<ul style="list-style-type: none"> - Sensorineural hearing loss - Retinopathy - Radiolucent bone disease - Congenital heart disease - Blueberry Muffin Rash 	<ul style="list-style-type: none"> - Culture - Serology (Viral isolation & IgM) 	Supportive therapy
CMV	Increased risk of transmission <u>later in pregnancy</u> but more severe sequelae associated with earlier acquisition	<ul style="list-style-type: none"> Periventricular intracranial calcifications Microcephaly Sensorineural hearing loss Thrombocytopenia Hepatosplenomegaly 	<ul style="list-style-type: none"> - Viral isolation 	Ganciclovir
HSV	Intrapartum (indication for c-section)	<ul style="list-style-type: none"> CSF pleocytosis Conjunctivitis Thrombocytopenia Mucocutaneous vesicles or scarring Elevated liver transaminases 	<ul style="list-style-type: none"> - Culture - Serology - PCR 	Acyclovir
varicella	First 20 weeks	<ul style="list-style-type: none"> Limb hypoplasia Cicatrical or vesicular skin lesions 	<ul style="list-style-type: none"> - Culture - Serology - PCR 	Acyclovir
Parvovirus	First 20 weeks	Nonimmune hydrops fetalis	<ul style="list-style-type: none"> - Serology - PCR 	Transfusion

Clinical syndrom	Etiology	Treatment
<p>Bacterial vaginosis</p> <p>Malodorous vaginal discharge, pH >4.5</p>	<p>Etiology unclear: associated with <i>Gardenerella vaginalis mobiluncus</i>, <i>Prevotella sp.</i>,</p>	<p>Metronidazole Tinidazole</p>
<p>Candidiasis</p> <p>Pruritus, thick cheesy discharge, pH <4.5</p>	<p><i>Candida albicans</i> 80-90%. <i>C. Glabrata</i>, <i>C. tropicalis</i></p>	<p>Oral azole: Fluconazole Itraconazole</p>
<p>Trichomoniasis</p> <p>Copious foamy discharge, pH >4.5 Treat sexual partners</p>	<p><i>Trichomonas vaginalis</i></p>	<p>Metronidazole Tinidazole</p>

	Herpes simplex virus	Human papillomavirus
Structure	Linear ds-DNA & Icosahedral capsid	Circular ds-DNA & Icosahedral capsid
Types	HSV-2: genital herpes HSV-1	Cutaneous (1,2,3 & 10) Anogenital (16,11,18 & 6)
Transmission	Sex, Perinatal & intrauterine	Cutaneous: Direct contact Anogenital: sex, vertical
Clinical feature	Fever, Inguinal lymphadenopathy, vesicular herpetic lesion & aseptic meningitis	Cutaneous: Localized pain, abnormal discharge, warts & discomfort Anogenital: benign (6,11) or malignant diseases (16,18)
Diagnosis	ELISA, IF , PCR & tissue culture	PCR , Pap-smear & In-situ DNA hybridization
Treatment	Acyclovir , Famciclovir & Valacyclovir	Topical, injection, Cryotherapy etc
	No vaccine	Gradasil & Cervrix

	Chlamydia	Gonorrhea	Syphilis
Causative organism	Chlamydia trachomatis	Neisseria Gonorrhoeae	Treponema pallidum
Clinical	Non-gonococcal urethritis, epididymitis, cervicitis, salpingitis, endometritis & proctitis	Urethritis, cervicitis, proctitis, PID in women & DGI if it spreads to bloodstream	Primary: Chancre Secondary: Bacteremia Tertiary: Neurosyphilis & aortic aneurysm.
Congenital infection	Inclusion conjunctivitis & pneumonia syndrome		Abortion, Rhinitis, rash, bone change & liver failure.
Diagnosis	<ol style="list-style-type: none"> 1. PCR 2. Tissue culture (McCoy cell line) 3. Iodine or Giemsa stain 	<ol style="list-style-type: none"> 1. Gram stain: gram-negative intracellular diplococci 2. Thayer-Martin or chocolate ager. 3. Sugar fermentation of glucose only 	<ol style="list-style-type: none"> 1. Dark-field microscopy, Silver impregnation HT & Immunofluorescence 2. Serology: Nontreponemal tests (RPR & VDRL) and treponemal tests (FTA-ABS) & (MHA-TP) 3. IgM for congenital s.
Treatment	Azithromycin or Erythromycin (for pregnant) or Doxycycline (for LGV)	Ceftriaxone or cefixime Ciprofloxacin or Ofloxacin Azithromycin or Doxycycline	Penicillin

Quiz

1. A 23-year-old male patient presented with painful urination. He has a fever and from the history he has traveled abroad recently. A direct smear from his urethra shows: **Gram negative intracellular diplococci**. What is the most likely FINDING on the further investigations?

- a) Growing on the tissue culture (McCoy cell line)
- b) Growth on sugar fermentation of maltose
- c) Rapid plasma reagin (RPG) +ve
- d) Positive growth on Thayer-Martin media

2. A pregnant lady came for routine check-up. The lady was susceptible for Cytomegalovirus (CMV) infection. What is the best applicable sample to collect?

- a) Serology sample to detect antibodies (IgG & IgM) in the fetus and mother
- b) Urine sample to detect viral load
- c) Ultrasound and tissue culture
- d) Amniotic fluid sample

3. A 31-year-old pregnant lady came on routine follow-up to her Ob/Gyn doctor. The doctor noticed abnormal vesicle around her vagina and reaching her cervix. ELISA has shown +ve results for herpes complex virus. What is the fate of her child if she left untreated?

- a) Severe massive infection of the skin with internal organ infection
- b) Fetal loss through hydrops fetalis
- c) Microcephaly, periventricular calcifications & chorioretinitis
- d) Congenital varicella syndrome

Quiz

4. From the previous question: What is the most appropriate management?

- a) Intrauterine transfusion + Digoxin
- b) C-section + Acyclovir
- c) Spiramycin or Pyrimethamine & Sulfadiazine
- d) Penicillin G

5. A 33-year-old lady presented with pain during sexual intercourse. There was thick-white vaginal discharge. Further investigations showed budding yeasts. What is the most likely causative organism?

- a) Candida albican
- b) Candida glabrata
- c) Trichomoniasis
- d) Gram positive bacilli

6. Which GENOTYPE of HPV is associated with BENIGN (low grade) disease? **“IMPORTANT”**

- a) 6 & 11
- b) 6 & 18
- c) 16 & 18
- d) 31 & 45

7. An HIV-infected patient came to the clinic for his routine check-up. The ID consultant arranged for some blood tests. He found:

High viral load, Anti-gp120 positive, CD4+T cell count is 170 cell/mm³ (Very low). In which stage is this patient?

- a) Acute stage
- b) Chronic stage
- c) AIDS stage
- d) Recovery stage

Quiz

8. Which of the following statements is **WRONG** about transmission of Herpes complex virus?

- a) Auto-inoculation is a method of transmission
- b) HSV-1 is more common after oral sex & child abuse.
- c) HSV can be transmitted by sharing contaminated needles, razors or tooth brushes.
- d) Majority of maternal infection occurs during delivery.

9. A 28-year-old patient, who is sexually active, presents to the clinic with abnormal inguinal **lymph node enlargement**. From the history he had a **mark on his penis** which healed from about 2 weeks. From the clinical examination the GP noticed generalized **non-tender lymph nodes enlargement**. Treponemal test results were positive. In which stage is the patient most likely in?

- a) Primary syphilis
- b) Secondary syphilis
- c) Tertiary syphilis

10. From the previous scenario the GP arranged for **treponemal** tests which were positive. What is the true statement from the following about this test?

- a) Positive during 2nd stage, used for follow up therapy & screening
- b) Positive at all stages. It's confirmatory test
- c) Used to detect congenital syphilis

Quiz

11. Pediatrician had a case of a neonate who has suffered from heart problem and she died after 2 days. From autopsy she had an anemia & generalized edema. What is the most likely infectious disease to cause these symptoms?

- a) Parovirus b) Rubella c) Syphilis d) Varicella

12. In toxoplasmosis, the fetal death is higher in which trimester?

- a) 1st trimester b) 2nd trimester c) 3rd trimester

13. Which of the following statements is **WRONG** about HIV?

- a) HIV type 2 is less virulent & less susceptible to mutations
b) Zidovudine can protect the fetus from perinatal infection
c) Caesarean section is recommended to avoid the perinatal infection
d) Diagnosis is done by ELISA (detection of HIV AG & AB)

Quiz

14.A 33-year-old female patient presented with Itching on her vagina & burning micturition. From her history she is a married and she's using an oral contraceptives. The doctor diagnosed her with bacterial vaginosis. What is the most likely organism to cause these symptoms.

- a) E. Coli b) Staphylococcus aureus c) Corynebacterium d) Streptococcus pyogenes

15.Which of the following vaccine is used to protect the individual from HPV type 6,11,16 & 18?

- a) Cervarix b) Gardasil c) Meruvax II d) Zoster

16.Which of the following is the genomic-structural form of HIV?

- a) One copy ss-RNA b) Two copies ss-RNA c) Two copies ds-RNA d) Linear ds-DNA

Q17: What is the description of the vaginal discharge of Trichomoniasis?

- a) Malodorous smelling, frothy yellow-green appearance b) Thin-white urethral discharge
c) Painless, indurated ulcer with firm base and raised margins d) Thick, crudy, white (cottage cheese appearance)