

# **PATHOPHYSIOLOGY**

## **IMPORTANT QUESTIONS**

### **UNIT 5**

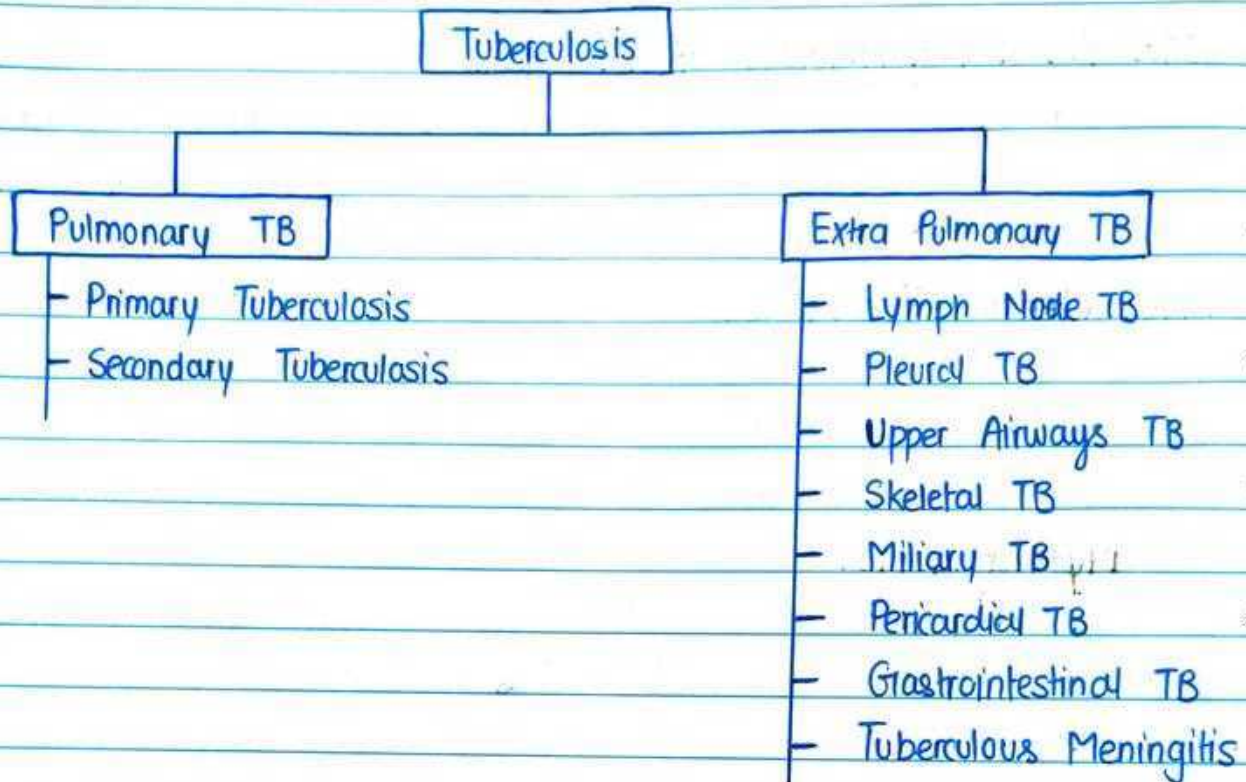
## UNIT- 5 PATHOPHYSIOLOGY

- ① Write the pathophysiology of Tuberculosis
- According to WHO Tuberculosis is most prevalent infectious disease worldwide and leading killer at least 3 million deaths annually.
  - Tuberculosis is an infection caused by a bacteria named *Mycobacterium Tuberculosis*.
  - Tuberculosis (TB) most often affects the lungs, characterized by symptoms such as acute inflammation, tissue necrosis etc.
  - *Mycobacteria* are a genus of acid-fast bacilli belonging to the *Mycobacteriaceae*.
  - In few cases infection can also travels through lymph & blood and can spread to other body tissues.

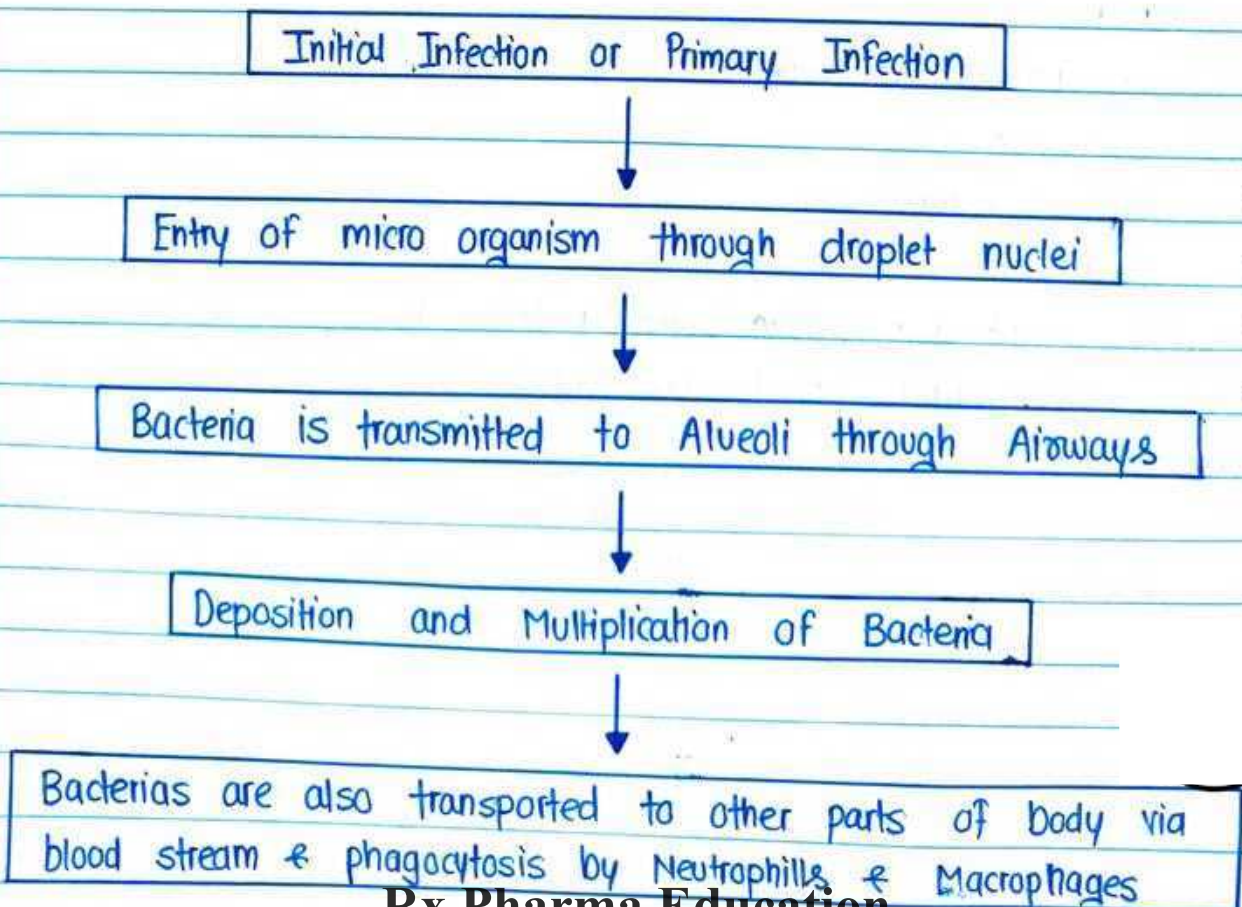
### Causes

- Tuberculosis is mainly caused by a bacteria called *Mycobacterium Tuberculosis*.
- TB is spreads from one person to other through air.
- Undernutrition
- Bacterial Infection
- Smoking
- Close contact with person suffering from disease
- Intake of Unpasteurised Cow Milk

## Classification of Tuberculosis



## Pathogenesis of Tuberculosis





## Symptoms of Tuberculosis

- Hemoptysis
- Chronic cough
- Weakness
- Fatigue
- Loss of Appetite
- Rise in Temperature
- Weight Loss
- Chest Pain
- Night Sweats

## Complications

- Spinal Pain
- Joint Damage
- Meningitis
- Liver or kidney complications.
- Blurred Vision
- Respiratory Failure

## Plan of Treatment

- Rest
- Proper Nutrition
- Hygiene Maintenance
- First Line Drugs : Streptomycin, Isoniazid, Ethambutol
- Second Line Drugs : Para Amino Salicylic Acid, Kanamycin

## ② Define Urinary Tract Infections.

- Urinary Tract Infections are amongst most common bacterial infections of human.
- UTI Infections is defined as a condition in which bacteria invade and grow in the urinary tract.
- A Urinary Tract Infection can occur in any part of your urinary system e.g. kidneys, Ureters, Bladder & Urethra.
- Most of the infections involve the lower urinary tract bladder and Urethra.

### Types

UTI can be classified on the basis of two categories:

- On the basis of Clinical Features
- On the basis of Anatomical Site.

#### On the basis of Clinical Features

On the basis of clinical features UTIs are of two types.

- ① Complicated UTI
- ② Uncomplicated UTI

#### On the basis of Anatomical Site

On the basis of anatomical site UTIs are of three types

- ① Cystitis : Infections of Urinary Bladder
- ② Urethritis : Infections of Urethra
- ③ Pyelonephritis : Infections of Kidney



## Causes

- More than 90% of UTI cases are a type of bacteria called Escherichia Coli (E. Coli)
- These bacteria normally live in the bowel & around anus
- Urinary Tract Infections normally occur when E. coli bacteria get into the urine & begin to grow.
- The infections usually starts at the opening of urethra & gradually infect the kidneys.
- Improper Wiping
- Contaminated Clothes
- Sexual Intercourse

## Pathogenesis

Chronic Infections of skin, Respiratory Tract & Gastrointestinal Tract



Bacteria's enter blood circulations



Blood enters kidney for filtration



Bacteria moves from cortex to renal medulla



Bacteria resides & proliferates

## Symptoms Of UTIs

- A persistent urge to urinate
- Burning or Pain during urination
- Passing small amount of urine
- Cloudy Urine
- Reddish, brownish Urine
- Strong smelling Urine

## Complications

- Recurrent Infections
- Permanent kidney Damage
- Urethral Narrowing
- kidney Infections
- Blood Poisoning.

## Treatment

- Increased Fluid Intake
- Maintenance of Hygiene
- Drugs like Ciprofloxacin
- Amphotericin
- Fluconazole



③ Define the pathophysiology of AIDS.

- AIDS is a type of Sexually Transmitted Disease (STD)
- Sexually transmitted disease are illness that have a significant probability of transmission b/w humans by means of sexual behaviours including vaginal intercourse, oral sex etc.
- AIDS referred to Acquired Immunodeficiency Disease.
- It is a disease caused by Human Immunodeficiency Virus (HIV) & characterized by profound immunosuppression that leads to opportunistic infections & secondary neoplasm etc.
- AIDS is defined as a syndrome & was first recognized by US in 1981.
- As per WHO, AIDS is a condition characterized by occurrence of more than 20 opportunistic infections.
- When HIV infection progresses and reaches the advanced stage the condition is described as AIDS.

### Stages of HIV Infections

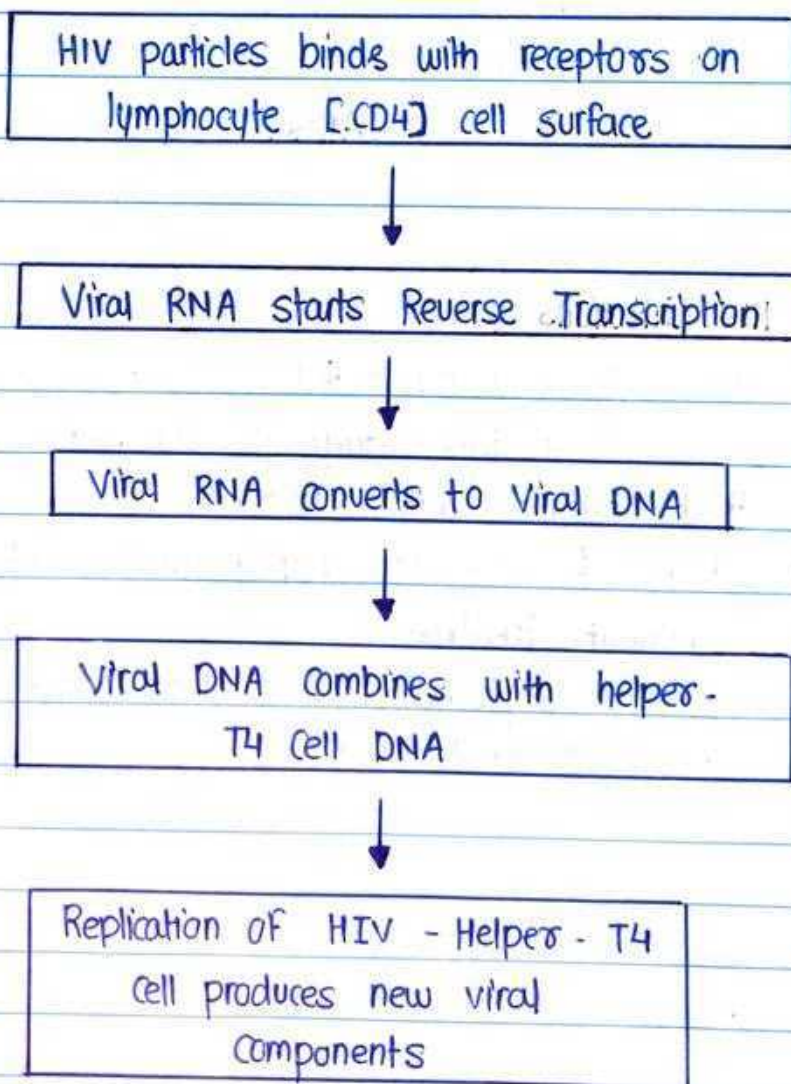
- The initial stage of primary infection occurs within week of acquiring the virus & this stage is characterized by a Flu-like illness that resolves within weeks.
- The middle stage of chronic asymptomatic infection last for 8-10 years without treatment.
- The final stage is symptomatic infection in which body's immune system is suppressed and complications develops called AIDS.



## Causes

- AIDS is mainly caused by HIV (Human Immunodeficiency Virus), a human retrovirus.
- They are of mainly two types:
  - ① HIV I
  - ② HIV II
- HIV - I : It is most common in US, Europe & Central Africa
- HIV - II : It is most common in West Africa & India.

## Pathophysiology



Development of New Viral Particles



Infected helper-T4 cells destroyed



Initial Stage Infections



Final Stage Infections  
(AIDS)

### Symptoms

- Rapid Weight Loss
- Dry Cough
- Fever
- Night Sweats
- Unexplained fatigue.
- Swallowing Swelling
- Diarrhoe that lasts more than week
- Nausea
- Vomiting
- Seizures
- Neurological Disorders
- Severe Headaches
- Coma



## Complications

- Recurrent Infections
- Opportunistic Infections
- Tuberculosis
- Malabsorption
- Cardiomyopathy
- Nephropathy
- Neuropathy
- Psychological Crisis

## Treatment

There is no cure exists for HIV / AIDS but medications can control HIV & its progression.

- Cotrimoxazole Prophylaxis
- Oral Isoniazide.
- Anti-Retrovirus Therapy