



# Urogenital Tract Module

## Sexually Transmitted Diseases

### (Syphilis)

### Lecture 6

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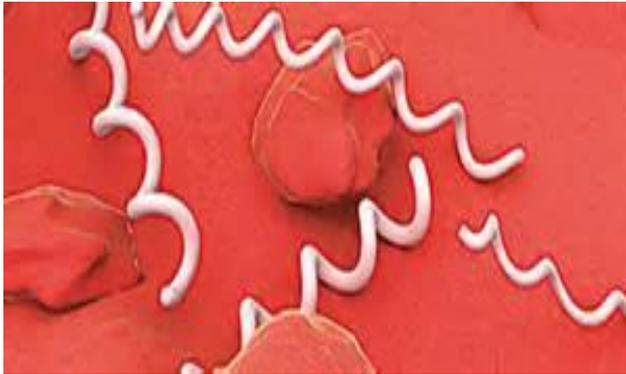


# Etiology of syphilis

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Caused by *Treponema pallidum* which is:

- A member of the spirochete family
- Spiral-shaped (corkscrew shape)



- Gram-negative, thin (0.1-0.2um in diameter) and 5 to 15um long
- Highly motile bacterium
- Rapidly die on drying
- killed by detergents and disinfectants
- Heat sensitive

# Transmission & Epidemiology

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- **Direct contact** with **infectious lesions** of skin and mucous membranes
- **Most commonly** occurs during **sexual activity**.
- Less commonly occurs during non sexual activity
  - Blood transfusions
  - Congenital (during pregnancy)
  - Direct contact with an infectious lesion
- **No** spread through contact with toilet seats, doorknobs, swimming pools, shared clothing, or eating utensils
- Groups at risk are:
  - ✓ Homosexuals (MSM)
  - ✓ Individuals with HIV
  - ✓ Lower socioeconomic classes in urban areas

# Entry

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The spirochete can reach the sub-epithelial tissues through

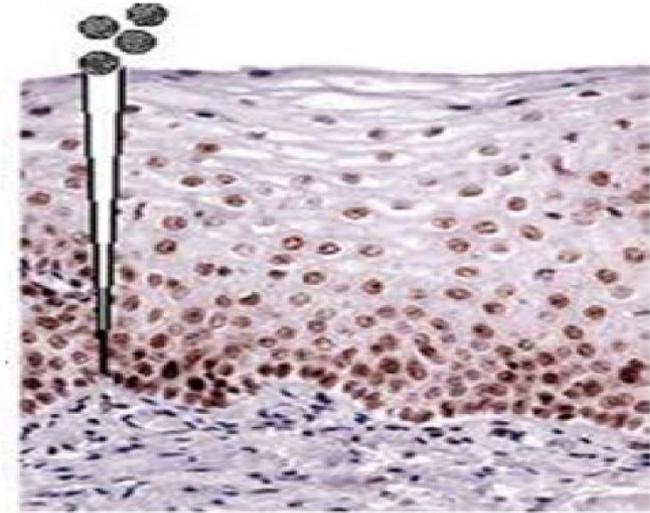
1. Minute abrasions that occurs during sexual intercourse
2. Passage between the epithelial cells of mucous membranes



Then they replicate in the sub-epithelial tissue



From there they can escape to the systemic circulation



**ectocervix**



**Endocervix**

# Pathogenesis and Clinical Manifestations

## Stages of syphilis

Primary syphilis

100 **untreated infected** patients  
with primary syphilis

Secondary syphilis

25% of them will undergo  
secondary syphilis

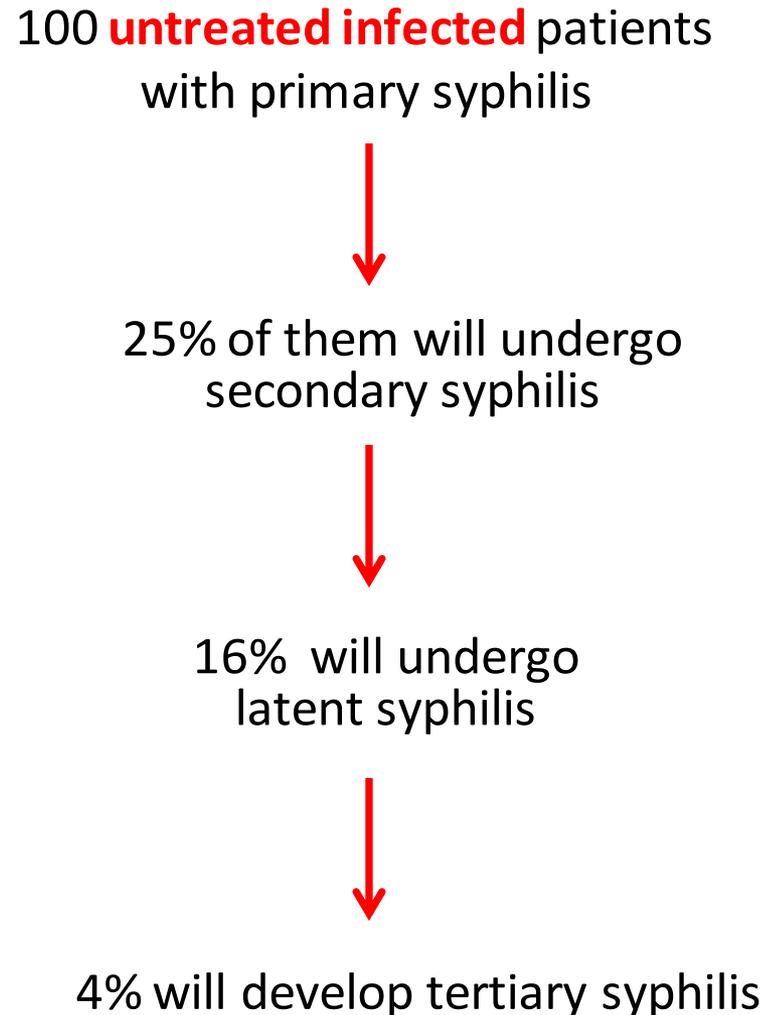
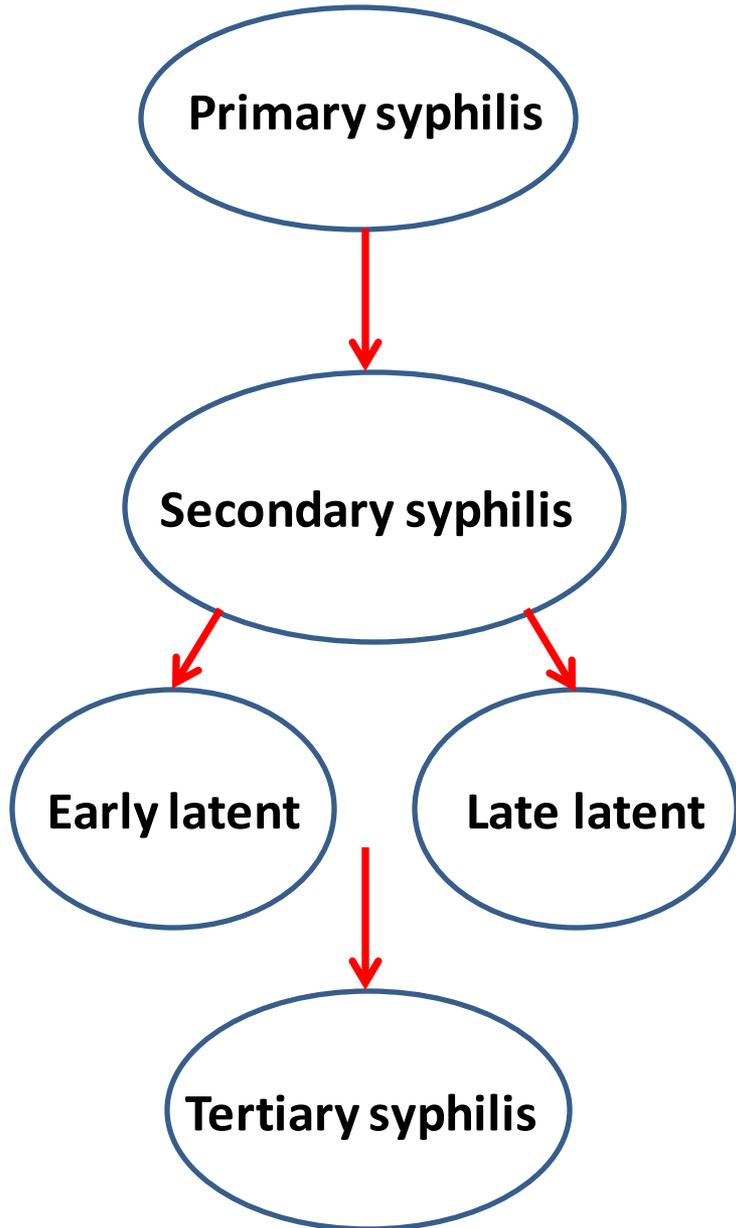
Early latent

Late latent

16% will undergo  
latent syphilis

Tertiary syphilis

4% will develop tertiary syphilis



# Pathogenesis and Clinical Manifestations

## Stages of syphilis

❑ *Treponema* causing **obliterating endarteritis**

- **Obliterating endarteritis:**

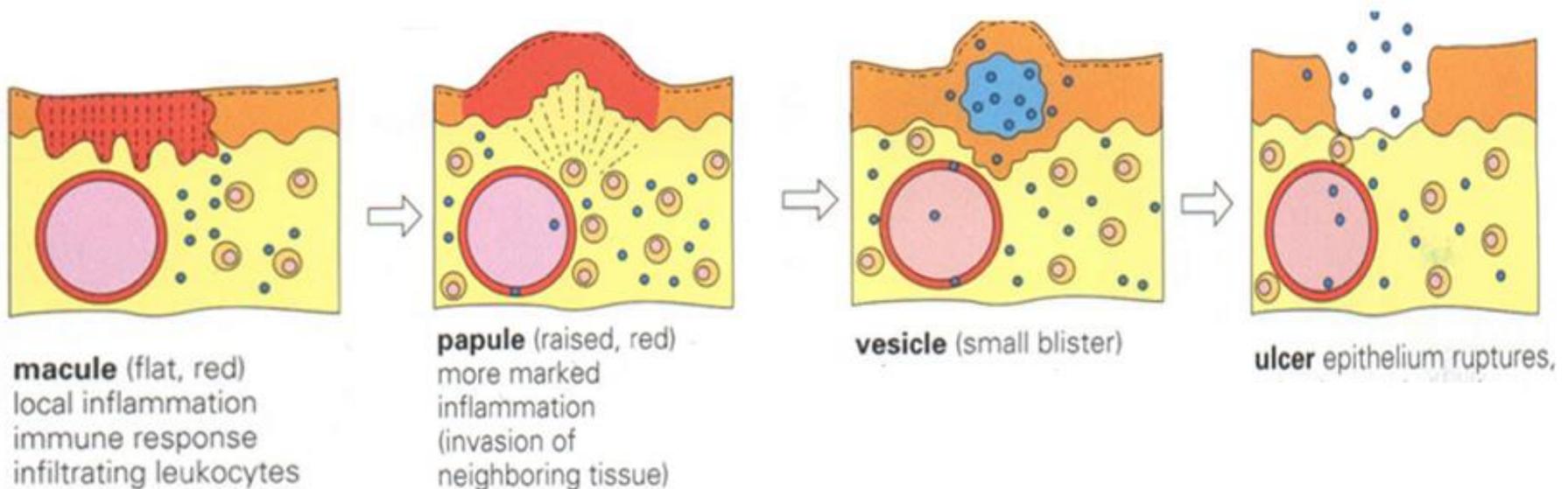
(inflammation of the intima or inner lining of an artery) that results in an occlusion of the lumen. This obstruction eventually causing necrosis, ulcers, and death of the affected tissue



# Pathogenesis and Clinical Manifestations

## Primary syphilis

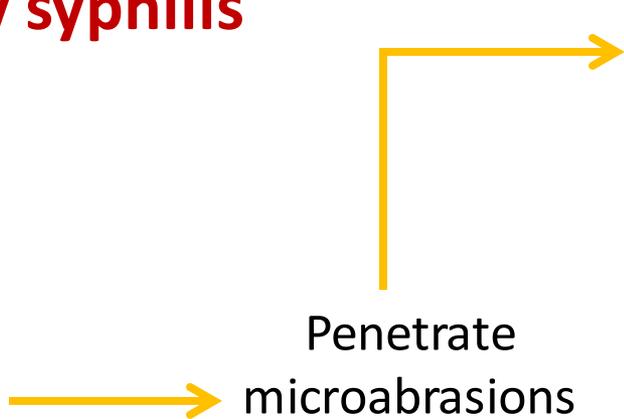
- The first symptom of syphilis is **chancre** (sore) develops between 10-90 days after exposure (mean of 21 days) at the site of infection
- The chancre is a **painless** ulcer, **moist** base with **well defined** and **indurated margins**



# Pathogenesis and Clinical Manifestations

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## Primary syphilis

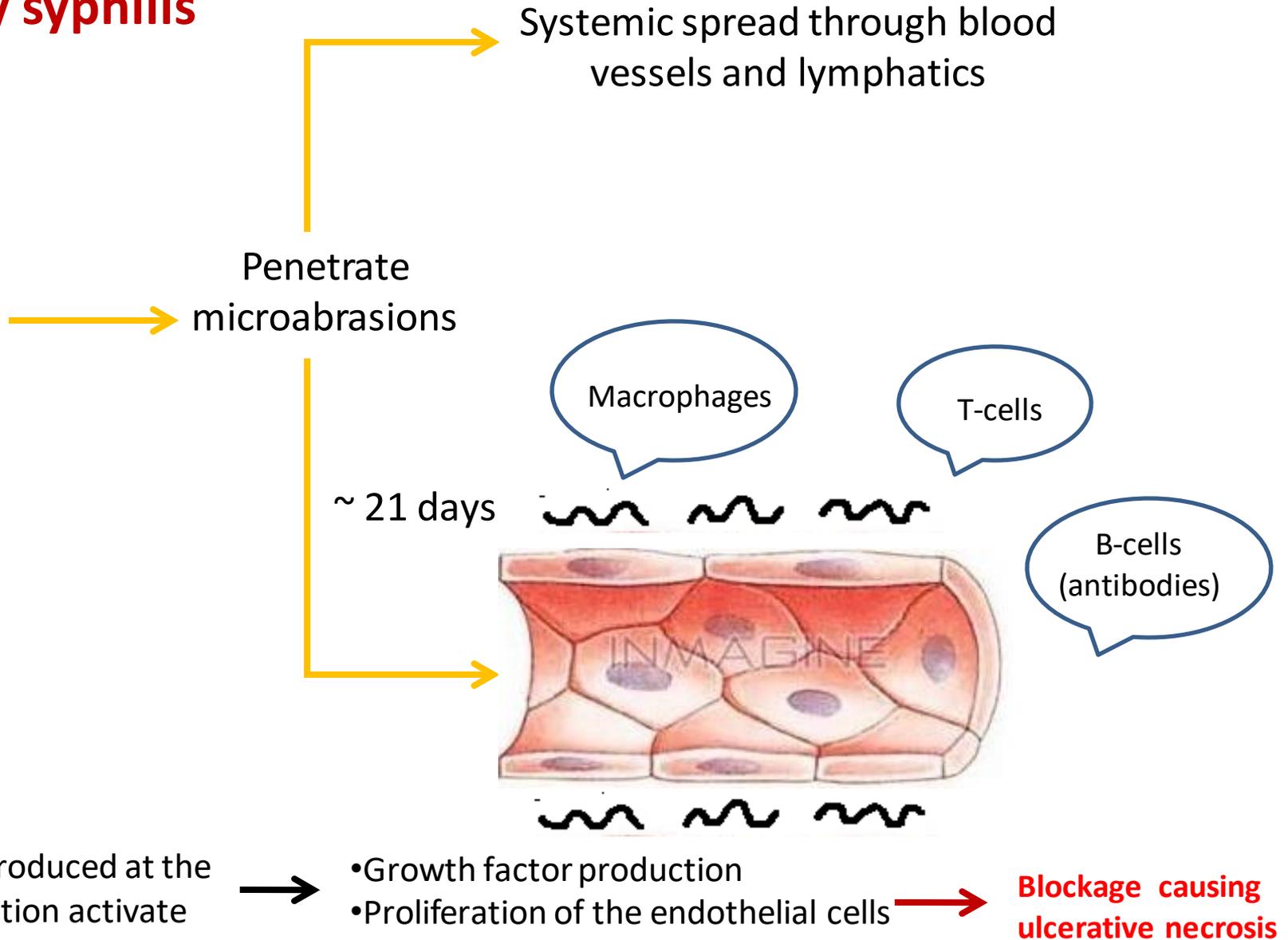


~ 21 days



# Pathogenesis and Clinical Manifestations

## Primary syphilis



# Pathogenesis and Clinical Manifestations

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## Primary syphilis

- Highly infectious
- Regional painless and nontender Lymphadenopathy (swollen glands)
- **Systemic dissemination** continues during this period
- The **chancre resolves spontaneously over a period of 4-6 weeks** without treatment without forming a **scar**
- **25%** of untreated patients undergo the **secondary syphilis**

# Pathogenesis and Clinical Manifestations

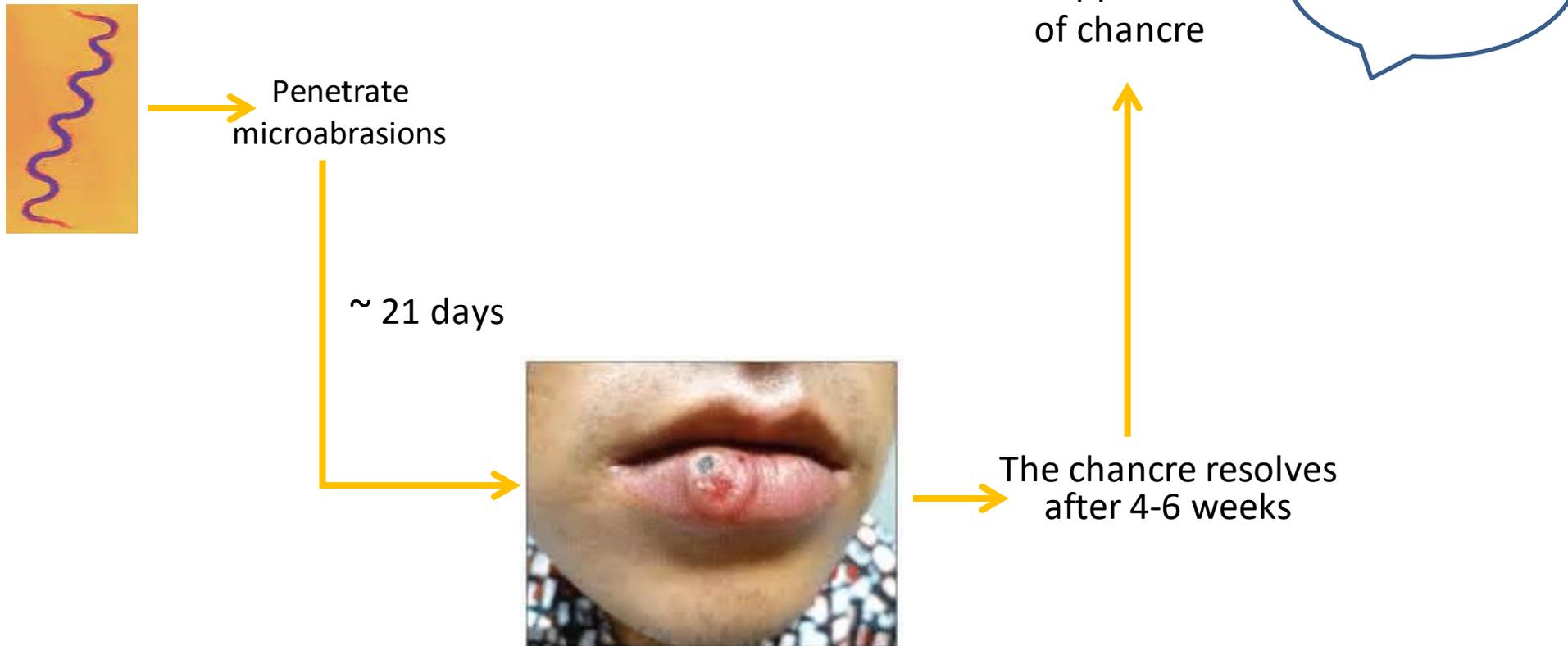
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## Primary syphilis (chancre)



# Pathogenesis and Clinical Manifestations

## Secondary syphilis



# Pathogenesis and Clinical Manifestations

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## Secondary syphilis

- Secondary or disseminated syphilis **develops 2 to 10 weeks after the appearance of the chancre**
- Infection spreads through the blood and lymph system
- Common signs & symptoms include:
  - generalized **nontender lymph node enlargement**
  - **chancre may still be present**
  - fever, malaise and other manifestations of systemic infection
  - **mucoctaneous maculopapular skin rash**
    - palms & soles
    - Abdomen
    - Face
  - condyloma lata: painless, mucosal, warty like rash, develop in warm, moist sites of the genitals and perineum.
  - May affect other organs

# Pathogenesis and Clinical Manifestations

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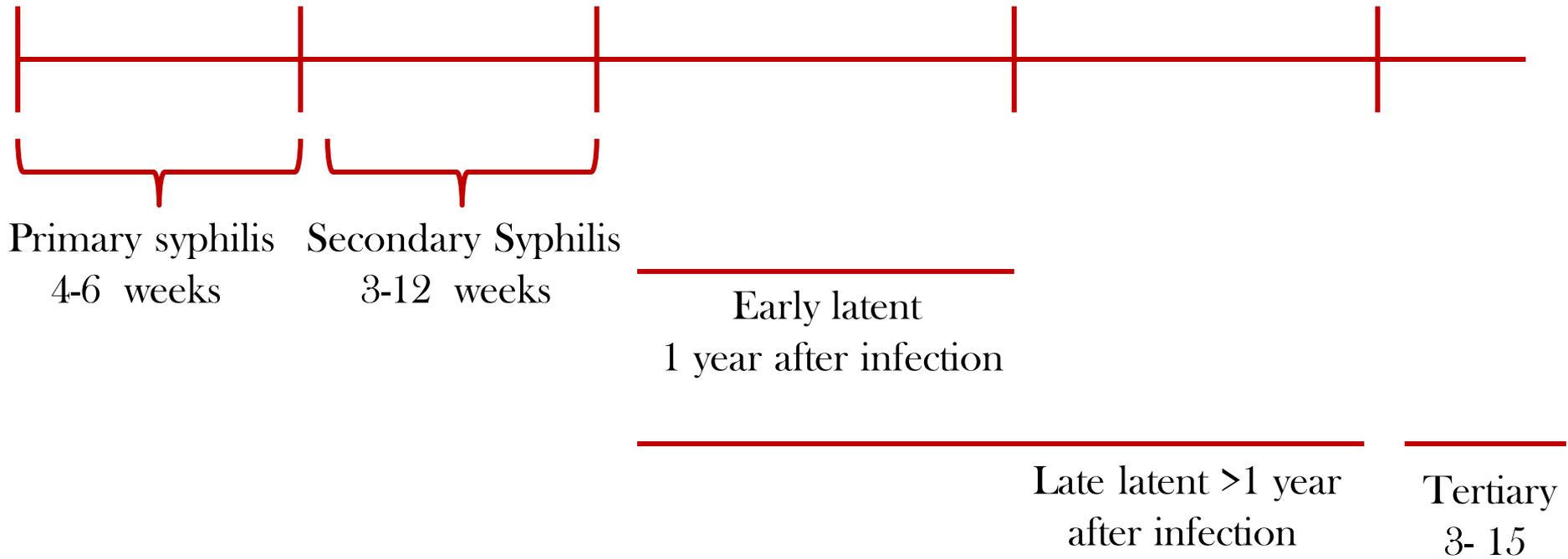
## Secondary syphilis

- Lesions are **highly infectious**
- **Symptoms** resolve spontaneously **after 3-12 weeks**
- Infection is **resolved in only 1/3** of patients
- The illness enters the **latent** state in the remaining **2/3** of patients



# Pathogenesis and Clinical Manifestations

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# Pathogenesis and Clinical Manifestations

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## Latent Syphilis (hidden)

- Latent syphilis is defined as having serologic proof of infection without symptoms of disease
- Divided into:
  - Early latent syphilis**
    - One year or less post-infection.
    - Occasional relapses of active lesions
    - Infectious
    - Transmittable from mother to child, resulting in congenital syphilis
  - Late latent syphilis**
    - is defined as asymptomatic infection of longer than one year post-infection.
    - Non infectious period
    - Transmittable from mother to child, resulting in congenital syphilis
- One third of patients with untreated latent syphilis develop tertiary syphilis



On and off

# Pathogenesis and Clinical Manifestations

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## Tertiary syphilis

- The major manifestations occur after 3 to 15 years of primary infection
- Three major forms

### 1- Gummatous syphilis:

- an area of necrosis secondary to endarteritis obliterance
- most commonly found in liver (gumma hepatis), but can also be found in brain, heart, skin, bone, testis, and other tissues.
- the most common



# Pathogenesis and Clinical Manifestations

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## Tertiary syphilis

### 2- Cardiac syphilis:

aneurysm of ascending aorta, aortitis

### 3- Neurosyphilis:

a. Meningovascular

Looks like  
meningitis

b. cerebrovascular

Looks like ischemic  
stroke

c. Tabes Dorsalis

Loss of sensation  
Ataxia

# Pathogenesis and Clinical Manifestations

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## Differential diagnosis of painless genital ulcer

1. Chancre:  
*(Trypanema pallidum)*
2. lymphogranuloma venerum:  
*Chlamydia trachomatis* L1, L2, L3
3. Granuloma inguinale:  
*Klebsiela granulomatis*

# Pathogenesis and Clinical Manifestations

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## Congenital syphilis

### ➤ Early congenital syphilis

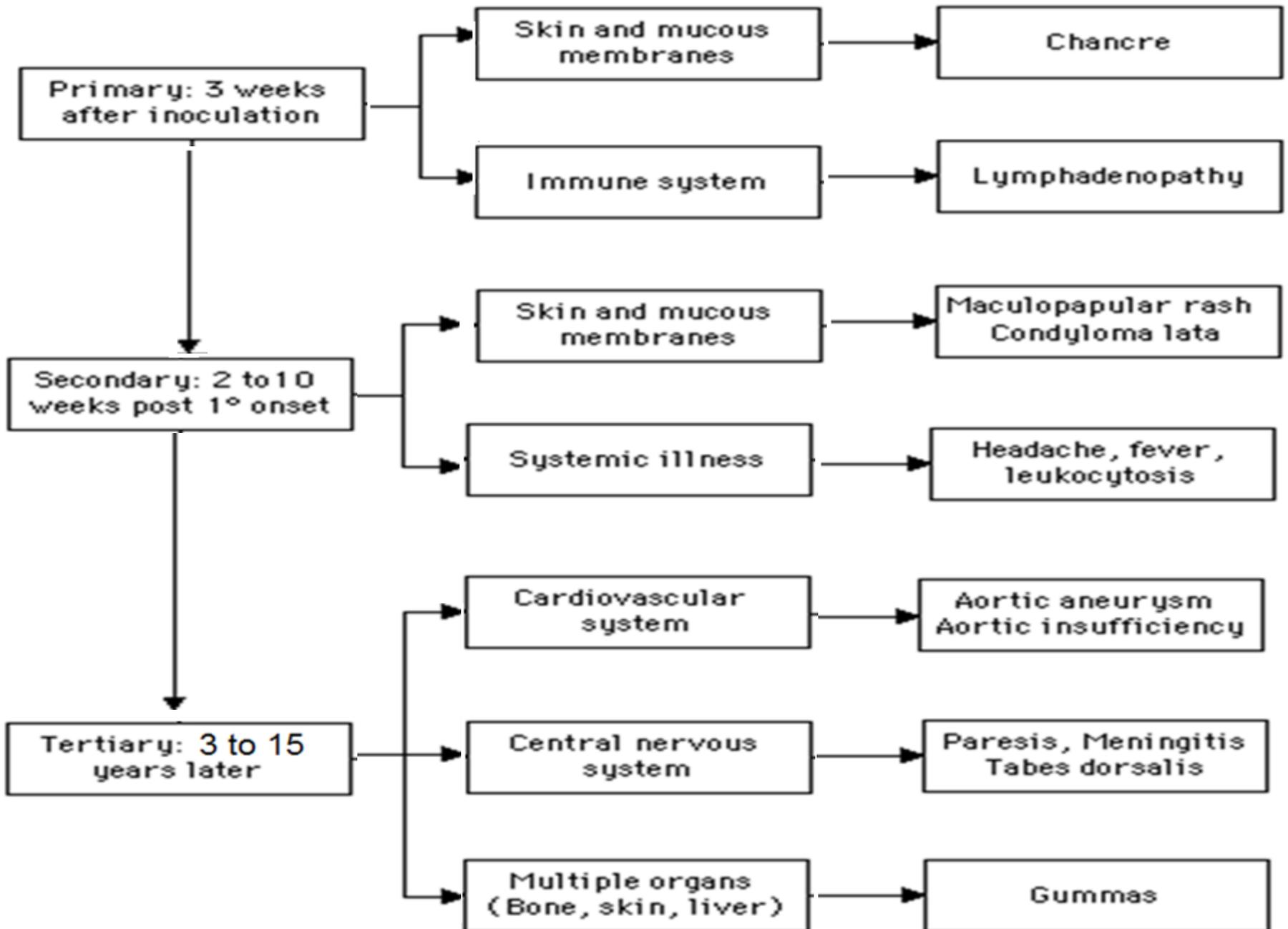
- Early manifestations appearing in the first 2 years of life.
- Resembles severe symptoms of adult secondary syphilis.
- The first symptom seen in up to 50% of newborns with congenital syphilis is snuffles (a nasal discharge in infancy characteristic of congenital syphilis).

### ➤ Late congenital syphilis

- Late manifestations appearing after 2 years.
- Ocular syphilis, arthropathy, gummas.



# Stages and manifestations of syphilis



# Diagnosis

## Syphilis diagnosis relies on:

1. Dark-field microscopy:  
is the most specific technique for diagnosing syphilis when an active chancre or condyloma latum is present
1. Nonspecific serological testing (nontreponemal antibodies)
  - VDRL=Venereal Disease Research Laboratory
  - RPR=Rapid Plasma Reagin
3. Specific treponemal tests (confirmatory test)
  - FTA Antibody-Fluorescent treponemal antibody absorption
  - TPHA test- Treponemal pallidum haemagglutination assay
  - TPPA test- Treponemal pallidum particle agglutination assay



# Syphilis

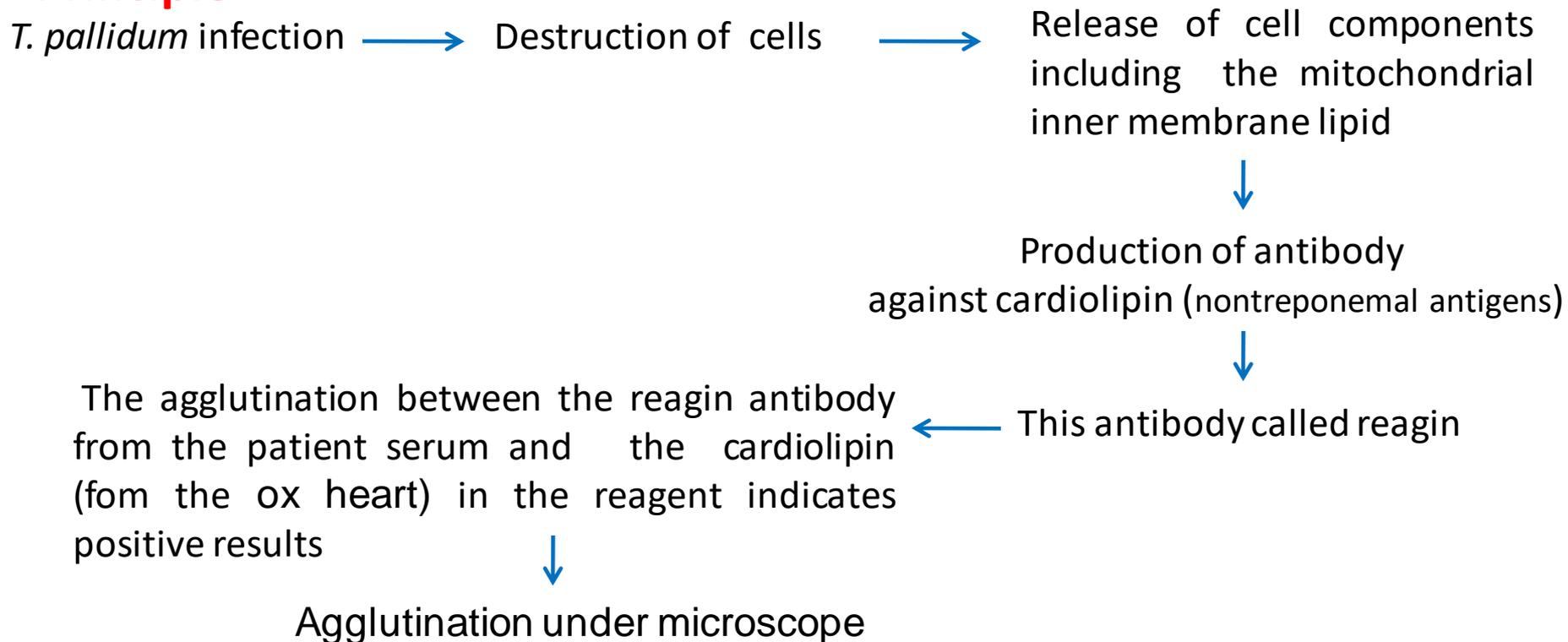
Methods of laboratory diagnosis of syphilis:

## 2. Indirect detection of spirochetes:

A. Venereal Disease Research Laboratory (VDRL)

B. Rapid plasma reagin (RPR)

### Principle



# Diagnosis

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## Congenital syphilis:

Testing for IgM and retesting at 6 months of age, by which time maternal antibody levels have waned. Antibody titers remain elevated in babies with congenital syphilis

# Treatment & Prevention

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## Treatment:

- Penicillin G (2.4 million units I.M)
- If allergic, Doxycycline or erythromycin is a good alternative
- In neurosyphilis use penicillin and Doxycycline together

## Prevention:

- No vaccine
- Early diagnosis and treatment of case and contact is important
- Test for syphilis if any STD exists

## Key Words

**Spirochete**

***Treponema pallidum***

**Syphilis**

**Chancre**

**Primary lesion**

**Darkfield microscopy**

**Secondary Lesion**

**Tertiary Lesion**

**VDRL**

**RPR**