**MICROBIOLOGY:**
- Spirochete Treponema pallidium, transmitted during sexual intercourse from infectious lesions such as chancres, condyloma lata and skin rash through openings of epithelial barriers.

**EPIDEMIOLOGY:**
- 70,000 new cases in year 2000
- Outbreaks in MSM population: 200 new cases this year in San Francisco

**CLINICAL PRESENTATION:** "THE GREAT IMITATOR"
- **Primary:** usually 3 weeks incubation, patient develops painless ulcer at genital, anal or oral areas (where direct contact was made), regional lymphadenopathy. Spontaneously resolves within 3-6 weeks, however during this time infection disseminates throughout body.
- **Secondary:** weeks to months post initial infection, 25% of patient’s progress to a systemic illness that includes the following constellation of signs and symptoms.
  - Rashes: discrete, red-brown, macular papular lesions that may be hyperkeratotic, non-pruritic or painful, symmetrically distributed over the entire trunk, including the extremities with palms and soles. Condyloma lata are large raised gray to white lesions involving mucous membranes in mouth and perineum. Mucous patches are silver gray erosions surrounded by peripheral erythema along lips, oral mucosa, tongue, palate and pharynx.
  - Systemic symptoms: fever, headache, malaise, anorexia, sore throat, malaise, diffuse LAN, alopecia, rarely, immune complex membranous GN, hepatitis, gastritis, arthritis, iritis.
- **CNS infections:** weeks or up to 25 years post initial infection, 40% cases with primary or secondary disease, 25% patients with latent disease, MAY be asymptomatic.
  - Ocular: uveitis, iritis, optic neuritis
  - Acute meningitis: headache, fever, nausea, vomiting, neck stiffness, cranial nerve palsies, seizures
  - Acute meningovascular syphilis: stroke syndrome mimicking medium to large vessel ischemia
  - General paresis: wide spread parenchymal damage results in changes in personality, affect, intellect and develop hyperactive reflexes, Argyll Robertson pupil, hallucinations.
  - Tabes dorsalis: demyelination of posterior column results in ataxia, paresthesias, impotence, areflexia, and incontinence.
- **Latent syphilis:** asymptomatic patient with positive serologic titers (early connotes less than one year and likely still infective, late connotes more than one year, not as infective).
- **Tertiary or late syphilis:** 1-30 years post infection, includes neurosyphilis (paresis, tabes dorsalis), cardiovascular involvement (thoracic aorta aneurysm, aortic valve disease), gummas (chronic granulomatous lesions with central necrosis) at any organ, typically bones and skin.

**DIAGNOSIS:** CANNOT be cultured
- Direct visualization: sample from moist lesions visualized on darkfield microscopy reveals corkscrew shaped organisms with rigid, tightly wound spirals with motion, must be preformed by experienced technician, not available at this lab, failure to identify foes NOT exclude dx.
- Serology: screen and confirm
  - Non-treponemal tests: Easy, fast, cheap, excellent screen, VDRL, RPR
    - Measure IgG and IgM antibodies in patients’ serum that react to a cardiolipin-cholesterol-lecithin antigen. As low as 20-75% sensitive in early syphilis (within 10 days of chancre), 100% sensitive in secondary.
  - Treponemal tests: confirm diagnosis in patients with early (95% sensitive) and latent infection, FTA-ABS, MHA-TP
    - Detects antibodies in patients serum that react directly to cellular components of treponeme
    - 2% false positive rate in all tests: seen with SLE, IVDU, chronic liver disease, HIV infection
• CSF: perform an LP in any patient with any stage of syphilis with any neurologic symptom.
  • CSF reveals moderate mononuclear pleocytosis, elevated protein, positive VDRL titer (highly specific, less sensitive), thus if suspicious must send treponemal test on CSF or PCR.
• HIV caveats: unusual serologic responses have been observed, both false negative and positives, but nonetheless, usually accurate.

**TREATMENT:** refer patient to department of public health for counseling, partner identification

- **Primary:** benzathine 2.4 million units IM once
- **Secondary:** benzathine penicillin 2.4 million units IM once
- **Neurosyphilis:** aqueous crystalline penicillin G 18-24 million units a day divided at 4 million units Q 4 hours for 10-14 days.
- **Early latent:** benzathine penicillin 2.4 million units IM once
- **Late latent:** benzathine penicillin 2.4 million units IM q week x3
- **Tertiary:** benzathine penicillin G 2.4 million units IM q week x3
- **Treatment failures:** failure of non-treponemal titers to decline 4 fold within 6 months.
- **Beware of Jarish-Herxheimer reaction:** acute febrile reaction with headache and myalgias within 24 hours of being treated for early syphilis (very common)

**DDX OF RASH ON PALMS AND SOLES**

**INFECTION**
- Rocky mountain spotted fever: discrete macular rash begin at wrist and ankles, quickly spreads to palms and soles then centrally, becomes petechial.
- Hand foot mouth disease: (coxsackie virus) small, red papules that quickly become pale, white oval vesicles with red areola
- Endocarditis: osler’s nodes, janeway lesions
- Tinea pedis
- Scabies

**PRIMARY SKIN DISORDERS**
- Dishydrotic dermatitis
- Psoriasis
- Plantar dermitis
- Eczema

**AUTOIMMUNE/SYSTEMIC DISEASES**
- Keratoderma blenorrhagicum: associated with reactive arthritis, thick psoriasiform plaques, with thick yellow scales.
- SLE: palmar erythema with telangiectasias
- Kawasaki’s disease: fever + 4 of the following, bilateral conjunctival injection, mucous membrane changes, palmar erythema with edema and dequamation, general erythematous exanthem, cervical adenopathy
- Erythema multiform/ Steven Johnson syndrome: red, round, usually on extensor surfaces, becomes classics “iris” lesion with central cyanosis, purpura or vesicle.

**NEOPLASM**
- Melanoma: acral lentigo

References:
- Up to date 2002
- Harrisons Textbook 15th edition
- San Francisco City Protocols for STD’s January 2001
- CDC’s update in STD treatment (web site)