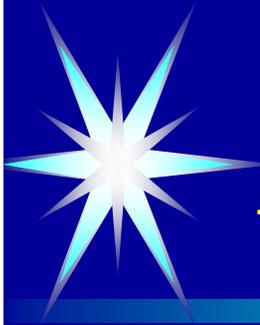


***SEXUALLY TRANSMITTED INFECTIONS:
DIAGNOSIS AND MANAGEMENT***

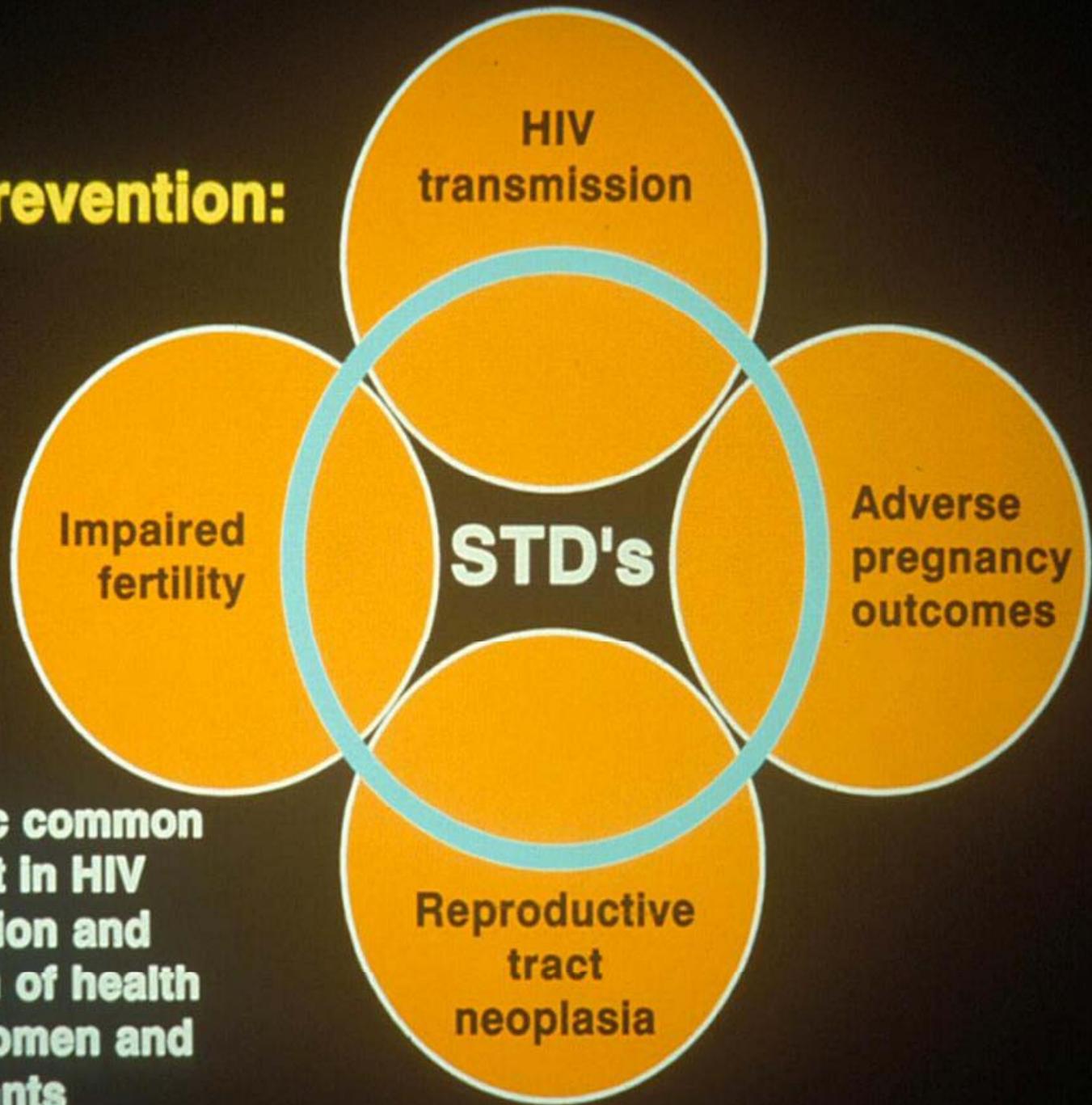
***STEPHANIE N. TAYLOR, MD
LSUHSC SECTION OF INFECTIOUS DISEASES
MEDICAL DIRECTOR,
DELGADO CENTER PERSONAL HEALTH
CENTER
NEW ORLEANS, LA***



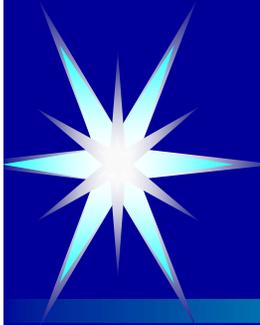
INTRODUCTION

- **Tremendous Public Health Problem**
- **An estimated 15 million Americans acquire an STD each year**
- **\$10 billion dollars in healthcare costs per year**
- **Substantial morbidity/mortality**
- **Ulcerative and non-ulcerative STDs associated with increased HIV transmission**

STD Prevention:

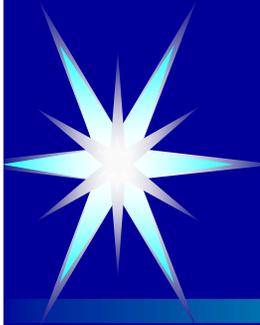


A strategic common element in HIV prevention and promotion of health among women and infants



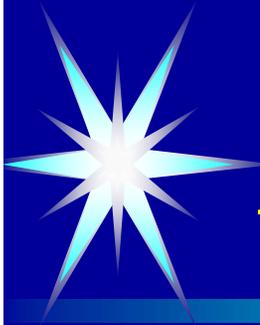
STI PRINCIPLES

- **Counseling – HIV infection, abstinence, and “safer sex” practices**
- **STD Screening of asymptomatic individuals and those with symptoms**
- **Patients with one STD often have another**
- **Partners should be evaluated and treated empirically at the time of presentation**



STI PRINCIPLES

- **Serologic testing for syphilis should be done in all patients**
- **HIV testing should be strongly encouraged in all patients (New CDC Recommendation for “Opt-Out” testing)**
- **STDs are associated with HIV transmission**



Major STI Pathogens

➤ Bacteria

- *Neisseria gonorrhoeae*,
Haemophilus ducreyi,
Gardnerella vaginalis

➤ Spirochetes

- *Treponema pallidum*

➤ Chlamydia

- *Chlamydia trachomatis*

➤ Viruses

- HSV I & II, HPV,
HBV, HIV,
molluscum

➤ Protozoa

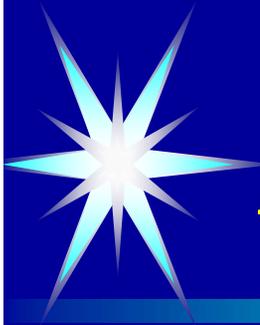
- *Trichomonas vaginalis*

➤ Fungi

- *Candida albicans*

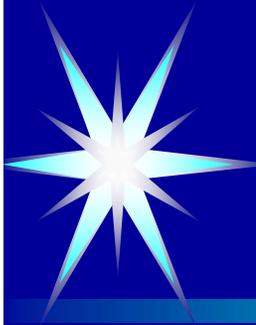
➤ Ectoparasites

- *Phthiris pubis*,
Sarcoptes scabiei



MAJOR STI SYNDROMES

- **GENITAL ULCER DISEASE**
- **URETHRITIS/CERVICITIS**
- **PELVIC INFLAMMATORY DISEASE**
- **VAGINITIS**
- **OTHER VIRAL STDs**
- **ECTOPARASITES**



GENITAL ULCER DISEASE

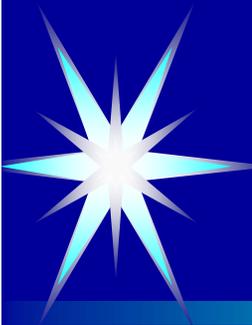
Differential Diagnosis:

➤ STIs

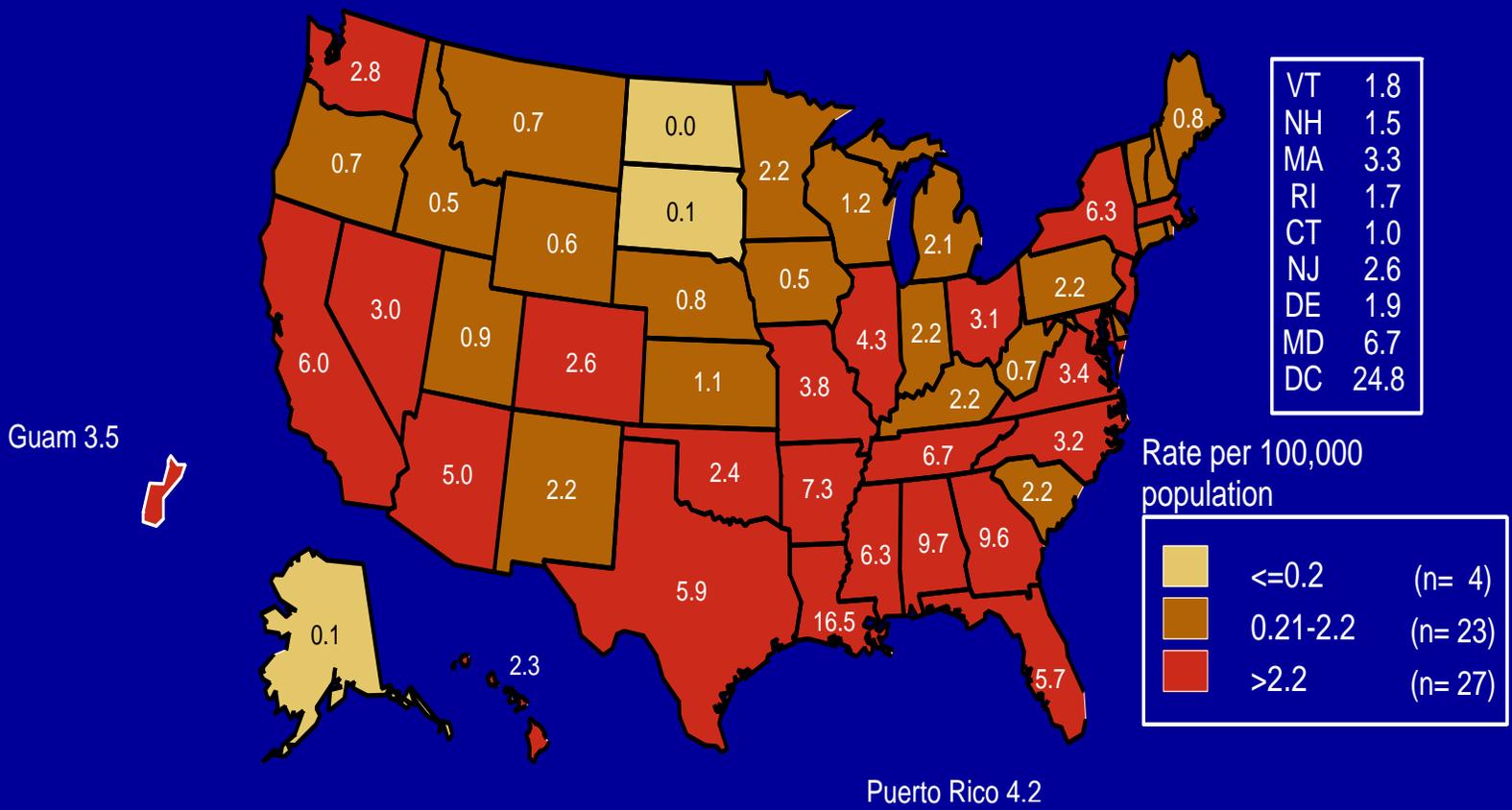
- Syphilis, Herpes, Chancroid**
- LGV, Granuloma inguinale**

➤ Non-STIs

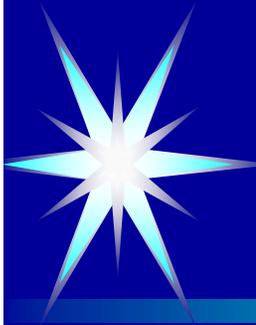
- Trauma, fixed drug eruption, neoplasia**
- Aphthous ulcers, non-STD infection,**
- Behçet's Syndrome – Oral and/or genital ulcers (not alone), cutaneous lesions, uveitis, arthritis, phlebitis**
- Reiter's Syndrome – arthritis, conjunctivitis, urethritis, circinate balanitis, keratoderma blennorrhagicum**



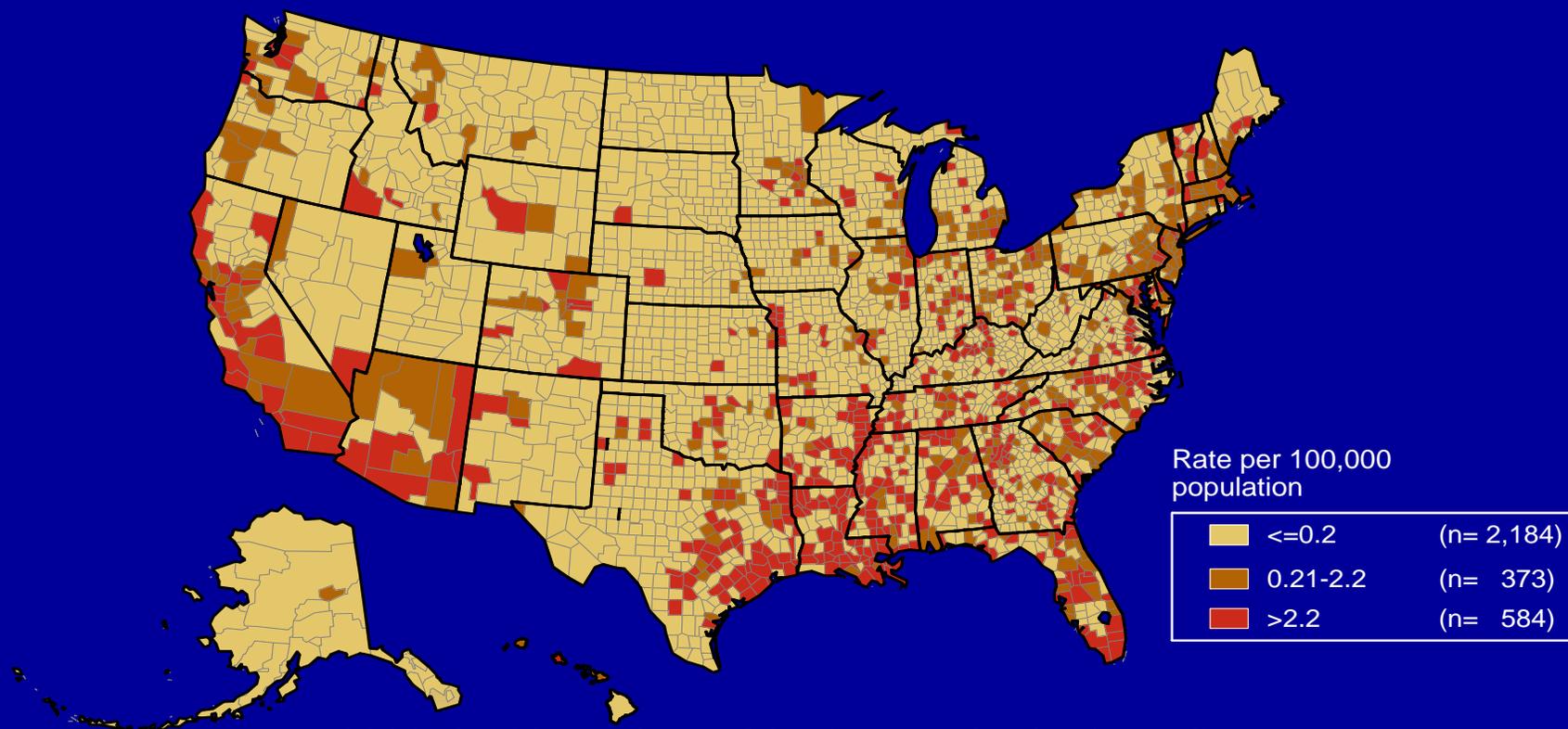
Primary and secondary syphilis — Rates by state: United States and outlying areas, 2008



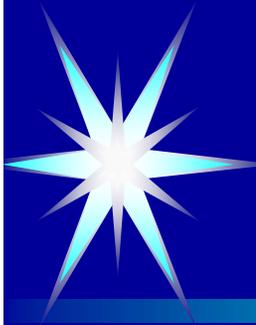
Note: The total rate of P&S syphilis for the United States and outlying areas (Guam, Puerto Rico and Virgin Islands) was 4.5 per 100,000 population. The Healthy People 2010 target is 0.2 case per 100,000 population.



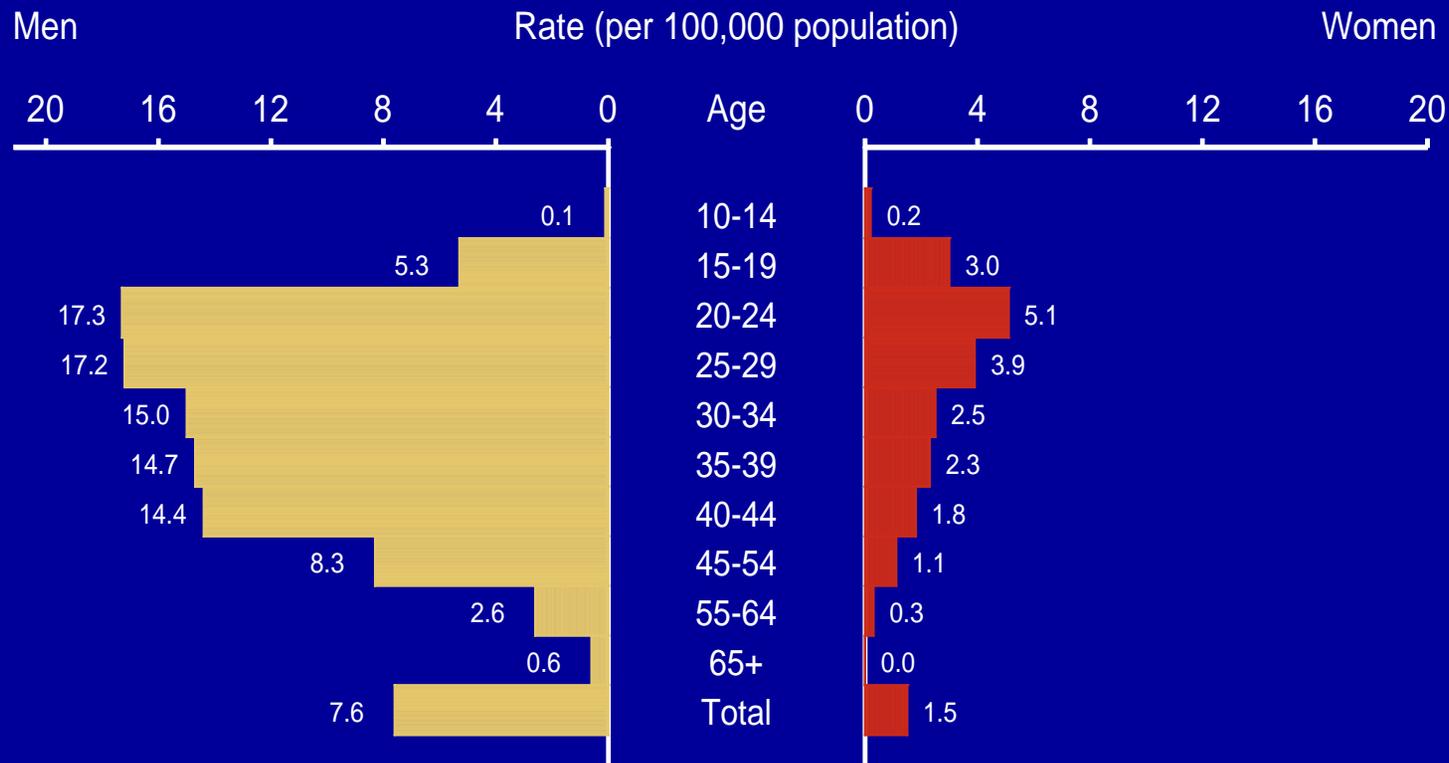
Primary and secondary syphilis — Rates by county: United States, 2008

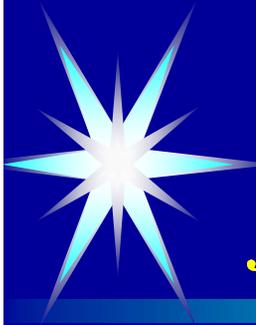


Note: In 2008, 2,180 (69.3%) of 3,141 counties in the U.S. reported no cases of P&S syphilis.

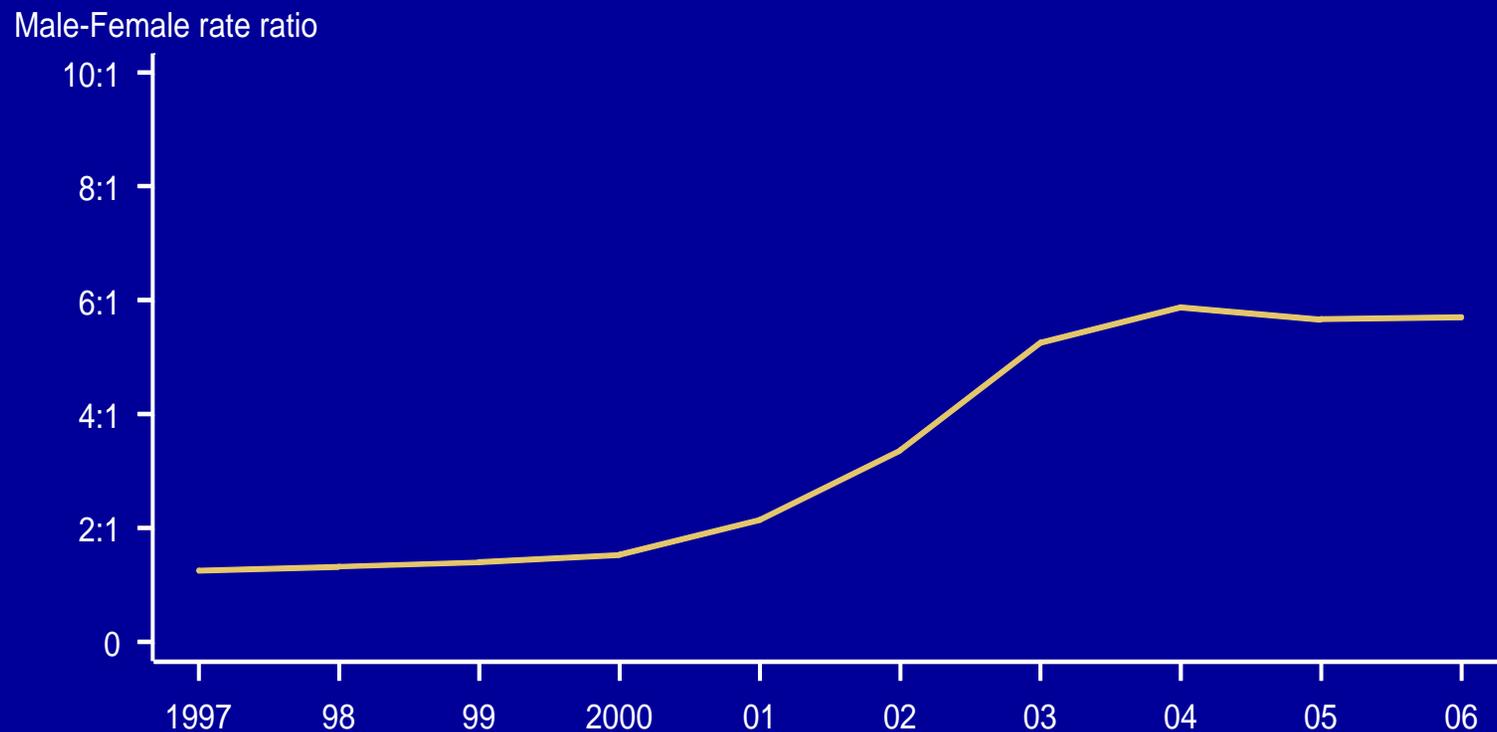


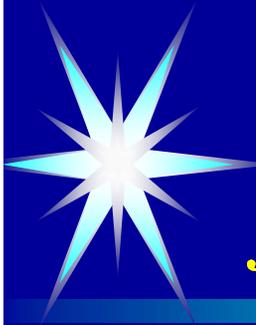
Primary and secondary syphilis — Age- and sex-specific rates: United States, 2008



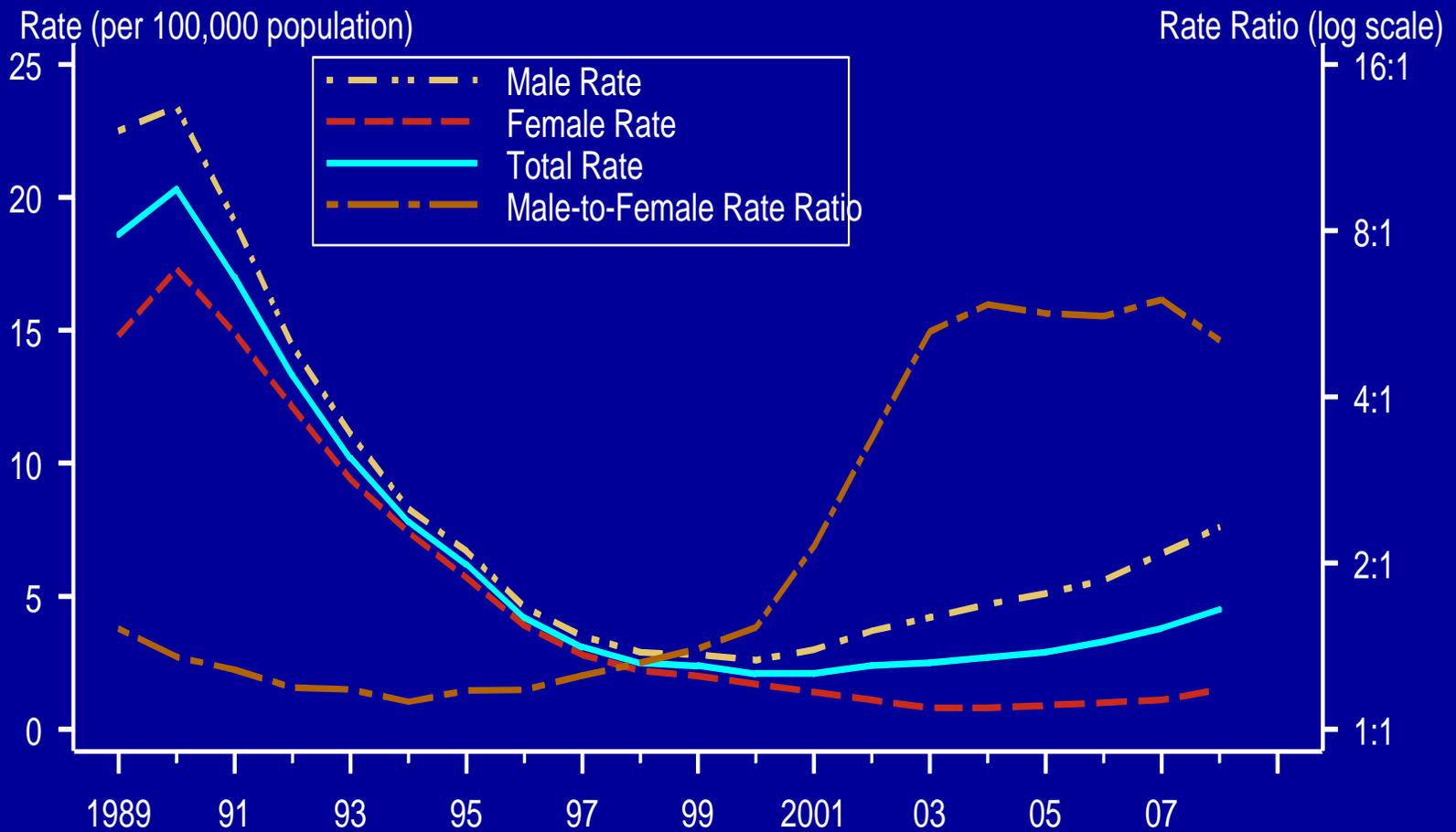


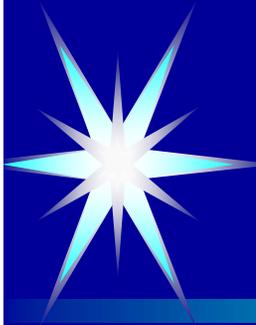
Primary and secondary syphilis — Male-to-female rate ratios: United States, 1981–2006





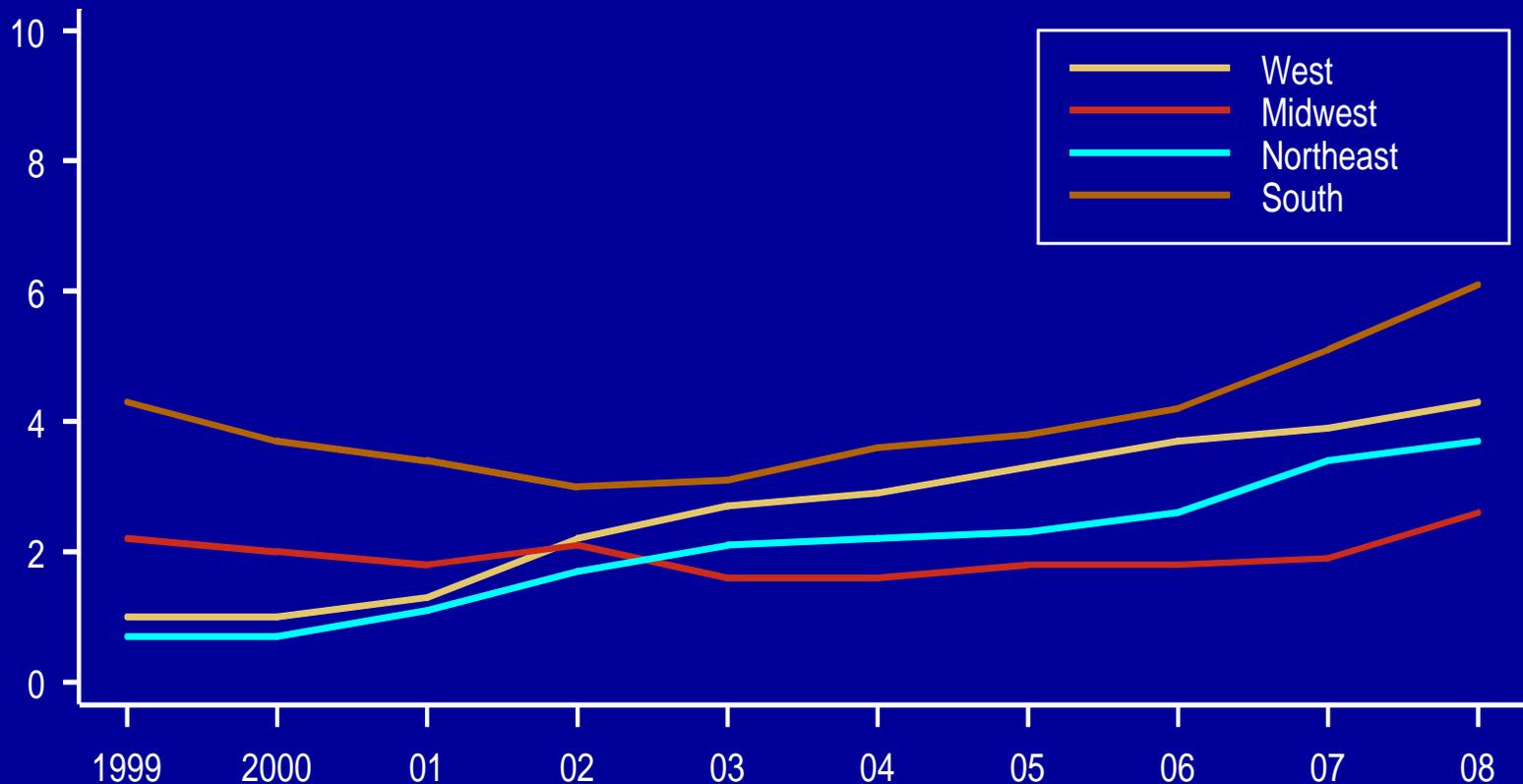
Primary and secondary syphilis — Male-to-female rate ratios: United States, 1989–2008

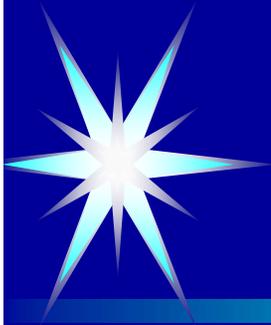




Primary and secondary syphilis — Rates by region: United States, 1999–2008

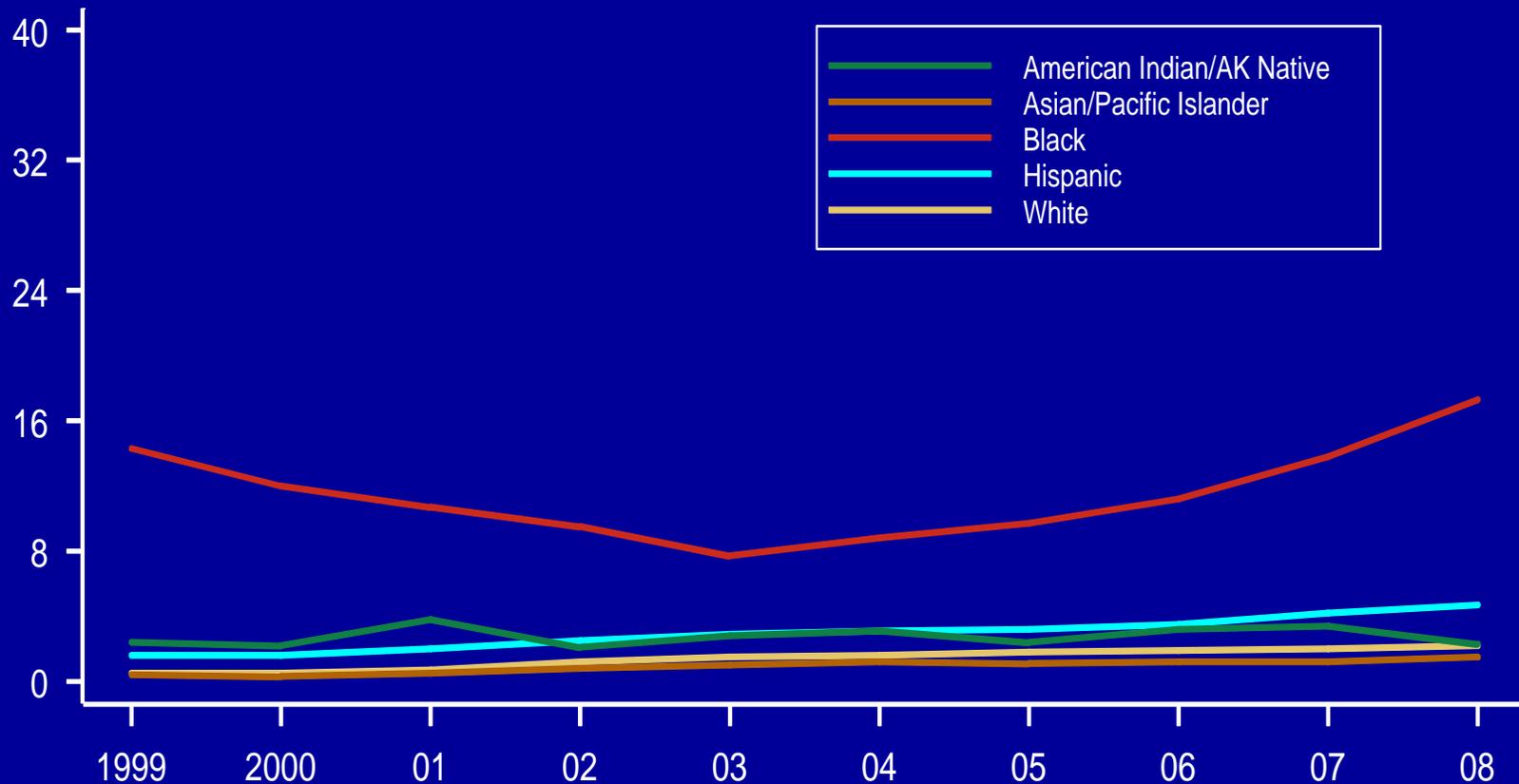
Rate (per 100,000 population)

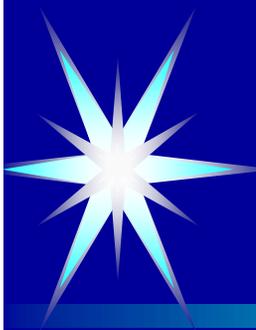




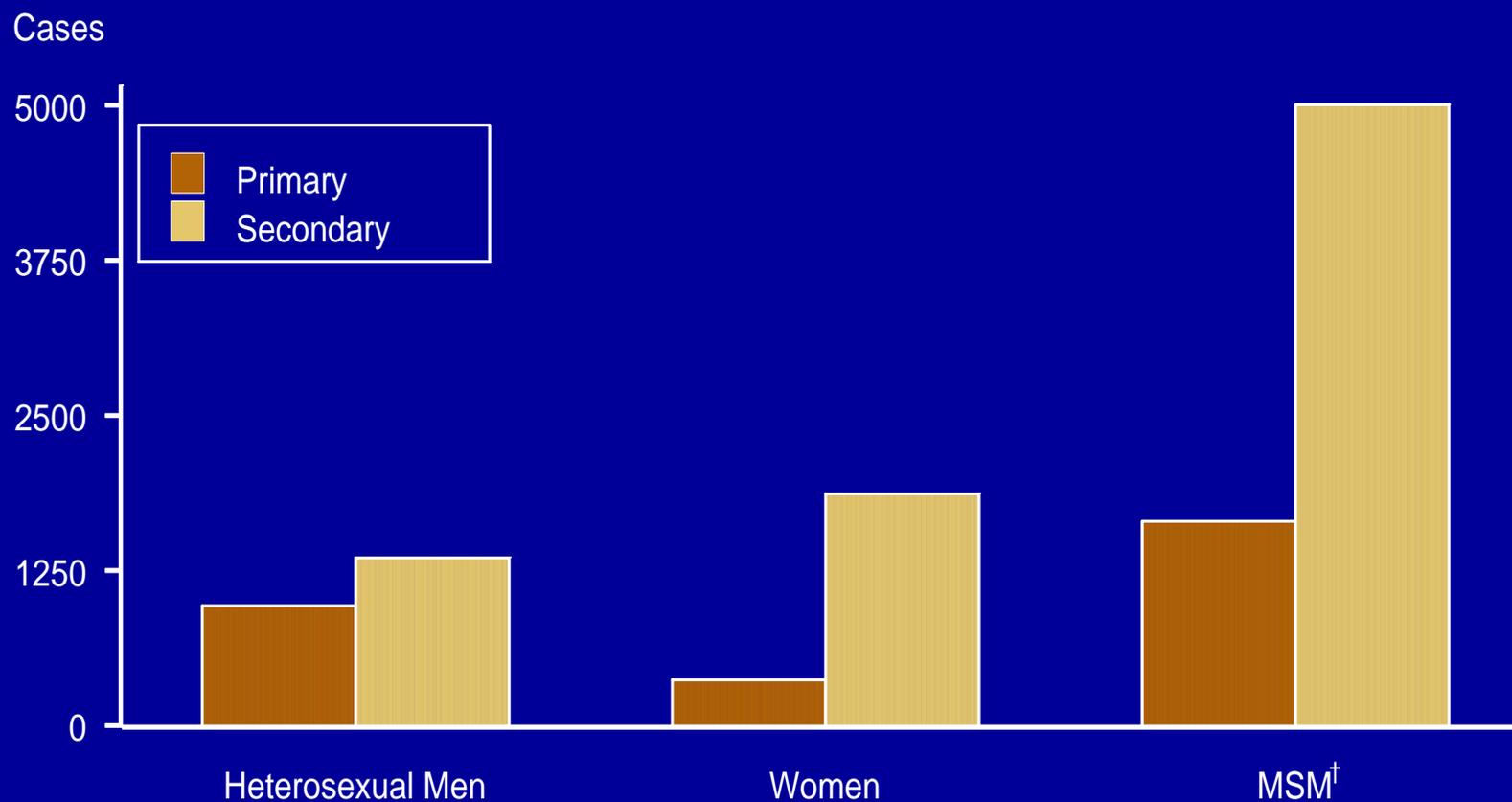
Primary and secondary syphilis — Rates by race/ethnicity: United States, 1999–2008

Rate (per 100,000 population)

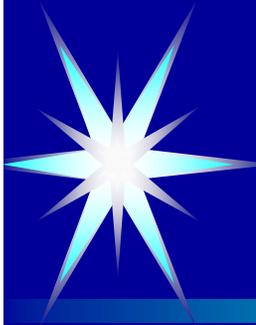




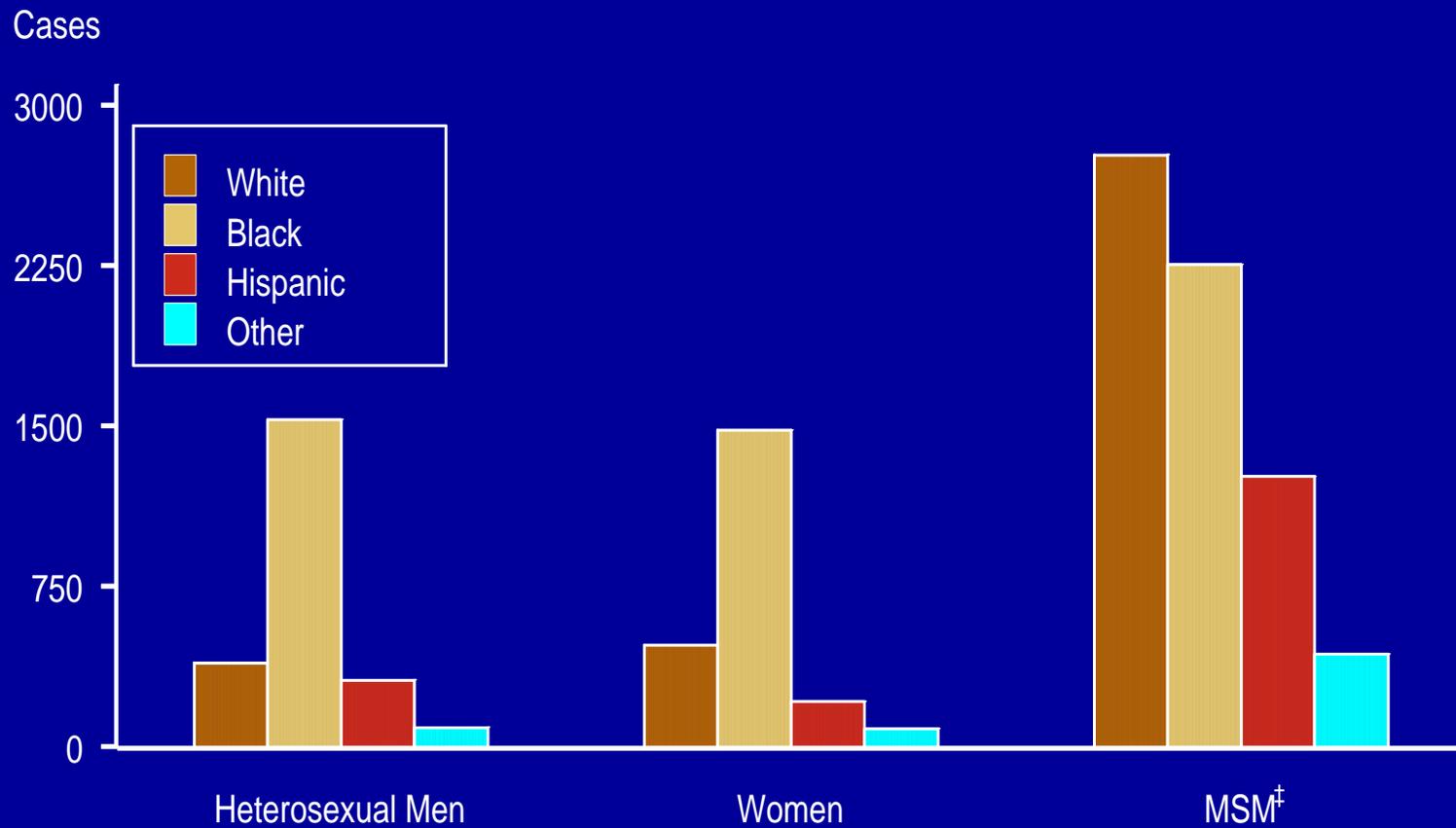
Primary and secondary syphilis — Reported cases by stage and sexual orientation, 2008*

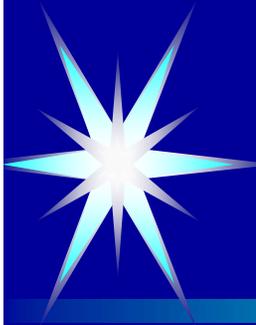


*20% of reported male cases with P&S syphilis were missing sex of sex partner information. †MSM denotes men who have sex with men.



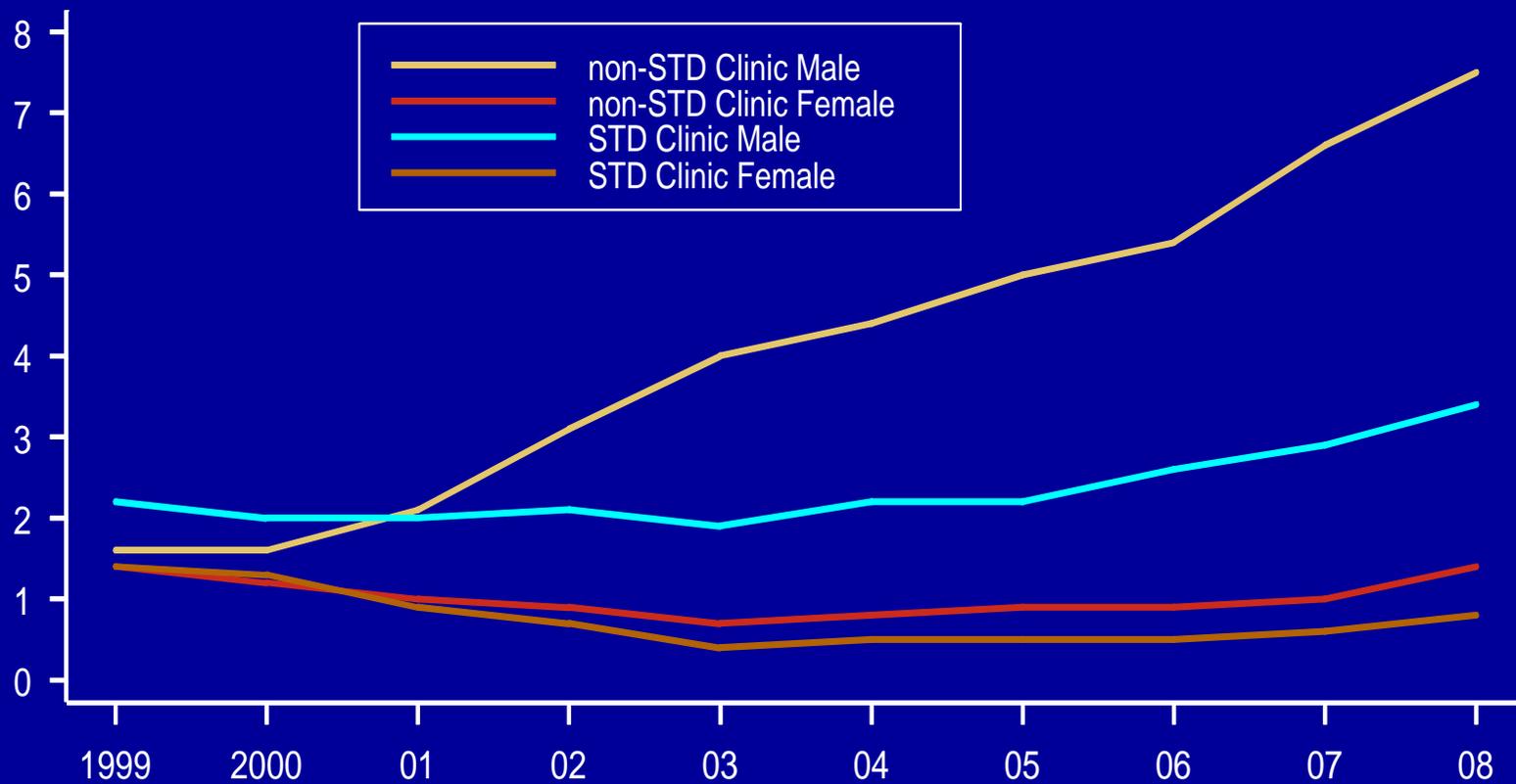
Primary and secondary syphilis — Cases by sexual orientation and race/ethnicity, 2008





Primary and secondary syphilis — Cases by source and sex: United States, 1999–2008

Cases (in thousands)

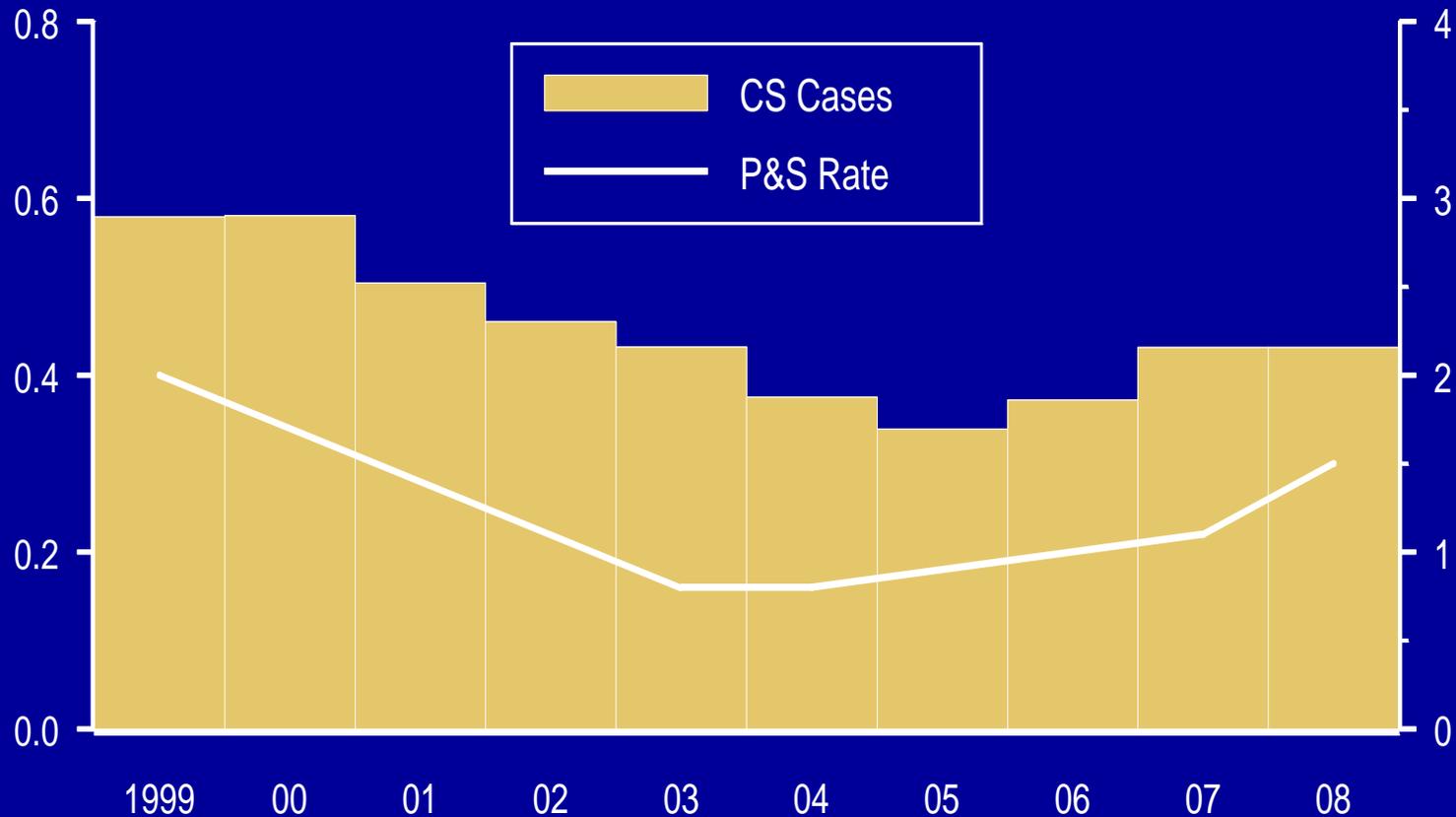




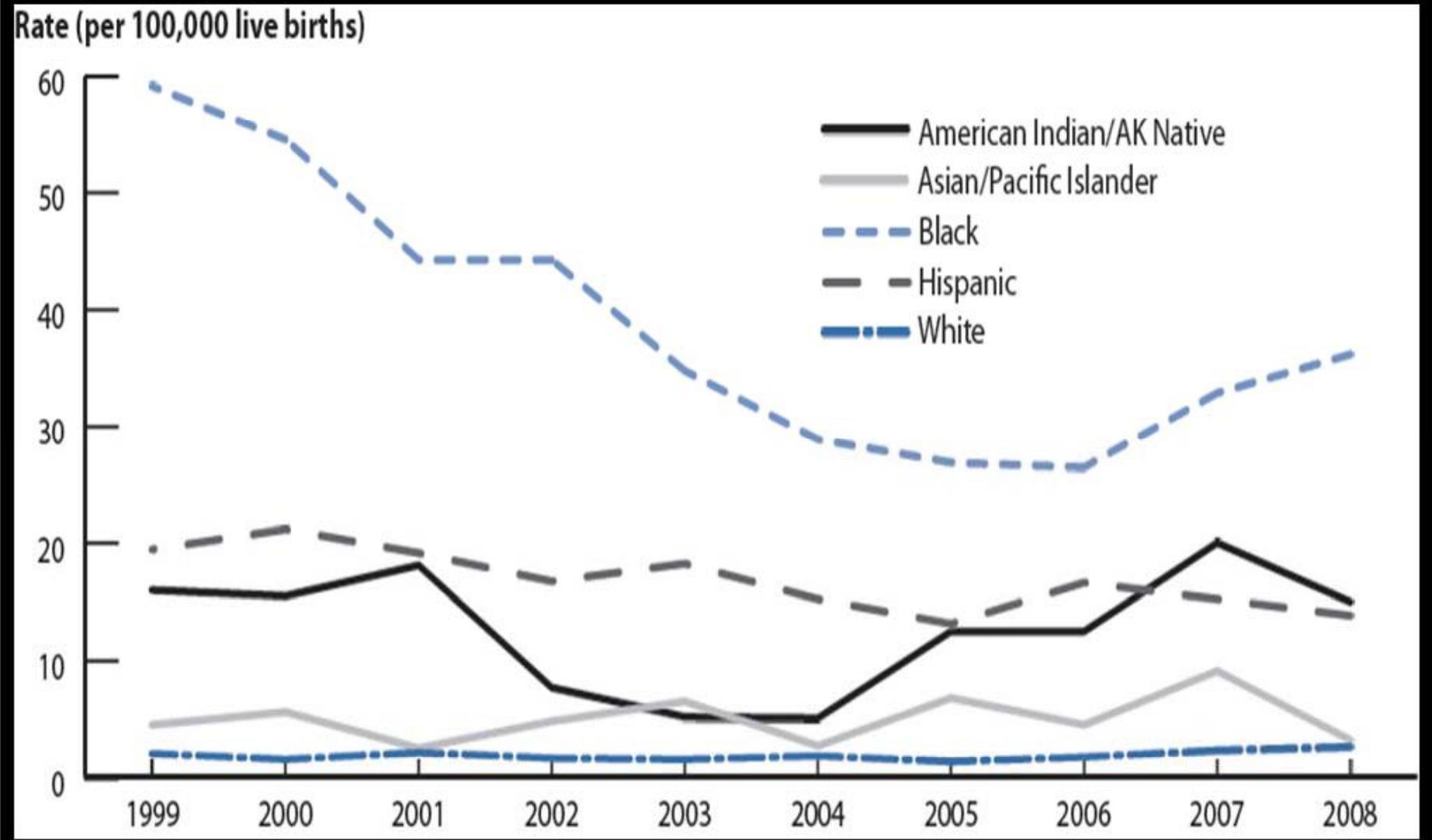
Congenital syphilis (CS) — Cases for infants <1 year of age and rates of primary and secondary syphilis among women: United States, 1999–2008

CS cases (in thousands)

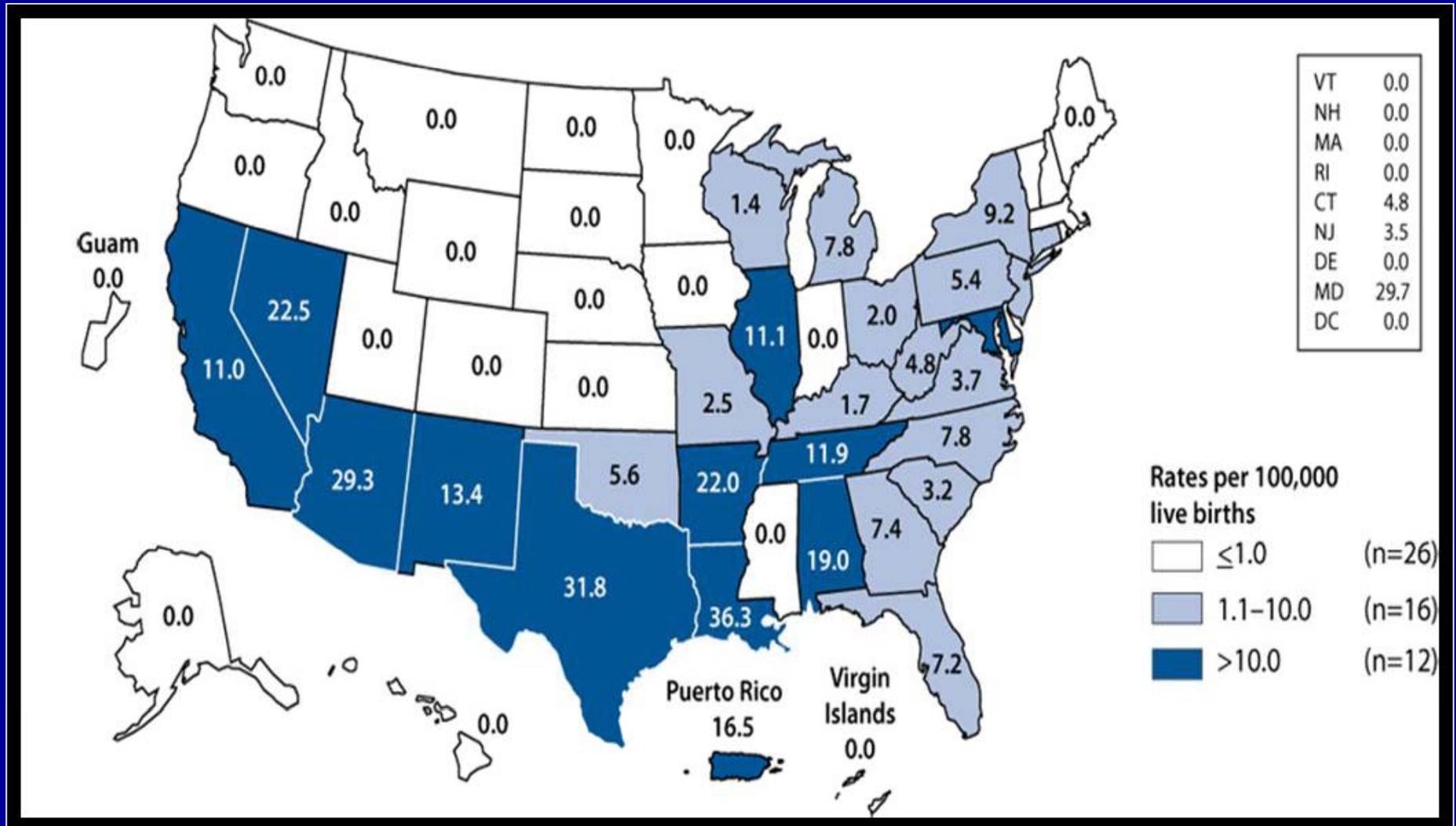
P&S rate (per 100,000 women)

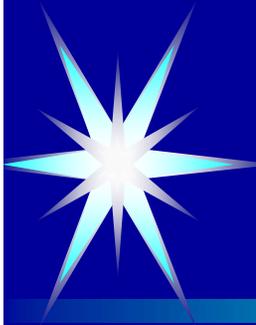


Congenital Syphilis Rates by Race/Ethnicity



Congenital Syphilis by State

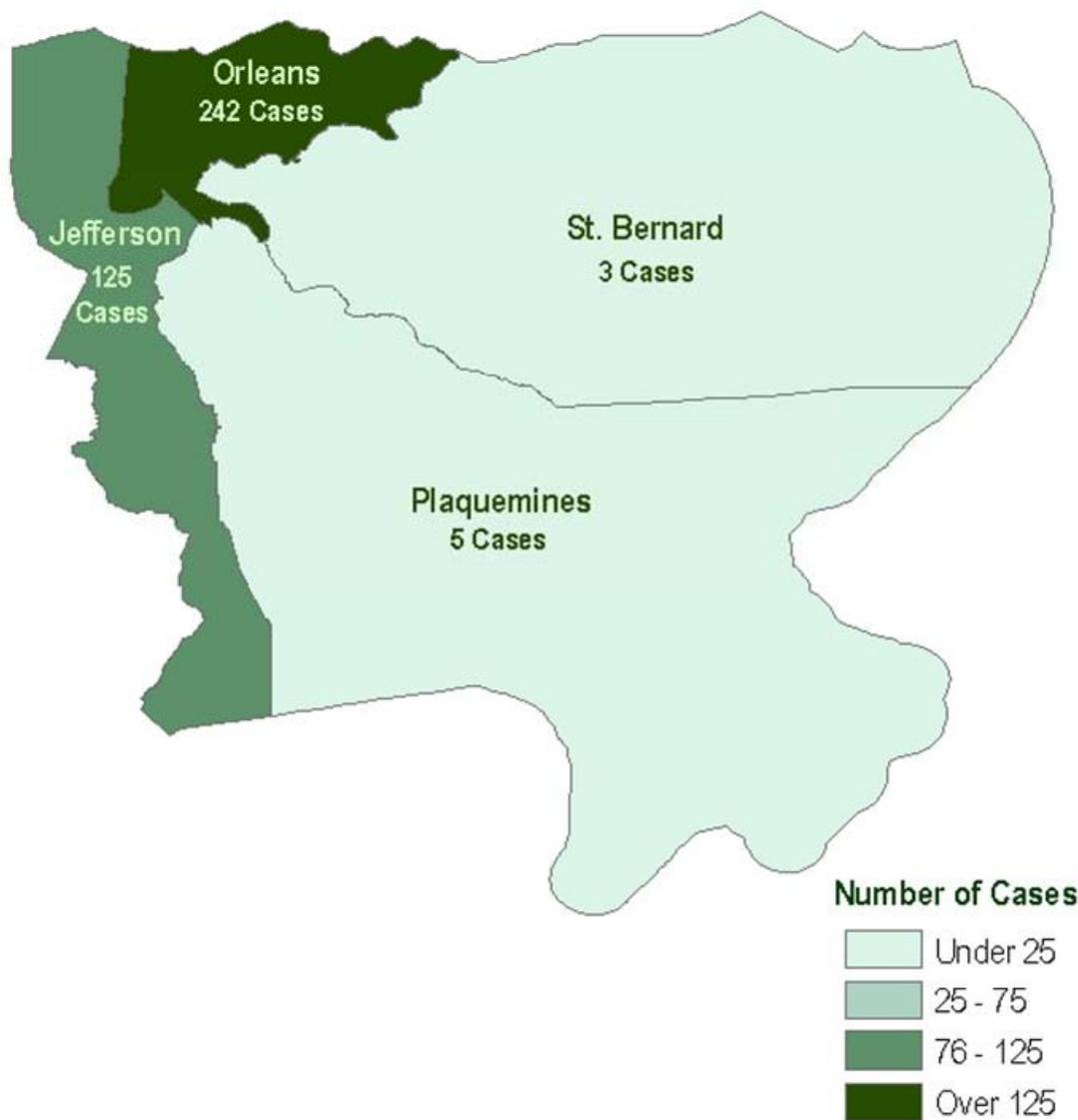




Parish vs. National Rates 2008

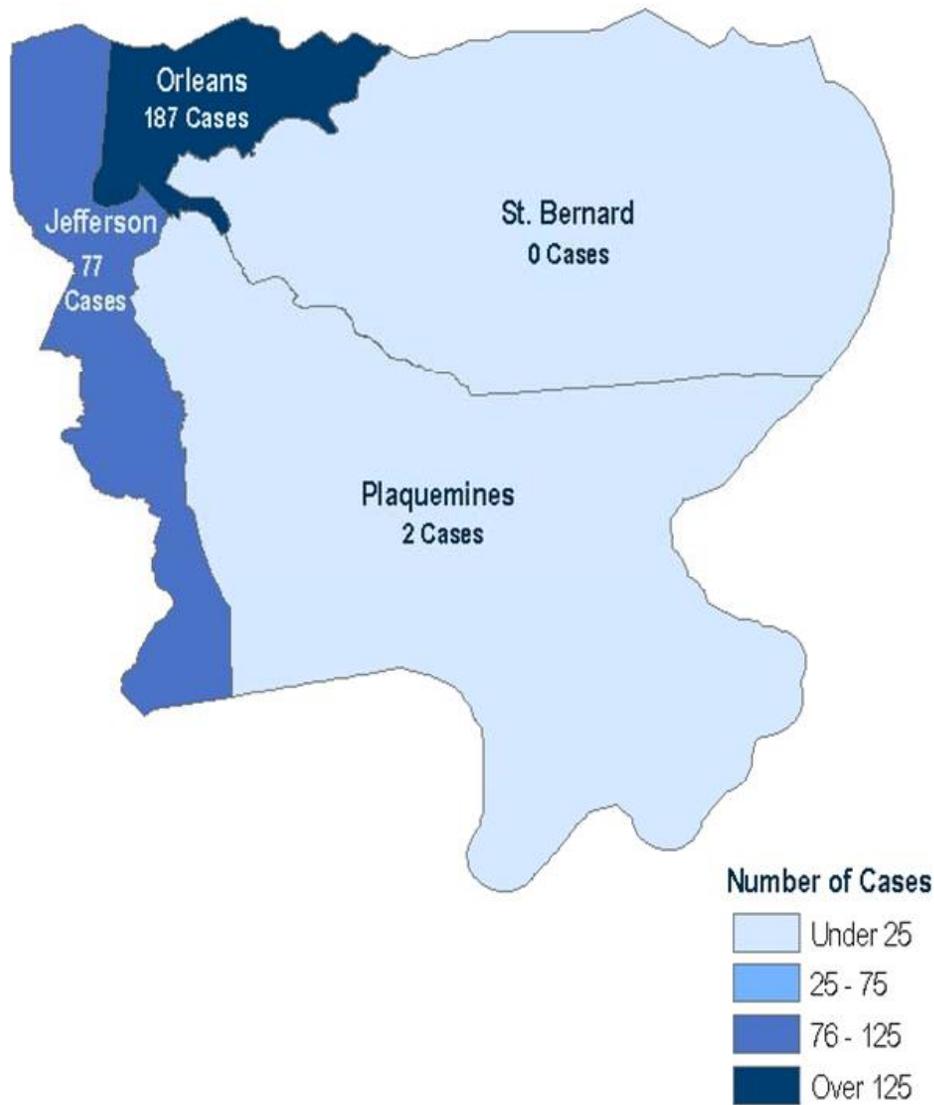
- **National Rate – 4.5 cases/100,000**
- **Jefferson Parish – 11.6 cases/100,000**
- **Orleans Parish – 38.9 cases/100,000**
- **National Goal < 0.4 cases/100,000**

Early Syphilis in Region 1 by Parish Louisiana 2008

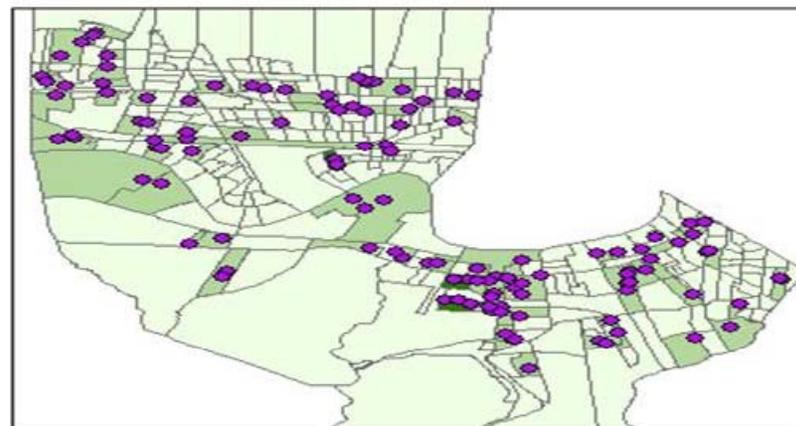
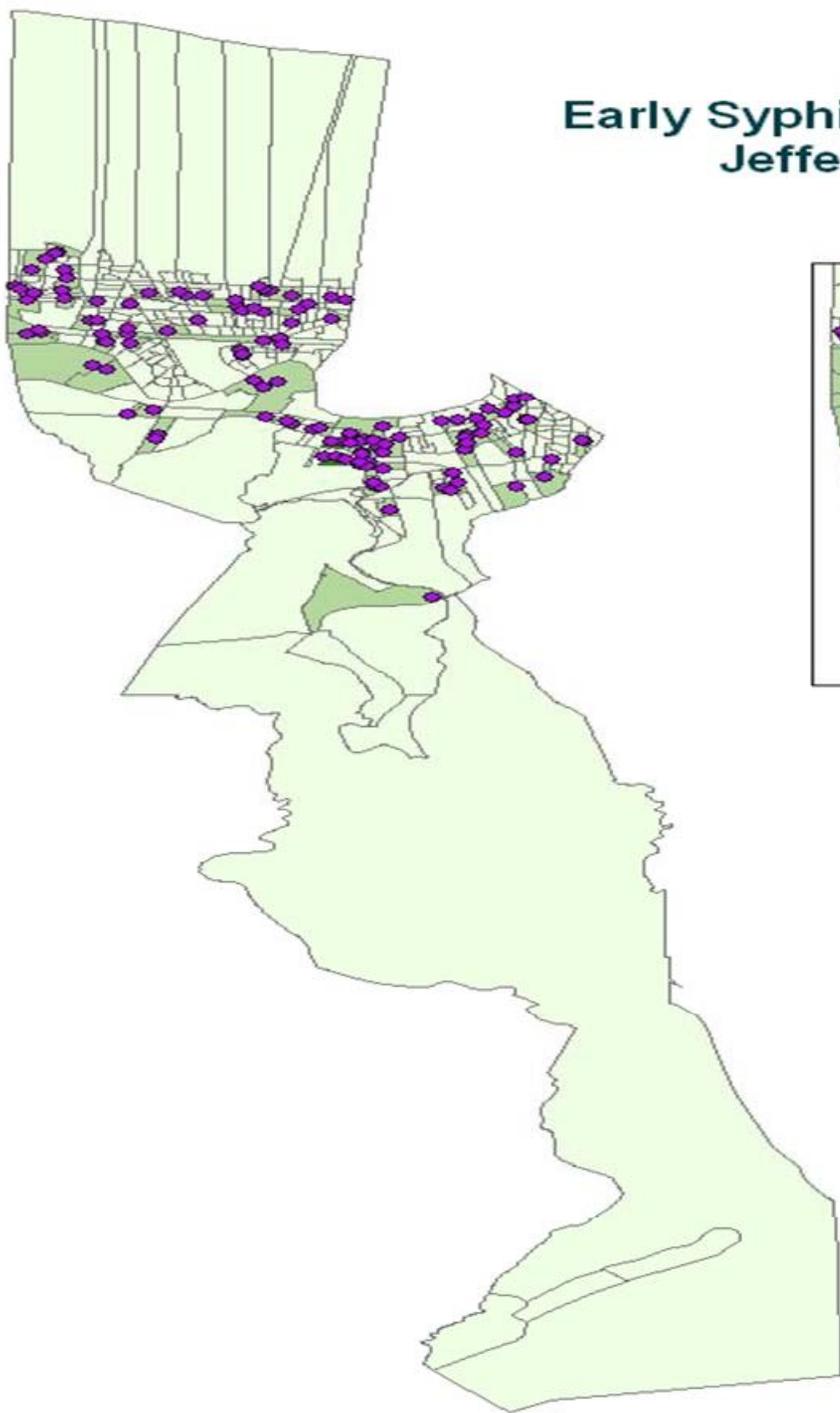


**1st
Six
Months
of 2009**

Early Syphilis in Region 1 by Parish Louisiana 2009



Early Syphilis Cases by Census Block Group Jefferson Parish, Louisiana 2008

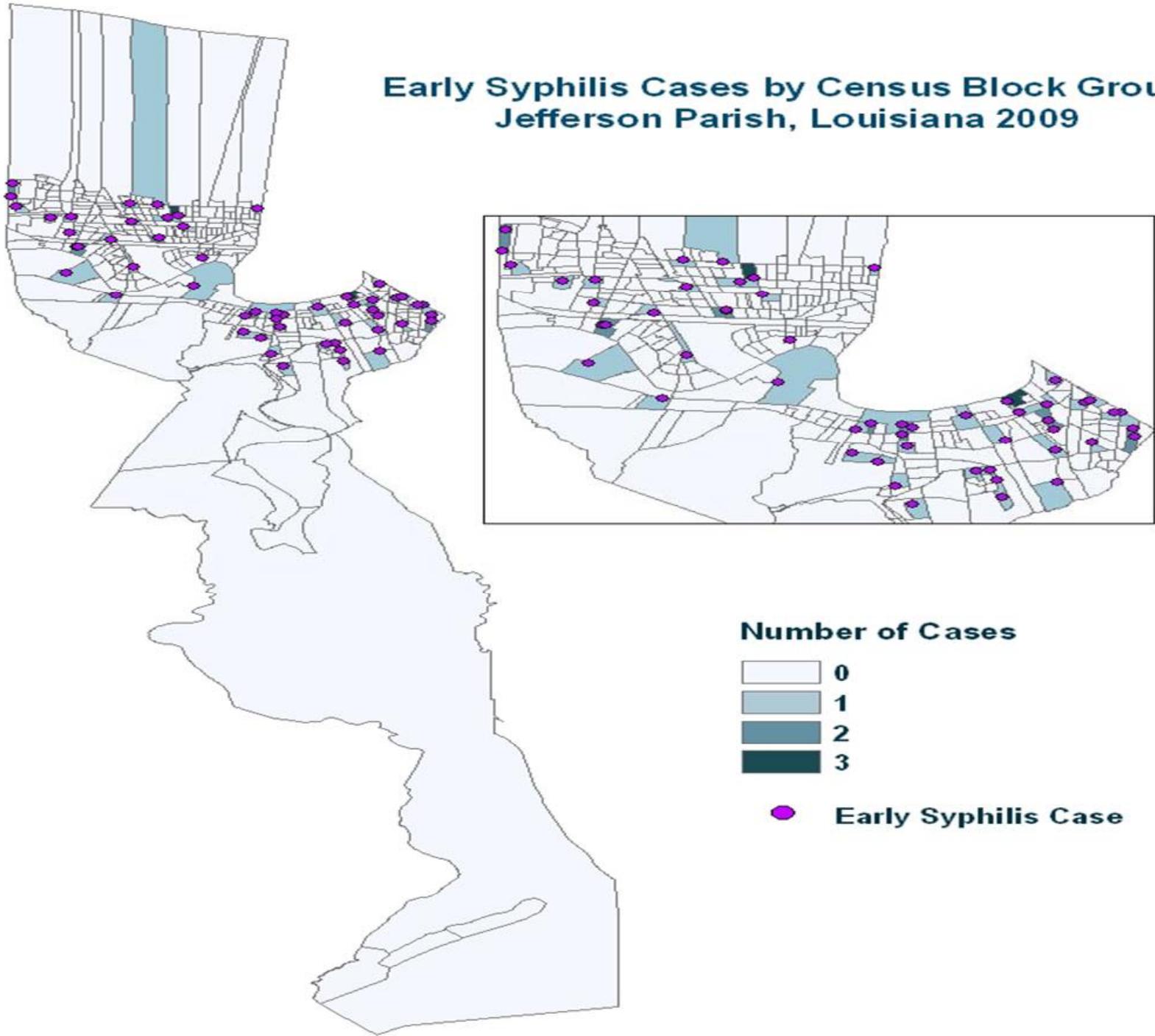


Number of Cases

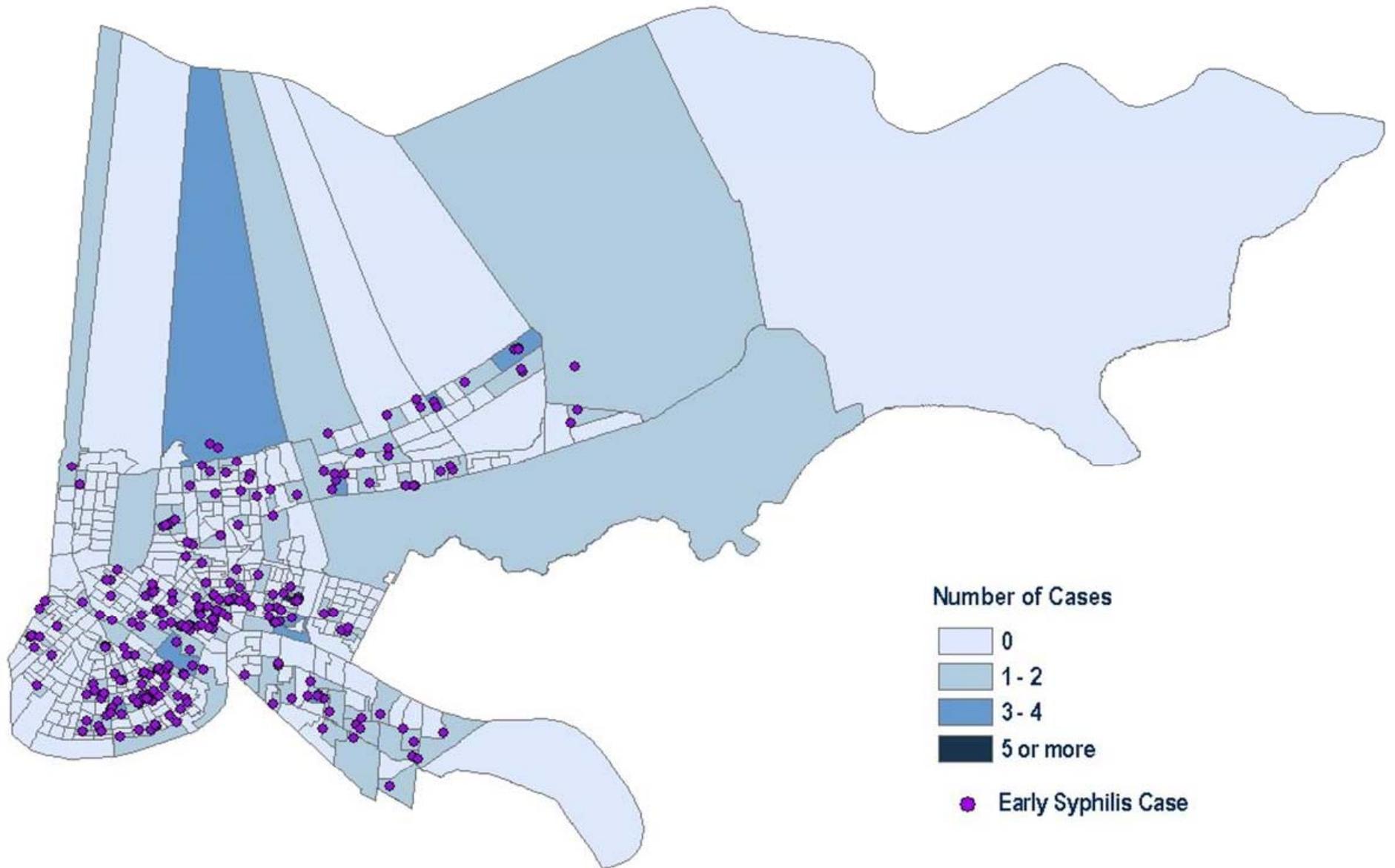


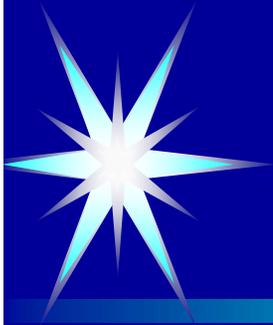
 Early Syphilis Case

Early Syphilis Cases by Census Block Group Jefferson Parish, Louisiana 2009

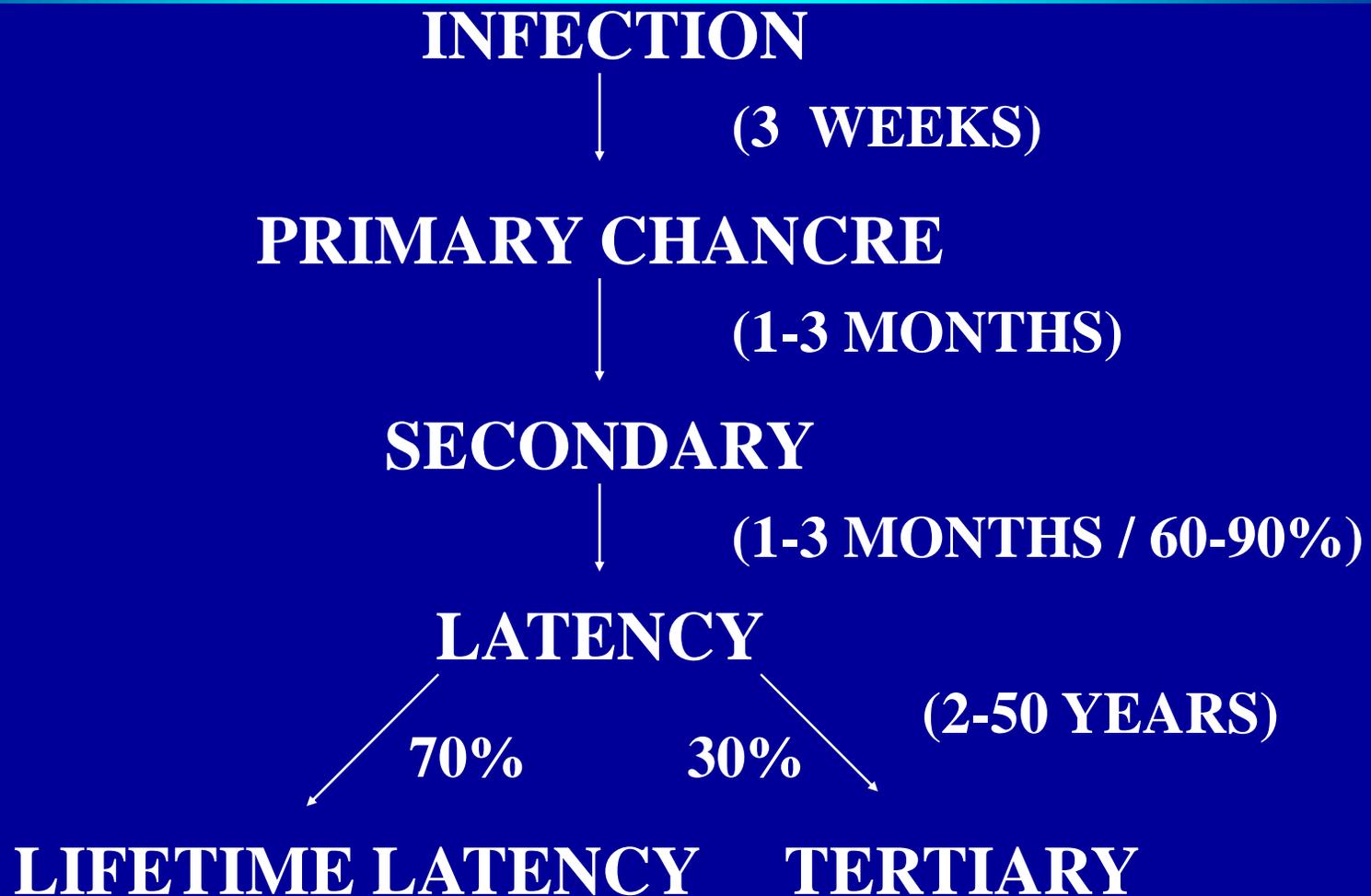


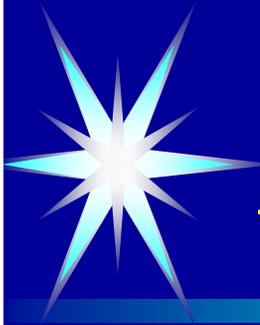
Early Syphilis Cases by Census Block Group Orleans Parish, Louisiana 2008





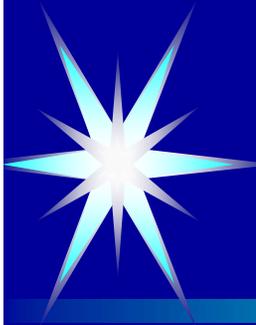
SYPHILIS STAGING





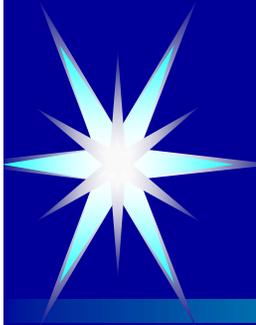
PRIMARY SYPHILIS

- **Incubation period 3-90 days**
- **Begins as a macule/papule that erodes into a clean based, painless, indurated ulcer with smooth, firm borders**
- **Usually singular but can be multiple**
- **Goes unnoticed in 15-30% of patients**
- **If untreated, will heal in 1-5 weeks**



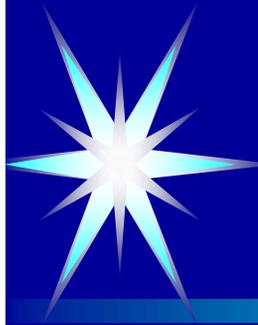
PRIMARY SYPHILIS





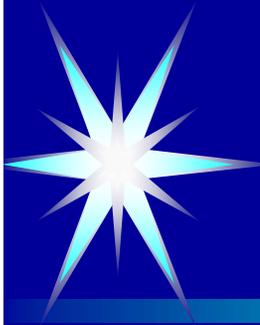
PRIMARY SYPHILIS





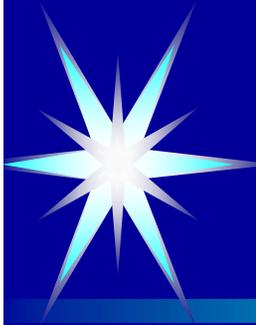
PRIMARY SYPHILIS





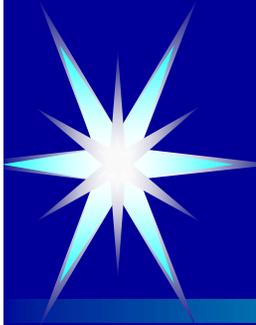
SECONDARY SYPHILIS

- **Hematogenous dissemination**
 - **Skin Rash (90%)** - Maculopapular, or pustular lesions involving the palms and soles. Condyloma lata.
 - **Mucous Membranes (70%)** - Lesions include mucous patches, erosions, aphthous ulcers.
 - **Constitutional symptoms (70%)** - Fever, malaise, pharyngitis, anorexia, weight loss, and arthralgias.
 - **CNS** - HA, meningitis, uveitis, tinnitus.



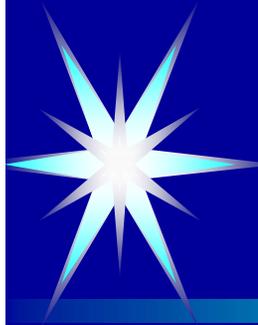
SECONDARY SYPHILIS





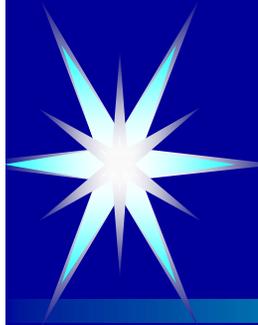
SECONDARY SYPHILIS





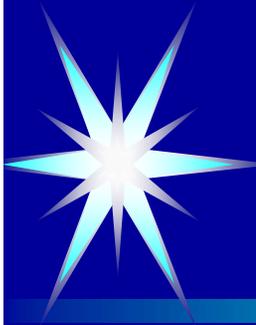
SECONDARY SYPHILIS





SECONDARY SYPHILIS





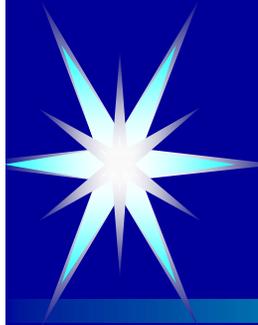
SECONDARY SYPHILIS



Adenopathy



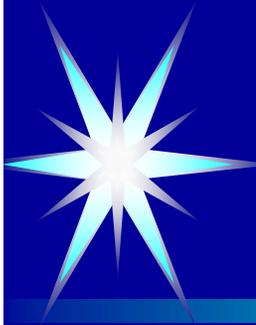
Patchy Alopecia



SECONDARY SYPHILIS



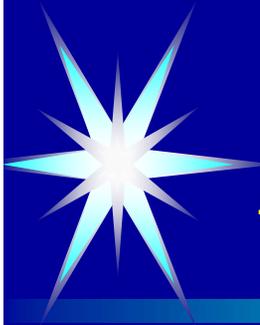
Condyloma lata



SECONDARY SYPHILIS

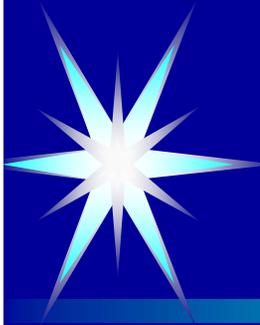


Condyloma lata



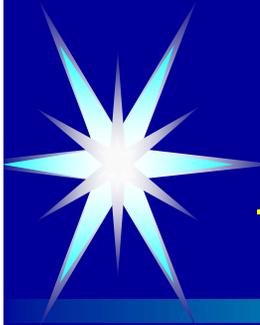
LATENT SYPHILIS

- **Period during which there is no clinical evidence of disease**
- **Serological tests are positive**
- **Arbitrarily divided into “early latent” (infection occurred within the last year) or “late latent”**



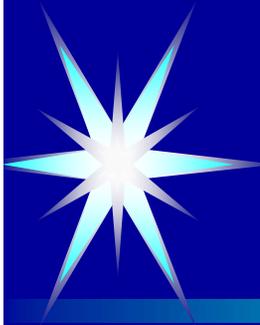
TERTIARY SYPHILIS

- **Slowly progressive disease - affects any organ system and produces clinical illness years after initial infection**
 - **NEUROSYPHILIS - meningitis, general paresis, optic neuritis (↑ WBCs, + CSF VDRL, ↑ Prot.)**
 - **CARDIOVASCULAR - aortic aneurysm, aortic regurgitation**
 - **GUMMATOUS - large indurated lesions of skin, GI tract, mouth**



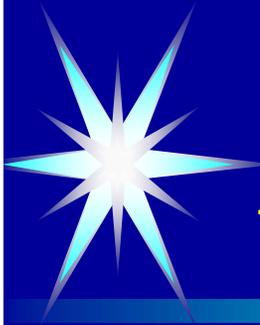
DIAGNOSIS

- **Darkfield examination of material from a moist lesion – 70-80% sensitive**
- **Serologic Tests**
 - **Non-treponemal – RPR, VDRL, ART**
 - **Treponemal – FTA-ABS, TPHA, IgG**
- **Silver stain of biopsy material**
- **DNA Methods (PCR, etc.)**



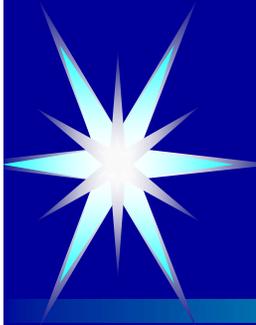
SEROLOGIC TESTS

- **REMEMBER!!!**
- **No serologic test for syphilis can make a diagnosis by itself, or distinguish between active (never treated or inadequately treated) syphilis and inactive (adequately treated) syphilis**
- **Must be coupled with a careful history and a thorough physical examination before a diagnosis can be made**



BIOLOGIC FALSE POSITIVE

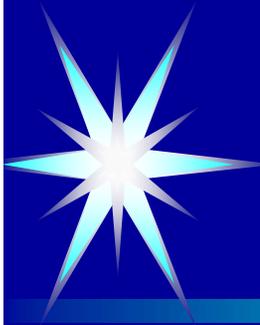
- **Antibodies to phospholipid produced in other disorders**
- **Positive non-specific test (VDRL, RPR)**
- **Not confirmed with specific test (or negative TPHA, etc.)**
- **Seen in a number of conditions such as lupus, drug reactions, narcotic drug use, TB, pregnancy, hepatitis, rheumatoid arthritis, etc.**



Syphilis:

2006 CDC STD Treatment Guidelines

- Primary, Secondary, and Early Latent
 - Benzathine penicillin 2.4 MU IM X 1
 - PCN allergic– Doxy. 100 mg po bid for 14 days
- Late Latent
 - Benzathine penicillin 2.4 MU IM q wk. x 3 weeks
 - PCN allergic – Doxy. 100 mg po bid x 4 weeks
- Neuro-Syphilis –
 - Aqueous crystalline PCN 3-4 MU IV q 4 hrs 10-14 days – PCN Allergic need to be desensitized
- Special Circumstances
 - Pregnant and PCN allergic – desensitize and treat
 - HIV – Same tx. for stage of syphilis in non-HIV pt.



CHANCROID

➤ ETIOLOGY

- *Haemophilus ducreyi*
- Fastidious organism difficult to isolate
- Requires supplemented chocolate agar and 5% CO₂ for growth

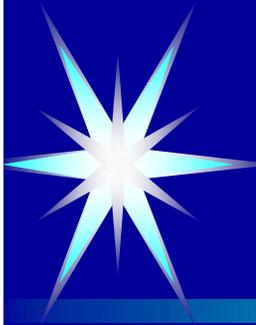
➤ EPIDEMIOLOGY

- Seen more commonly in third world countries
- Less than 1,000 cases seen in the U.S. ,but outbreaks or epidemics have been seen

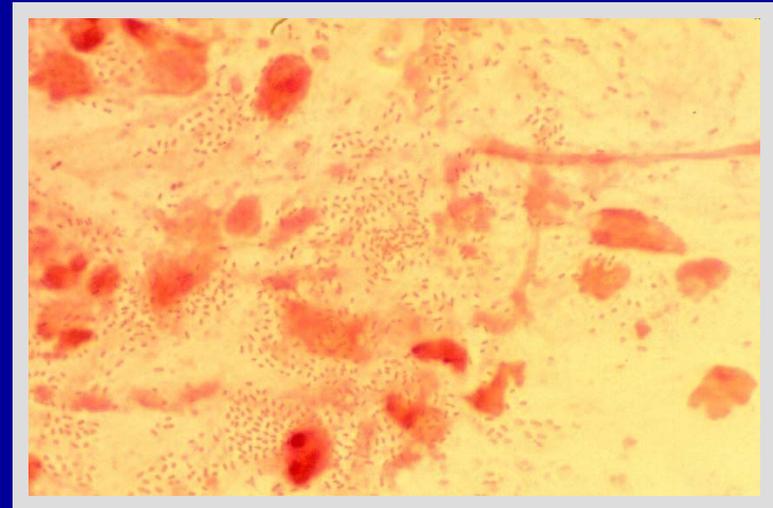


CLINICAL MANIFESTATIONS

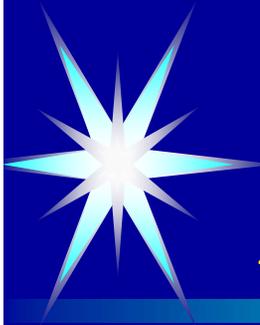
- **Incubation period 5-7 days**
- **A papule develops initially but goes on to erode into a painful, soft, and non-indurated ulcer**
- **50% of patients will develop painful local adenopathy which may suppurate or rupture**



CHANCROID

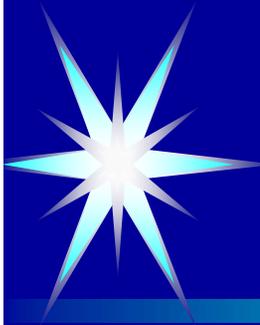


Genital Ulcer with Inguinal Bubo in 50%



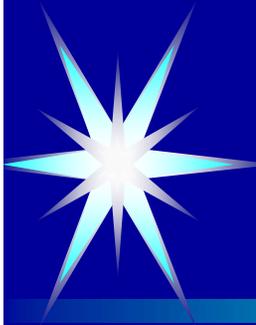
Chancroid: 2006 CDC STD Treatment Guidelines

- **Azithromycin 1 gm orally single dose**
- **Ceftriaxone 250 mg IM single dose**
- **Ciprofloxacin 500 mg po bid for 3 days**
- **Erythromycin base 500 mg po qid for 7 days**



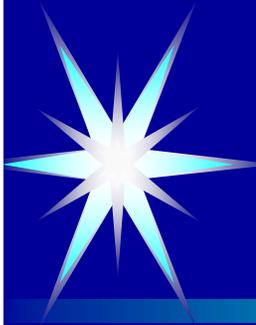
GENITAL HERPES

- **Most common cause of genital ulcer disease in N.A.**
- **Primary Infection**
 - **80-90 % due to HSV-2**
 - **Typically most severe, systemic symptoms common**
 - **Mult. painful vesicles, shallow ulcers, heal 2-3 wks**
- **Recurrences**
 - **Less severe lesions**
 - **Shorter duration**
- **Most patients with HSV-2 asymp. or do not recognize symptoms**
- **Asymptomatic viral shedding occurs without outbreaks**



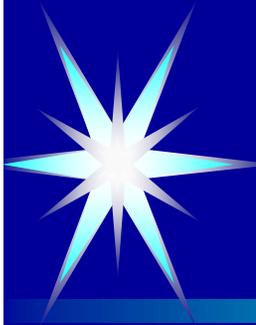
HERPES SIMPLEX





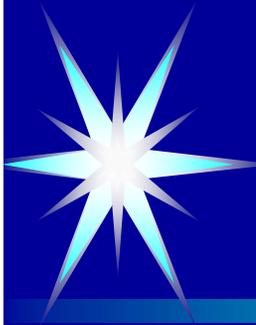
HERPES SIMPLEX





HERPES SIMPLEX





HSV - 2006 STD Treatment Guidelines

➤ Initial Episode

➤ Acyclovir, famcicloivir, or valacyclovir X 7-10 days

➤ Recurrences

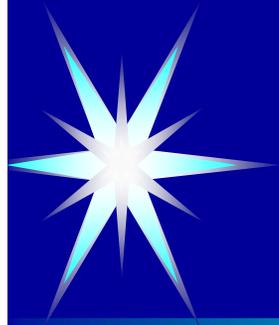
➤ Acyclovir, famcicloivir, or valacyclovir X 5 days

➤ Acyclovir 800mg tid X 2d; Fam 1000mg BID X 1d;
Val 500 mg BID X 3d

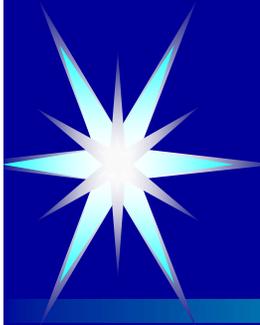
➤ Suppressive Therapy

➤ Indicated for patients with 6 outbreaks a year

➤ Reduces the frequency and asymptomatic shedding



URETHRITIS/CERVICITIS/PID



URETHRITIS

➤ Clinical Syndrome

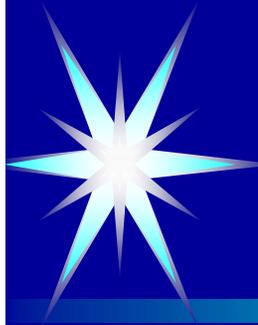
- Dysuria, urethral discharge/itching, >5 WBCs/hpf**
- Dx.– DNA probes and amplification (swab or urine)**
- Still need GC cultures to monitor resistance (GISP – Gonococcal Isolate Surveillance Program)**

➤ Gonococcal Urethritis

- 2-5 day incubation, copious amounts of purulent d/c**
- Intra-cellular diplococci seen in 95% of men**

➤ Non-gonococcal Urethritis

- Less profuse, thin, clear, or mucoid d/c**
- Urethral smear with WBCs only**



Etiology of NGU

<i>Chlamydia trachomatis</i>	20-40%
<i>Mycoplasma genitalium</i>	15-25%
<i>Ureaplasma urealyticum</i>	10-20%
<i>Trichomonas vaginalis</i>	5-15%
Adenovirus	1-4%
Herpes simplex virus	1-2%



History of Mycoplasma genitalium

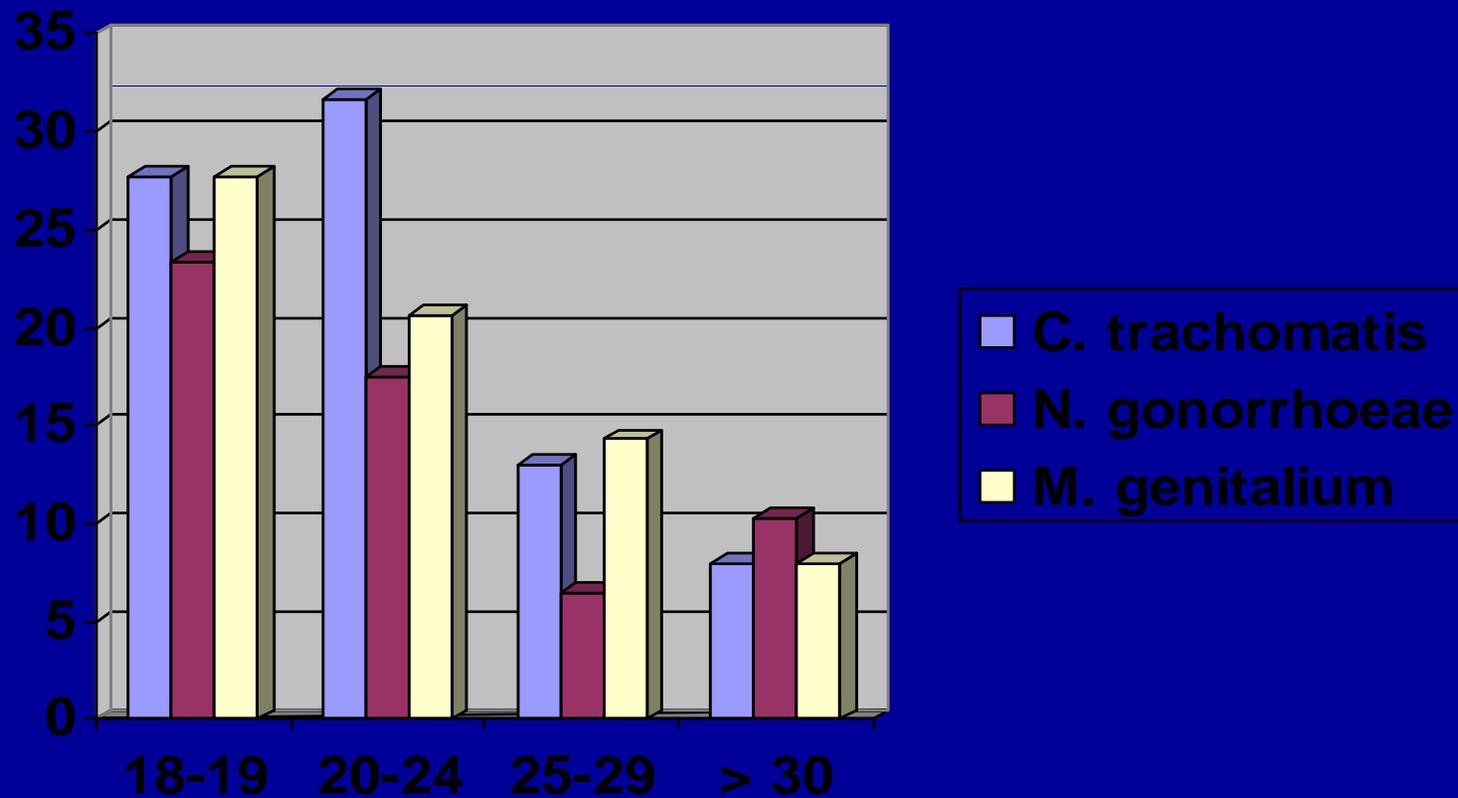
- **1981 – First identified by culture in 2/13 men with NGU. (Tully and Taylor-Robinson)**
- **1982-90 – Attempts to obtain additional isolates from men with NGU fail. (Taylor-Robinson, et al; Samra, et al)**
- **1986-87 – Primate studies show *M. genitalium* causes NGU. (Tully, et al; Taylor-Robinson, et al)**
- **1988 - Direct DNA probes give mixed results. (Hooten, et al; Risi, et al.)**
- **1991 – First PCR assays described. (Jenson, et al and Palmer et al.**



M. genitalium Infections in Women Attending the New Orleans STD Clinic

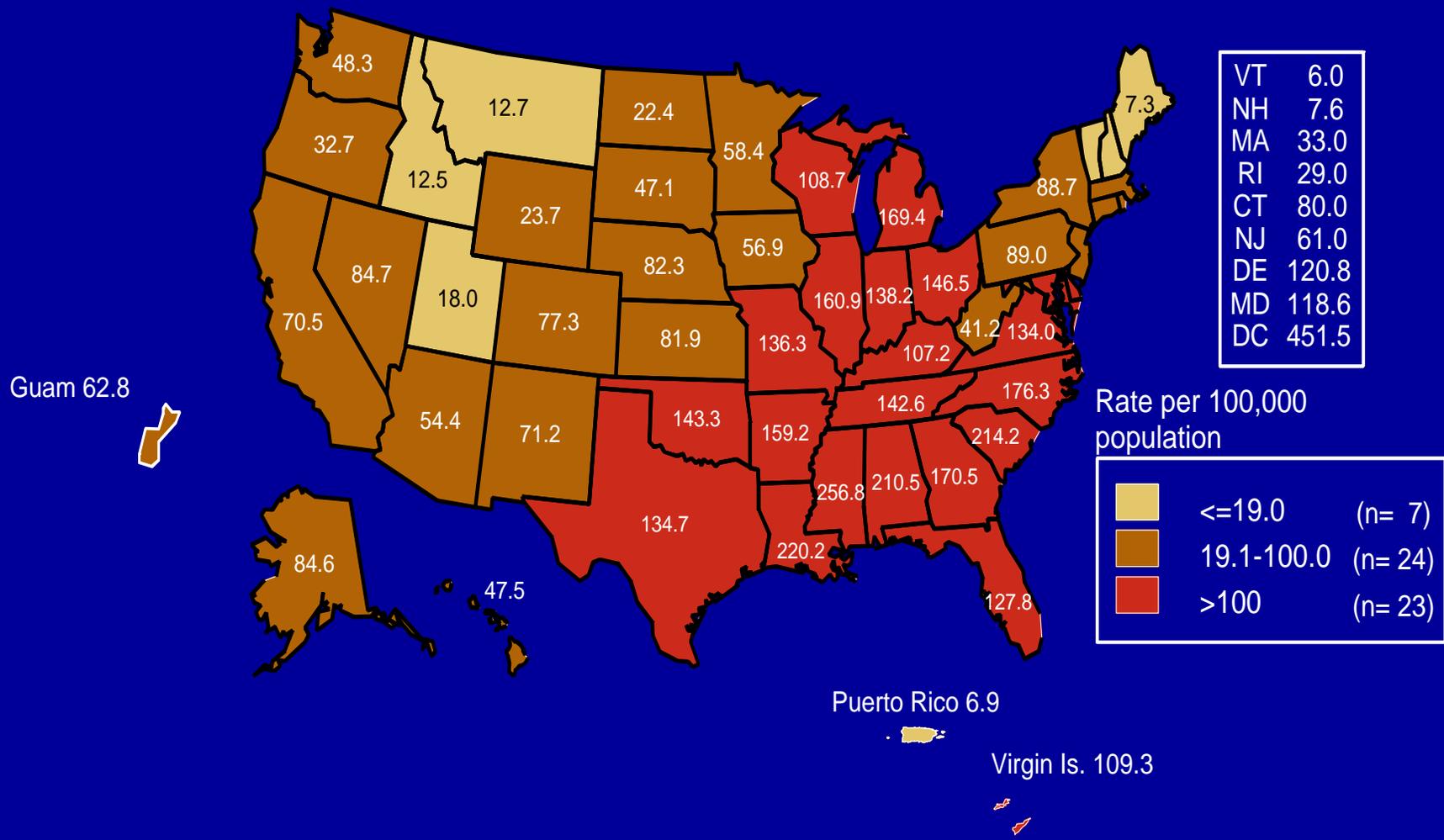
Organism	No. Positive/(%)
<i>M. genitalium</i>	70 (17%)
<i>C. trachomatis</i>	90 (22%)
<i>N. gonorrhoeae</i>	58 (14%)
<i>T. vaginalis</i>	87 (22%)

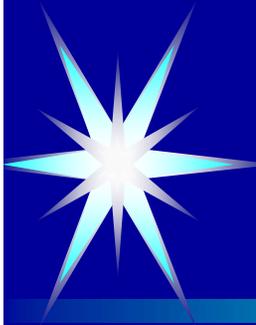
Association of Mucosal Pathogens and Young Age in women



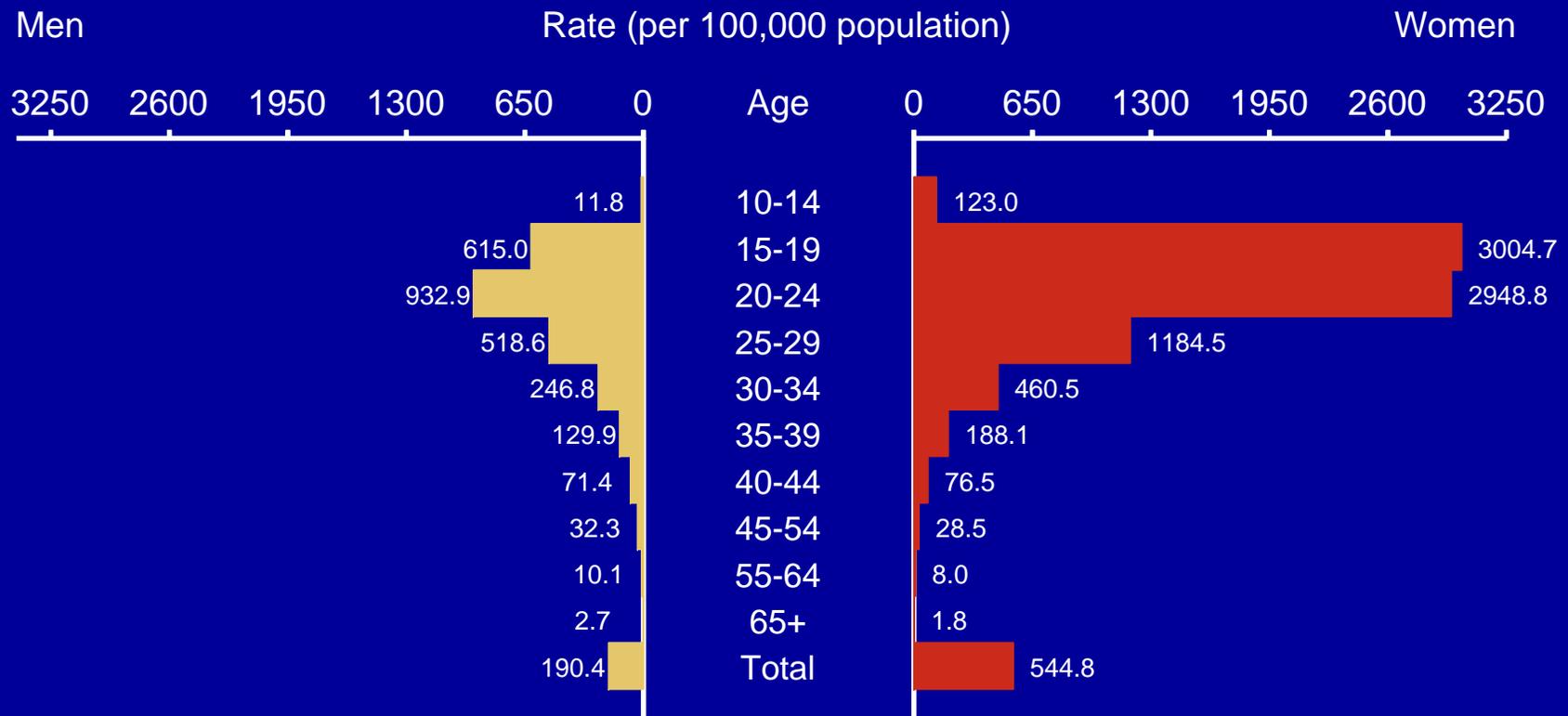


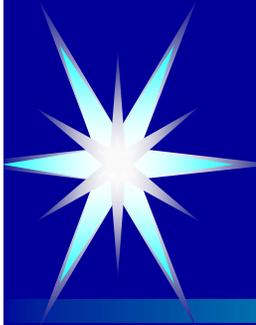
Gonorrhea — Rates by state: United States and outlying areas, 2008



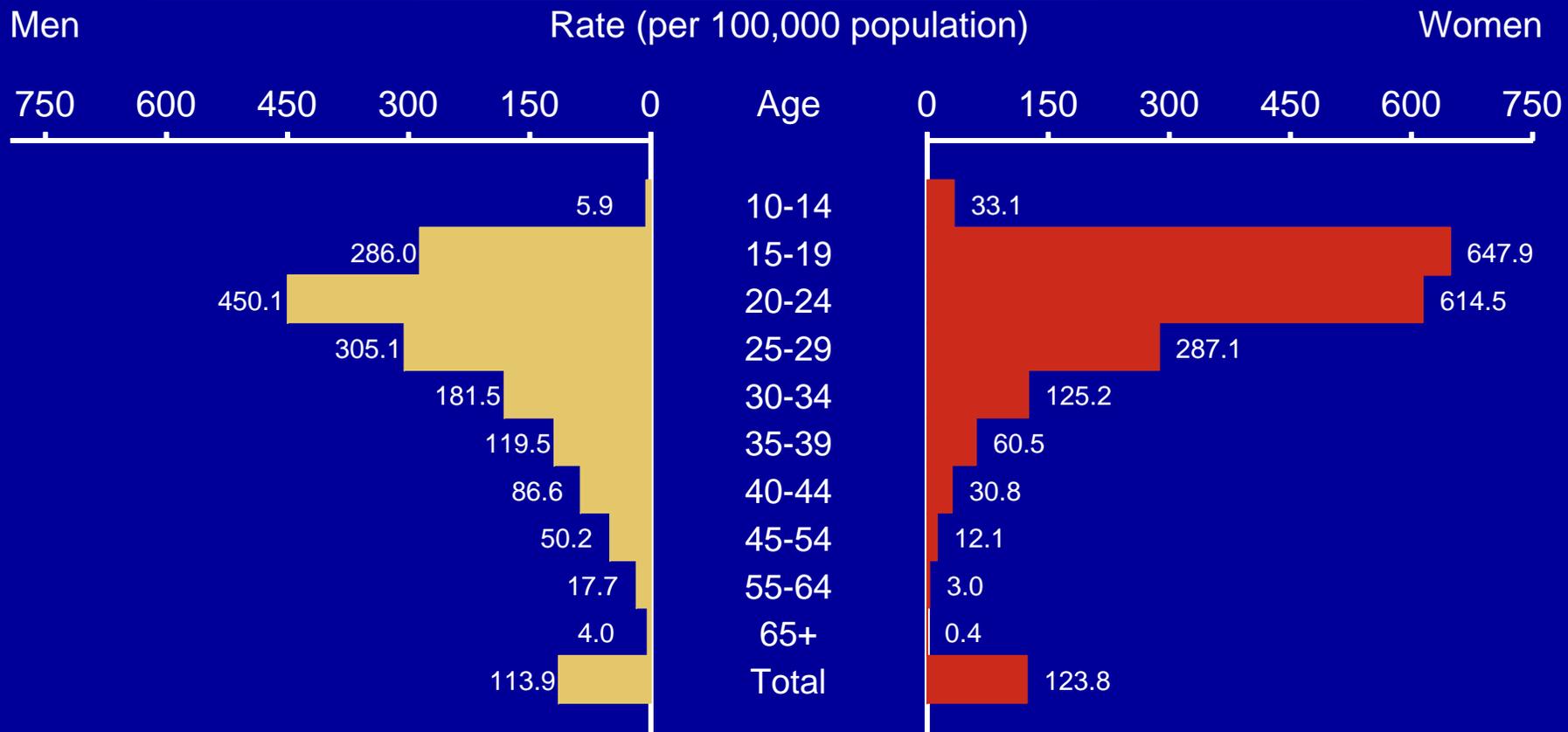


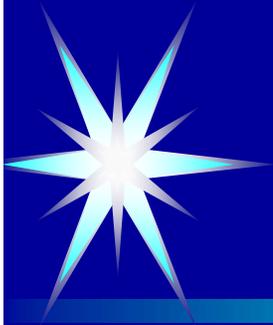
Chlamydia — Age- and sex-specific rates: United States, 2007



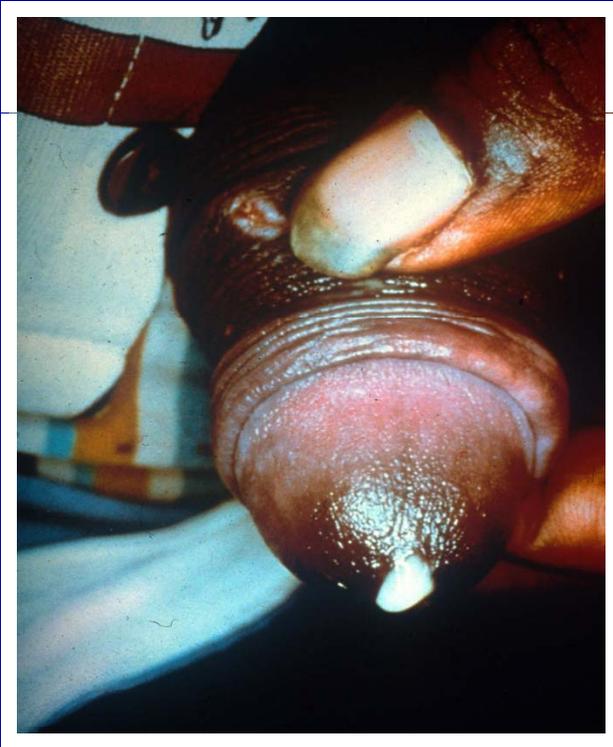


Gonorrhea — Age- and sex-specific rates: United States, 2007





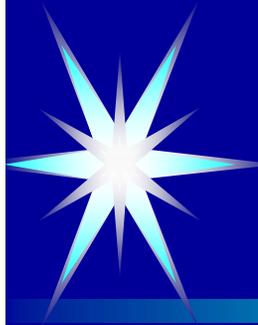
GC URETHRITIS AND NGU



Gonococcal Urethritis



Non-gonococcal Urethritis



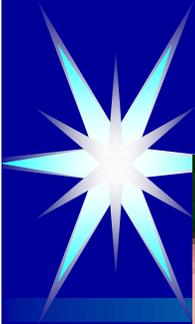
GC URETHRITIS AND NGU

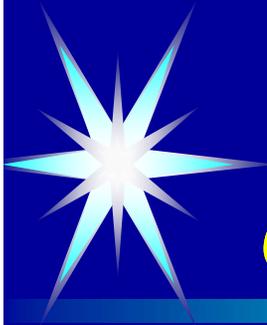


Gonococcal Urethritis

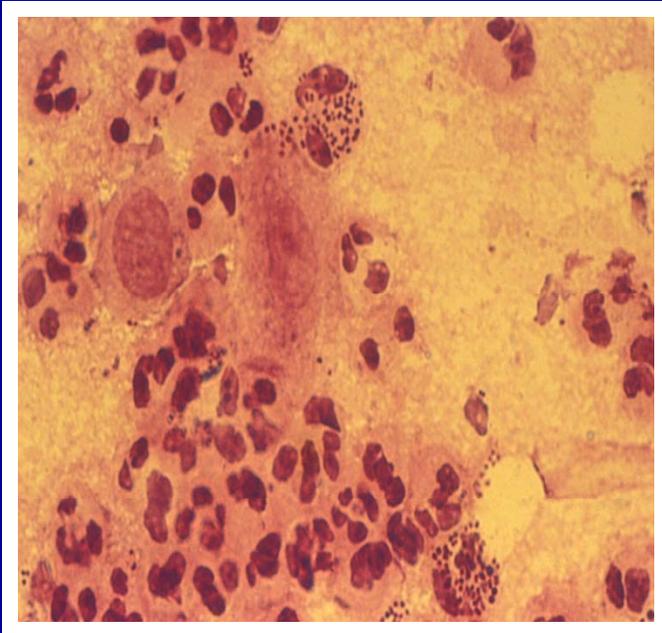


Non-gonococcal Urethritis

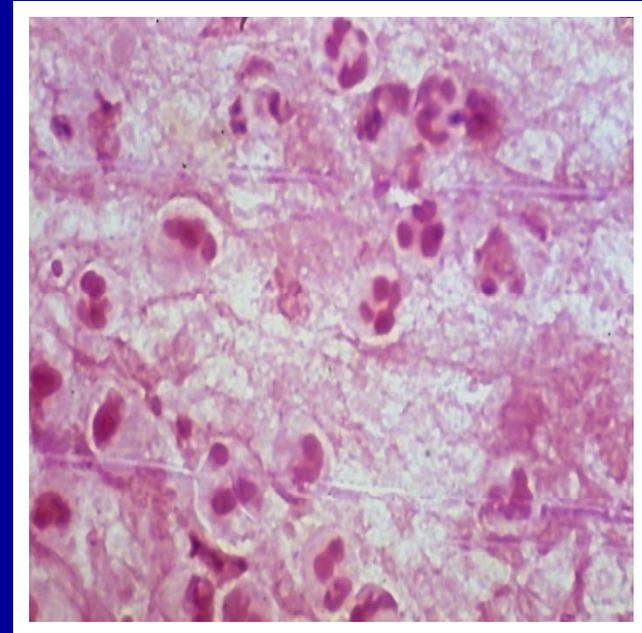




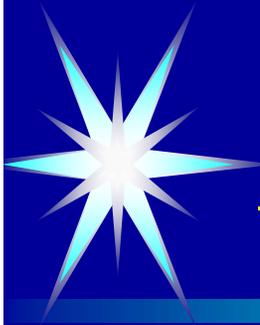
URETHRAL SMEAR: GC VS. NGU



GC/Intracellular diplococci

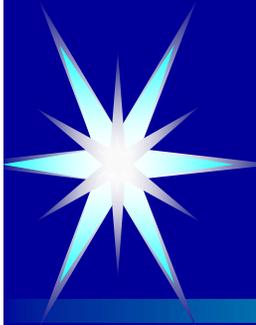


NGU/ >5 PMNs/hpf

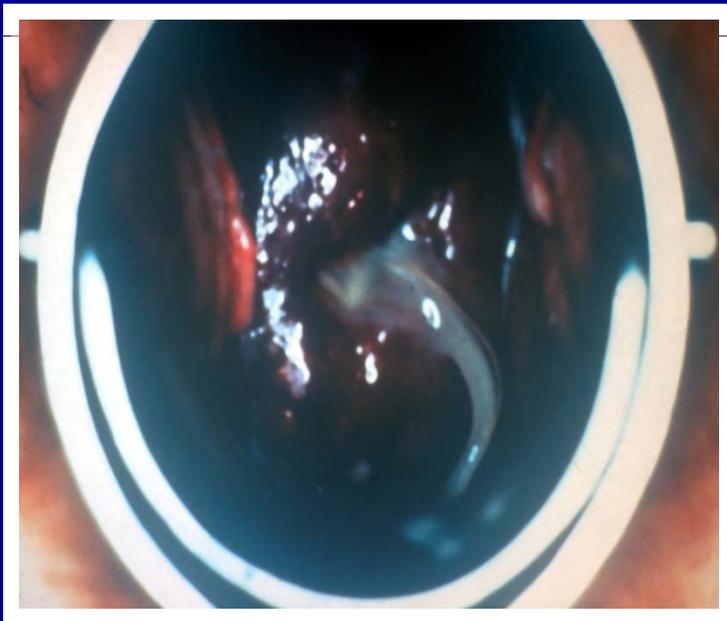


MUCOPURULENT CERVICITIS

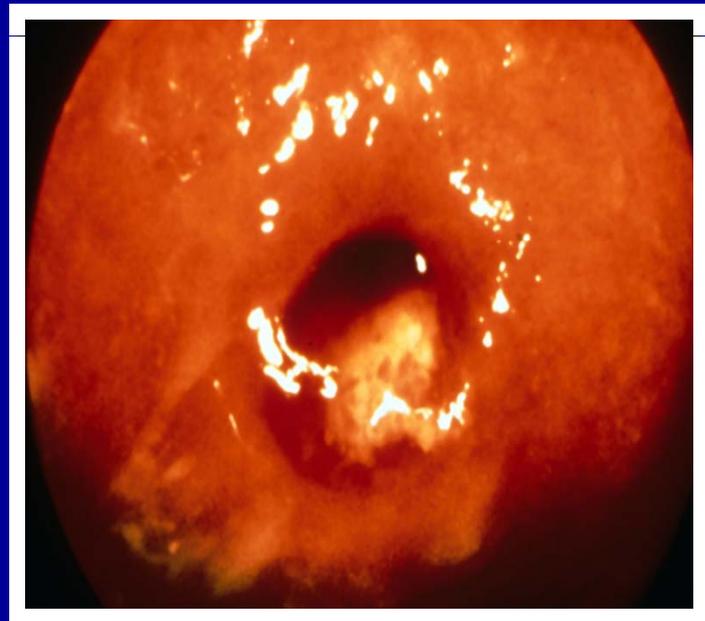
- Infection and inflammation of the endocervix
 - Thick cervical discharge
 - Erythema and easily induced bleeding
 - Ectopy of endocervical mucosa
- Pathogens
 - *N. gonorrhoea*
 - *C. trachomatis*
- Asymptomatic infection
 - ~40% of women with GC
 - ~50% of women with CT



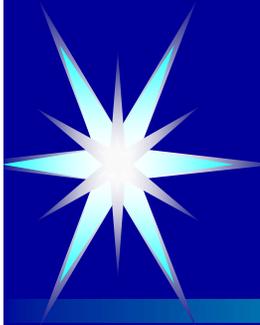
MUCOPURULENT CERVICITIS(MPC) ***GC VS. CT***



Gonococcal MPC



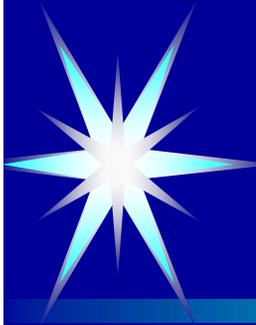
Chlamydial MPC



GC - 2006 STD Treatment Guidelines

- **Gonococcal urethritis/cervicitis (MPC)**
 - **Ceftriaxone 125 mg IM single dose or Cefixime 400 mg po in single dose**
 - ****Quinolones no longer recommended in U.S. due to resistance**
 - **Azithromycin 1 gm or Doxy 100 mg bid x 7d for CT**

- **Alternatives**
 - **Spectinomycin 2 gm IM single dose**
 - **Single dose cephalosporin**

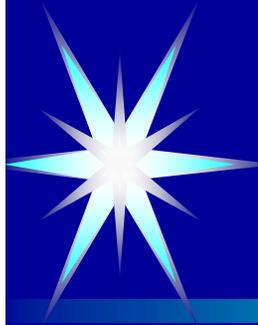


NGU/CT - 2006 STD Treatment Guidelines

- **NGU or Chlamydia Urethritis/Cervicitis**
 - Azithromycin 1 gm po single dose
 - Doxycycline 100 mg po bid x 7 days

- **Alternatives**
 - Erythromycin base 500 mg po qid x 7 days
 - Ofloxacin 300 mg bid po x 7 days
 - Levofloxacin 500 mg po x 7 days

- **Recurrent or Persistent NGU**
 - Metronidazole 2 gm po in a single dose
 - Tinidazole 2 gm po in a single dose
 - Azithromycin 1 gm po if not used for initial episode



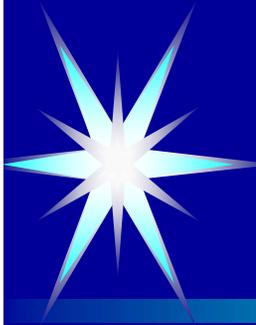
GC COMPLICATIONS

➤ Men

- Epididymitis**
- Prostatitis**
- Conjunctivitis**
- Periurethral abscess**
- Penile lymphangitis**
- Disseminated gonococcal infection (DGI)**

➤ Women

- Bartholin's glands abscess**
- Perihepatitis (Fitz-Hugh-Curtis syndrome)**
- PID**
- Infertility**
- Conjunctivitis**
- Endometritis**
- Tubo-ovarian abscess**
- Ectopic pregnancy**
- Ophthalmia neonatorum**
- Disseminated gonococcal infection (DGI)**



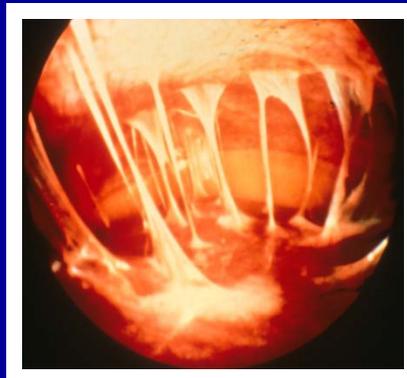
COMPLICATIONS OF GC/CT



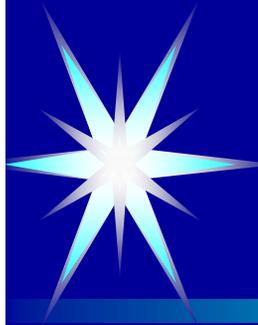
Epididymitis



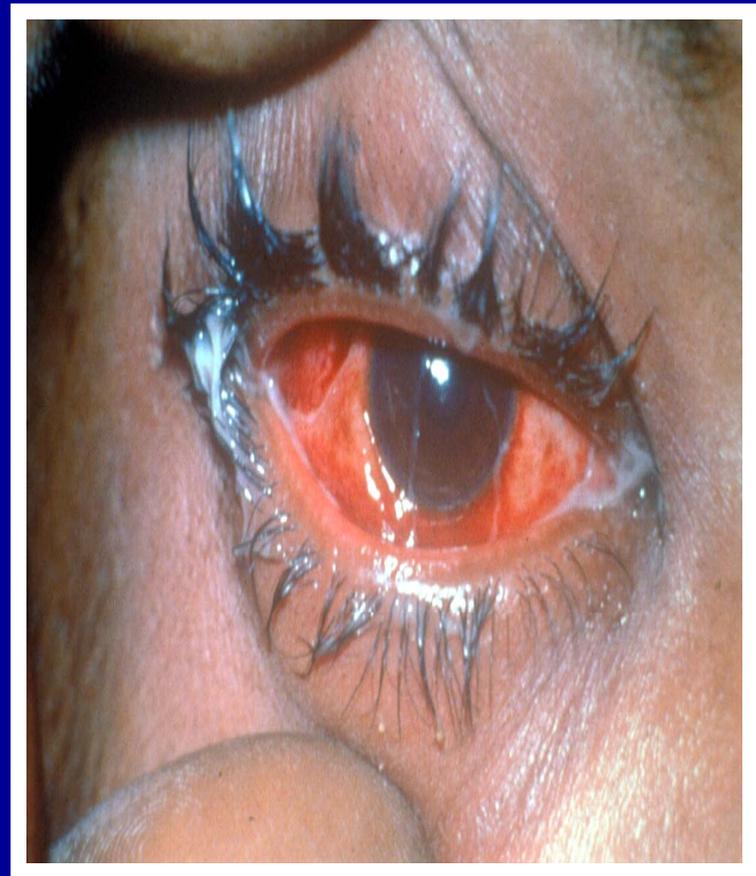
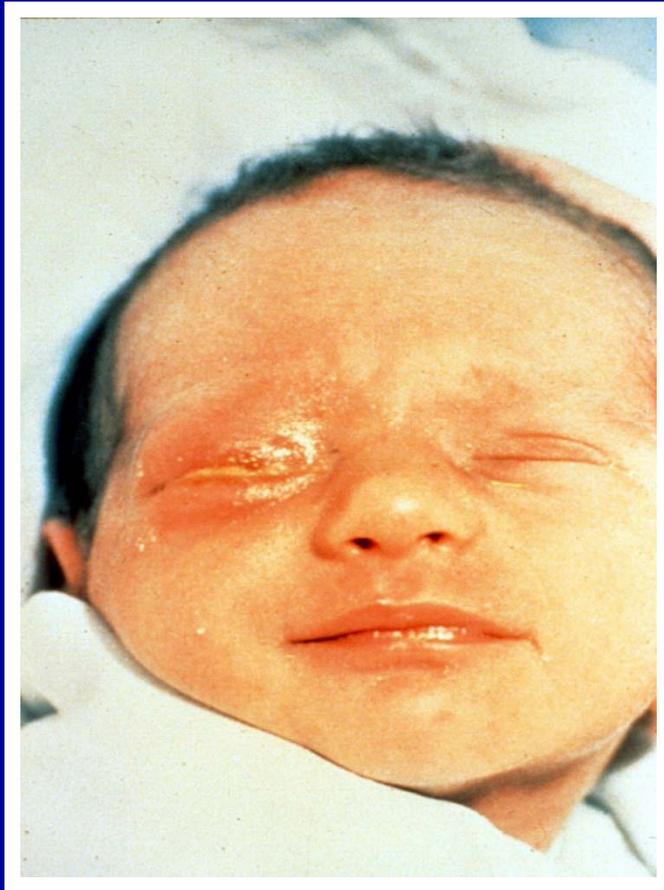
Tubo-ovarian abscess

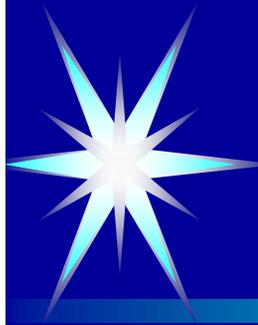


Peri-hepatitis/Fitz-Hugh-Curtis Syn.

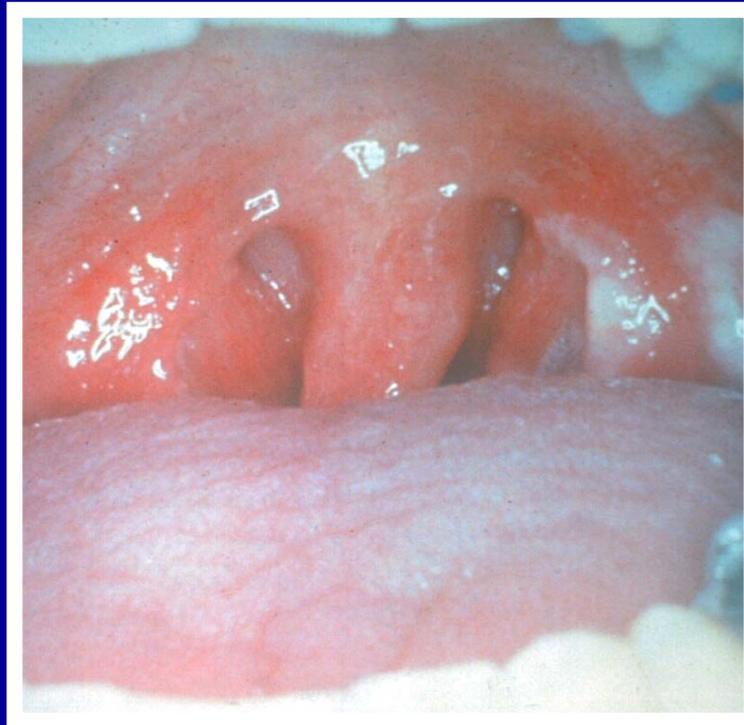


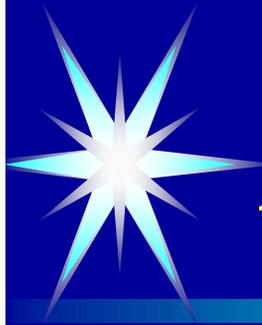
GONOCOCCAL CONJUNCTIVITIS





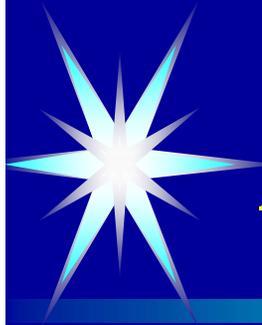
GONOCOCCAL PHARYNGITIS





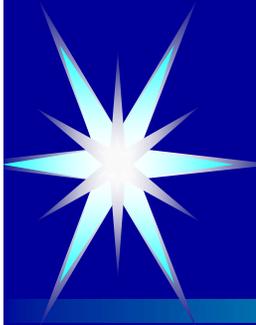
Disseminated Gonococcal Infection

- **Most common cause of acute infectious arthritis among sexually active adults**
- **Migratory arthralgias, frank arthritis in one or two joints**
- **Skin lesions**
 - **Distal extremity location**
 - **Pustules on an erythematous base (Usually < 20)**
- **Fever**
- **Tenosynovitis**
- **Genital symptoms usually absent**



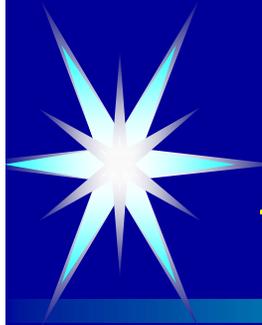
Disseminated Gonococcal Infection

- **0.5-3% of genital inf./Recurrent Ds. – Complement Def.**
- **Female:Male Ratio - 4:1**
- **Associated with menstruation and pregnancy in women**
- **Remember to culture the throat, cervix/urethra, and rectum in suspected DGI (Joints and blood rarely pos.)**
- **Tx. - Ceftriazone 1 gm IM or IV q d (plus CT tx.) until clinical improvement – Finish 7 day course with Cefixime or Cefpodoxime**



DISSEMINATED GC (DGI)





PID – Pelvic Inflammatory Ds.

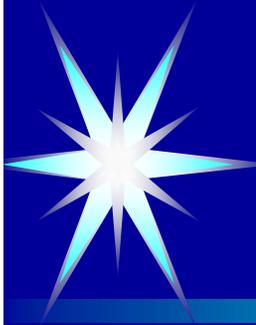
➤ **Etiology**

- *C. trachomatis*
- *N. gonorrhoeae*
- *Gardnerella vaginalis*
- **Other facultative aerobes and anaerobes**

➤ **Diagnosis**

➤ **Minimum Criteria**

- **Lower abdominal pain**
 - **Adnexal tenderness**
 - **Cervical motion tenderness**
- **Other Criteria – cervical or vaginal discharge, T > 38.3°C, leukocytosis, ↑ ESR, U/S-inflammatory mass**



PID – 2006 STD Treatment Guidelines

➤ Criteria for Hospitalization

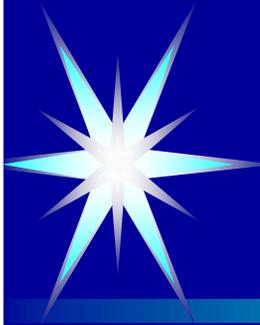
- Can't rule out surg. emergency, unable to tolerate oral meds 2° N/V, pregnancy, tubo-ovarian abscess**

➤ Parenteral Regimen

- Cefotetan 2 gm IV q 12 hours or Cefoxitin 2 gm IV q 6 hours plus Doxycycline 100 mg IV q 12 hours**
- Discontinue 24 hours after clinical improvement then complete 14 day course with doxycycline**

➤ Oral Regimen – Both with or without metronidazole

- A - Ceftriaxone 250 mg IM single dose or Cefoxitin 2 gm IM and Probenecid 1 gm po plus Doxy x 14d**
- B – Other 3rd Gen. Cephalosporin plus Doxy x 14d**
- Both plus or minus metronidazole**



VAGINITIS

➤ Etiology

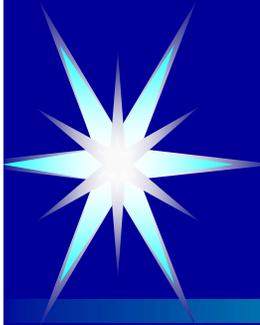
- Bacterial vaginosis
- Trichomonas
- Vulvovaginal candidiasis

➤ Diagnosis

- BV – pH >4.5, +Whiff test on KOH, Clue cells on wet prep
- Trichomonas – Strawberry cervix, organism seen on wet prep
- Vaginal Candidiasis – hyphae and pseudohyphae on KOH

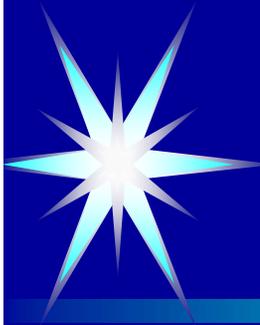
➤ Treatment

- BV – Metro. 500mg bid x 7 d, Tinidazole, Metrogel, Clinda
- Trichomonas – Metro. 2gm po single dose
- Candida – OTC azole creams, Flucon. 150 mg po single dose



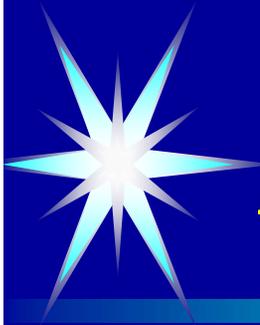
WHAT IS BACTERIAL VAGINOSIS?

- **Most prevalent cause of vaginal symptoms in women of childbearing age**
- **Characterized by:**
 - **Increased malodorous discharge**
 - **Decrease or absence of *Lactobacillus sp.* (*L. crispatus* and *L. jensenii* most common)**
 - **Overgrowth of *Gardnerella vaginalis*, *Mycoplasma sp.* and other anaerobic organisms**
 - **Altered pattern of organic acids from these bacteria (e.g., putrescine, cadaverine, etc.) producing odor**
- **Lack of inflammation – vaginosis (not vaginitis)**



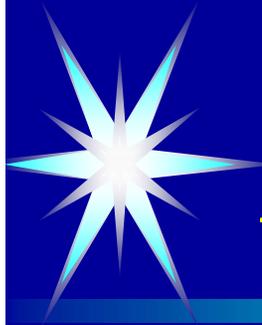
WHAT'S IN A NAME?

- **Leukorrhea**
- **Non-specific vaginitis**
- ***Haemophilus vaginalis* vaginitis**
- ***Gardnerella vaginalis***
- **Anaerobic vaginosis (but not just anaerobes)**
- **Bacterial vaginosis (since inflammation is not a feature of BV, the term vaginosis has replaced vaginitis)**



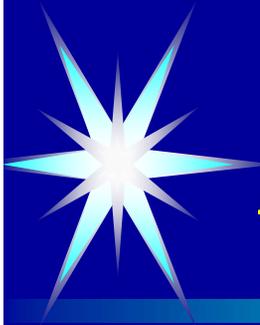
EPIDEMIOLOGY

- **Prevalence depends upon population studied**
- **Student Health Clinics – 4-10%**
- **Family Planning Clinics – 17-19%**
- **Pregnant women – 16-29%**
- **Infertility Clinics – 30%**
- **STD Clinics – 24-40%**



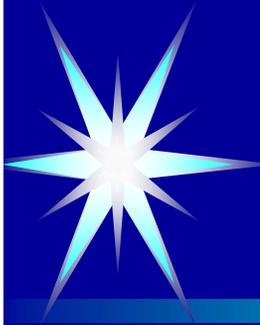
EPIDEMIOLOGY

- **Prevalence also depends on ethnicity**
- **Large U.S. Study of pregnant women**
- **13,747 at 23-26 weeks gestation**
- **16.3% of women had BV**
- **Asians – 6.1%**
- **Caucasians – 8.8%**
- **Hispanics – 15.9%**
- **African American – 22.7%**
- **51% of 4,718 women in Ugandan study**



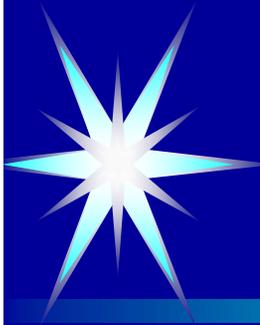
EPIDEMIOLOGY

- **BV is common in most populations**
- **More common in STD clinics than in family planning or prenatal clinics**
- **More common in women with discharge**
- **Related to ethnicity for unknown reasons**
- **Especially common in Sub-Saharan Africa**



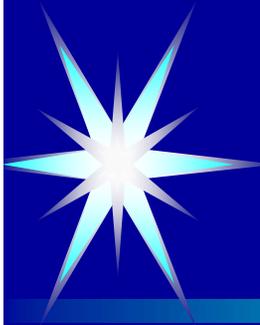
WHAT ABOUT SEXUAL TRANSMISSION?

- **Conflicting and controversial area**
- **Women who use condoms have decreased prevalence of BV**
- **Yet multiple partner treatment trials have failed to demonstrate benefit to women with BV**
- **Evidence of sexual transmission of BV in women who have sex with women**



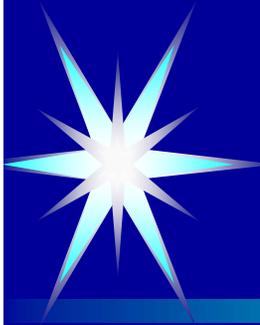
WHAT ABOUT SEXUAL TRANSMISSION?

- **Females with no sexual exposure have significantly lower prevalence of BV**
- **Some studies have found association with younger age of sexual debut**
- **In college women, Amsel demonstrated that 0 of 18 virgins versus 69 of 293 (24%) sexually experienced women had BV**



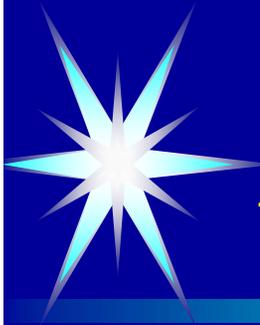
WHAT ABOUT SEXUAL TRANSMISSION?

- **Association with number of partners also seen**
- **Women with new or multiple sex partners also have higher prevalence of BV**
- **Evidence of NGU in male partners of patients with BV**



WHAT ABOUT SEXUAL TRANSMISSION?

- **Sexual transmission of *Gardnerella vaginalis* has been demonstrated**
 - **Gardner and Pheifer detected *G. vaginalis* in the urethras of 79 and 86% of male sex partners of women with BV but not in controls**
 - **Piot et al. developed a typing system and demonstrated that *Gardnerella* isolates in women with BV and from the urethras of their partners were the same**
 - **Ison and Easmon recovered *G. vaginalis* and other anaerobes at 10^3 to 10^7 org/ml from semen in 16% of men attending a subfertility clinic**

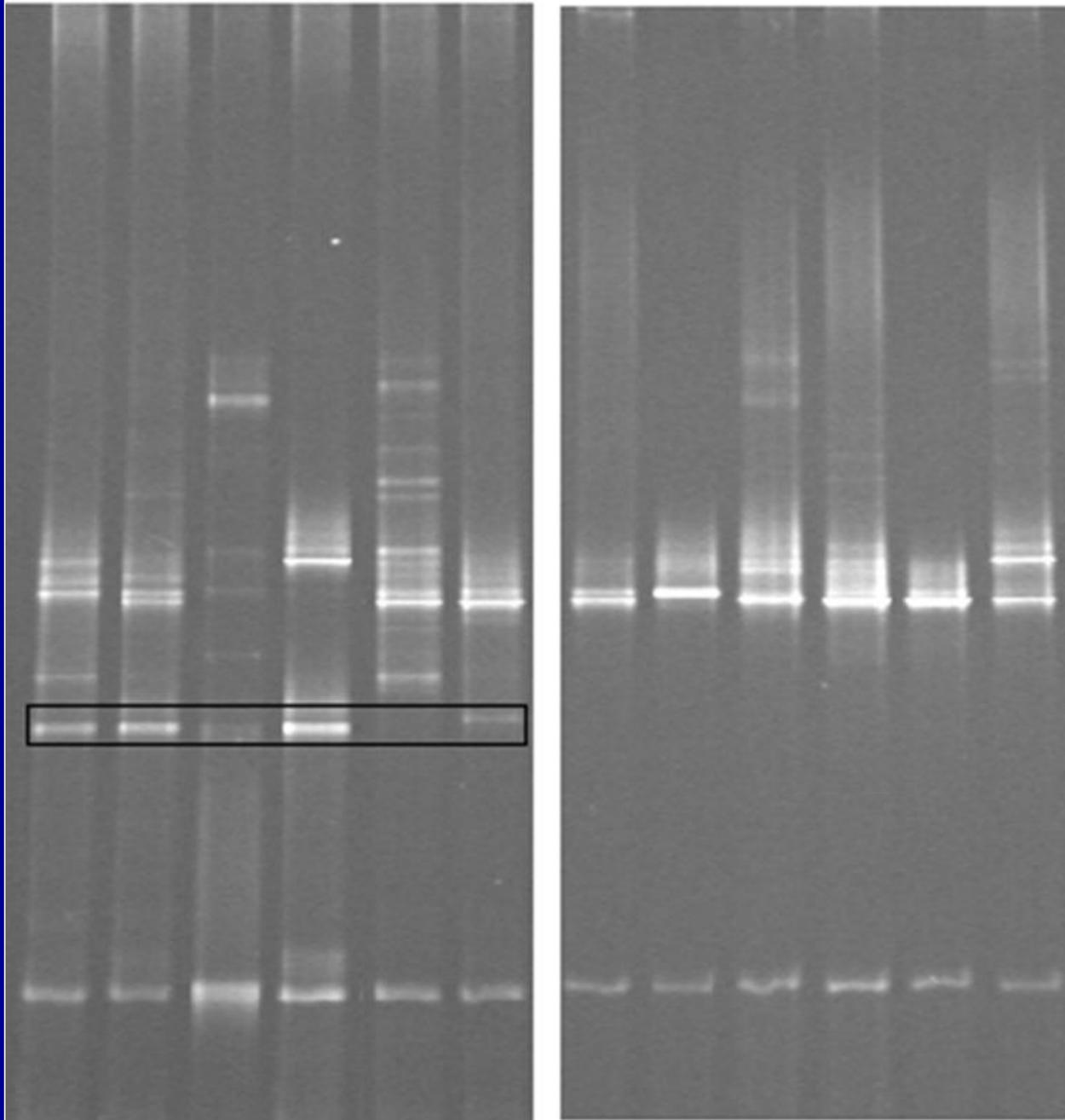


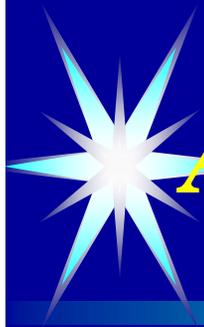
PREDISPOSING/RISK FACTORS

- **Douching**
- **IUD as contraceptive method**
- **Younger age**
- **New sex partner**
- **Multiple sex partners**

BV-POSITIVE

NORMAL

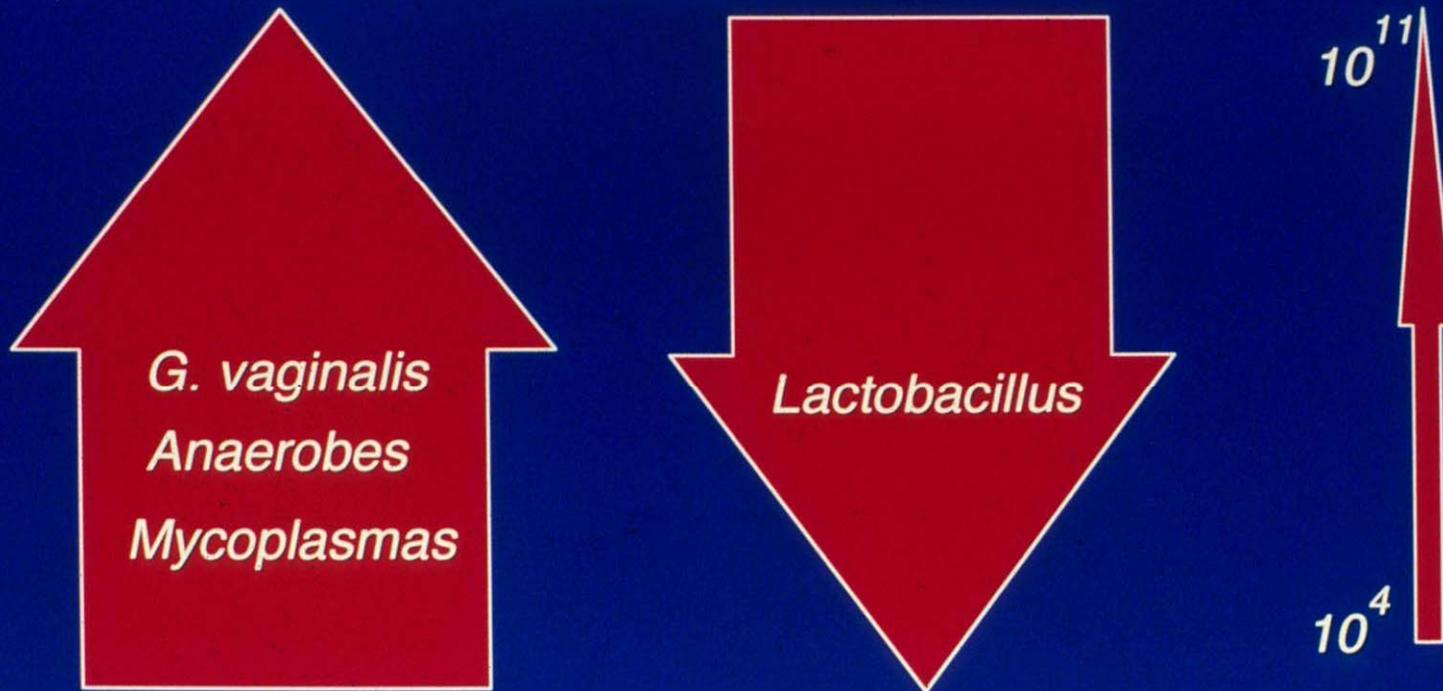




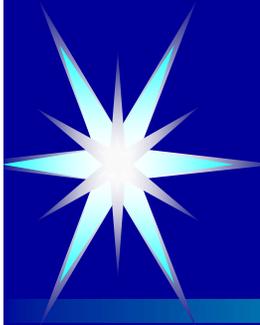
Atopobium vaginae

- **Small Gram positive cocco-bacillus**
- **Produces lactic acid**
- **Strict anaerobe**
- **Genus first described about 10 years ago as a member of human oral flora**
- **Only 2 isolates of *A. vaginae* reported in the literature prior to our report**
- **The 4 existing cultured strains are highly resistant to metronidazole.**

MICROBIAL SHIFTS OCCURRING IN BV

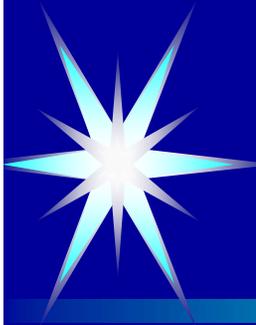


*BV is characterized by 100-1000 fold increases in pathogenic bacteria
Lactobacilli concentrations decrease substantially*



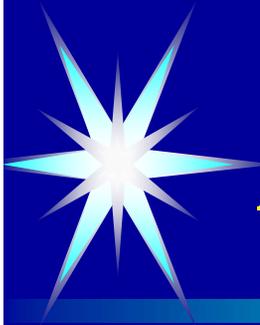
CLINICAL MANIFESTATIONS

- **“Fishy-smelling” discharge – More noticeable after intercourse (Addition of semen with alkaline pH is similar to addition of KOH)**
- **Discharge is gray or off-white, thin, homogeneous, and adherent to vaginal wall**
- **No erythema or inflammation**
- **Some patients report vaginal itching**
- **Cervix usually normal**



BACTERIAL VAGINOSIS





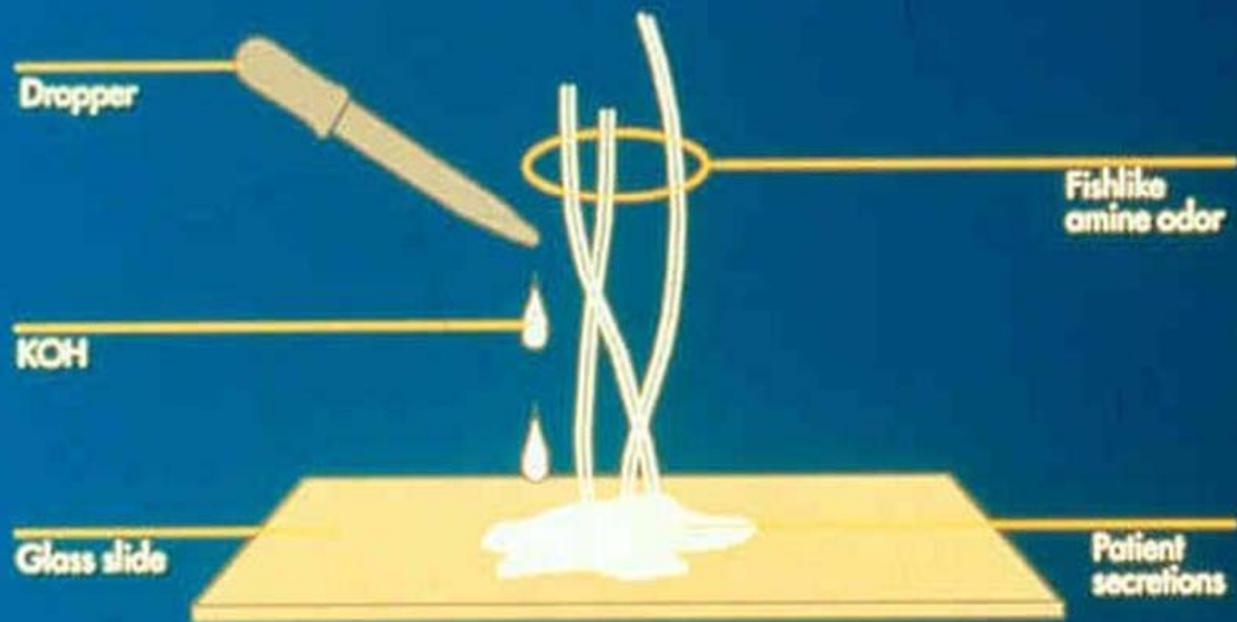
DIAGNOSIS

- **Amsel's Criteria (3 of 4 criteria for dx.)**
 - **Adherent, homogeneous gray-white discharge**
 - **Positive amine or whiff test with addition of 10% KOH**
 - **Elevated vaginal pH of >4.5**
 - **Presence of “clue cells” – Squamous cells with adherent bacteria (>20% of cells on wet mount)**

pH PAPER



AMINE TEST



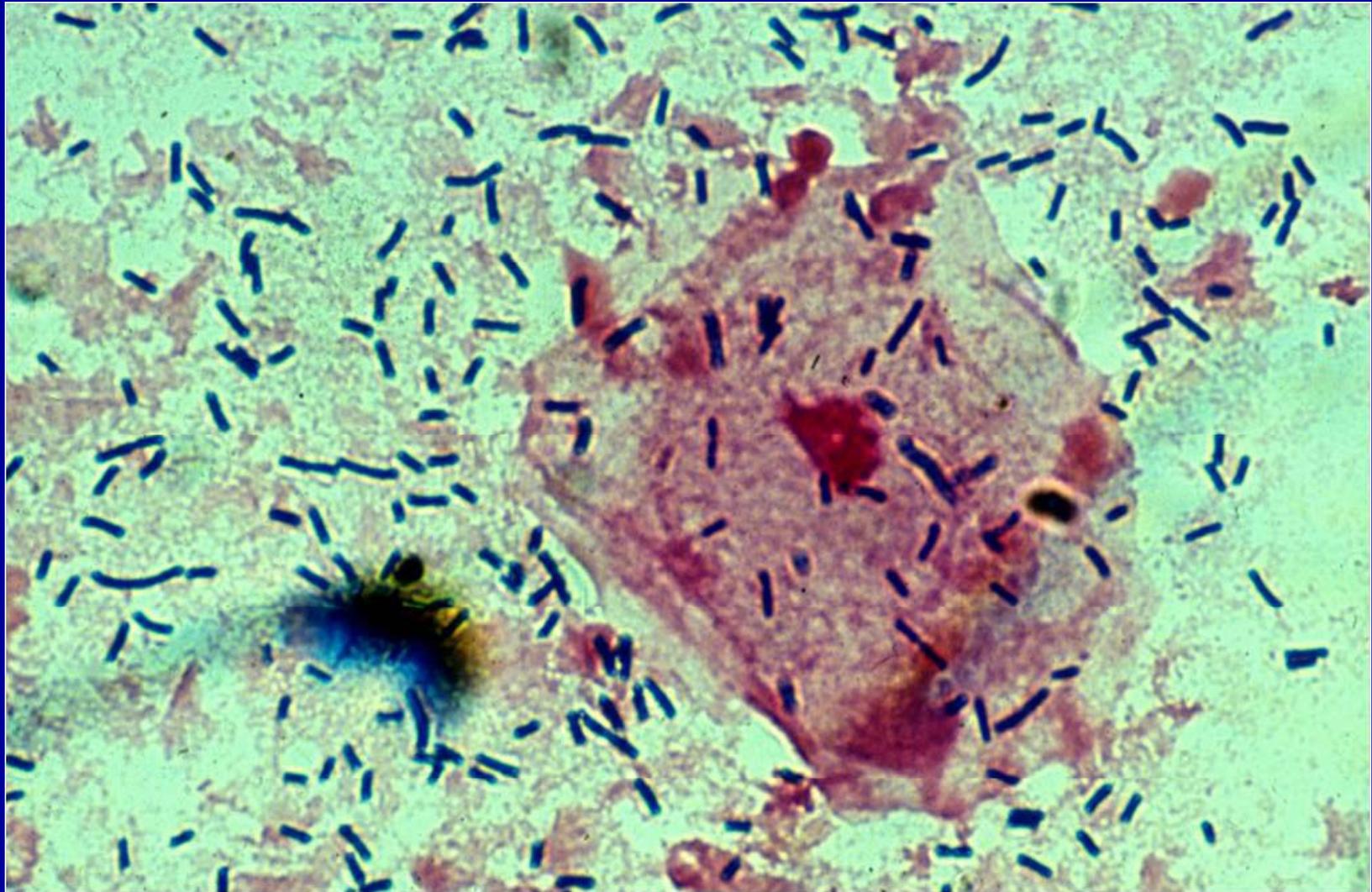
Whiff Test for “Fishy” Odor

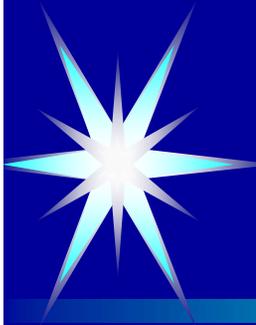


NORMAL VAGINAL GRAM STAIN

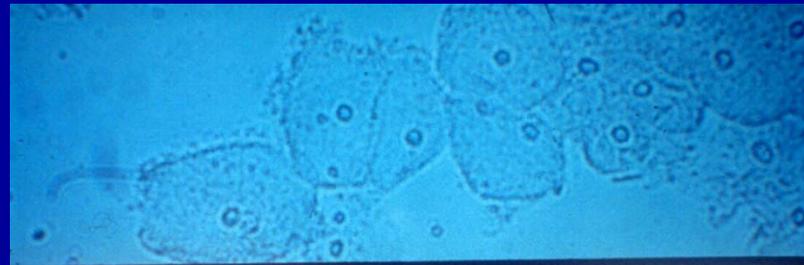


Gram Stain of Normal Vaginal Secretions





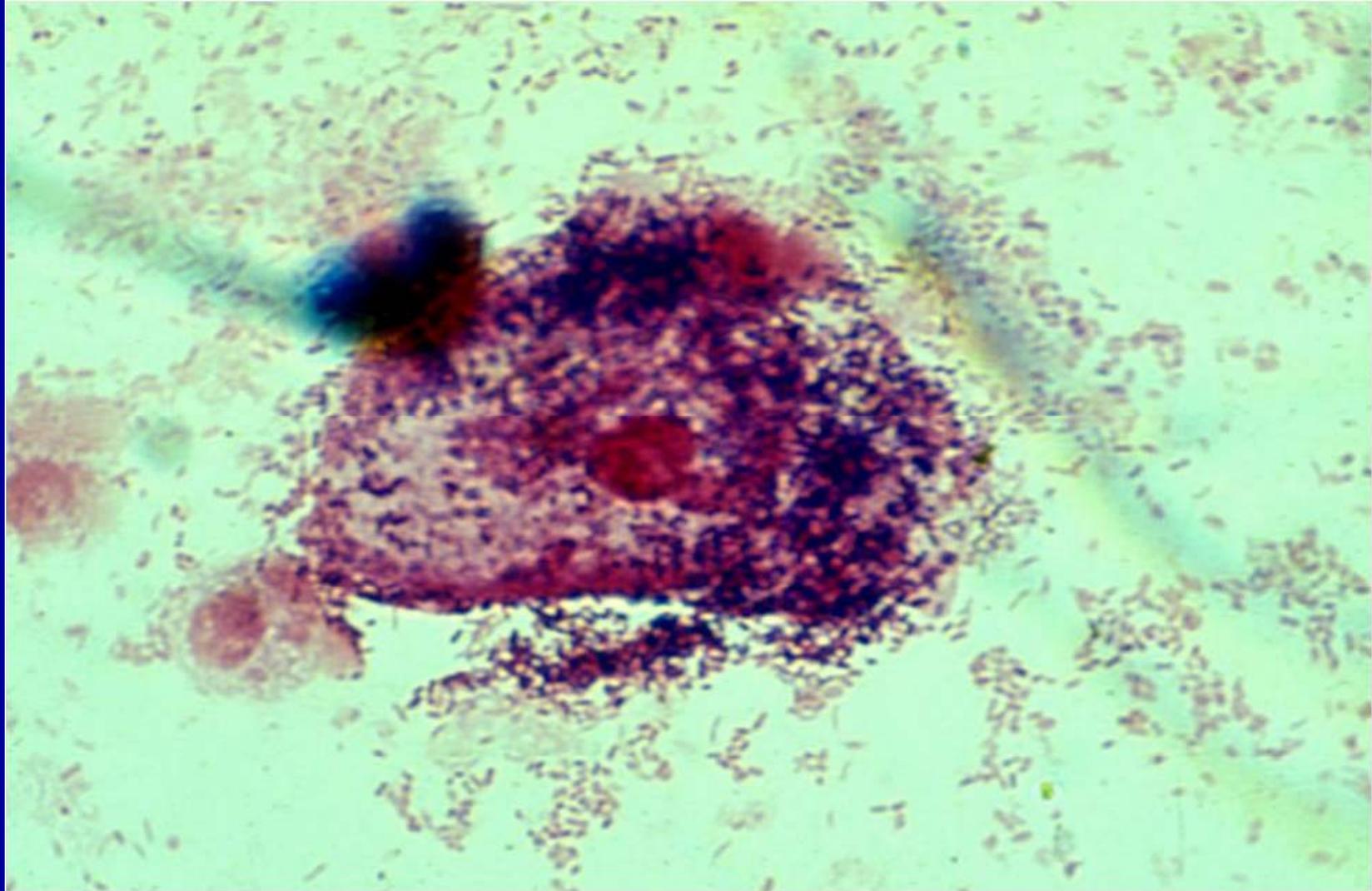
CLUE CELLS

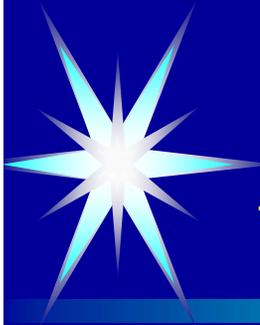


CLUE CELL WET MOUNT



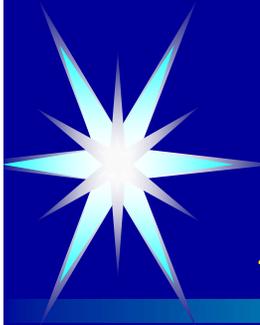
*Gram Stain of Vaginal Secretions
Showing Bacterial Vaginosis*





BV AND HIV ASSOCIATION

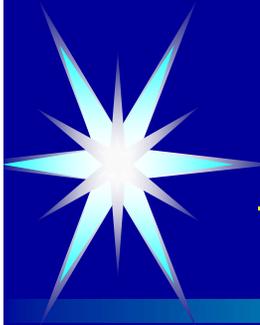
- **Presence of BV or absence of lactobacilli associated with heterosexual transmission of HIV**
- **2-fold increased prevalence of HIV in Thai and Ugandan women with BV**
- **Study of African pregnant and postnatal women in Malawi found that women with BV were more likely to seroconvert to HIV**
- **These data raise the question of whether BV should be treated more aggressively (In the past – asymptomatic BV was not treated)**



TREATMENT OF BV 2006 CDC GUIDELINES

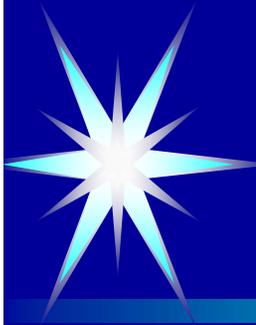
➤ Treatment

- Metronidazole 500 mg po bid for 7 d**
- Metro. 0.75% gel qd or bid for 5 d**
- Clinda 2% Cr., 5 gm qd for 7 d**
- Clinda 300 mg po bid for 7d (Active against Lactobacillus - interferes with re-establishment of normal flora)**
- Partner tx. - No treatment required**
- Recently approved drug- Tinidazole 500 bid po x 5 days – 95% efficacy/ Vaginally once daily – 80% eff.**



RECURRENT BV

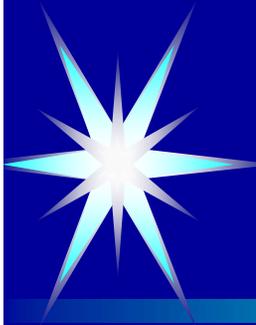
- **80-90% cure rates at 1 week**
- **15-30% recur within 3 months**
- **Single Dose versus 7 day course – 73% vs. 82%**
- **Higher recurrence rates for single dose tx.**



RECURRENT BV – COMBINED OR ALTERNATIVE TREATMENTS

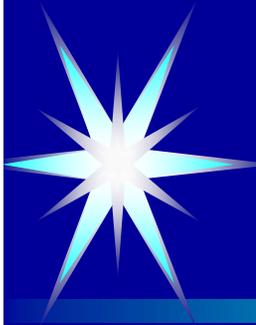
- **Replacement or Restoration of Lactobacilli (LB)(Bacteriotherapy)**
 - **Unfortunately lack of efficacy with few controlled trials**
 - **LB used needs to be able to adhere and produce H_2O_2**
 - **If given orally, LB needs to survive pass through GI tract and ascend from the perianal area into the vaginal area**

- **Lactobacilli used have not been vaginal strains**



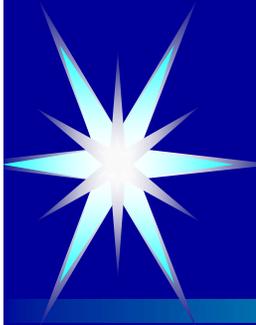
RECURRENT BV – COMBINED OR ALTERNATIVE TREATMENTS

- **Lactobacilli in yogurt strains do not bind to vaginal epithelial cells**
- **Only 1 of 14 women were cured after applying yogurt intravaginally twice daily for 7 days**
- **Little utility for therapies employing yogurt**



RECURRENT BV – COMBINED OR ALTERNATIVE TREATMENTS

- **Other types of capsules, powders, etc. in health food stores are also dairy derived**
- **In addition, 9 of 16 preparations were contaminated with other types of bacteria and 5 of 16 did not contain peroxide producing strains**
- **Placebo-controlled trial of purified *Lactobacillus* suppositories studied by Sharon Hillier.**
 - **~50% of women improved during therapy**
 - **Only 4 of 29 remained free of BV at 2nd visit**

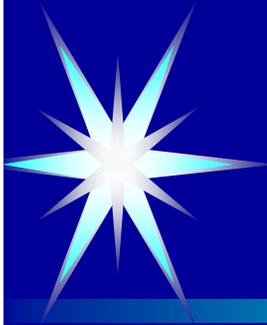


RECURRENT BV – COMBINED OR ALTERNATIVE TREATMENTS

- **Disinfectants**
 - Chlorhexidine – 79% effective but 50% recurred at one month
 - Povidone-iodine – bid for 2 wks – only 20 % efficacy

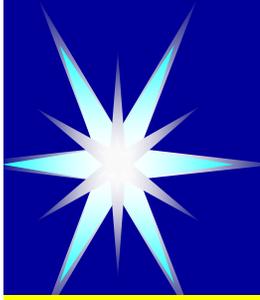
- **Acidifiers**
 - Lactic Acid suppository – 20% efficacy
 - Lactic acid gel x 7 days – 77% - 7 day follow-up – not repeated
 - 5% acetic acid tampon – 38% efficacy

- **Suppressive therapy – Currently being studied (Sobel)**
 - Metronidazole or Tinidazole twice a week
 - Results pending



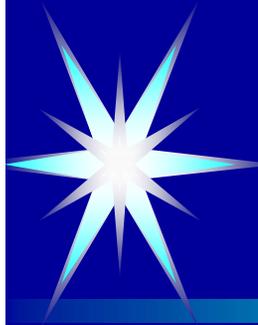
WHAT CAN WE OFFER PATIENTS WITH RECURRENT BV?

- **Clearly explain bacterial vaginosis**
- **Carefully go through personal hygiene practices to remove douching, etc. that may disrupt normal flora**
- **Explain that course of therapy may relieve symptoms but it takes time for the bacterial imbalance normalize and recolonize with Lactobacilli**
- **Longer course of antibiotics or combination therapy for recurrences (2 weeks/ oral + vaginal therapy)**
- **???Suppressive and alternative combination therapy in the future**

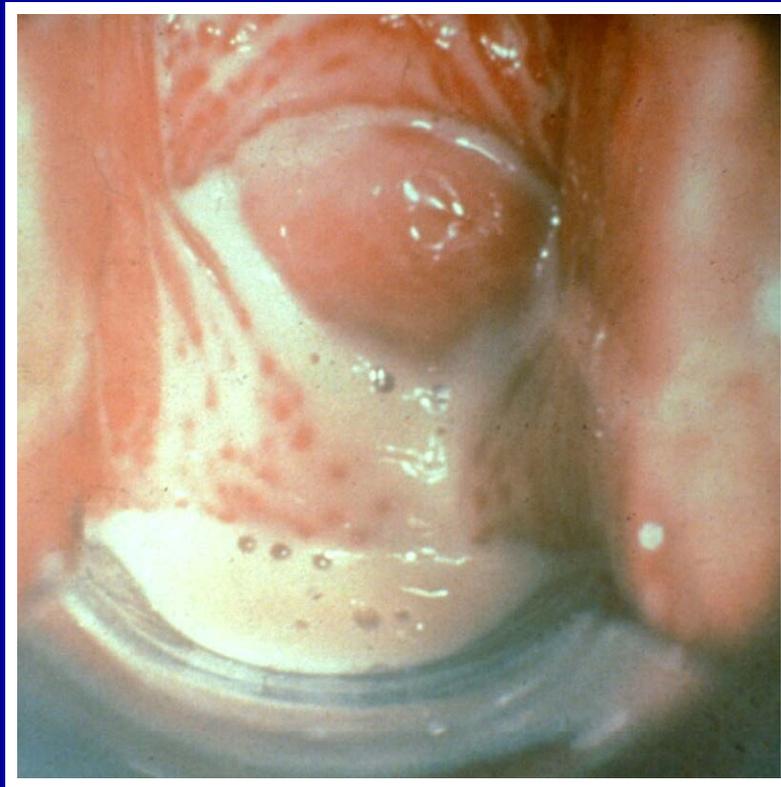


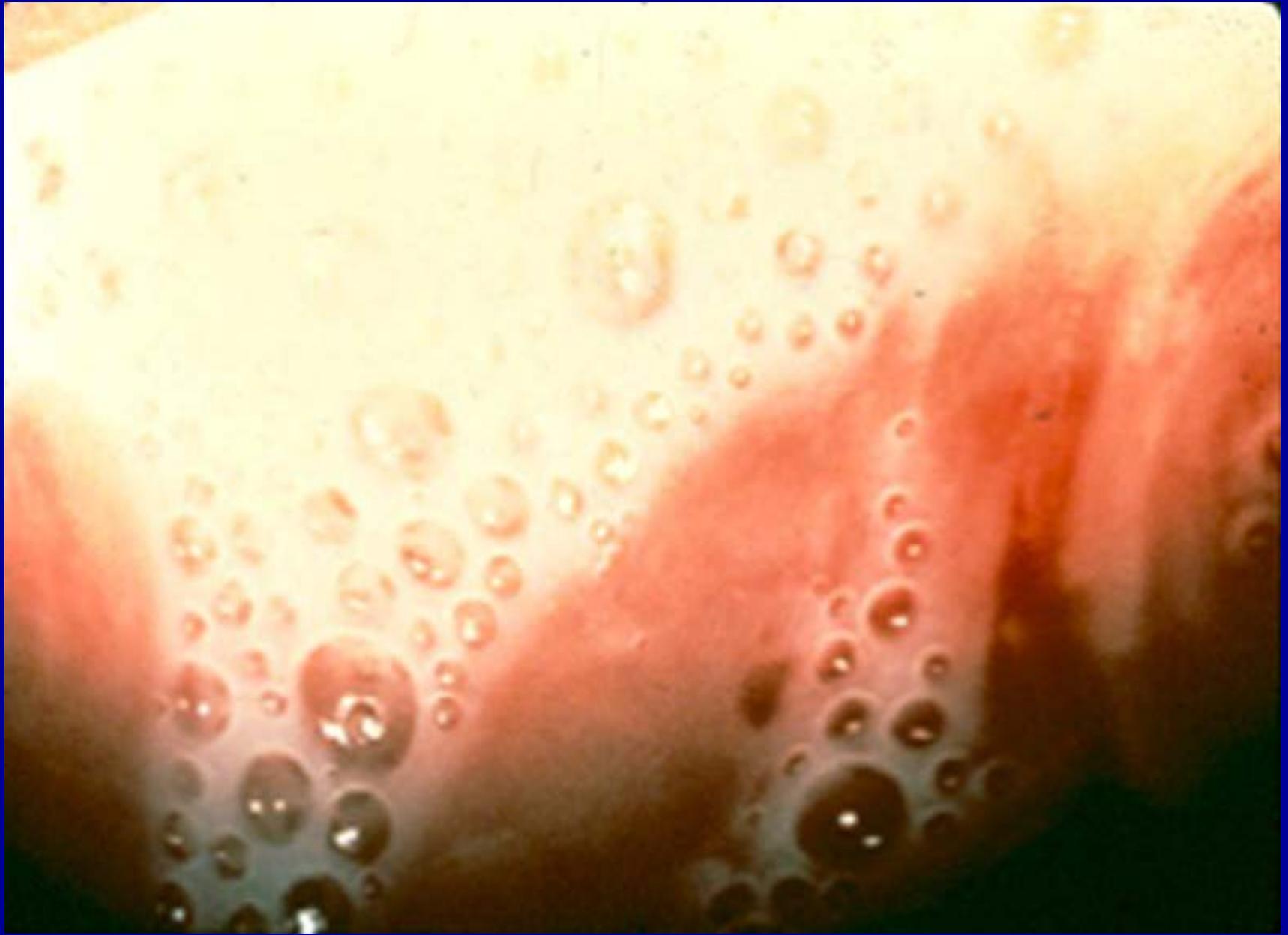
TRICHOMONIASIS

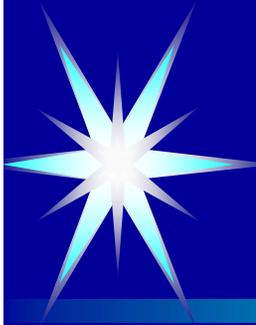
- **Sexually transmitted parasite**
- **Vaginal discharge, pruritis in females, but may be asymptomatic.**
- **Males usually asymptomatic, but can cause NGU**



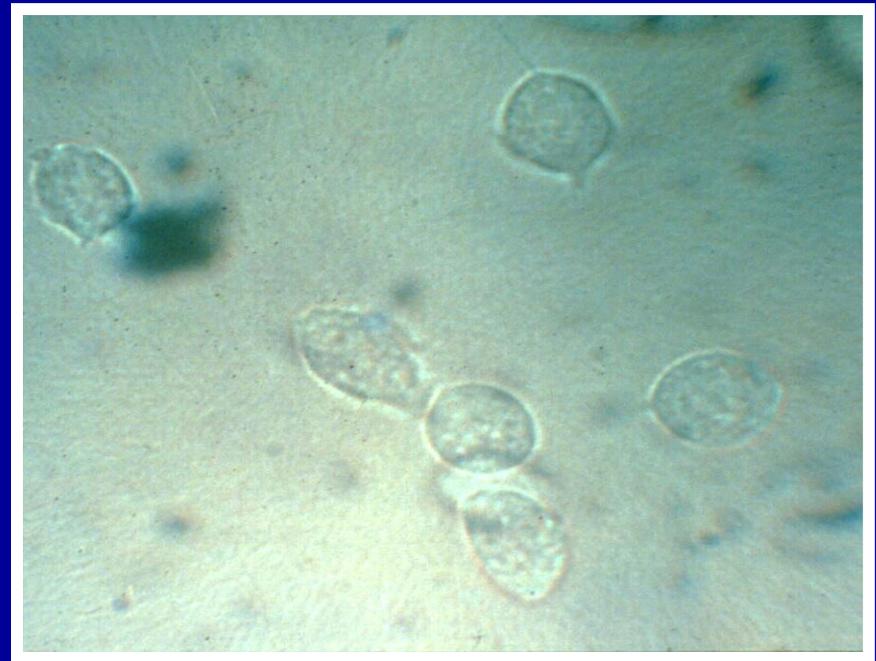
TRICHOMONAS VAGINITIS

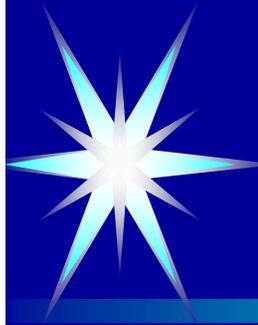




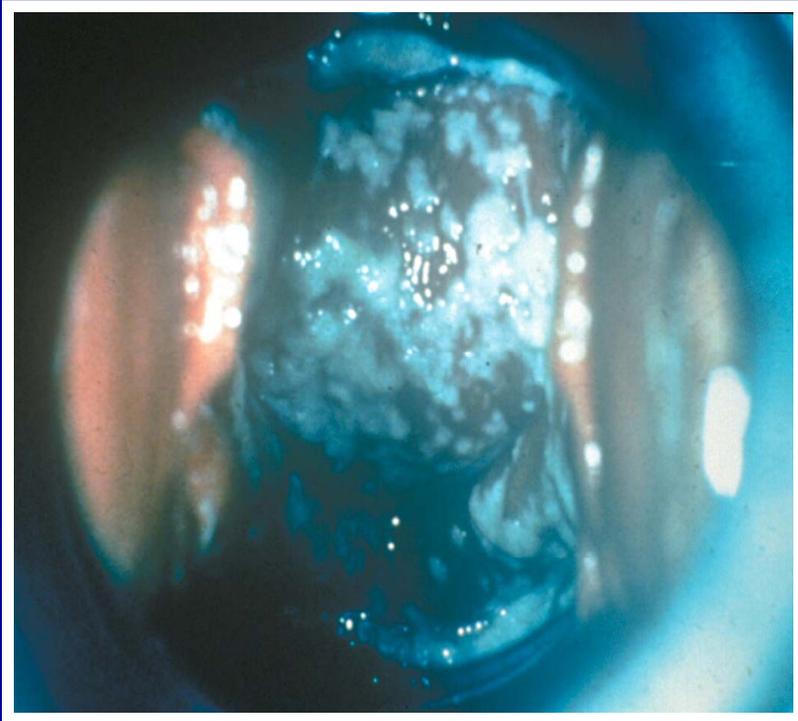


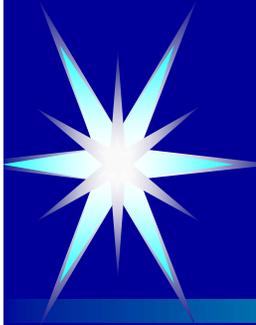
TRICHOMONAS VAGINALIS



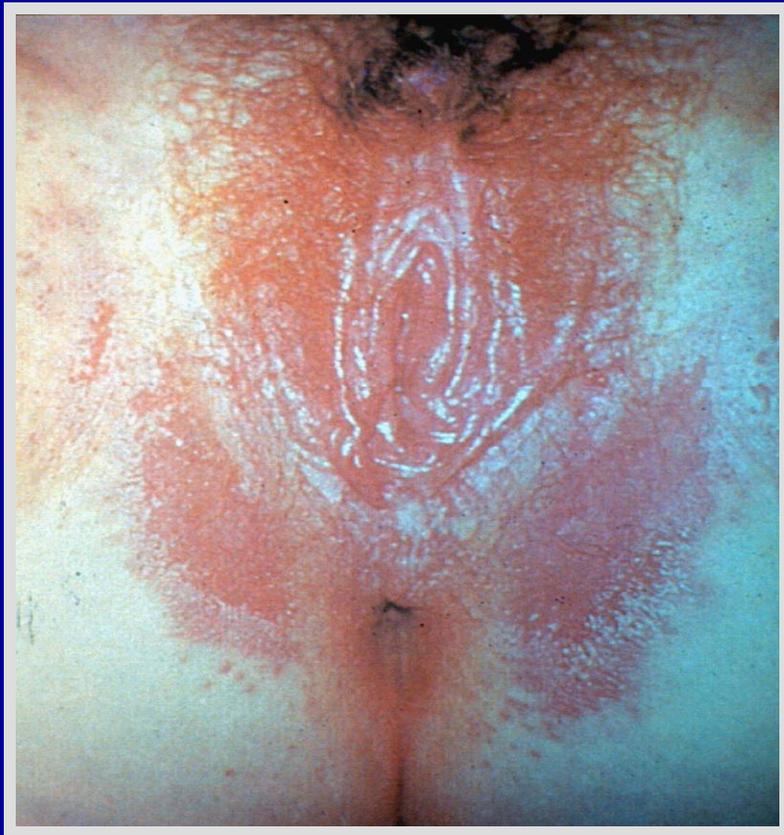


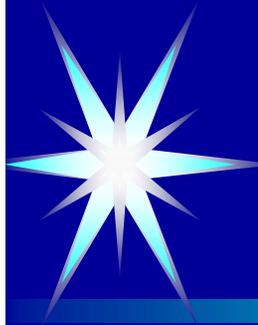
CANDIDA VAGINITIS





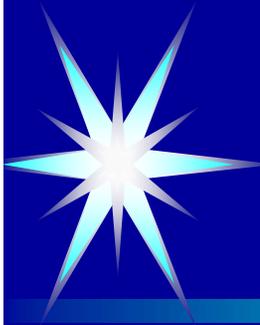
CANDIDA DERMATITIS





CANDIDA BALANITIS





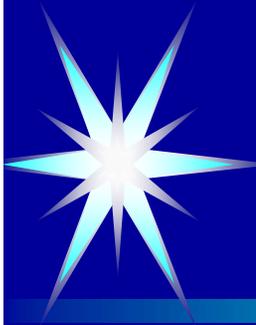
OTHER VIRAL STDs

➤ GENITAL WARTS

- Human Papilloma Virus**
- Incubation period if 4-8 weeks**
- Involve any portion of the genitalia**
- Cervical lesions**
- Ulceration, secondary bacterial infection, and cervical cancer**

➤ MOLLUSCUM

- Seen in children but can also be sexually transmitted**
- Caused by a poxvirus**
- Lesions appear as smooth papules usually 2-5 mm in size with a central umbilication**



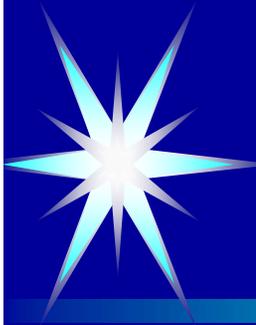
OTHER VIRAL STDs



Genital Warts
[Human Papilloma Virus (HPV)]



Molluscum contagiosum

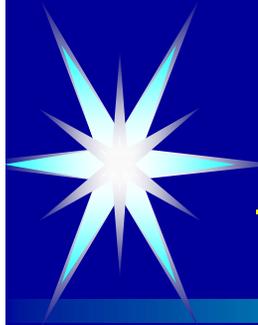


OTHER VIRAL STDs

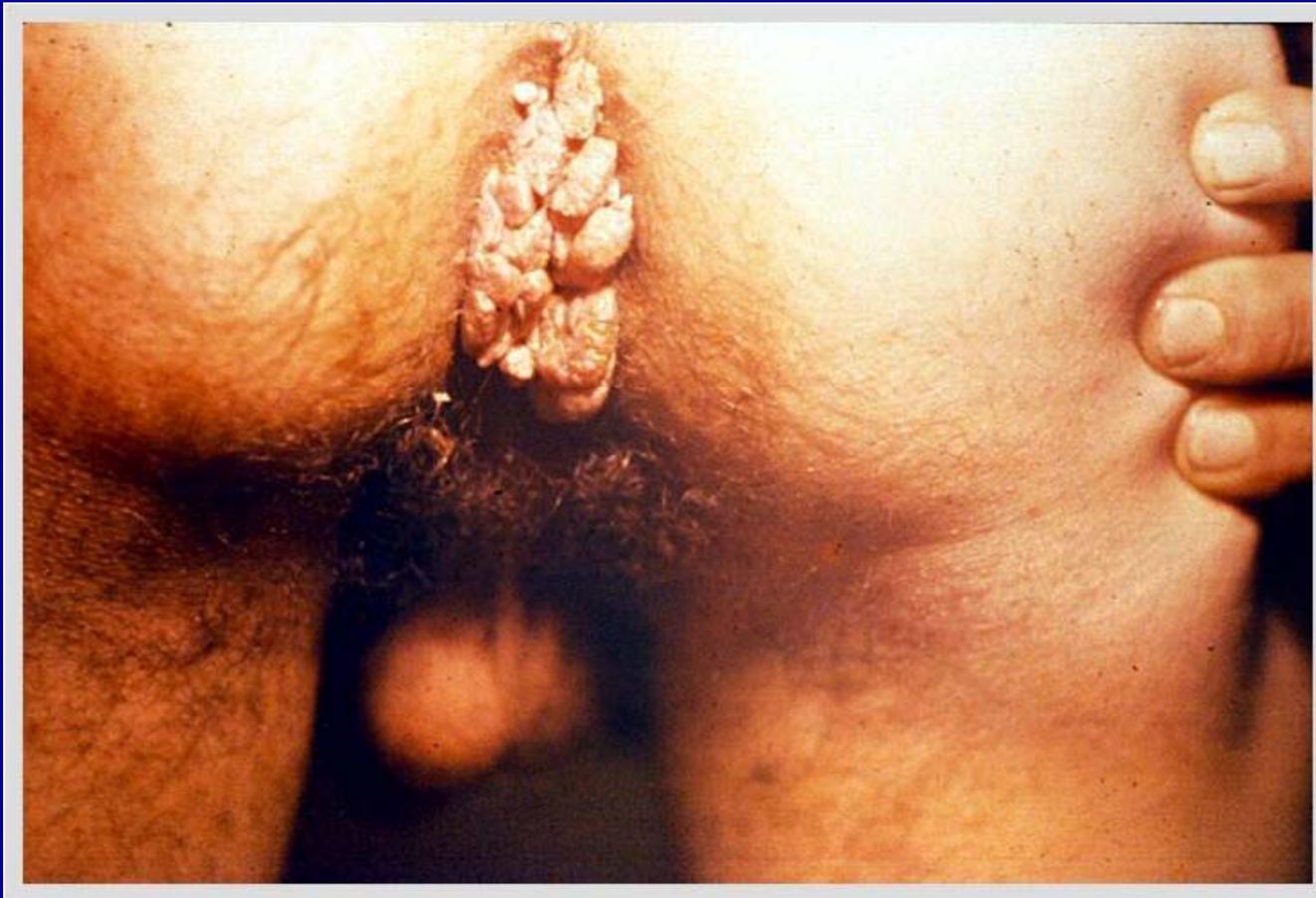


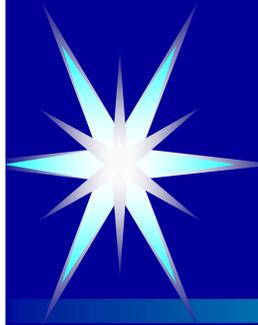
Genital Warts (HPV)

Molluscum contagiosum



ANAL HPV



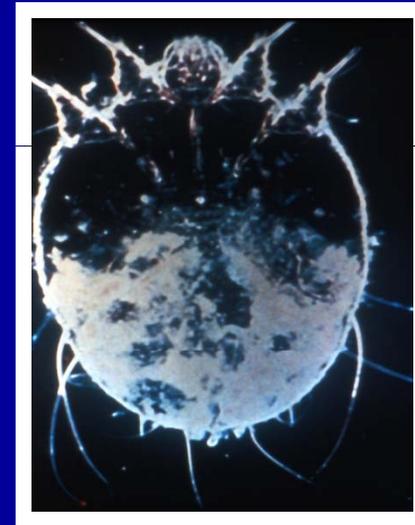


Pubic Lice and Scabies



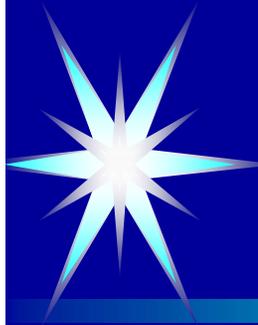
Phthirus pubis (crabs)

- Tx. – 1. Permethrin Cream 1%
Wash off after 10 min.
2. Lindane 1% for 4 min.**



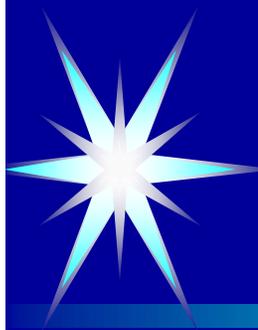
Sarcoptes scabiei

- Tx. – 1. Permethrin Cr. 5%
Wash off in 8-14 hrs.
2. Lindane 1% for 8 h**



ECTOPARASITES - SCABIES





***HIV + SCABIES =
NORWEGIAN SCABIES***

