STI Guidelines, October 2011 NY/NESCHA

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Prevalence/Impact of STD's

- The majority of STDs are reported in college age students
- Trichomonas and HPV alone account for an estimated 11 million new cases of STDs each year
- The 2010 CDC Guidelines are available at www.cdc.gov/std. They are frequently updated and accessible in a variety of formats
- Male latex condoms have shown to be effective in promoting the regression of HPV- related cervical dysplasia

HPV

- 30% prevalence in college-age, and 60% cumulative incidence within 4 years
- Subtypes 6& 11 cause 90% of all genital warts
- Subtypes 16&18 cause 70% of all cervical cancer
- Gardasil (6,11,16,18) approved for men and women ages 9-26
- Cervarix (16&18) approved for women only
- 85% of adolescents will clear the virus spontaneously within 3 years and have no long-term sequellae
- Start cervical paps at age 21, perform every two years
- Studies ongoing to investigate role of anal pap tests in MSM, no recommendation to screen yet

Chlamydia

- Chlamydia rates are rising, and is most common in African American women age 15-24
- All sexually active women under age 26 should be screened annually for chlamydia. Men and older women should be screened if they are at higher risk (MSM, new or multiple partners, inconsistent condom use)
- NAAT is the screening test of choice.
- Both partners should be treated simultaneously. Consider Expedited Partner Therapy
- All positive tests should be repeated in 3 months, no sooner than 3 weeks if a NAAT is used. 15-2-% of women are reinfected within 6 mo

Gonorrhea

- Gonorrhea rates are falling, except in the MSM population
- Routine screening in low risk populations is not recommended
- NAAT is the test of choice, be certain to test all sites of contact (urine, rectum, pharynx)
- Fluorquinolones should not be used to treat GC
- Ceftriaxone 250 mg IM WITH 1 g Azithromycin is the treatment of choice, even in the setting of a negative chlamydia
- Repeat testing at 3 months advised

NGU

- Male urethritis- always suspect STI !
- 30% of NGU recurs or persists after treatment. Consider Trich or M. Genitalium as causative organisms

Trichomonas

- Up to 50% of females with trich are asymptomatic
- Wet mount has 60% sensitivity for trich. Consider NAAT testing
- Tinidazole (2g po times 1) now approved for trich treatment

Bacterial Vaginosis

- Risk factors for bacterial vaginosis include multiple partners, unprotected sexual activity and lack of vaginal lactobacilli
- Twice weekly metronidazole cream, probiotics and Nuvaring can help prevent recurrences

Yeast Vaginitis

- Up to 20% of vaginal yeast infections may be unresponsive to azole treatment
- Treat with azole first, consider boric acid or nystatin tablets
- Chronic/recurrent yeast may be treated with weekly Diflucan for 3-6 mo.
- Consider fungal cx to confirm diagnosis

Syphilis

- Incidence rising sharply in MSM, especially young & African American men
- Asymptomatic incubation, then painless chancre (primary) which resolves, then secondary (rash, malaise, mucous plaques, condyloma lata) which resolves, then latent
- Treat empirically with Benzathine Penicillin 2.4 million units IM (Bicillin LA)
- Serologies can be negative during primary syphilis
- Test with both non-treponemal and treponemal test

HIV

- Incidence increasing in young MSM, especially black men
- 1 in 5 individuals infected are unaware of their infection
- Treatment is now highly effective
- Encourage testing in sexually active students, esp if MSM

Herpes

- HSV-1 causes herpes labialis, initial infection my present as gingivostomatitis
- HSV 1 & 2 cause genital herpes, in college students seems to be mostly HSV-1
- HSV-2 is more likely to recur and to shed when asymptomatic
- Initial and episodic treatment can alleviate symptoms, but only suppressive therapy reduces recurrences and decreases viral shedding
- Only screen asymptomatic partners in discordant couples

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We have NO actual or potential conflict of interest in relation to this educational activity or presentation.
We WILL be discussing off-label use of medications and devices

Impact of Sexually Transmitted Infections in the US

- More than 19 million STD cases in US annually

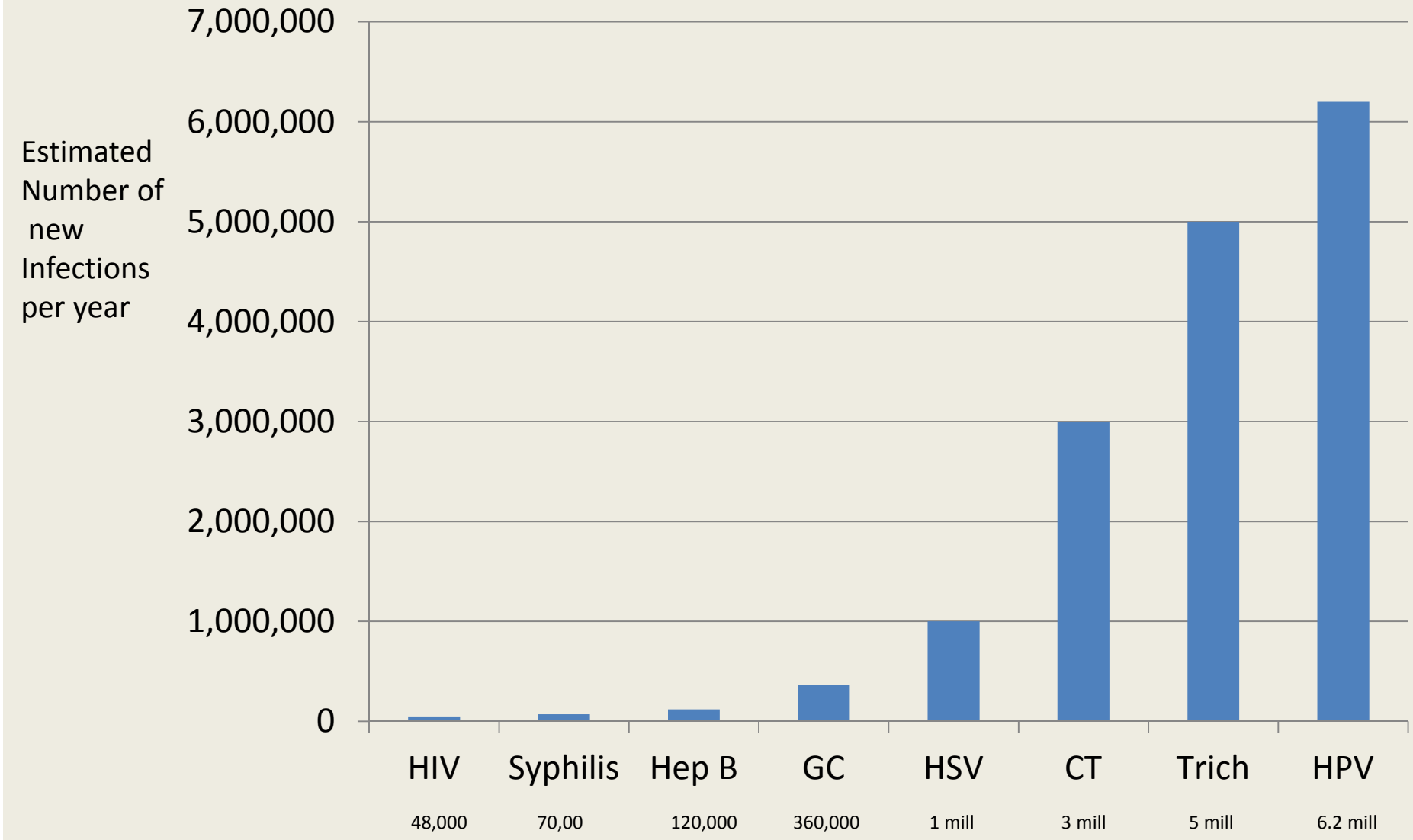
  - CT and GC most reported infections

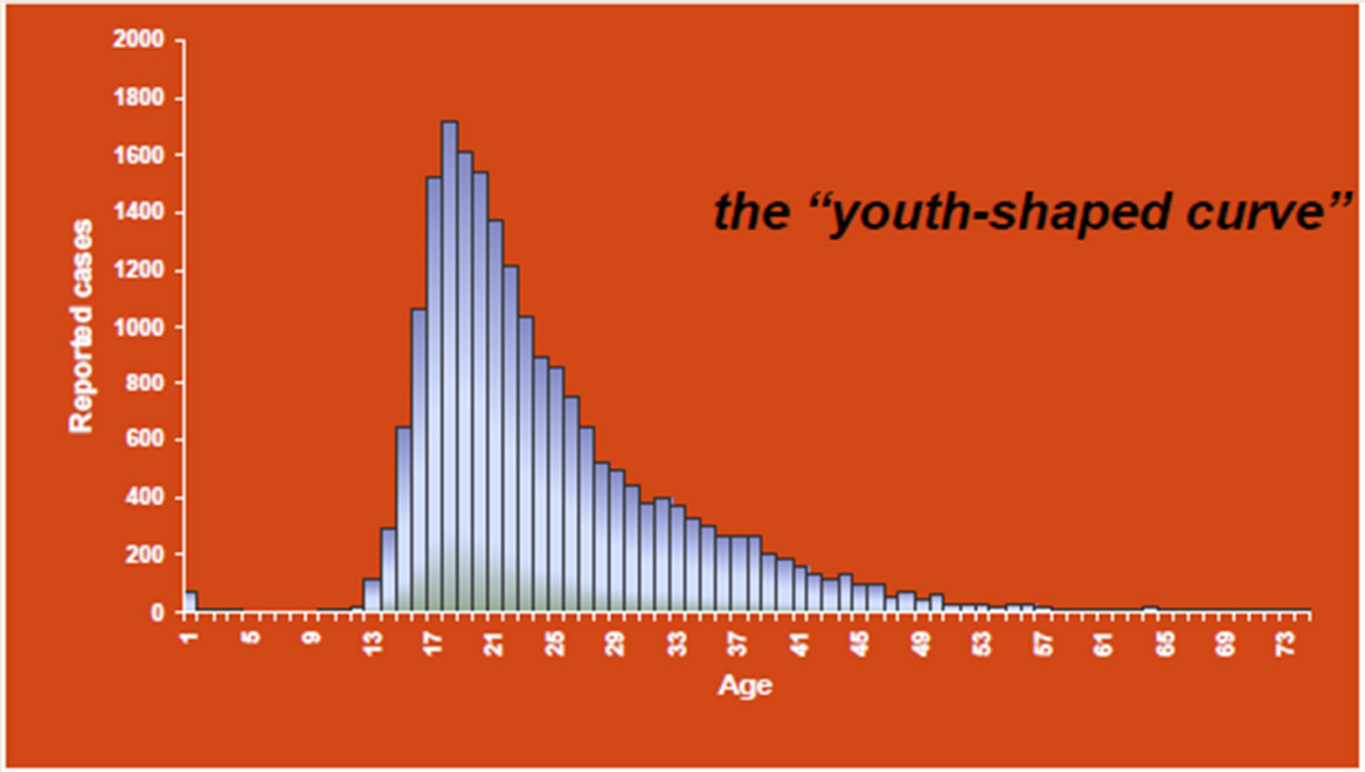
- Health consequences of untreated STDs

  - Female reproductive health
  - Untreated CT or GC can lead to PID
  - Leading infectious cause of infertility
  - Neonatal HIV, HSV, congenital syphilis

- Health care cost

  - $16.4 billion (2009)


Estimated Number of new Infections per year
7,000,000
6,000,000
5,000,000
4,000,000
3,000,000
2,000,000
1,000,000
0
HIV
Syphilis
Hep B
GC
HSV
CT
Trich
HPV
48,000
70,00
120,000
360,000
1 mill
3 mill
5 mill
6.2 mill



ACHA National College Health Assessment 2010:

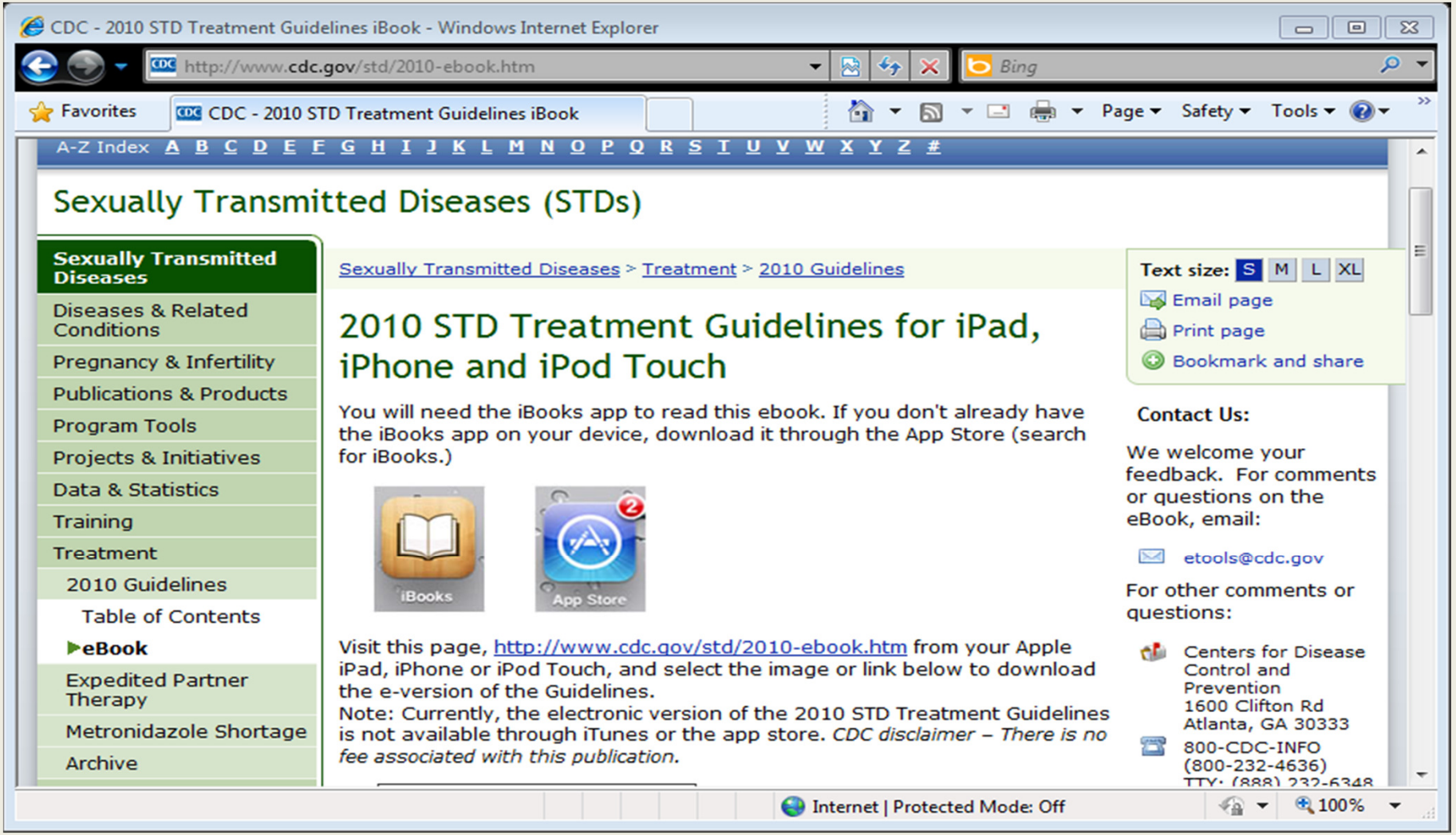
- 65.8 % of college students have had oral, vaginal or anal intercourse within the past 12 months
- 11.6 % of males have had 4 or more partners
- 40 % of sexually active males report not using a condom with vaginal intercourse within the last 30 days

- ✓ Evidence based recommendations for the prevention, screening, diagnosis and treatment of sexually transmitted infections as well as non-STD associated genital infections and guidelines for sexual assault victims

- ✓ Living document that is continuously updated online :

www.cdc.gov/std

Yea, there's an App for that…



“An ounce of prevention is worth a pound of cure. “

B. Franklin

The “5 P’s” of Prevention Counseling

an approach to obtaining sexual histories

- Partners
  - Do you have sex with men, women, or both ?
  - In the past 2 months, how many partners have you had sex with ?
  - In the past 12 months, how many partners have you had sex with ?
  - Is it possible that any of your sex partners in the past 12 months had sex with someone else while they were still in a sexual relationship with you ?
- Prevention of Pregnancy
- Protection from STDs
- Practices
- Past History of STDs

- Pre-exposure vaccination- HAV, HBV, HPV
  - Cervarix or Gardasil for females age 9-26
    subtypes 6, 11, 16 ,18 = Gardasil
    subtypes 16,18= Cervarix
  - Gardasil approved for males age 9-26 (types 6,11)

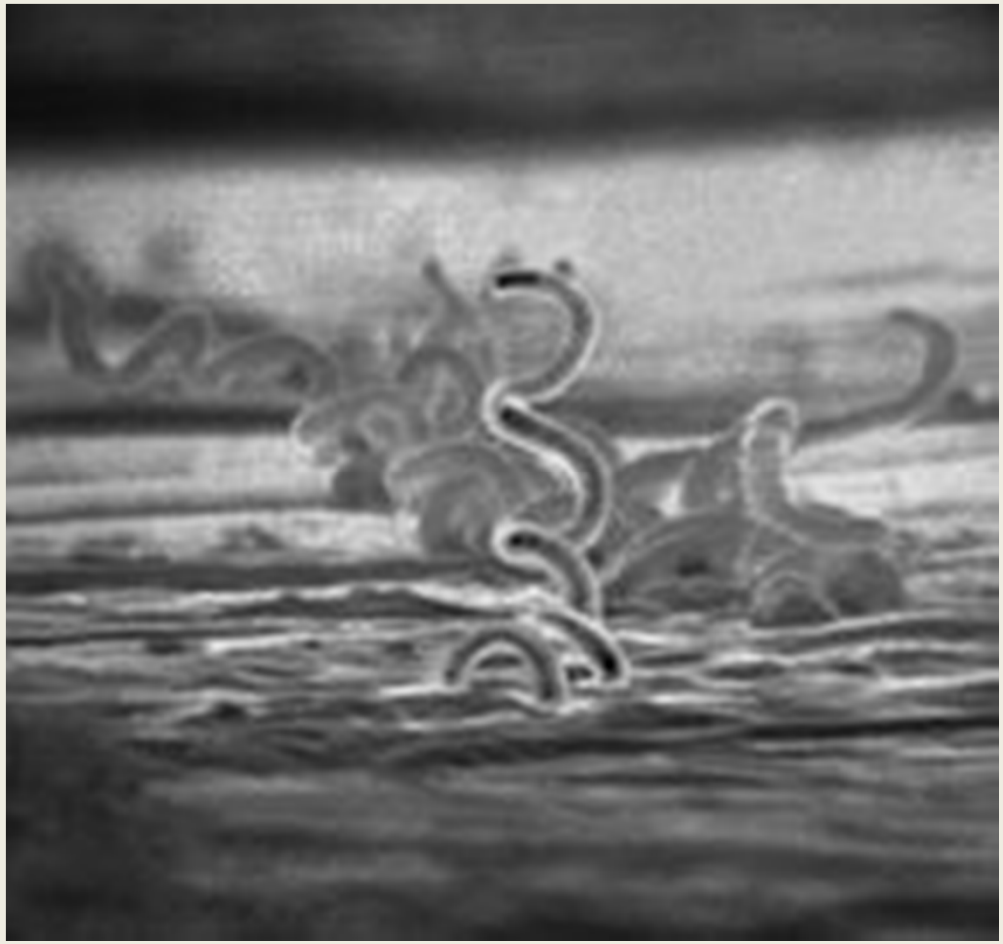
- Male latex condom
  - Decreased transmission of HIV, GC, CT, Trichomoniasis
  - May reduce HSV-2, HPV and genital warts
  - Higher rates of CIN regression, HPV clearance, penile lesions

- Spermicides not effective in reducing transmission of CT/GC or HIV… may increase HIV transmission. N-9 condoms no more effective than plainly lubricated condoms as contraceptive.

STDs in Adolescents

expanded section

- Routine annual chlamydia screening for all sexually active females aged <26
- Annual gonorrhea screening for at-risk females aged <25 (ie. previous gonorrhea infection, other STDs, new or multiple partners)
- Discussion of HIV screening with all teens, encouraging testing for those who are sexually active or who inject drugs
- Pap screening beginning at age 21
- Routine screening of adolescents who are asymptomatic for certain STDs (syphilis, trich., BV, HSV, HPV, hepatitis) is NOT recommended.
- Young men who have sex with men and pregnant teens require more careful screening
- Cervarix or Gardasil recommended for all females
- Gardasil recommended for males in the prevention of genital warts



SYPHILIS

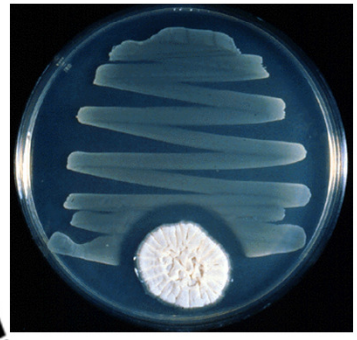
SYPHILIS

- Treponema pallidum, spirochete bacteria
- “The French Disease”
- “The Italian Disease”
- “The Christian Disease”
- Great Pox
- The Black Lion
- Ultimately named Syphilis by the Italian poet and physician Girolamo Fracistoro
- “The Great Imitator”

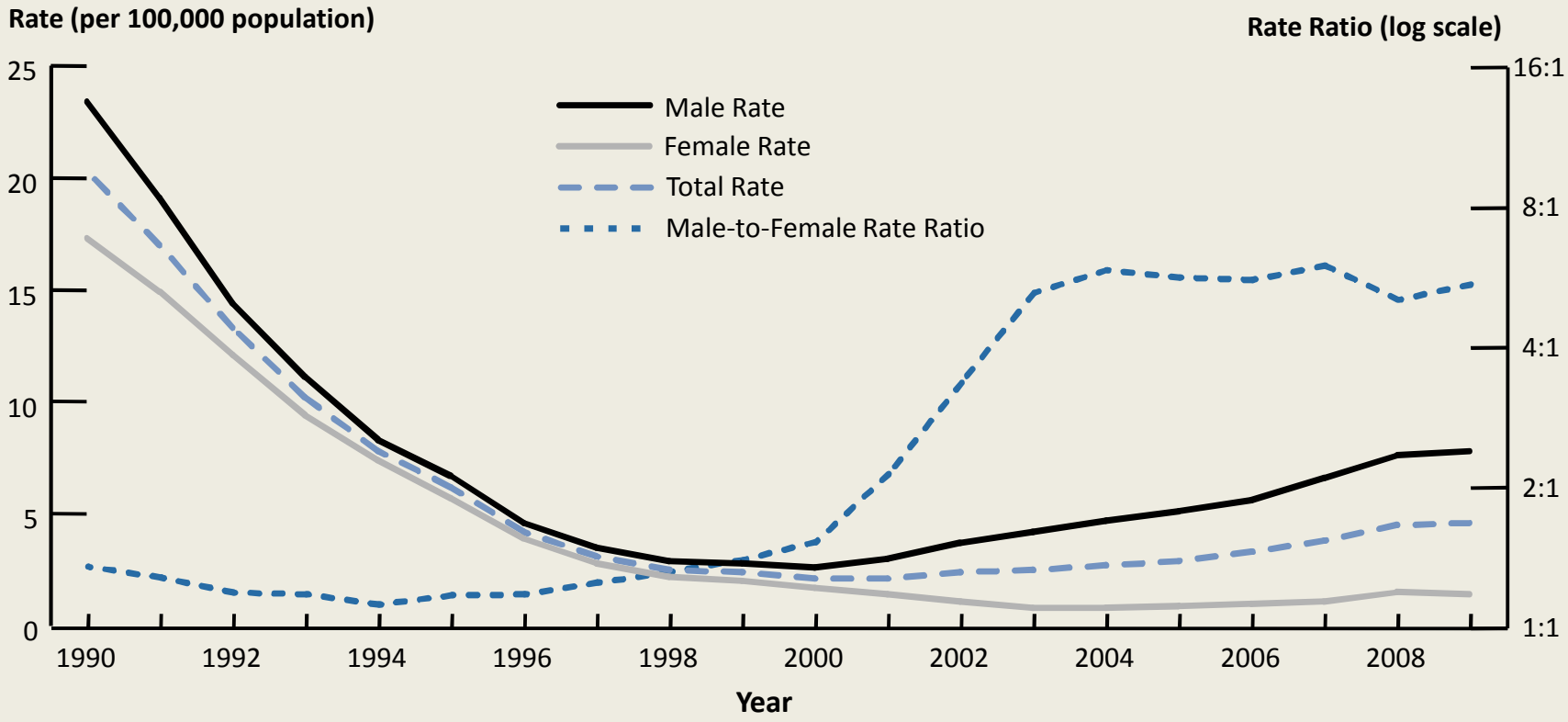
History of Syphilis

History of Syphilis

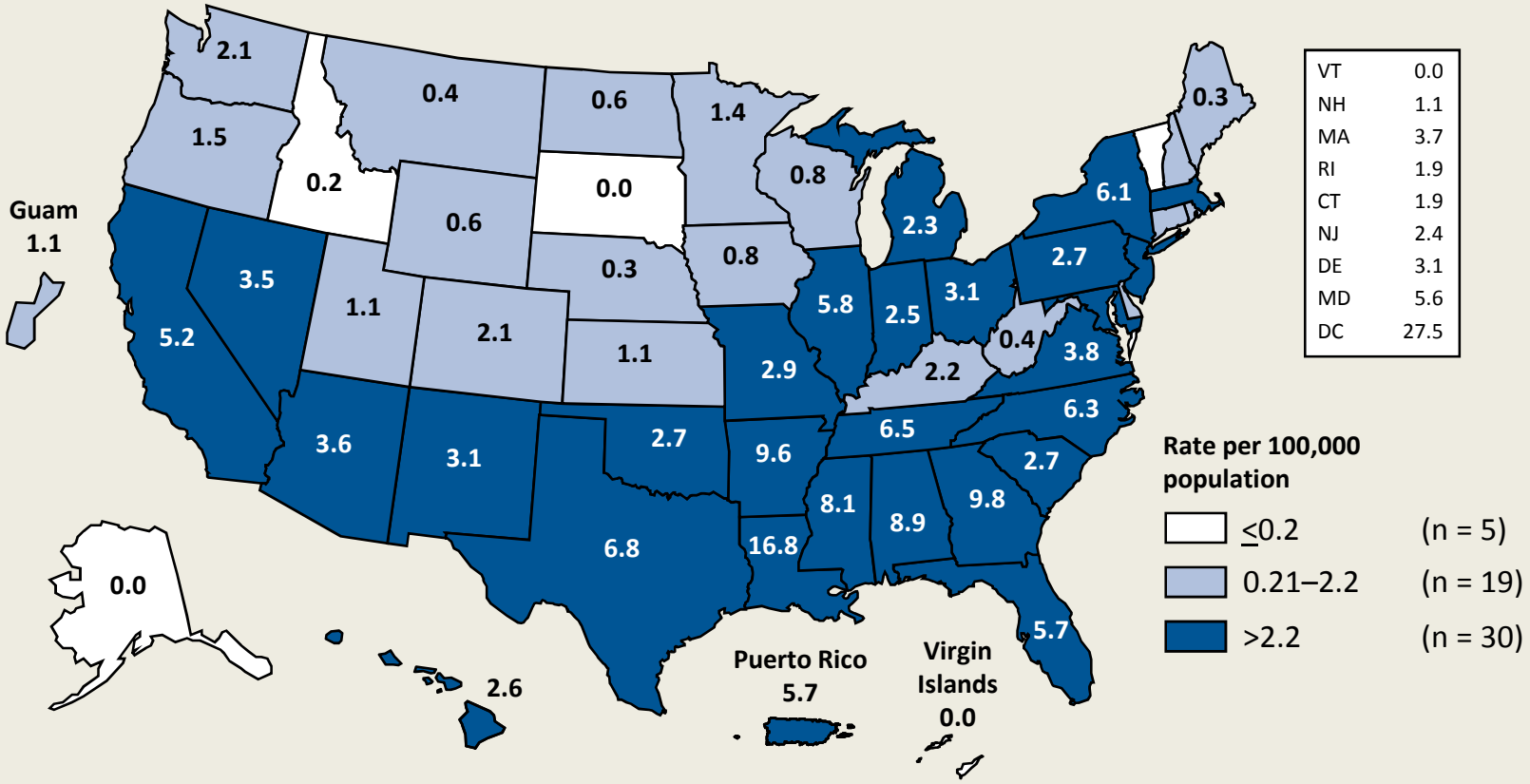
Syphilis Over the Years



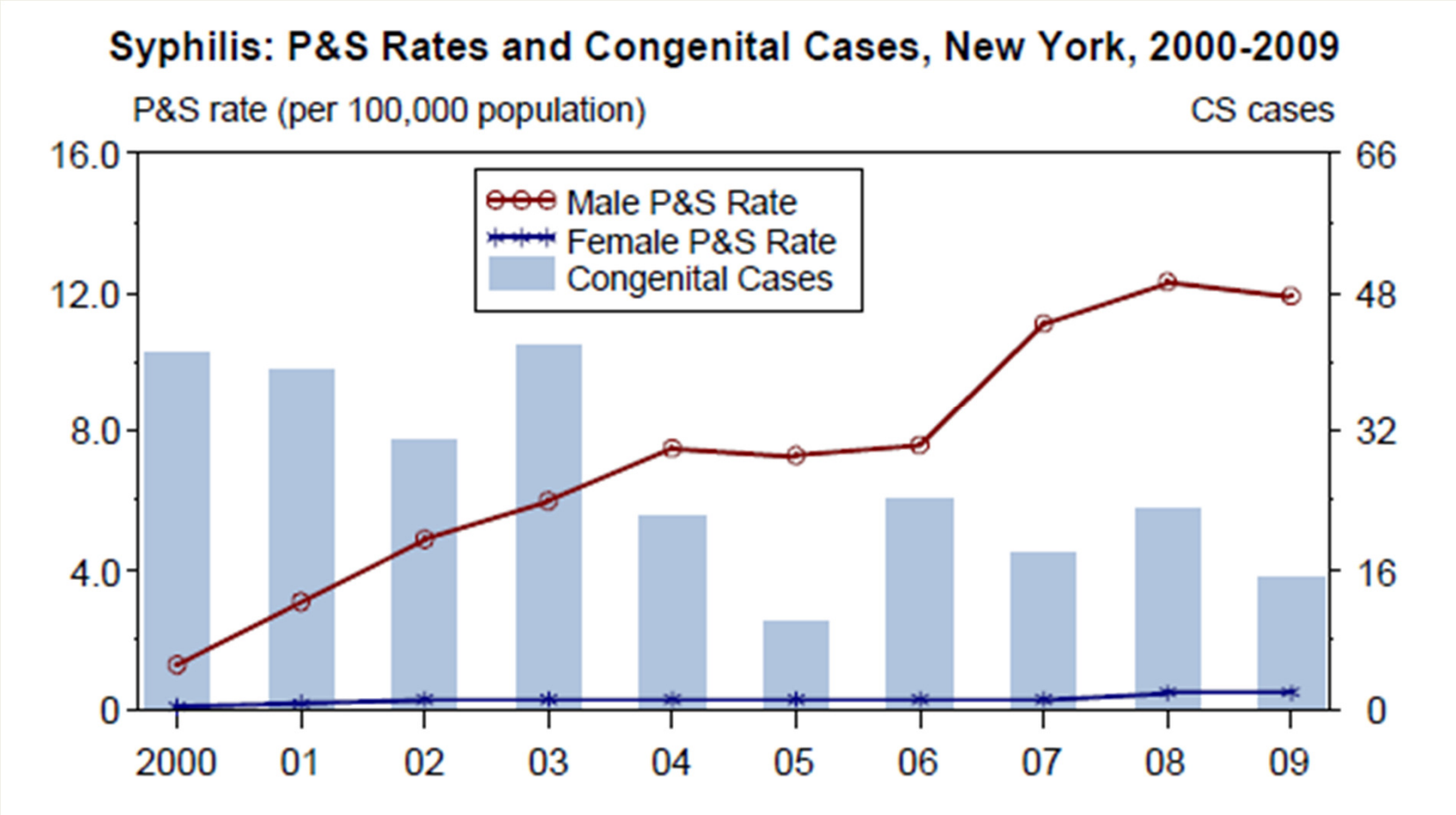
Syphilis 1990-2009



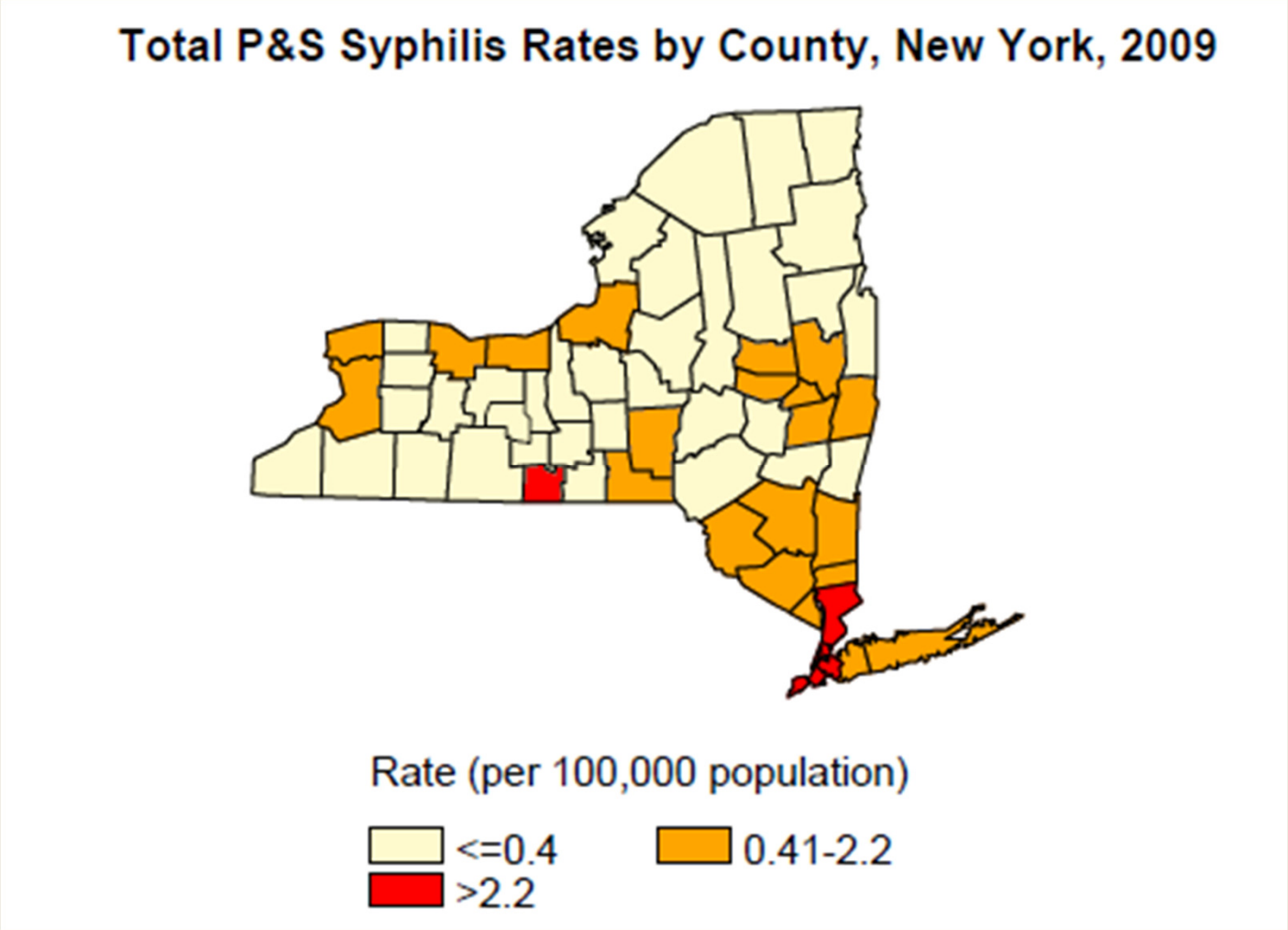
2009, Syphilis by State



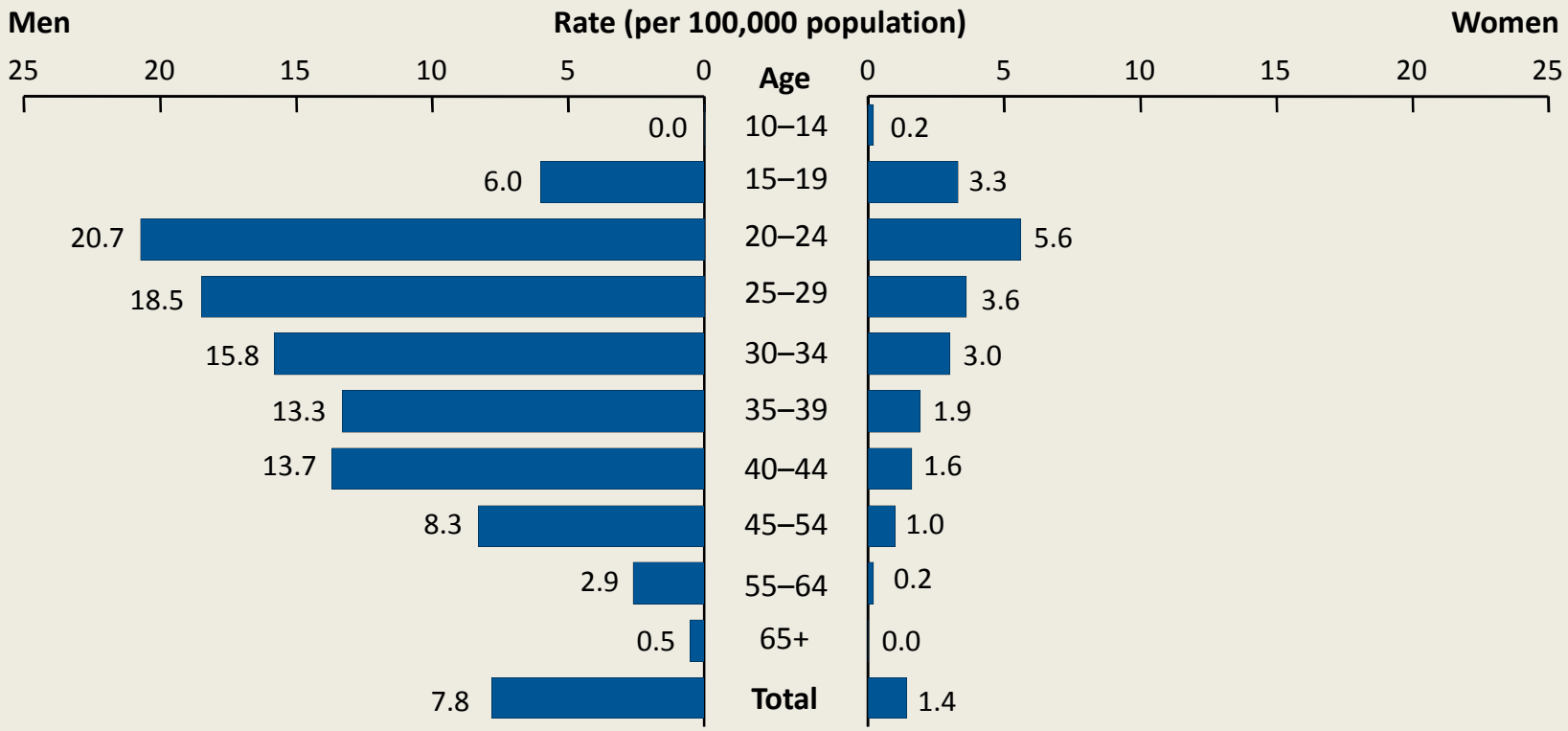
Syphilis in New York



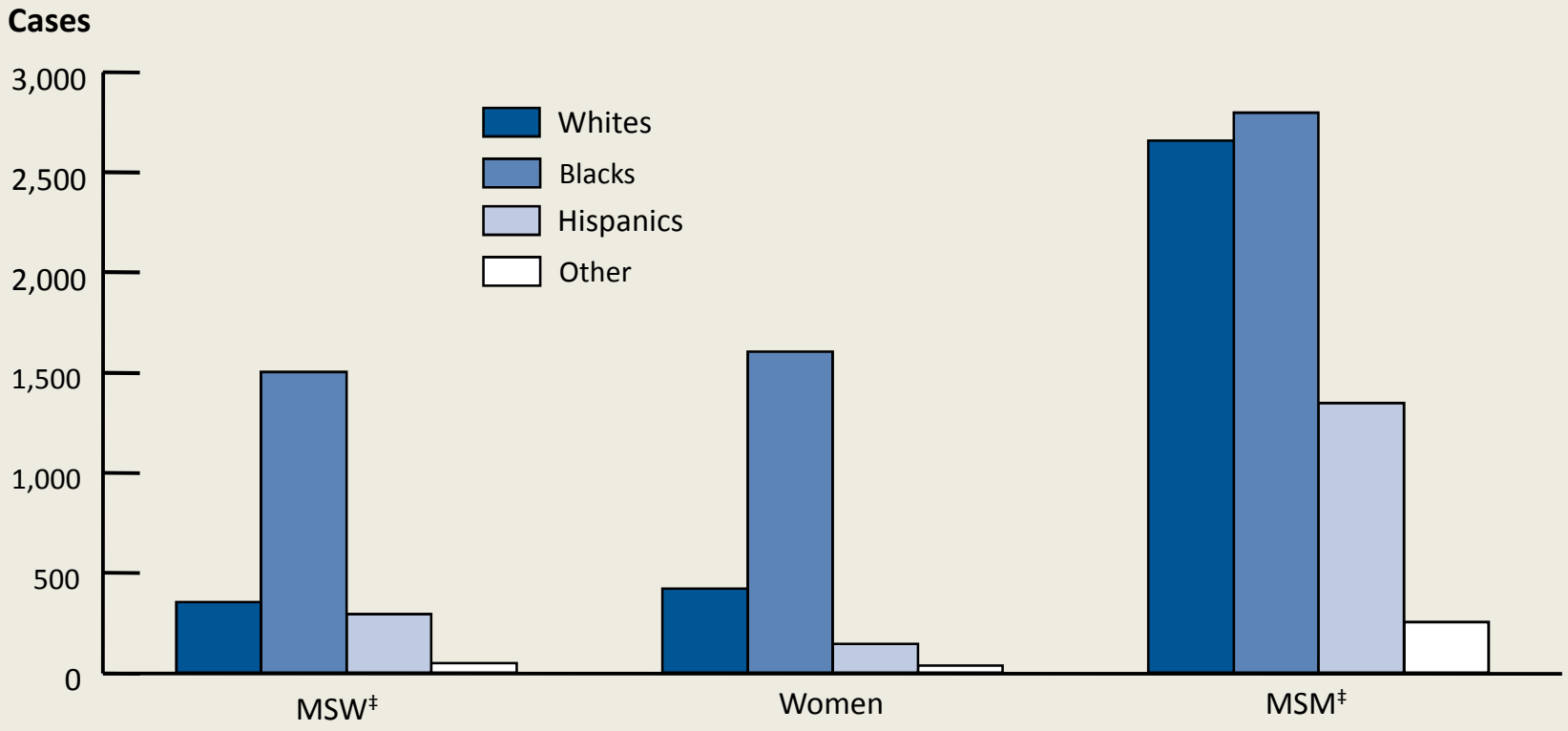
Syphilis in New York



Syphilis Rates by Age, 2009



Primary and Secondary Syphilis—Reported Cases* by Sex, Sexual Behavior, and Race/Ethnicity,† United States, 2009



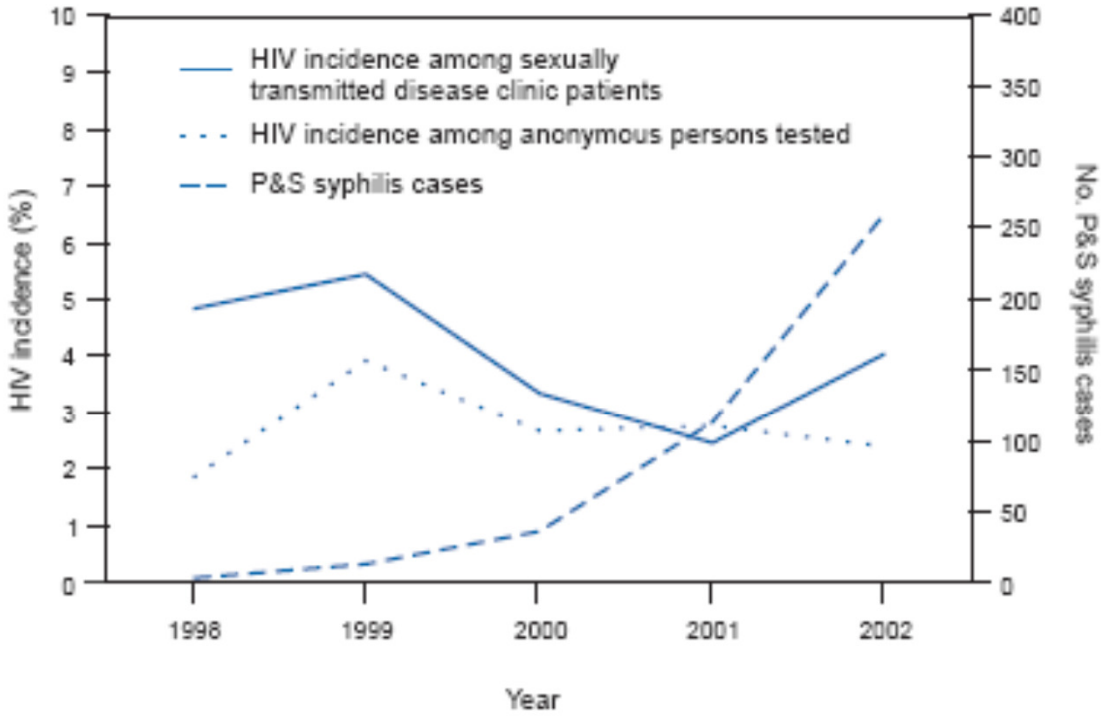
* Of the reported male cases of primary and secondary syphilis, 20% were missing sex of sex partner information; 1.7% of reported male cases with sex of sex partner data were missing race/ethnicity data.

† No imputation was done for race/ethnicity.

‡ MSW = men who have sex with women only; MSM = men who have sex with men.

Syphilis on the rise in MSM

FIGURE 1. Number of primary and secondary (P&S) syphilis cases among men who have sex with men (MSM) and incidence of human immunodeficiency virus (HIV) among MSM in two HIV-testing populations, by year — San Francisco, California, 1998–2002

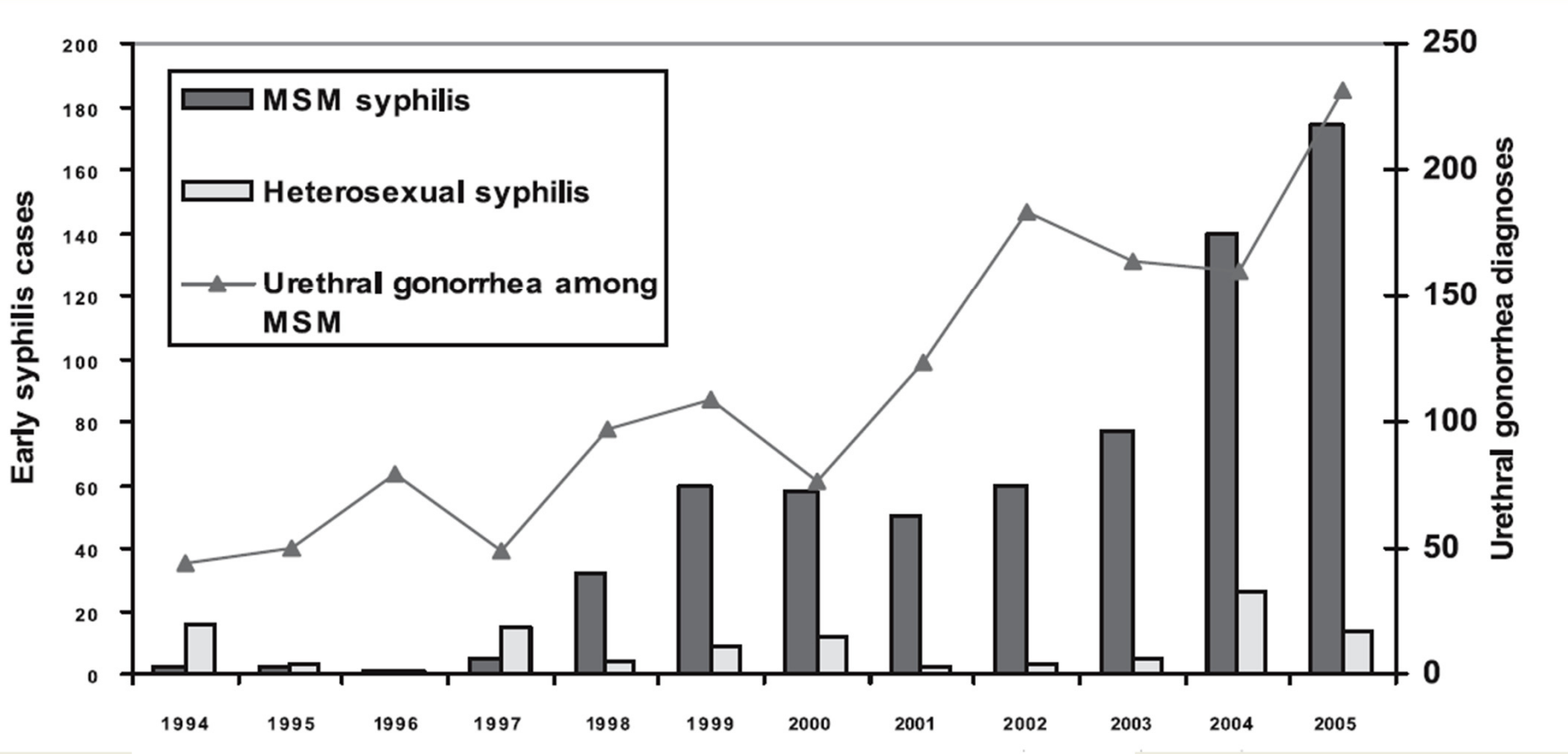


1998–2002

Year	P&S syphilis cases No.	Rate
1998	4	8
1999	13	26
2000	36	71
2001	113	223
2002	260	512

* Per 100,000 men who
† Men who reported havi
§ San Francisco City Clir
¶ Confidence interval.

Syphilis on the rise in MSM



Sexually Transmitted Diseases, March 2007, Vol. 34, No. 3, p.154–161
DOI: 10.1097/01.olq.0000233709.93891.e5

The Role of Anonymous Sex

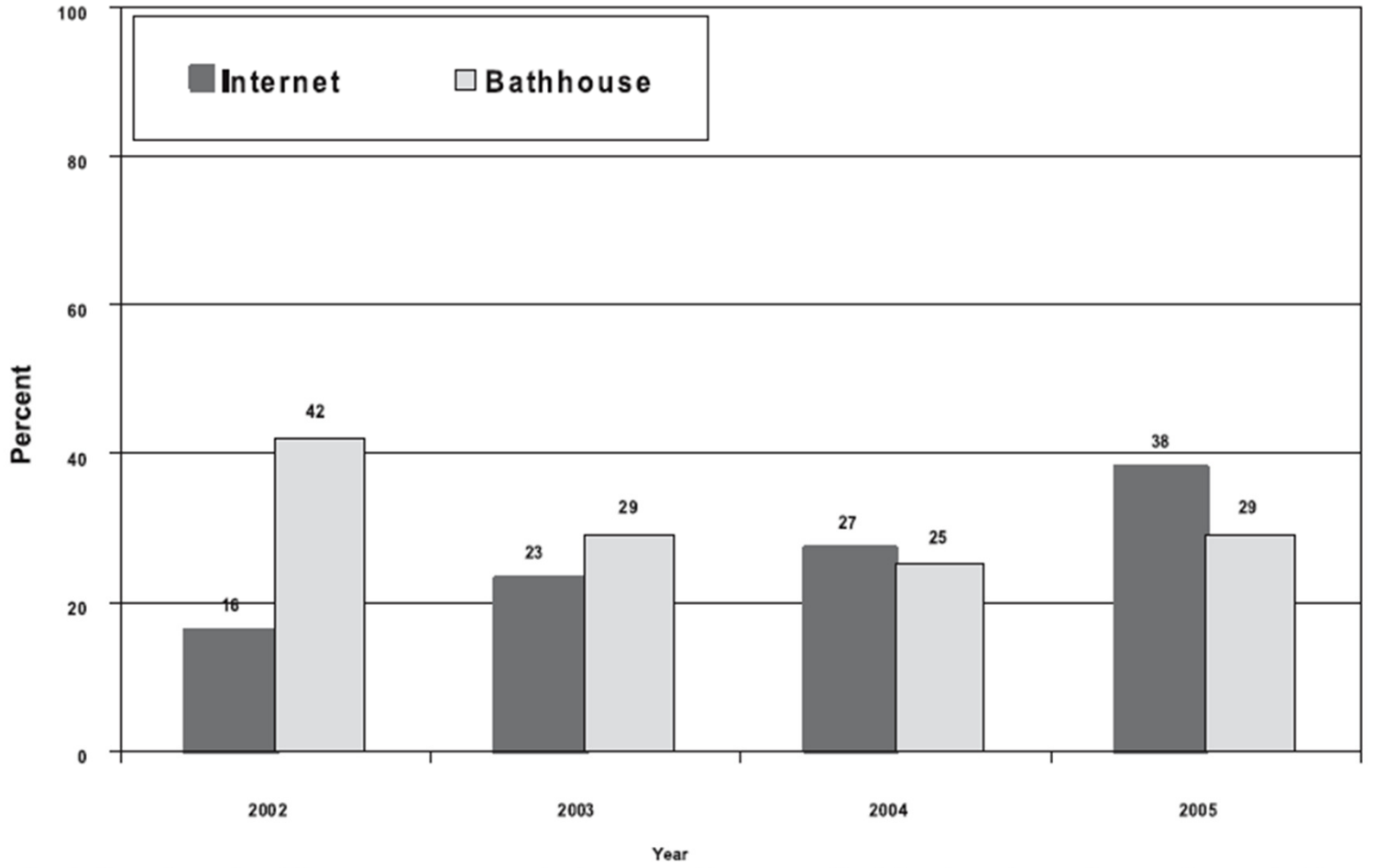


Fig. 5. Percentage of syphilis cases among men who have sex with men reporting Internet use to recruit sex partners or bathhouse attendance, 2002–2005.

Oct 8 - Afternoon delight? - m4m - 21 - (IC)

Oct 8 - You are straight, married, bi-curious, & wanna watch - m4m - (Cortland)

Oct 8 - Weekend Raw - m4m - 56 - (Downtown Ithaca)

Oct 8 - massage - m4m - 24 - (ithaca)

Oct 8 - you host im your slave right now - m4m - 25 - (ithaca/downtown)

Oct 8 - Fall Weekend Fun - m4m - 36 - (Ithaca/Cortland)

Oct 8 - Fall Break Fun - m4m - 21 - (Ctown) pic

Oct 8 - cornell visiting - m4m - 22 - (cu) pic

Oct 8 - Hosting for Oral Service - m4m - (Ithaca/Newfield)

Oct 8 - Will suck sunday early afternoon - m4m -

Oct 8 - new - m4m - 21 - (cortland)

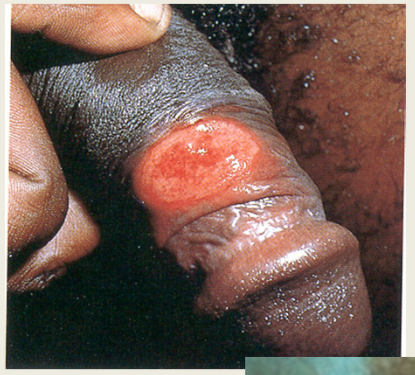
Oct 8 - Looking to suck and fuck - m4m - 19 - (CU)

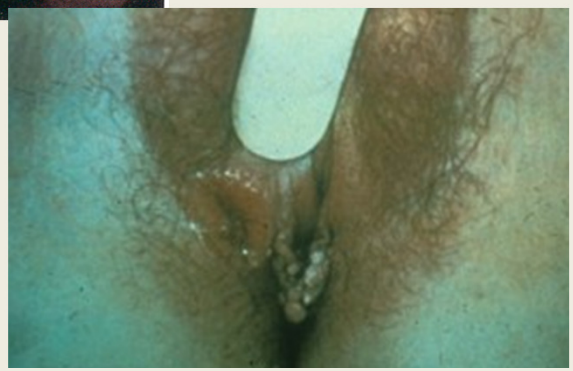
Oct 8 - your place today around 3? - m4m - 25 - (ithaca)

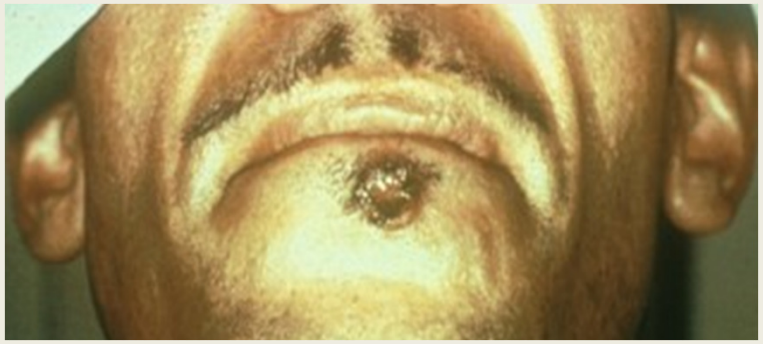
How do you get syphilis?

- Exposure to a chancre or other syphilitic lesion (i.e. rash or mucous placques)
- Entry via broken skin or intact mucous membranes
- Almost always sexually acquired, 20% is transmitted via oral sexual activity
- Can be vertical transmission (congenital)
- Condoms help but are not 100%, as may not cover area of infectious material
- Asymptomatic incubation period

Primary Syphilis

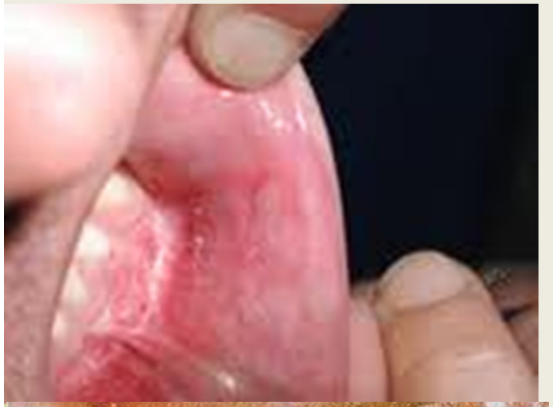


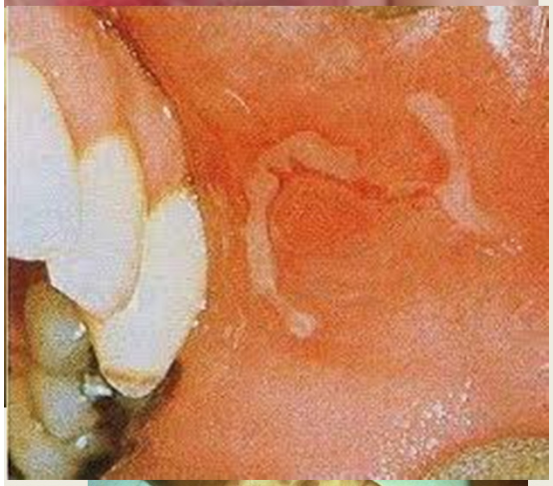


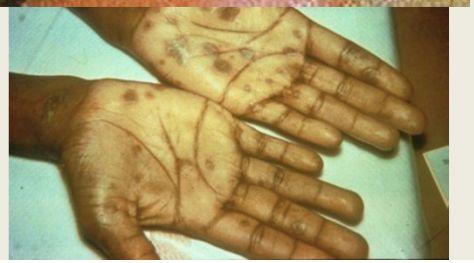


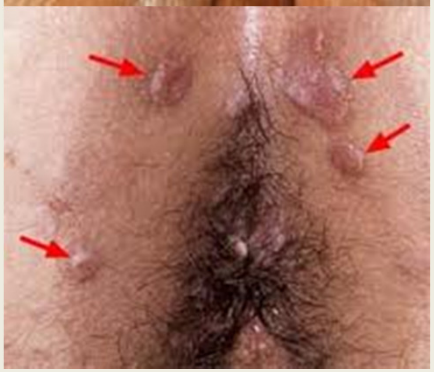
- 10-90 days after exposure
- Firm, painless ulcer, “chancre” at site of innoculation
- Usually penis, vagina, or rectum
- Resolves spontaneously in 4-6 weeks
- *Chancre may be too small or too inaccessible to be seen*
- 30-50% transmission rate

Secondary Syphilis







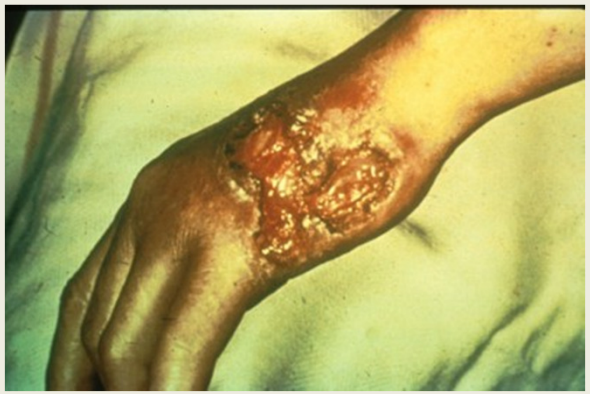


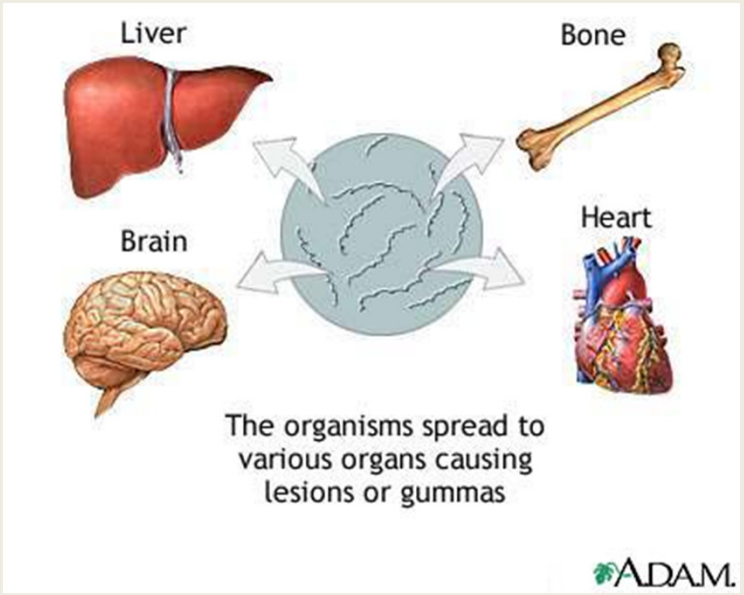
- 1-6 months later
- Rash
- Mucous plaques
- Condyloma lata
- Possible systemic symptoms
- Highly infectious - 30% transmission rate
- *Lesions may be missed by the patient, can be very subtle*

Latent Syphilis

- No signs or symptoms
- Still potentially infectious, esp. if early
- Early if <1 year
- Late or Unknown Duration if > 1 year

Tertiary Syphilis





- 1-10 to 50 years after infection
- Gummas - soft granulomas, mass effect
- Neurologic symptoms
- Cardiovascular
  - Aortitis (de Musset's sign)
  - Coronary Disease
- Can be fatal

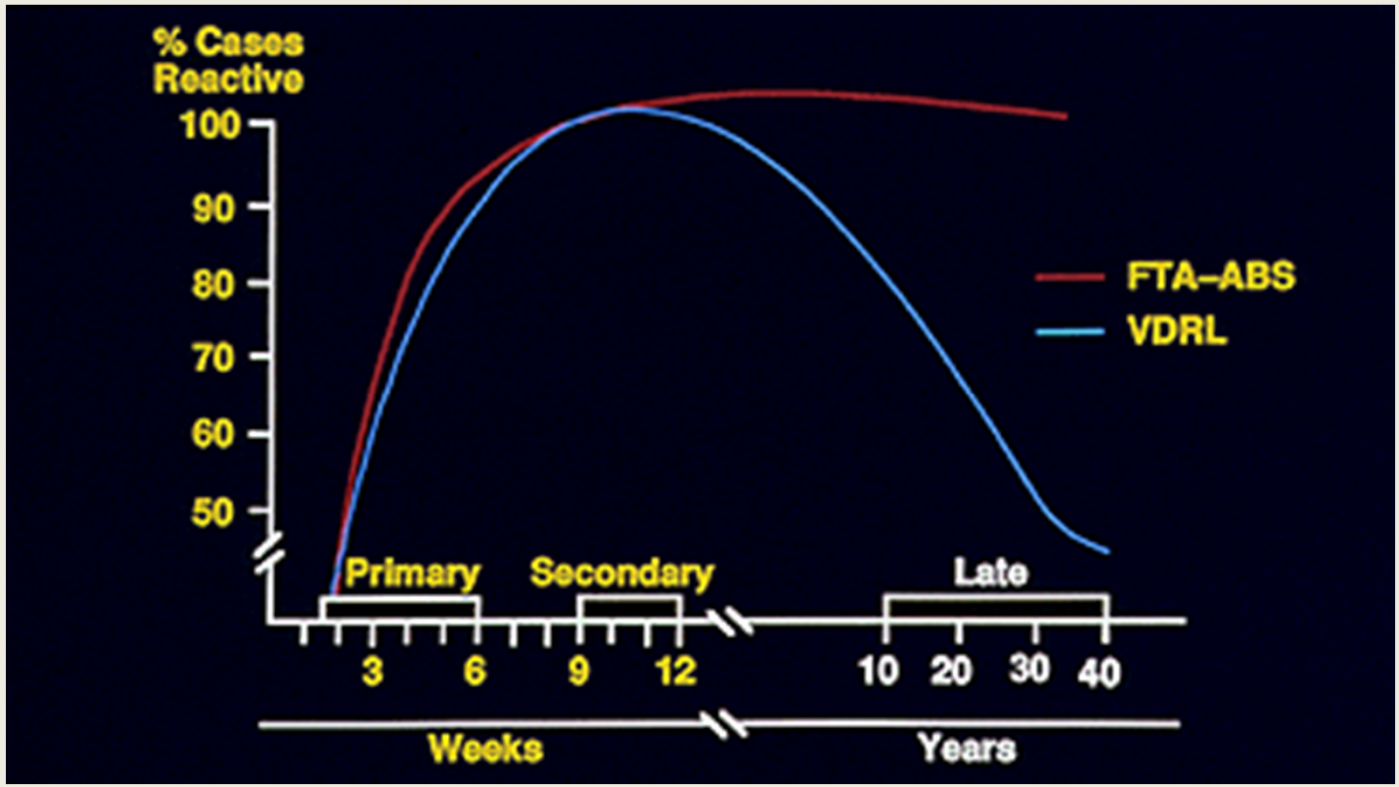
Neurosyphilis

- Can occur at ANY stage of disease
- Acute meningitis
- Cranial nerve involvement, including ophthalmic
- Meningovascular: focal neurologic symptoms, arterial narrowings
- General paralysis of the insane (dementia)
- Tabes dorsalis – weakness, loss of proprioception, neuropathic pain
- Ophthalmic – uveitis, optic neuritis, etc
- Consider neurosyphilis in any pt with syphilis who demonstrates any neurologic or ophthlamic s/s
- Requires CSF for diagnosis
- Requires aqueous, IV PCN for treatment

Diagnosis

- T. pallidum cannot be cultured in the lab
- Dark field microscopy not widely available
- Serology:
  - Non-treponemal tests
    - RPR & VDRL
    - Non-specific (can be false-positive due to mono, measles, varicella, connective tissue d/o, etc.)
    - Titers can be used to follow response (will decrease with successful treatment)
  - Treponemal
    - MHA-TP, FTA-ABS Fluorescent Treponemal Antibody, TPPA
    - Highly specific (only 1% false positive rate)
    - Will often remain positive life-long

Time course of antibody development during syphilis



A comparison of the reactivity of the VDRL and FTA-ABS during the course of untreated syphilis. A substantial proportion of persons with primary syphilis may not have developed a diagnostic antibody response at the time the chancre of primary syphilis appears. Courtesy of Charles B Hicks, MD; modified from the VD Program, Centers for Disease Control, US Public Health Service.

Difficulties in Diagnosis

- 20-30% of patients with primary syphilis will have a negative serologic test!
- 20-30% of patients with primary syphilis will have a negative serologic test!
- 20-30% of patients with primary syphilis will have a negative serologic test!
- So, treat first, confirm diagnosis later!

Treatments for Syphilis

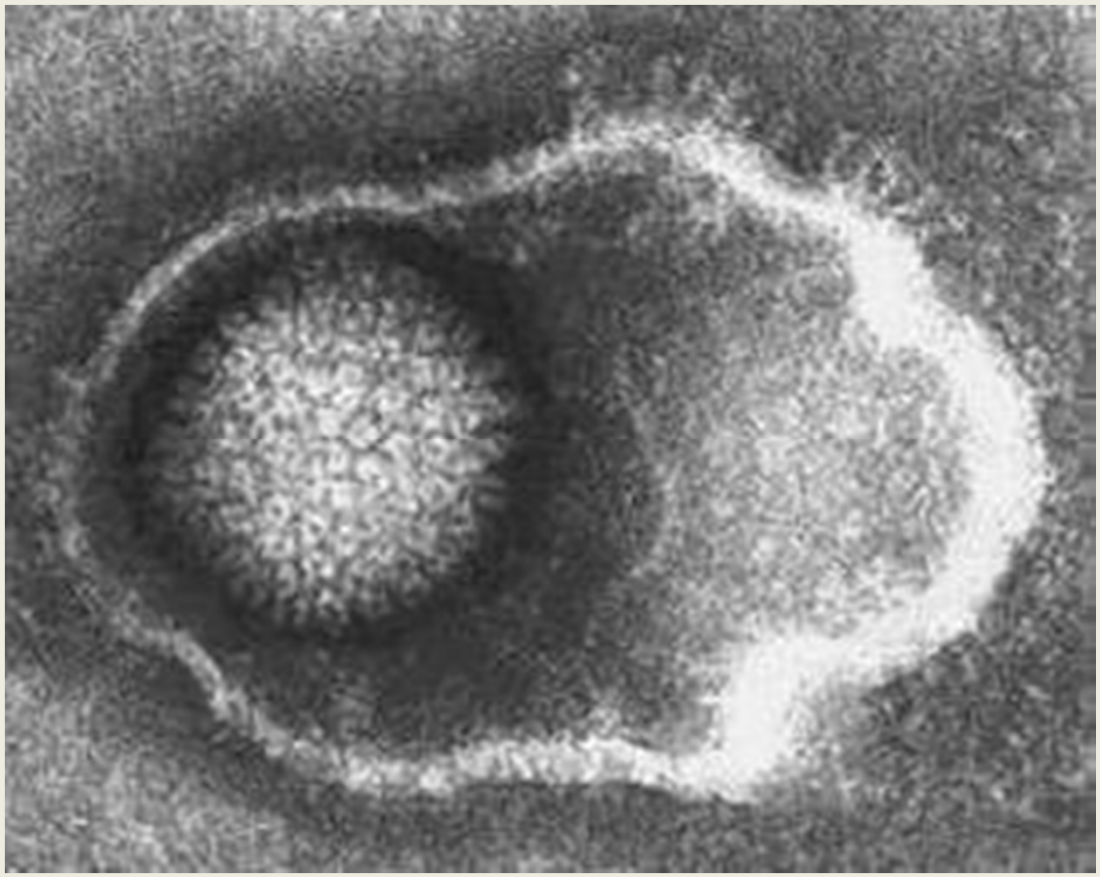
- Guaiacum wood
- Mercury “A night in the arms of Venus leads to a lifetime on Mercury”
- Arsenic (Salvarsan)
- Malaria infection
- Penicillin, 1 dose for Primary and Secondary
  - Benzathine penicillin - **Bicillin L-A** 1.2 million units, one in each glut (total 2.4 million units IM)
  - *NOT* benzathine-procaine PCN (Bicillin C-R)

Syphilis Treatment

- Jarisch-Herxheimer reaction – acute febrile reaction with headache, myalgias within the first 24 hours of treatment
- Notify partners and health department
- Partners should be tested and empirically treated (don’t wait for results, might be false negative anyway)
- Test for HIV, GC, CT
- Recheck visit and serologies at 6 and 12 months

Screening for Syphilis

- Annually in MSM, more frequently if appropriate
- Pregnant women at first prenatal visit
- Institutionalized persons, if institution's prevalence is high



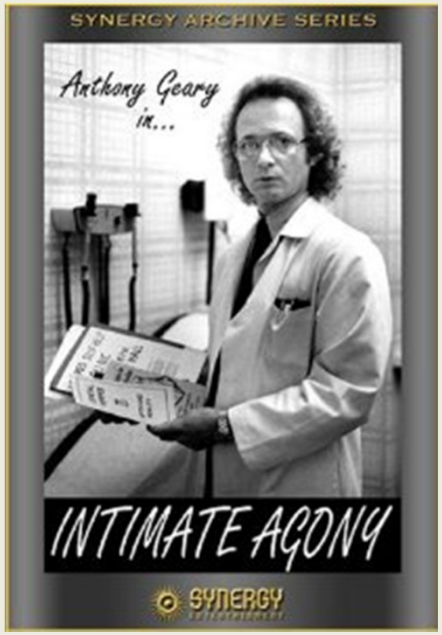
HERPES

History of Herpes

- Herpes has been known for at least 2,000 years.
- Named by ancient Greeks, means “to creep.”
- It is said that Emperor Tiberius banned kissing in Rome for a time due to so many people having cold sores.
- In the 16th century *Romeo and Juliet*, it is mentioned that there are blisters "o'er ladies' lips."
- In the 18th century it was so common among prostitutes that it was called "a vocational disease of women."

History of Herpes

- Prior to 1970's genital herpes not talked about, or at least not stigmatized, just felt to be a cold sore in a weird place
- Drug developers of Acyclovir worried they would have no market
- Public education campaigns and media coverage began in late 70's - early 80's



Monday, Jul. 28, 1980 Time Magazine

Herpes: The New Sexual Leprosy

"Viruses of love " infect millions with disease and despair.

Susan, 29, a Ph.D. in English literature from Harvard, knew her boyfriend had a herpes infection and consulted her gynecologist about the safety of having intercourse. The doctor reassured her that herpes was only contagious if her partner had festering sores. Susan slept with her friend, who had no obvious signs, and within a week got herpes. …

Such is the predicament—indeed, the pathos—of herpes, one of the most common venereal diseases in the U.S. today, possibly even more widespread than gonorrhea. This year up to half a million more Americans will develop the telltale genital blisters of herpes, adding to the 5 million to 14 million who already have the disease. When they seek medical help, they will often be given incorrect information or false hopes for cures. Most will suffer shame, guilt and even depression, and a few will become suicidal over what they feel is the "new leprosy." ….

Selling sickness: the pharmaceutical industry and disease mongering

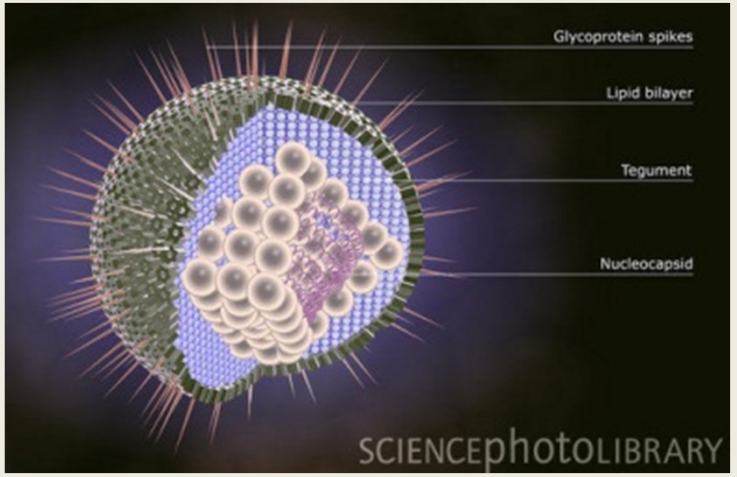
Ray Moynihan, Iona Heath, David Henry

BMJ VOLUME 324 13 APRIL 2002

Within many disease categories informal alliances have emerged, comprising drug company staff, doctors, and consumer groups. Ostensibly engaged in raising public awareness about underdiagnosed and undertreated problems, these alliances tend to promote a view of their particular condition as widespread, serious, and treatable. Because these “disease awareness” campaigns are commonly linked to companies' marketing strategies, they operate to expand markets for new pharmaceutical products.

Alternative approaches—emphasising the self limiting or relatively benign natural history of a problem, or the importance of personal coping strategies—are played down or ignored. As the late medical writer Lynn Payer observed, disease mongers “gnaw away at our selfconfidence.”

Herpes Simplex

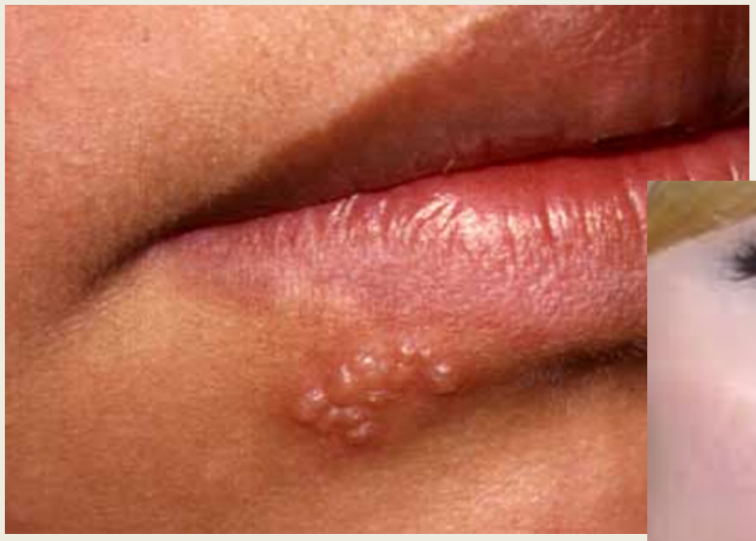


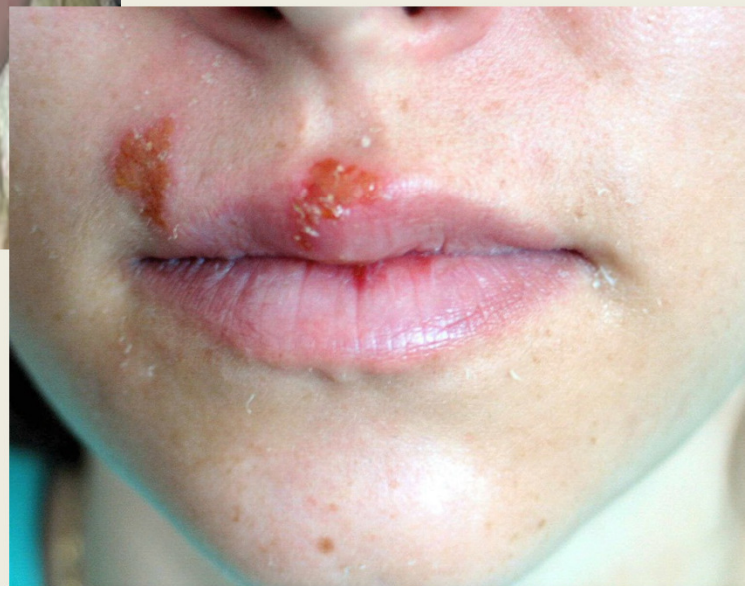
- Double-stranded DNA virus
- Humans are only reservoir
- HSV-1 and HSV-2
- Transmitted by contact with infected secretions or skin
- Average onset to symptoms is 5 days
- Prodrome - Small papules – vesicles – pustules – ulcers - crusts

Oral HSV

- Usually HSV-1
- Usually herpes labialis (cold sore, fever blister)
- Can get gingivostomatitis as primary infection
- 50-90% of US adult population has positive titer for HSV-1, varies by SES

Oral HSV

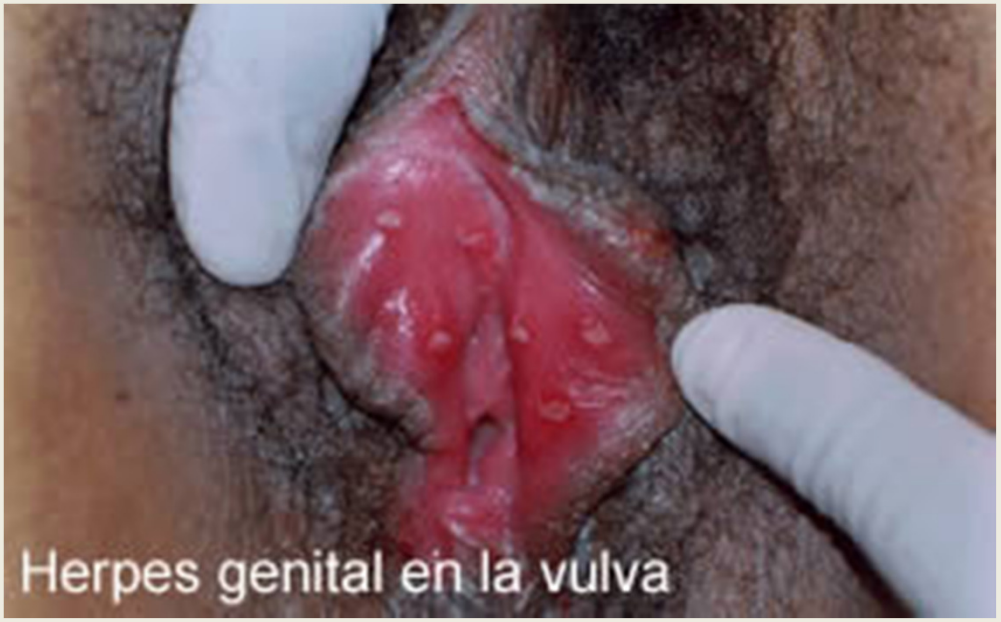


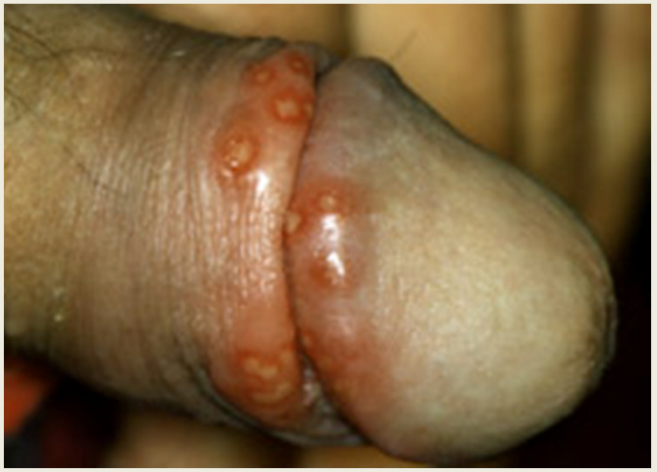


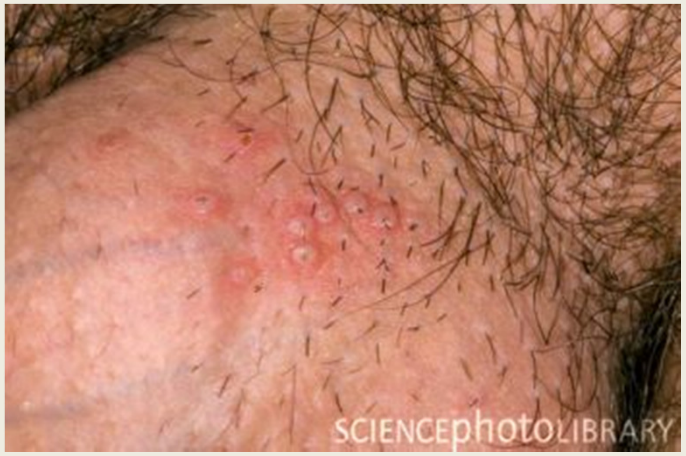
Genital HSV

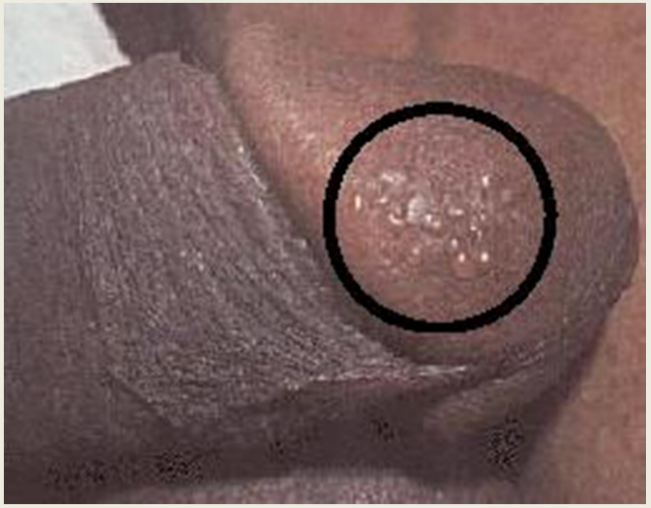
- May be HSV-2 OR HSV-1
- HSV-1 is more common cause in college students (up to 75% in 2003 study)
- HSV-2 is more likely to recur and more likely to be shed while asymptomatic
- Persons with h/o HSV-2 are at higher risk of acquisition of HIV, regardless of symptoms or treatment

Genital HSV

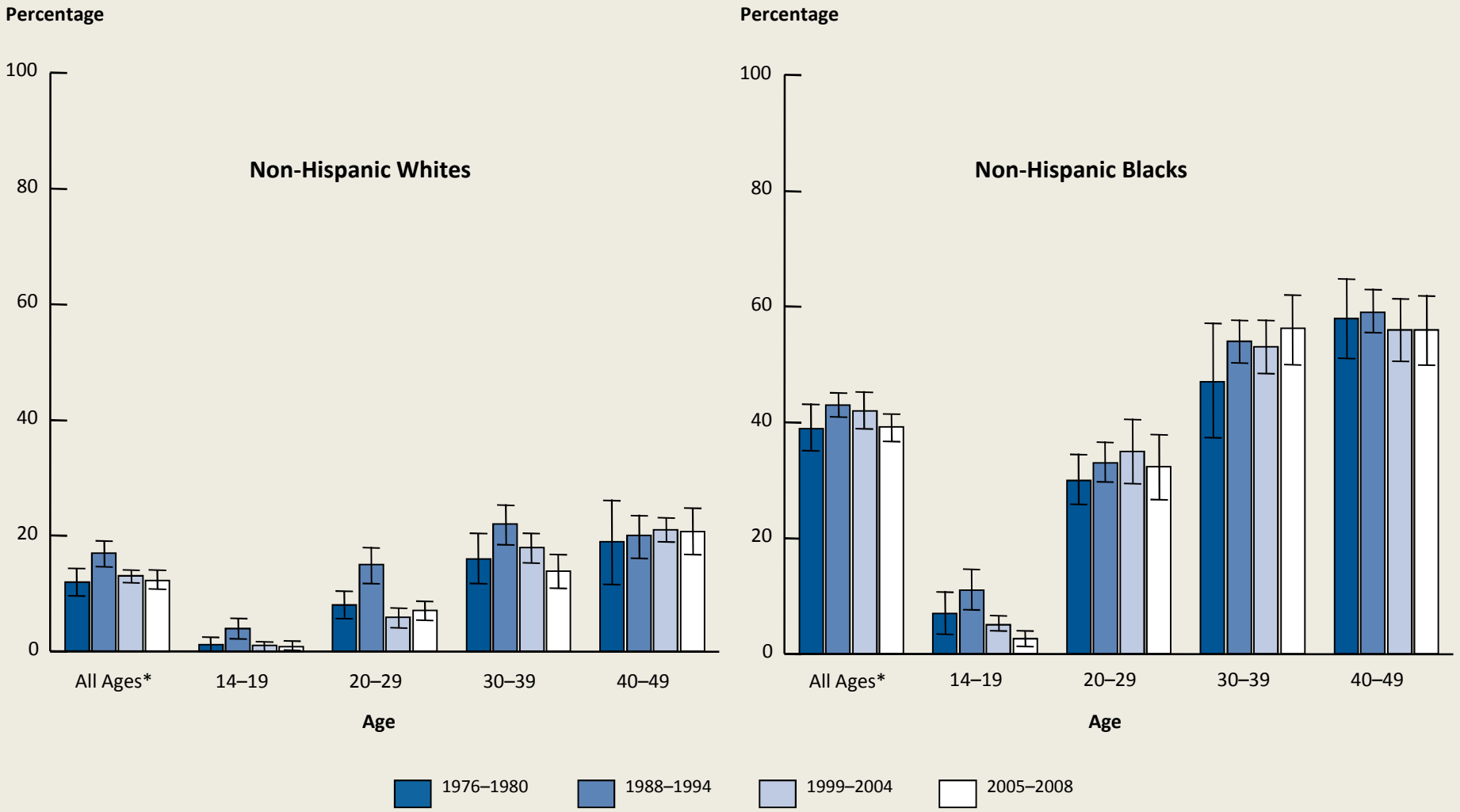




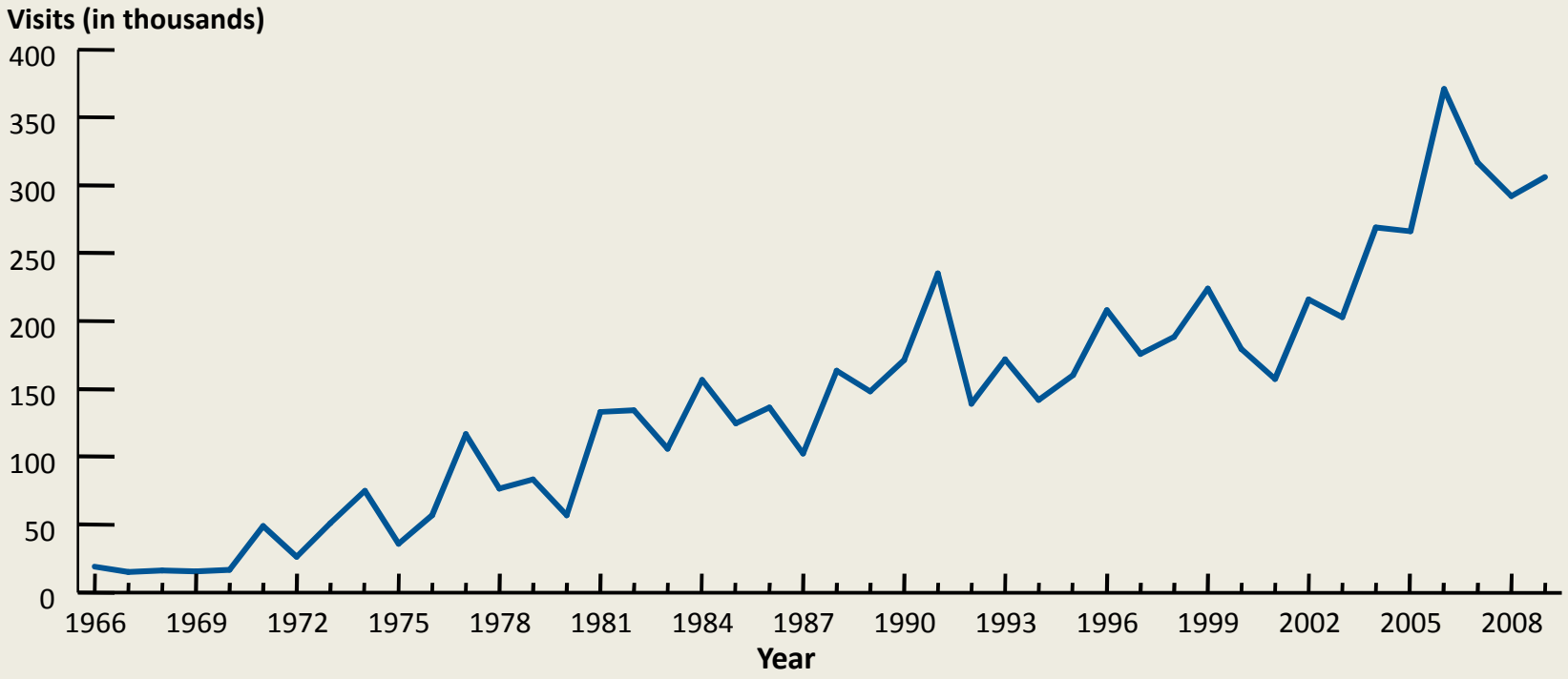




HSV-2: Seroprevalence by Age Group, NHANES



Genital Herpes—Initial Visits to Physicians' Offices, United States, 1966–2009



NOTE: The relative standard errors for genital herpes estimates of more than 100,000 range from 18% to 30%.

SOURCE: IMS Health, Integrated Promotional Services™. IMS Health Report, 1966–2009.

Diagnosis

- Many are completely asymptomatic
- Clinical
- Culture or PCR – can differentiate 1 vs 2, which is useful for prognosis, is recommended by CDC guidelines

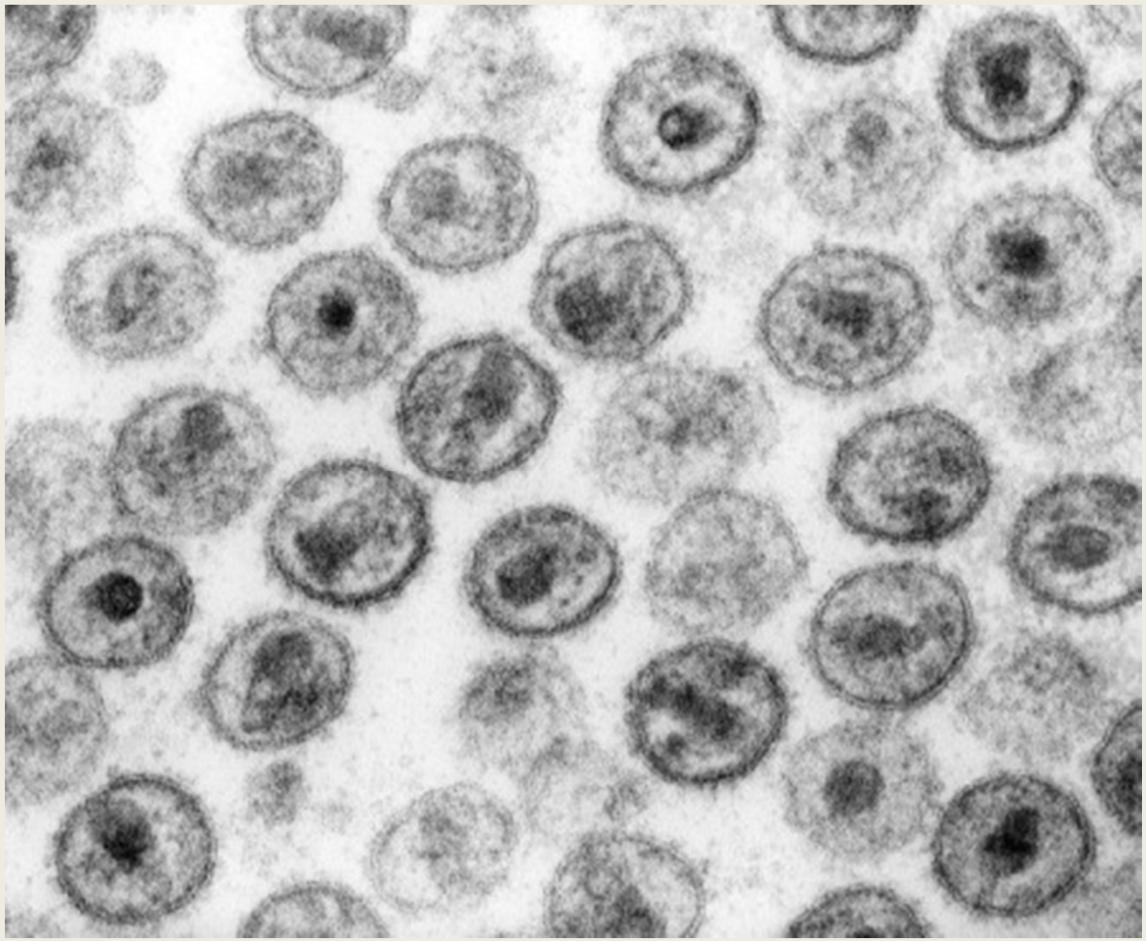
Treatment – Genital HSV

- Initial episode*
  - Acyclovir 400 TID or 200 5x/day x 7-10 days
  - Famciclovir 250 TID x 7-10 days
  - Valacyclovir 1 gm BID x 7-10 days
  - May treat longer if symptoms still present
- Episodic treatment for recurrences*
  - Acyclovir 400 TID x 5 d or 800 BID x 5 d or 800 TID x 2 d
  - Famciclovir 125 BID x 5 d or 1000 BID x 1 d
  - Valacyclovir 500 BID x 3 d or 1gm QD x 5 d
- Suppressive therapy
  - Acyclovir 400 BID
  - Famciclovir 250 BID
  - Valacyclovir 500 or 1000 QD

*Ameliorates symptoms and duration, does not affect likelihood of recurrence nor viral shedding

Screening

- Type-specific serology
- ONLY recommended for asymptomatic partner of known HSV-2 infected individual (discordant couple)
- Expensive
- What will you do with the information?



HIV

History of HIV

The New England
Journal of Medicine

Volume 305 DECEMBER 10, 1981 Number 24

PNEUMOCYSTIS CARINII PNEUMONIA AND MUCOSAL CANDIDIASIS IN PREVIOUSLY HEALTHY HOMOSEXUAL MEN

Evidence of a New Acquired Cellular Immunodeficiency

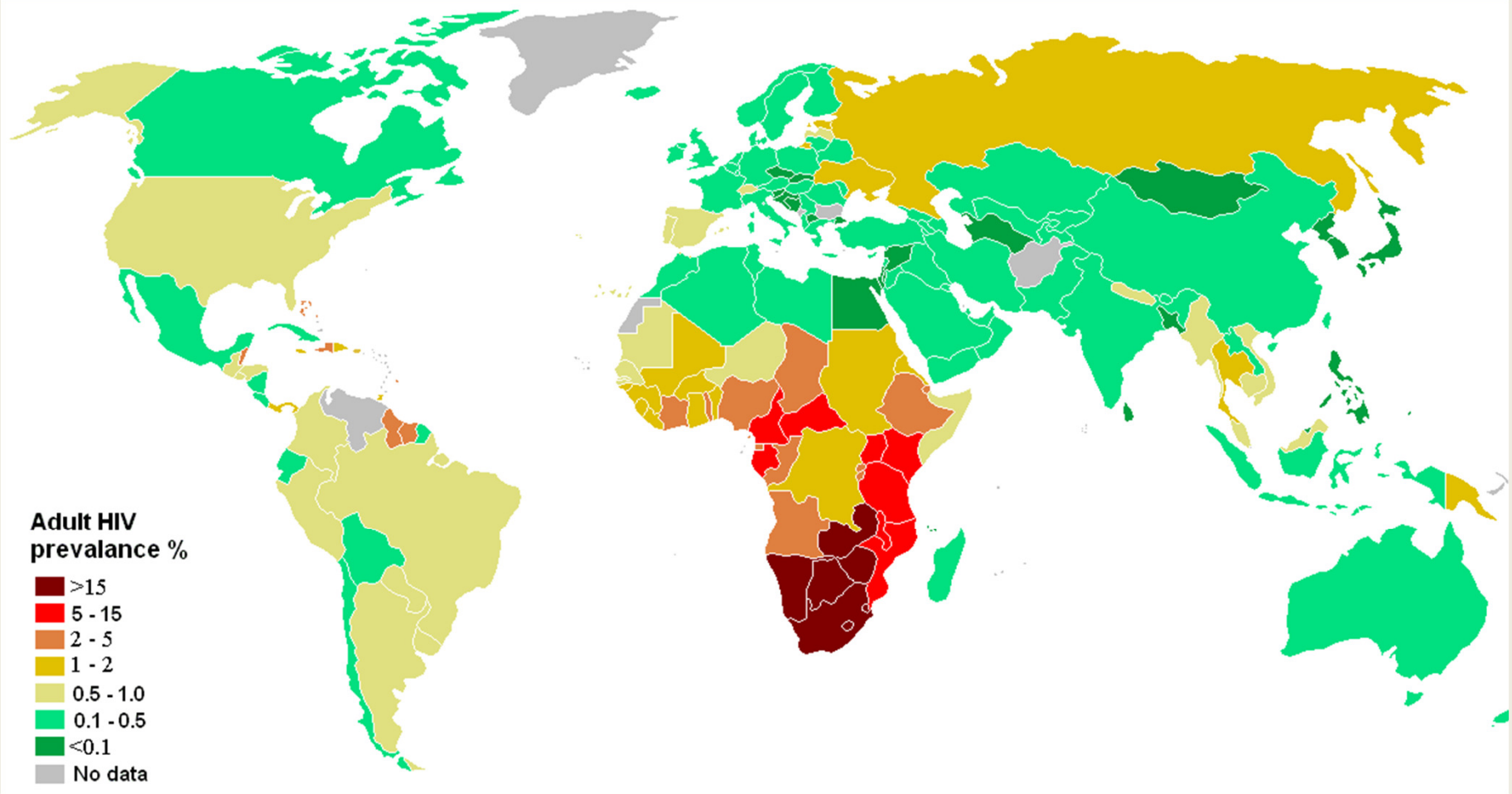
MICHAEL S. GOTTLIEB, M.D., ROBERT SCHROFF, PH.D., HOWARD M. SCHANKER, M.D.,
JOEL D. WEISMAN, D.O., PENG THIM FAN, M.D., ROBERT A. WOLF, M.D., AND ANDREW SAXON, M.D.

History of HIV

- *Science 20 May 1983:*
  Vol. 220 no. 4599 pp. 865-867
  Isolation of human T-cell leukemia virus in acquired immune deficiency syndrome (AIDS) RC Gallo, PS Sarin, EP Gelmann, M Robert-Guroff, E Richardson, VS Kalyanaraman, D Mann, GD Sidhu, RE Stahl, S Zolla-Pazner, J Leibowitch and M Popovic
- *Science 20 May 1983:*
  Vol. 220 no. 4599 pp. 868-871

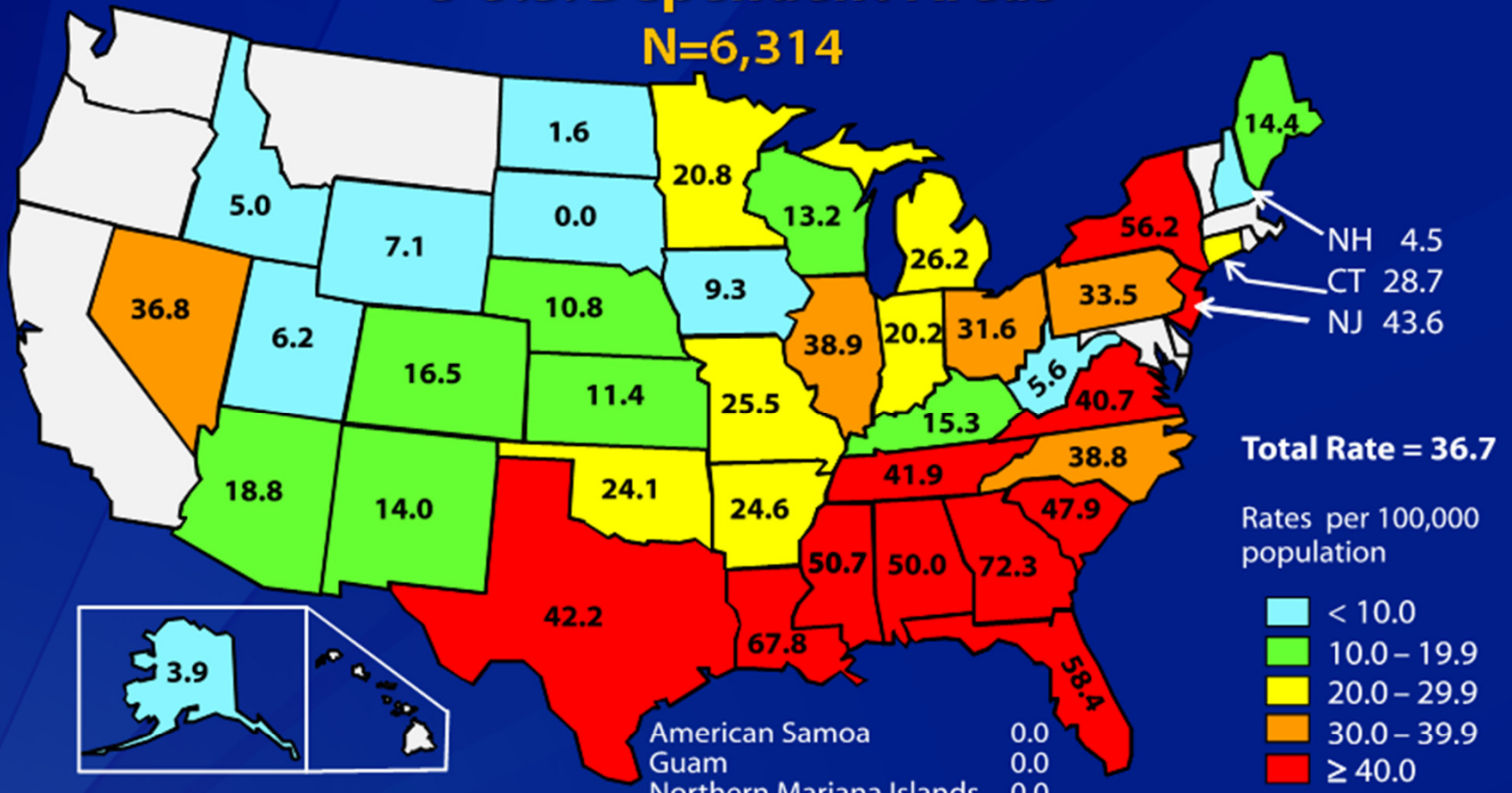
  Isolation of a T-lymphotropic retrovirus from a patient at risk for acquired immune deficiency syndrome (AIDS) F Barre-Sinoussi, JC Chermann, F Rey, MT Nugeyre, S Chamaret, J Gruest, C Dauguet, C Axler-Blin, F Vezinet-Brun, C Rouzioux, W Rozenbaum and L Montagnier
- Compromise – call it HIV

Global Prevalence



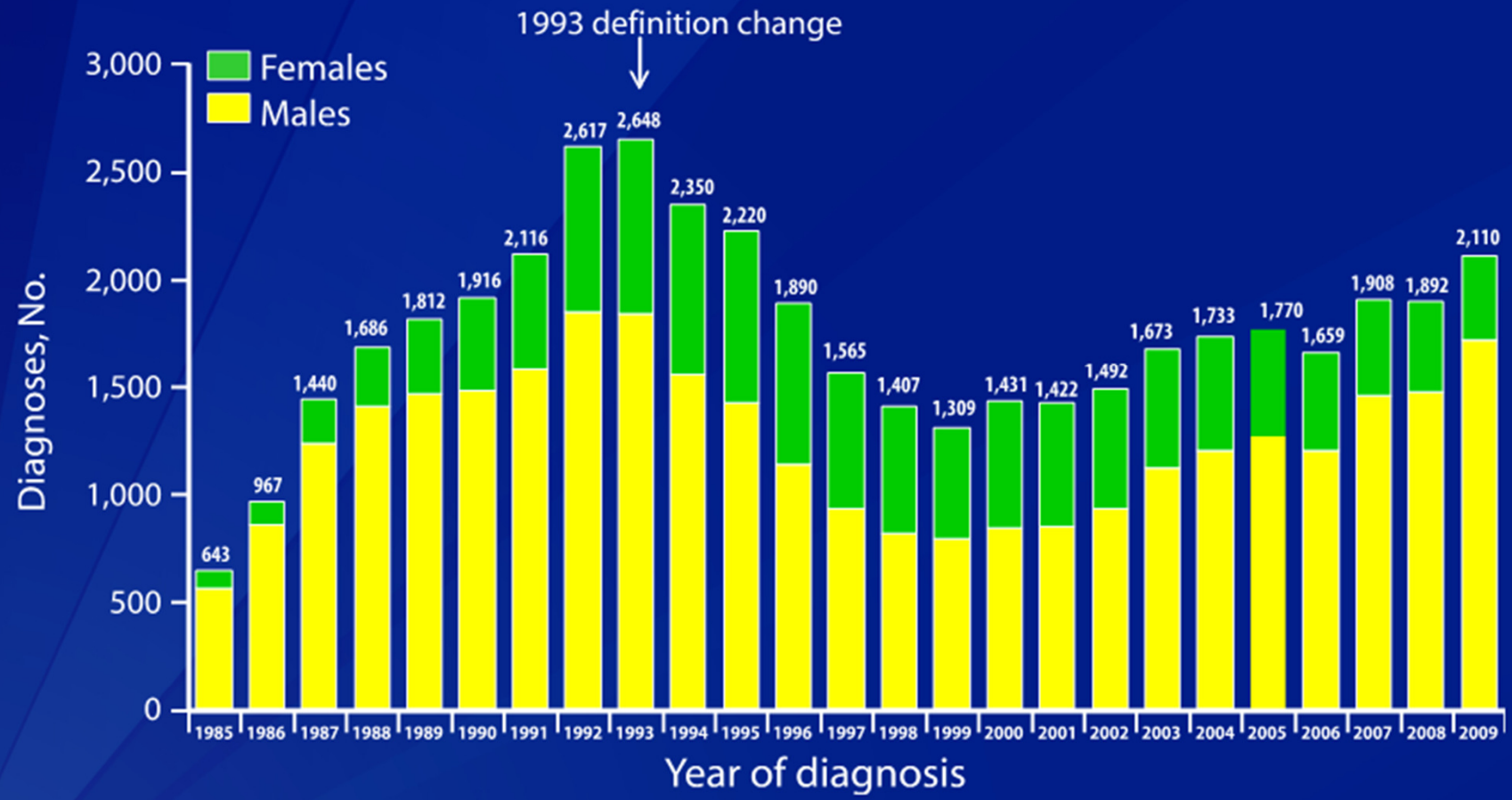
Rates of Diagnoses of HIV Infection among Young Adults Aged 20–24 Years, 2009—40 States and 5 U.S. Dependent Areas

N=6,314



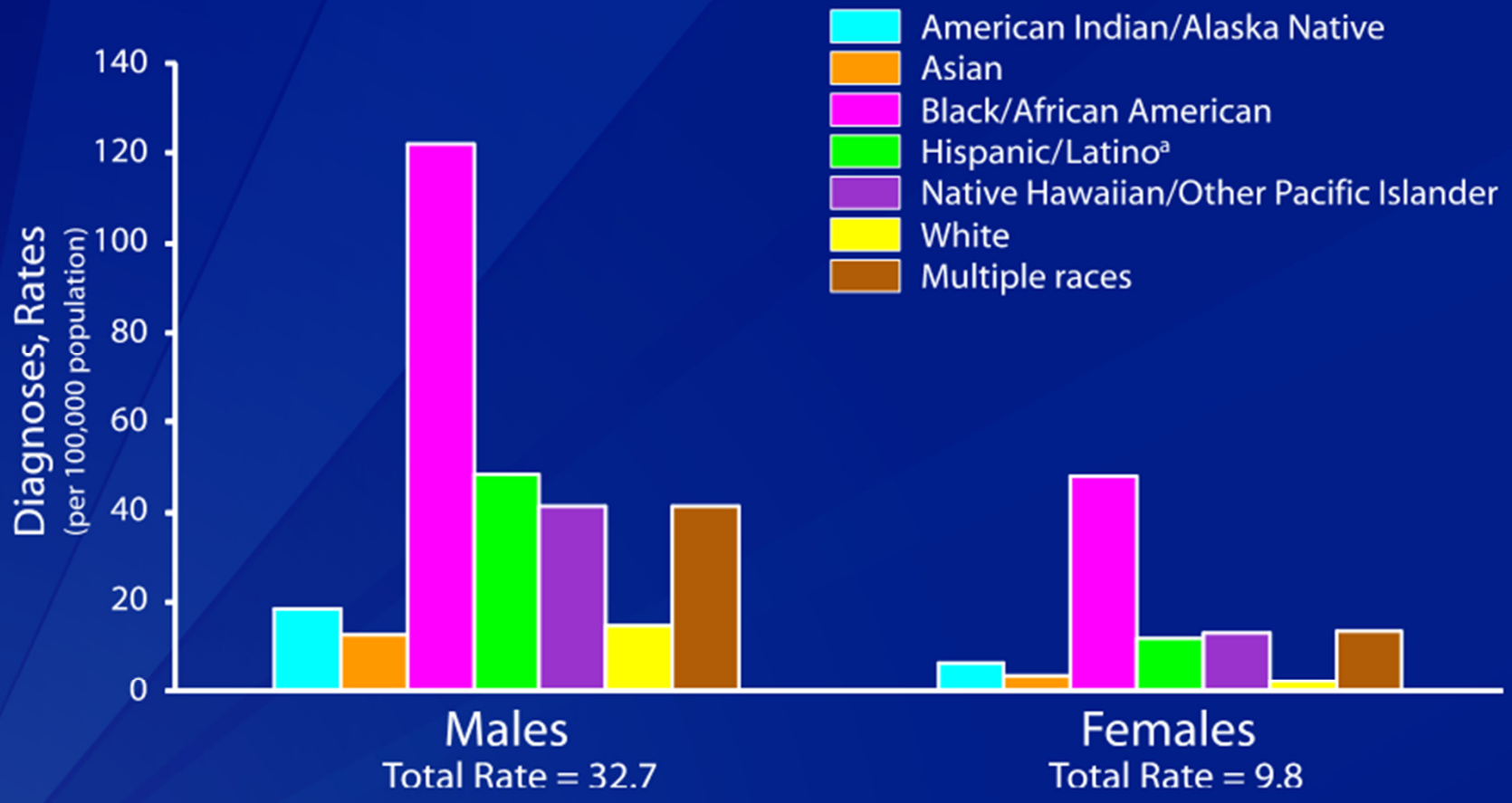
Note. Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. All displayed data have been statistically adjusted to account for reporting delays, but not for incomplete reporting. Rates are per 100,000 population.

AIDS Diagnoses among Adolescents Aged 20–24 Years, by Sex, 1985–2009—United States and Dependent Areas



Note. All displayed data have been statistically adjusted to account for reporting delays, but not for incomplete reporting.

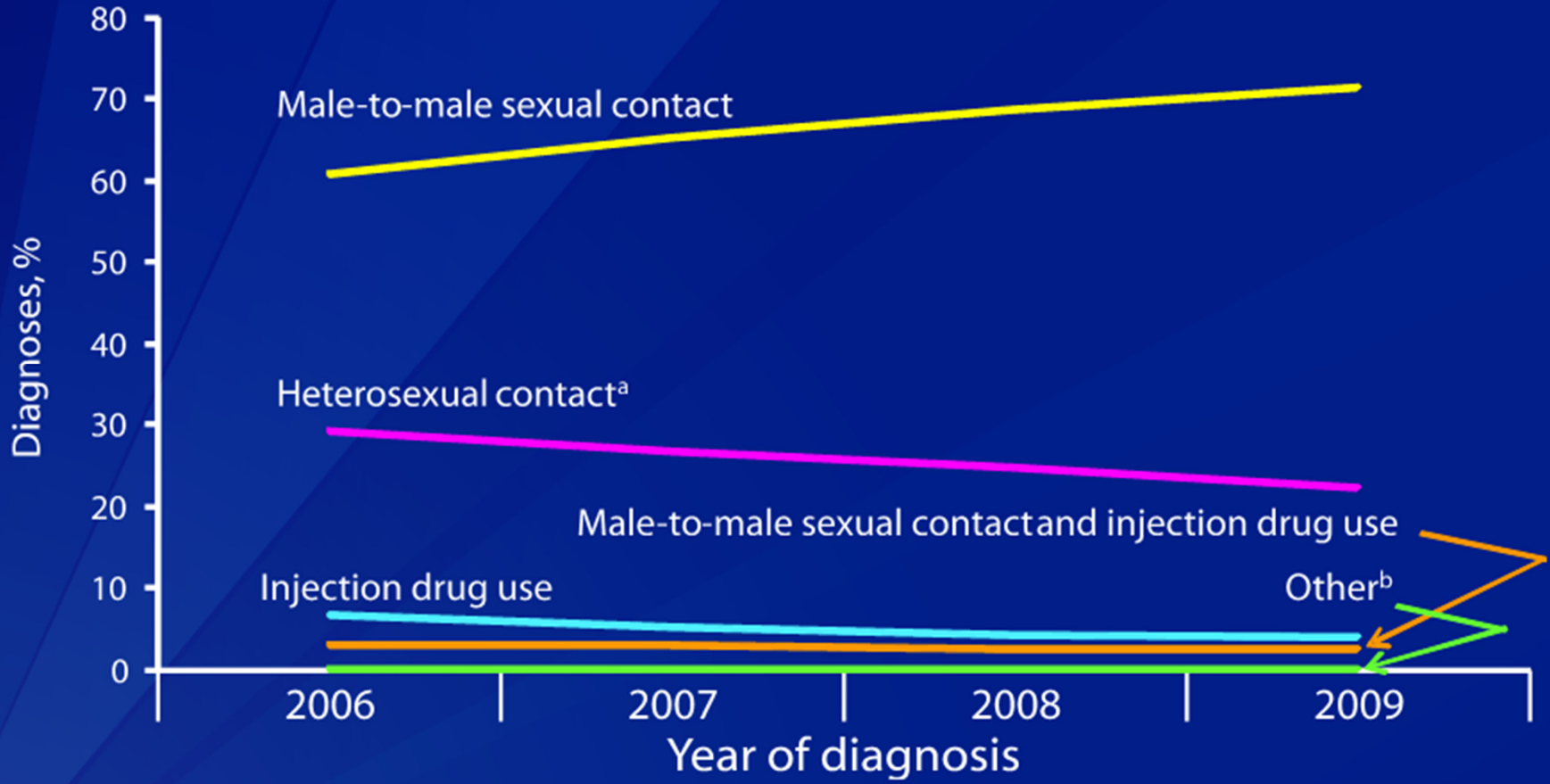
Estimated Rates of Diagnoses of HIV Infection among Adults and Adolescents, by Sex and Race/Ethnicity, 2009—40 States



Note. Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. All displayed data have been statistically adjusted to accounted for reporting delays, but not for incomplete reporting.

[a] Hispanics/Latinos can be of any race.

Diagnoses of HIV Infection among Adolescents and Young Adults Aged13–24 Years, by Transmission Category, 2006–2009—40 States and 5 U.S. Dependent Areas



Note. Data include persons with a diagnosis of HIV infection regardless of stage of disease at diagnosis. All displayed data have been statistically adjusted to account for reporting delays and missing risk-factor information, but not for incomplete reporting.

[a] Heterosexual contact with a person known to have, or to be at high risk for, HIV infection.

[b] Includes hemophilia, blood transfusion, perinatal exposure, and risk factor not reported or not identified.

Undiagnosed HIV

- At the end of 2008, an estimated 1,178,350 persons aged 13 and older were living with HIV infection in the United States. Of those, 20% had undiagnosed HIV infections.[1]
- According to NCHA 2010, only 23% of sexually active students have ever been tested for HIV

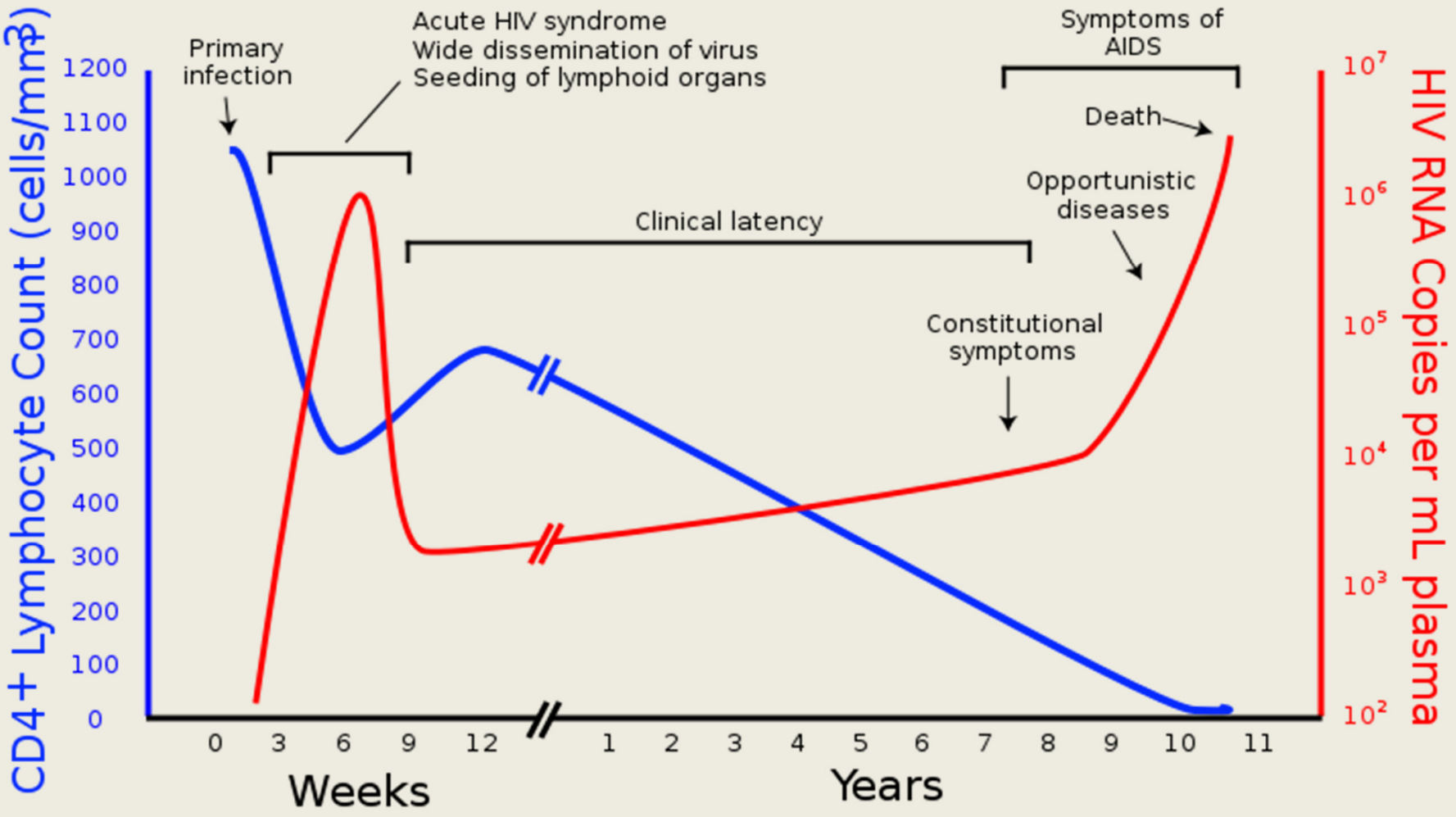
[1] CDC. HIV Surveillance - United States, 1981--2008. MMWR 2011 60(21); 689-693.

Exposure Route	Estimated infections per 10,000 exposures to an infected source
Blood transfusion	9,000 (90%)
Mother-to-child, including pregnancy, childbirth and breastfeeding (without treatment)	2,500 (25%)
Mother-to-child, including pregnancy, childbirth and breastfeeding (with optimal treatment)	100-200 (1%-2%)
Needle-sharing injection drug use	67 (.67%)
Percutaneous needle stick	30 (.30%)
Receptive anal intercourse (2009 and 2010 studies)	170 (1.7%)
Receptive anal intercourse (based on data of a 1992 study)	50 (.5%)
Insertive anal intercourse for uncircumcised men (2010 study)	62 (.62%)[a] [7-168]
Insertive anal intercourse for circumcised men (2010 study)	11 (.11%)[a] [2–24]
Insertive anal intercourse (based on data of a 1992 study)	6.5 (.065%)
Low-income country female-to-male	38 (.38%)[‡] [13–110]
Low-income country male-to-female	30 (.3%)[‡] [14–63]
Receptive penile-vaginal intercourse	10 (.1%)
Insertive penile-vaginal intercourse	5 (.05%)
Fellating a man	1 (.01%)
Man being fellated	0.5 (.005%)

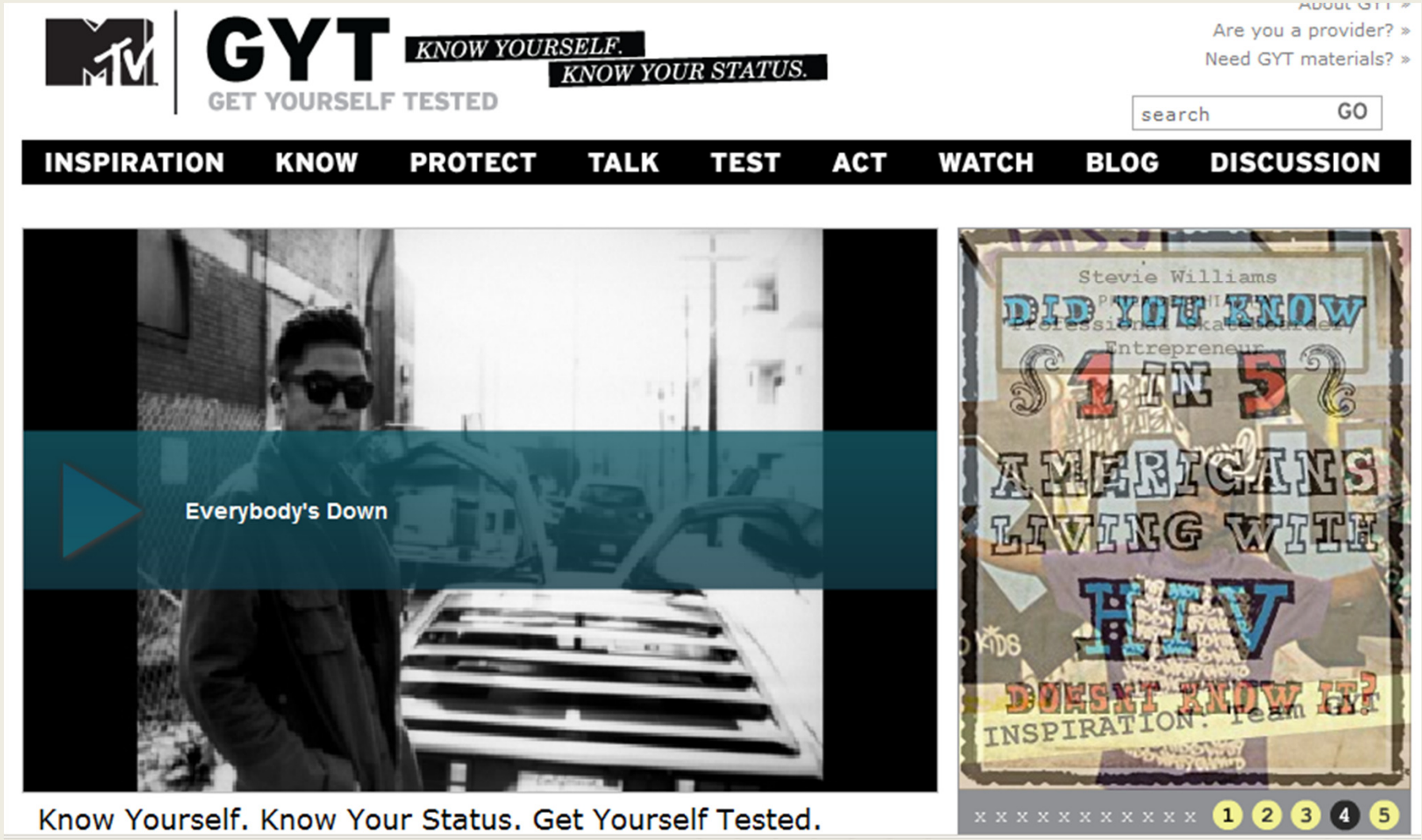
HIV Natural History

- Acute Infection
  - 50-80% develop syndrome of fever, malaise, lymphadenopathy, pharyngitis, rash in the first few weeks after infection, average duration of 28 days
  - Highly contagious, high viral counts in plasma and genital secretions
  - Antibody tests will be negative, but RNA will be positive

HIV Natural History



HIV Prevention

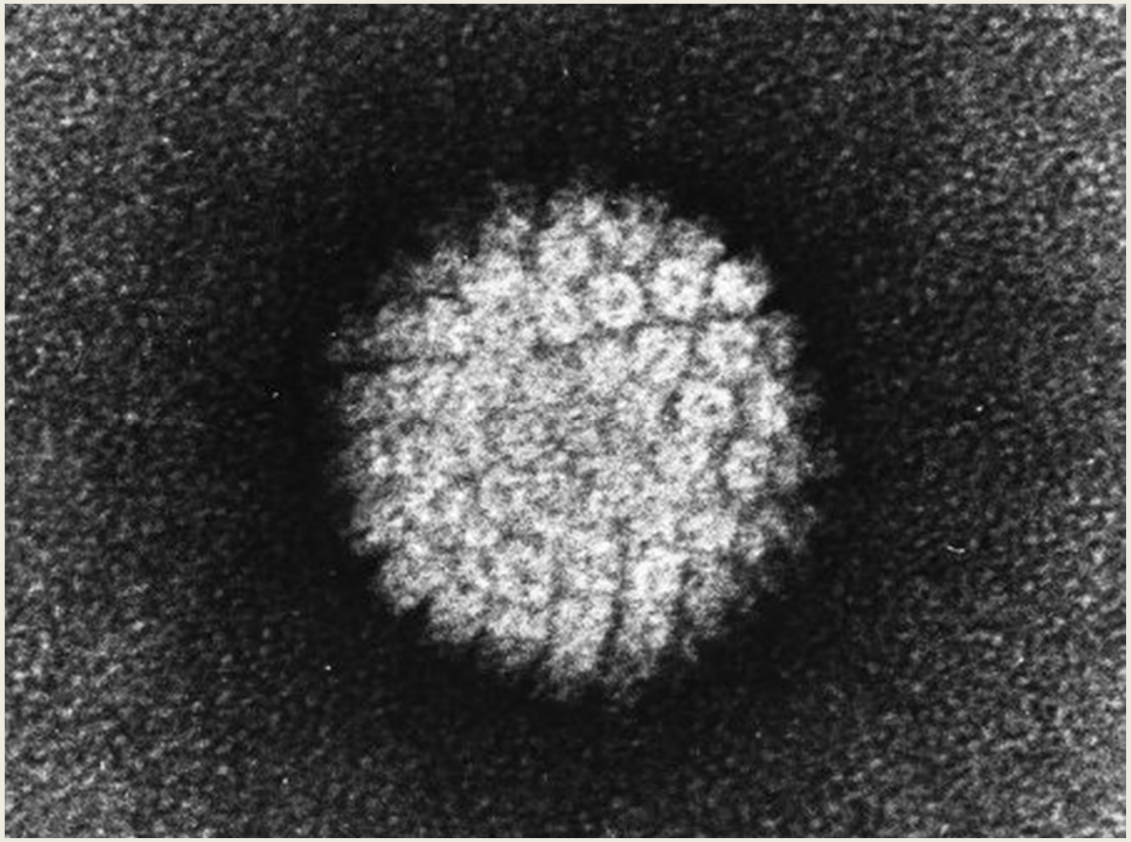


HIV Treatment

- Treatment with HAART
  - Forestalls morbidity and mortality
  - Decreases infectivity
  - Ave. life expectancy is 32 years from date of treatment initiation if initiated at CD4 of 350, higher if initiated when CD4>500
  - Without treatment, onset of AIDS in 9-11 years and death within one year thereafter
- Side effects:
  - lipodystrophy, dyslipidemia, insulin resistance, an increase in cardiovascular risks, and birth defects
  - cost

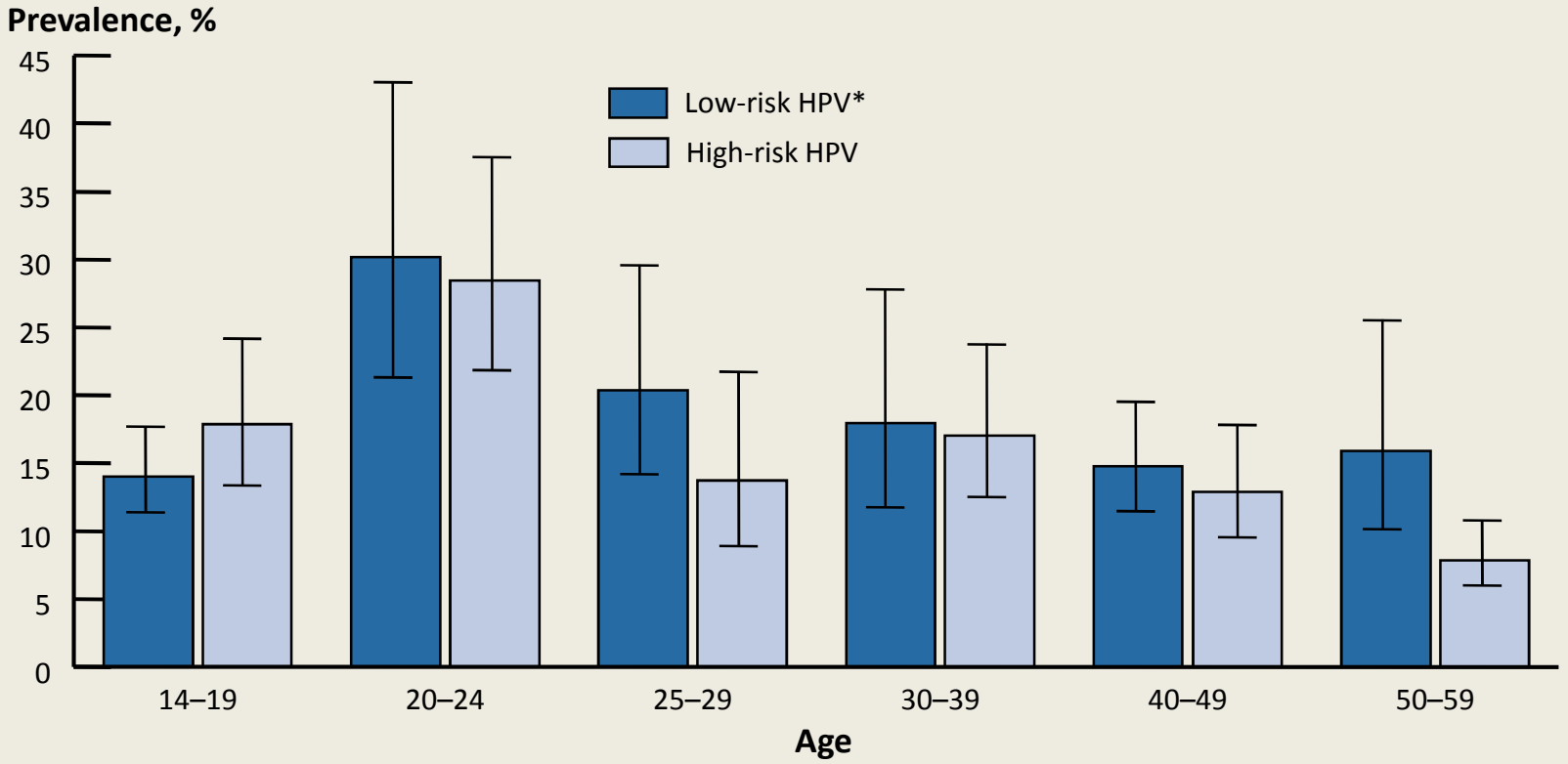
HIV Screening

- All patients should be offered
- All adolescents who are sexually active and/or use injection drugs
- All pregnant women
- MSM: annually or every 3-6 months if multiple or anonymous sex partners or have sex in conjunction with illicit drug use (e.g. crystal meth)



HPV

Human Papillomavirus—Prevalence of High-risk and Low-risk Types Among Females Aged 14–59 Years, National Health and Nutrition Examination Survey, 2003–2004



* HPV = human papillomavirus.
NOTE: Error bars indicate 95% confidence intervals. Both high-risk and low-risk HPV types were detected in some females.

SOURCE: Dunne EF, Unger ER, Sternberg M, McQuillan G, Swan DC, Patel SS, et al. Prevalence of HPV infection among females in the United States. JAMA. 2007;297(8):813-9.

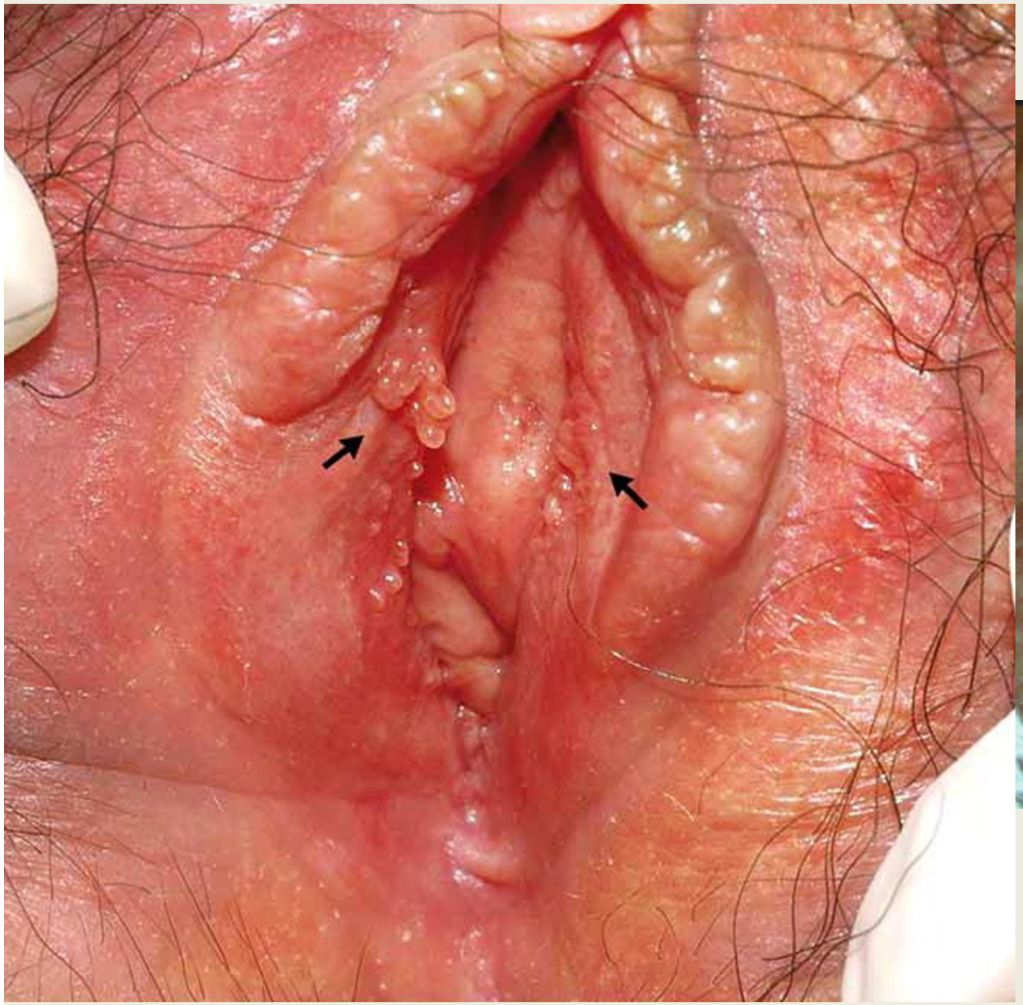
Natural History of HPV

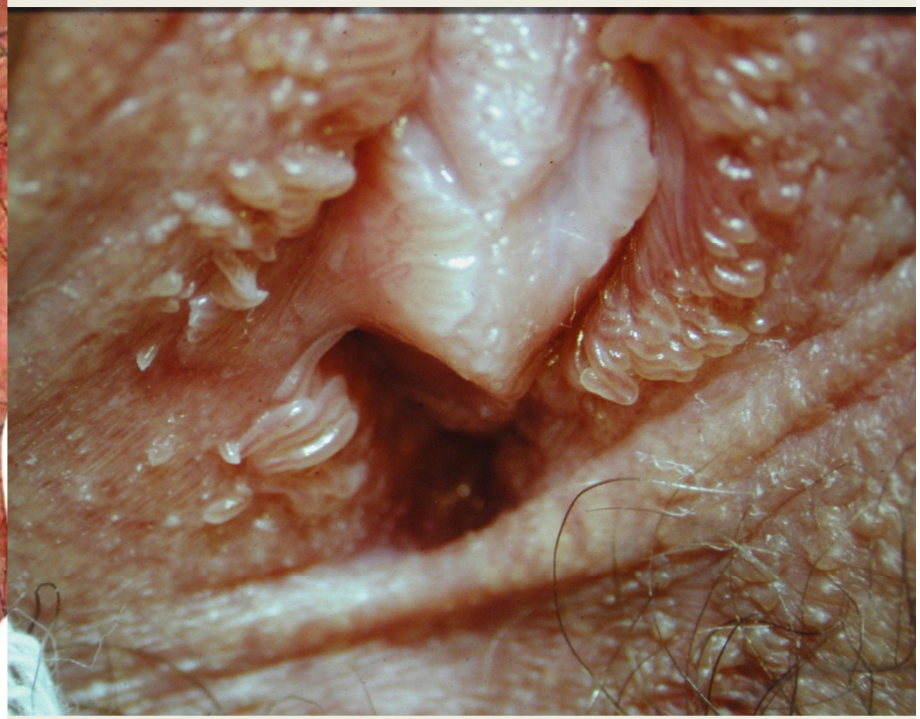
- 85-90% resolves within 3 years in adolescents and young adults
- Persistent infection with oncogenic strains can lead to cervical cancer (also anal and laryngeal cancer)
- Infection with non-oncogenic strains can cause genital warts

HPV Prevention

- HPV vaccine - 39% of all students have received per NCHA 2010
  - Gardasil – HPV 6,11,16,18
    - 6&11 cause 90% of genital warts
    - 16&18 cause 70% of cervical cancer
    - Series of 3 injections
  - Cervarix – HPV 16 & 18
    - Series of 3 injections
    - Not approved for men
- Condoms help too.

What is this?





HPV Treatment – Genital Warts

- Patient-applied:

Name	MOA	Sig	Max use	Side Effects	Comments
Podofilox 0.5%	Anti-mitotic	BID x 3 d, then 4 d off	Up to 4 cycles	Pain, irritation	<0.5 ml/day
Imiquimod	Immune enhancer	QHS 3 d/week, wash off in am	Up to 16 wks	Pain, irritation	Can weaken latex, hypopigment.
Sinecatechins	Green tea extract	TID, do not wash off	Up to 16 wks	Pain, irritation	Can weaken latex, No sexual contact

HPV Treatment – Genital Warts

- Provider-applied:

Method	MOA	Usage	Frequency
Cryo	Thermal-induced cytolysis	Apply til 2-3mm margin	Every 1-2 weeks
Podophyllin resin 10-25%	Antimitotic	Allow to air dry, wash off in 1-4 hrs	Weekly
TCA or BCA	Chemical coagulation of proteins	Allow to dry, neutralize with NaHCO3 if spills	Weekly

HPV Treatment – Genital Warts

- All therapies for genital warts have recurrence rates of 30 to 70 percent within six months of treatment.
- Spontaneous regression has been reported to occur within three months in 20 to 30 percent of cases.
- It is unknown if treatment decreases transmission risk.

HPV Treatment – Cervical Dysplasia

- Most young women will clear cervical dysplasia spontaneously, without treatment
- In those women in whom dysplasia is severe or persistent, treatment is appropriate
  - Cryo
  - LEEP
  - Laser
- Adenocarcinoma of the cervix is an exception and must usually always be treated

HPV Screening

- Not recommended in men
  - Keep an eye out for developing news on anal paps in MSM
- Recommended in women starting at age 21 by ACOG and USPSTF
  - Ages 21-29, pap every other year
  - Age 30 and up, pap every 3 years after 3 consecutive normals

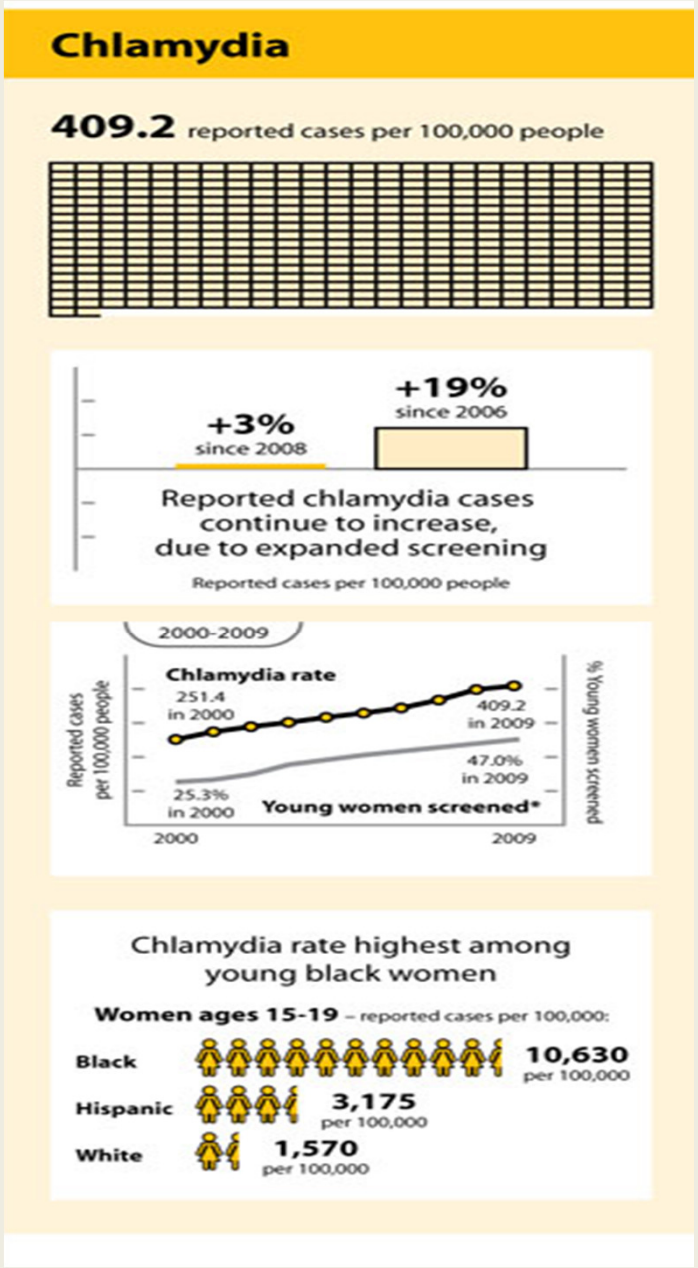
Chlamydia


Chlamydia capital of Canada.
Woo hoo.
Get tested. It's as easy at 1-2-Pee.
Planned Parenthood Regina
THE SEXUAL HEALTH EDUCATION PLACE
VIACOM

Current Burden

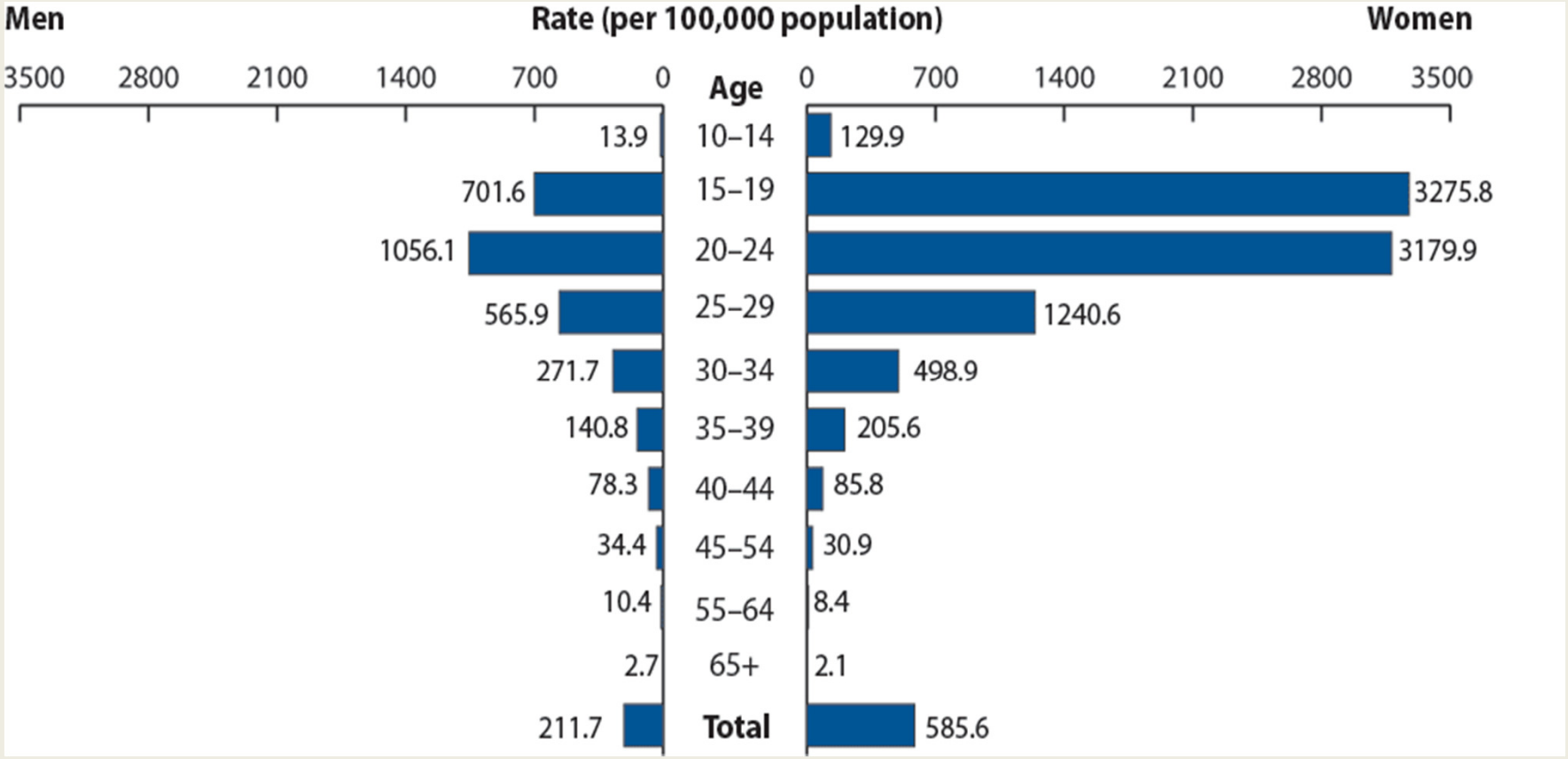
Trends Over Time

Disparities



Source: *Sexually Transmitted Disease Surveillance 2009*. Available at www.cdc.gov/std/stats/

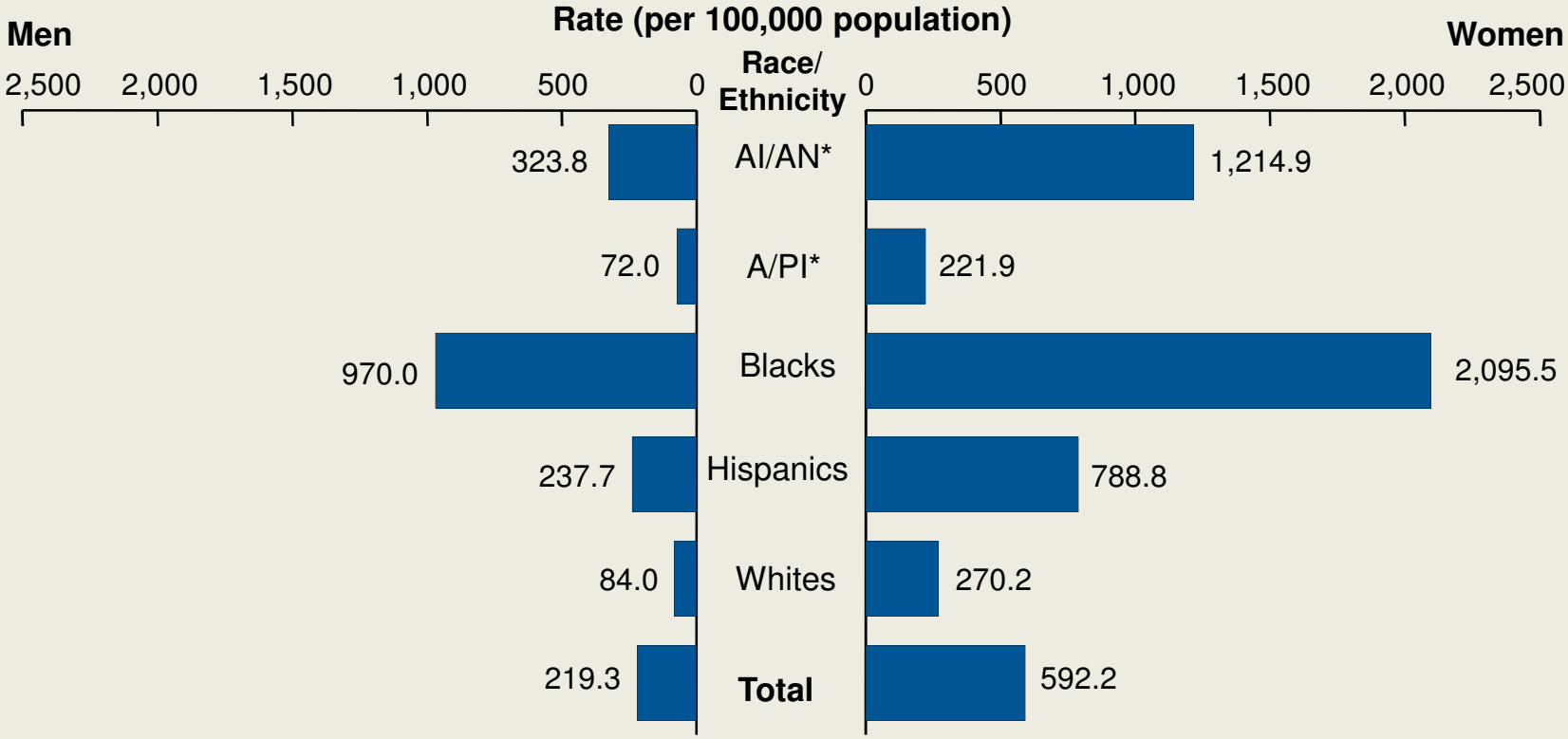
Chlamydia—Age- and sex-specific rates: United States, 2008



2010 ACHA

- Of the students who drink alcohol, 16 % report having unprotected sex as a consequence of their own drinking at some point in the last 12 months

Chlamydia—Rates by Race/Ethnicity and Sex, United States, 2009



* AI/AN = American Indians/Alaska Natives; A/PI = Asians/Pacific Islanders.

Symptoms: Women

Most cases are asymptomatic (up to 70%) if not, sx can occur 1-3 weeks after infection

- Abnormal vaginal d/c
- Dysuria
- Irregular bleeding
- Sx of PID
- Rectal sx

Symptoms: Men

Up to 25 % asymptomatic

- Dysuria
- Urethral discharge
- Meatus burning or itching
- Epididymitis
- Rectal sx

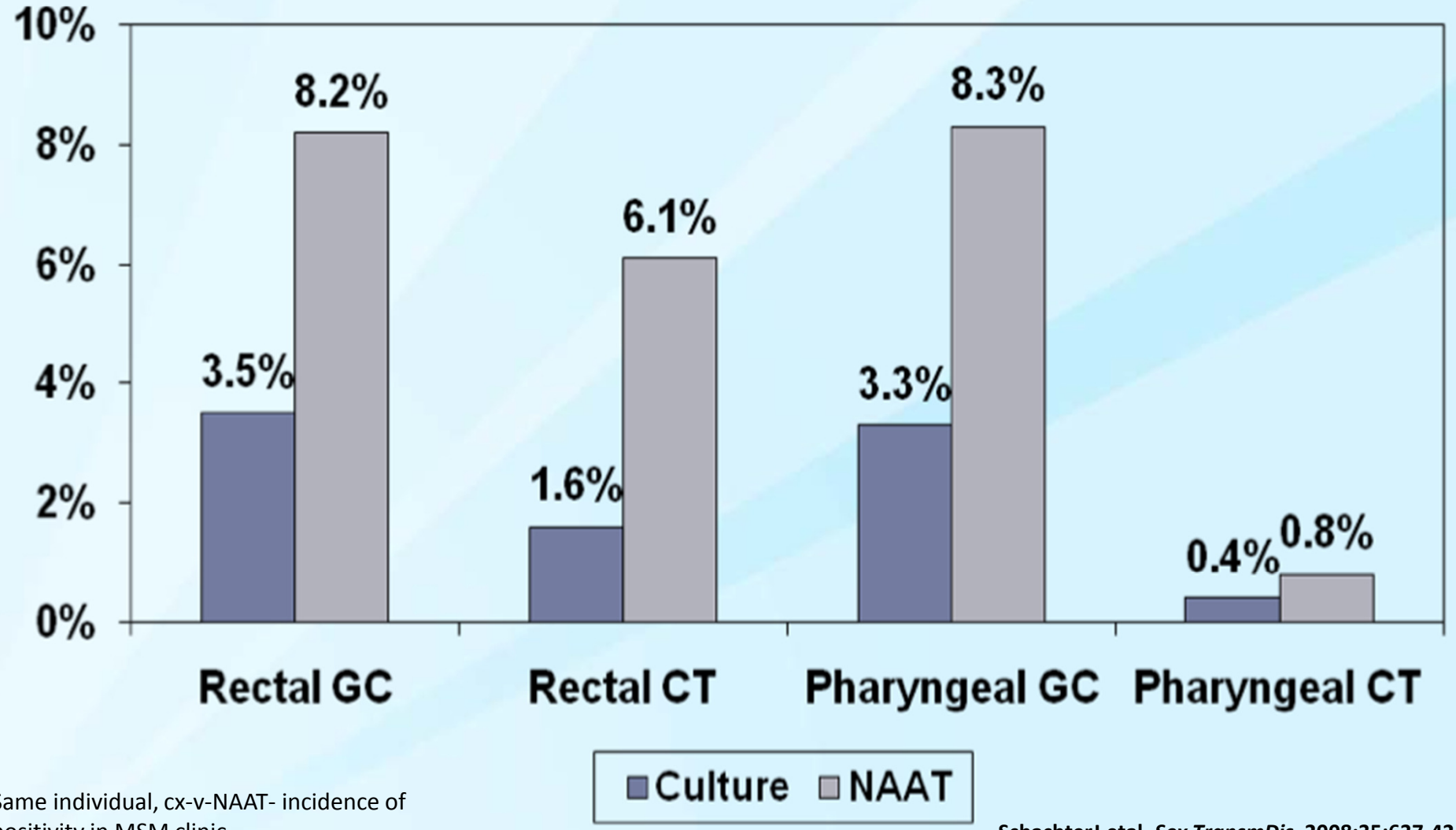
Screening

- ✓ Primary focus is to detect and prevent complications in women (USPSTF)
- ✓ Test all sexually active women under age 26 annually
  Test older women with risk factors (new or multiple partners)
- ✓ Selective male screening (MSM, adolescent clinics, correctional facilities and STD clinics) , or where resources permit

Diagnosis

- ✓ Nucleic Acid Amplification Test (NAAT) preferred
  - Cervical, urethral, urine, rectal and vaginal swabs (check with your lab)
  - Some NAATs approved from liquid based paps, may have reduced sensitivity
  - Oropharyngeal CT screening not recommended
  - Vaginal swabs (will be listed as test of choice in next revision) and urine samples appear to have best sensitivity

Nongenital GC/CT NAAT vs Culture Performance



Same individual, cx-v-NAAT- incidence of positivity in MSM clinic

SchachterJ,etal. *Sex TransmDis*. 2008;35:637-42.

Treatment

of uncomplicated chlamydia

Recommended Regimens

Azithromycin 1 g orally in a single dose

OR

Doxycycline 100 mg orally twice a day for 7 days

Alternative Regimens

Erythromycin base 500 mg orally four times a day for 7 days

OR

Erythromycin ethylsuccinate 800 mg orally four times a day for 7 days

OR

Levofloxacin 500 mg orally once daily for 7 days

OR

Ofloxacin 300 mg orally twice a day for 7 days

2 - 500 mg tablets of azithromycin may be better tolerated than packet

Follow-Up

- Test for other STI's
- Counsel risk reduction strategies
- Partner(s) who have had contact within the past 60 days to be treated. Consider EPT
- To abstain from sex for 7 days beyond both partner's completion of treatment
- Retest 3 mo post treatment (NO sooner than 3 weeks following tx if using NAAT)
    - 15 %-20% of women are reinfected within 6 mo.

Risks of Sequela following repeated CT infection

Ref	N, setting	Design	Ectopic pregnancy		
Hillis 1997	N=11,000, FP and STD clinics, ≥1 CT infection, WI	Retrospective cohort Hospital D/C codes	# CT	OR	(CI)
			1	1.0	
			2	2.1	(1.3-3.4)
			3+	4.5	(1.8-5.3)
Bakken 2007	N=20,762, w/ CT test 1990-2003, Norway	Retrospective cohort; Inpt + outpt	#CT	rate/100py	aHR
			1	0.58	1.0
			2+	1.39	2.4

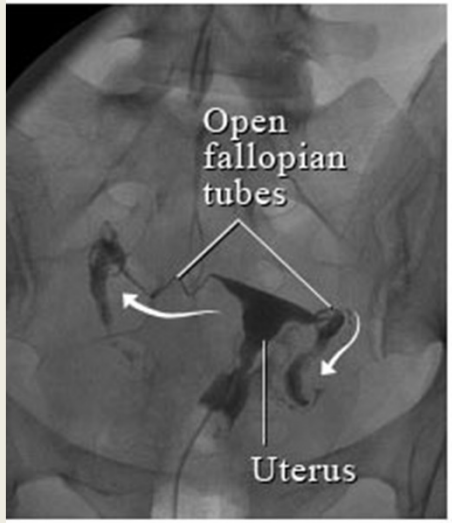


Figure 1

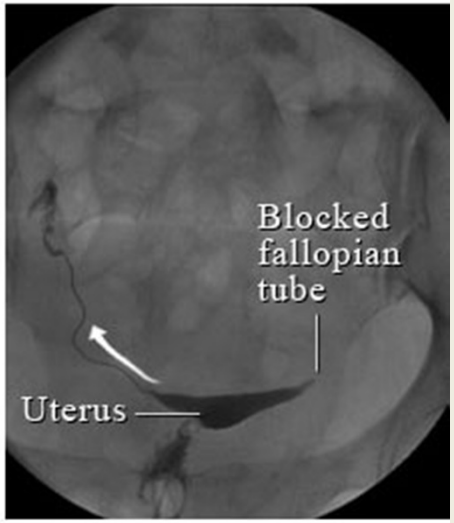
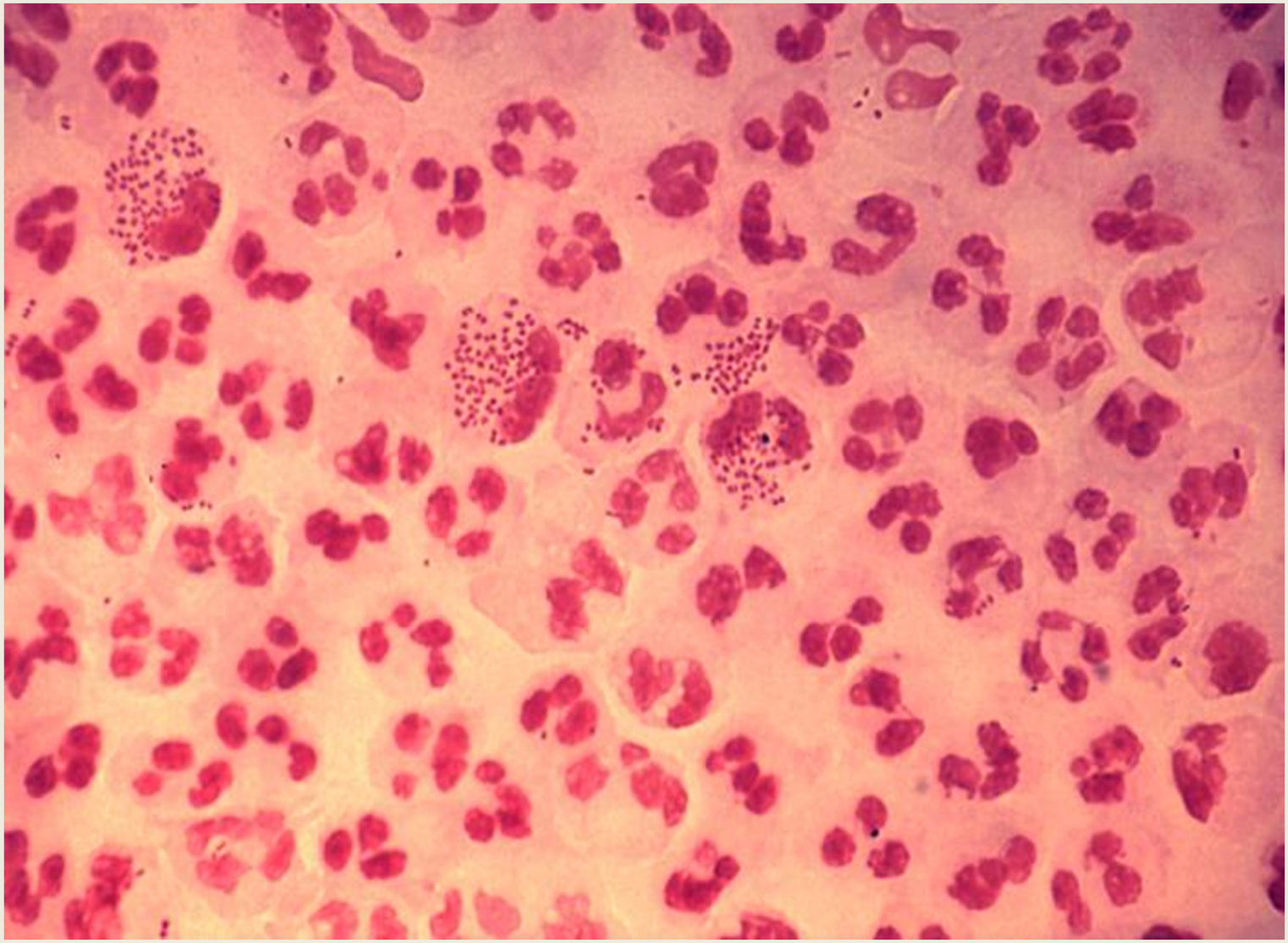
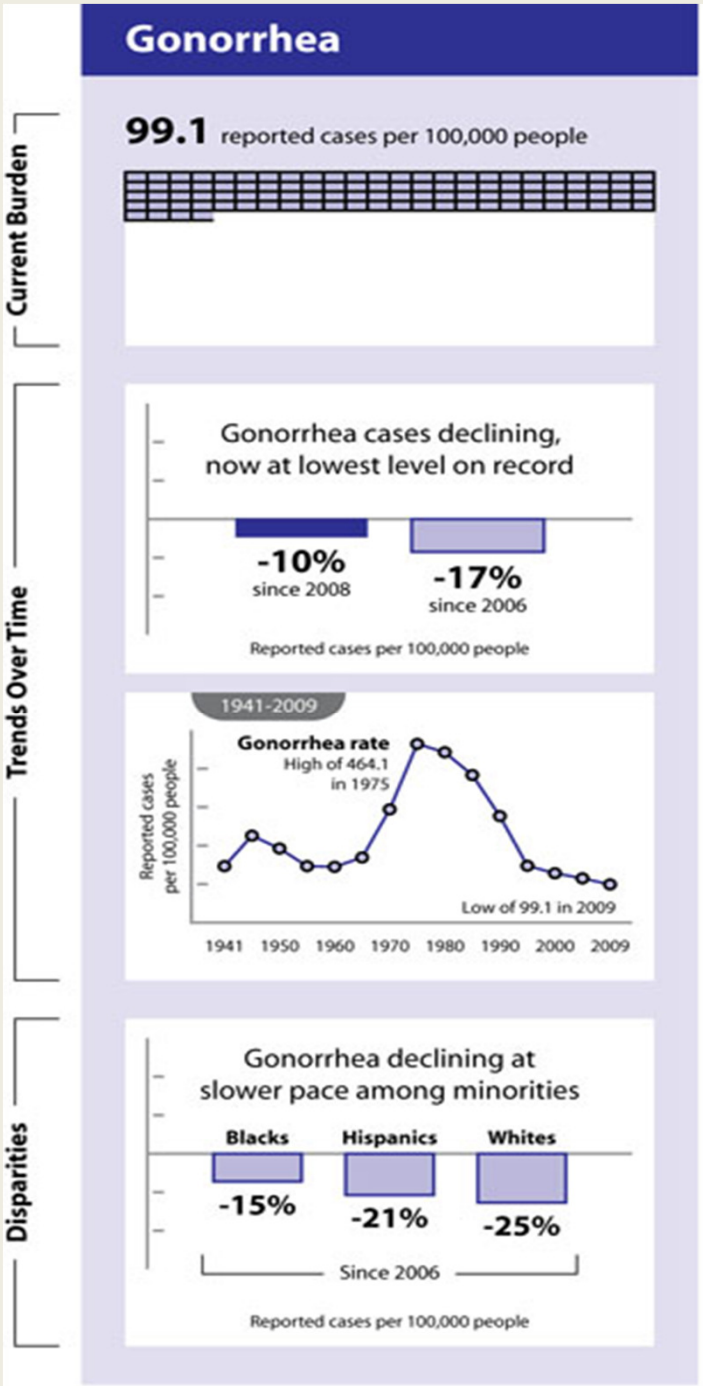


Figure 2

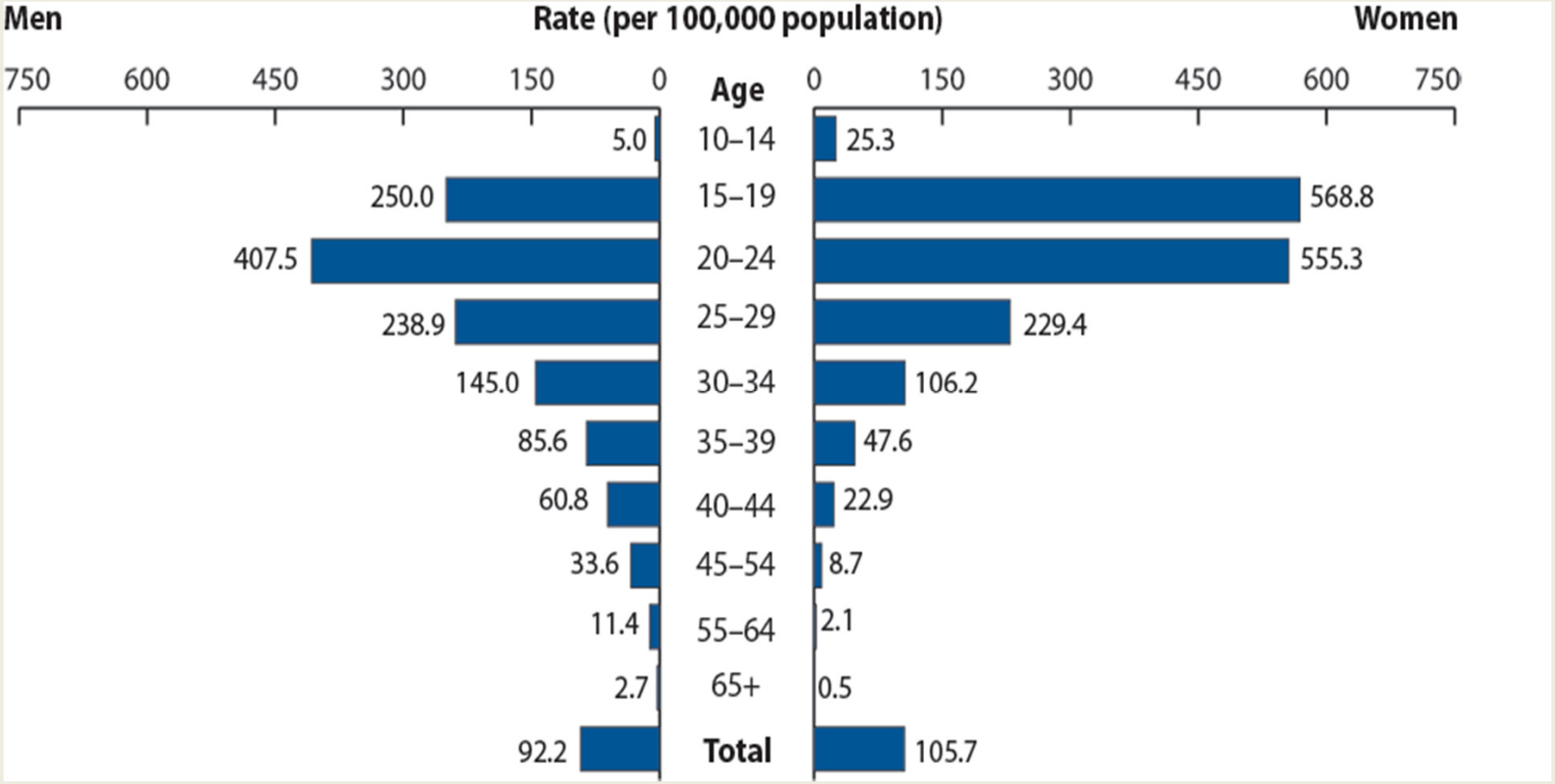


Gonorrhea

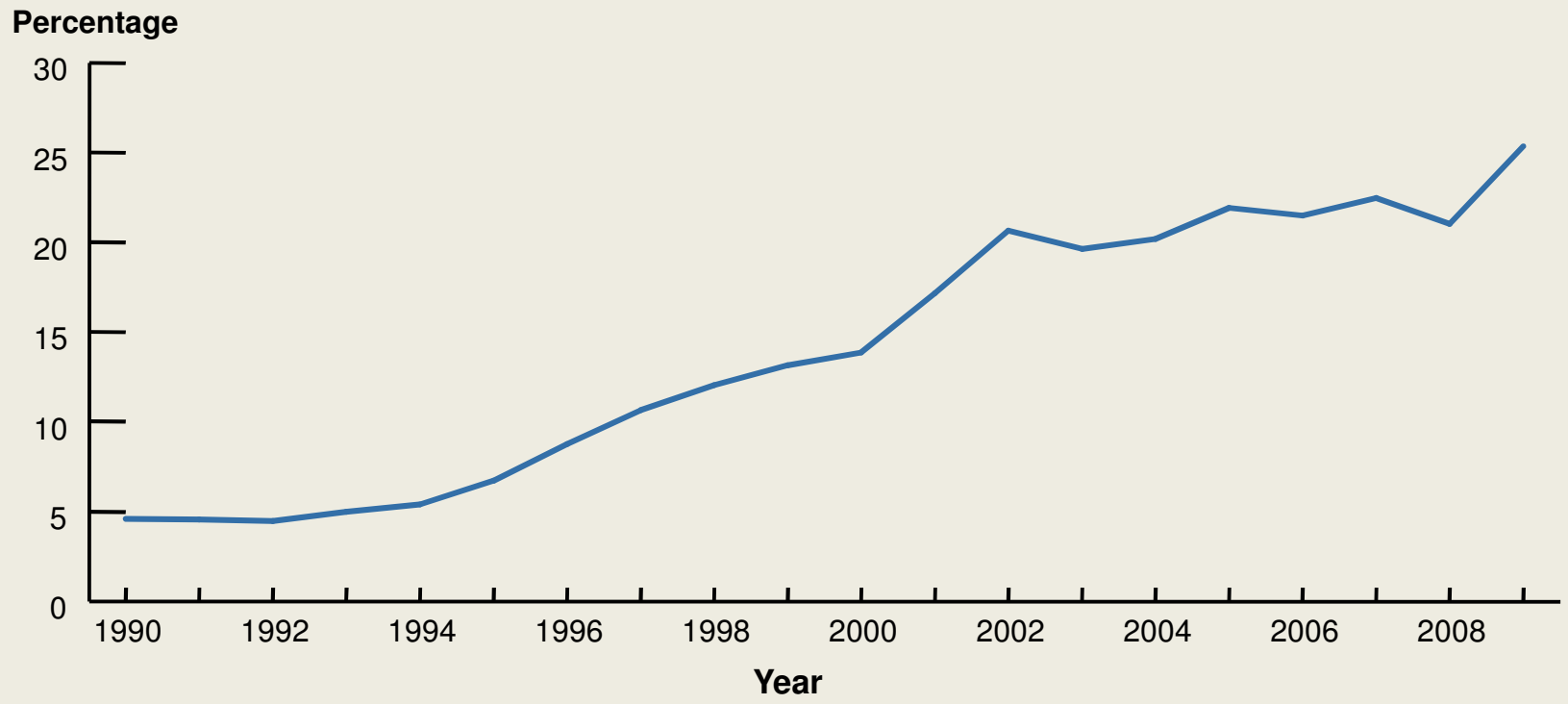


Source: *Sexually Transmitted Disease Surveillance 2009*. Available at www.cdc.gov/std/stats/

Gonorrhea—Rates by Age and Sex, United States, 2009

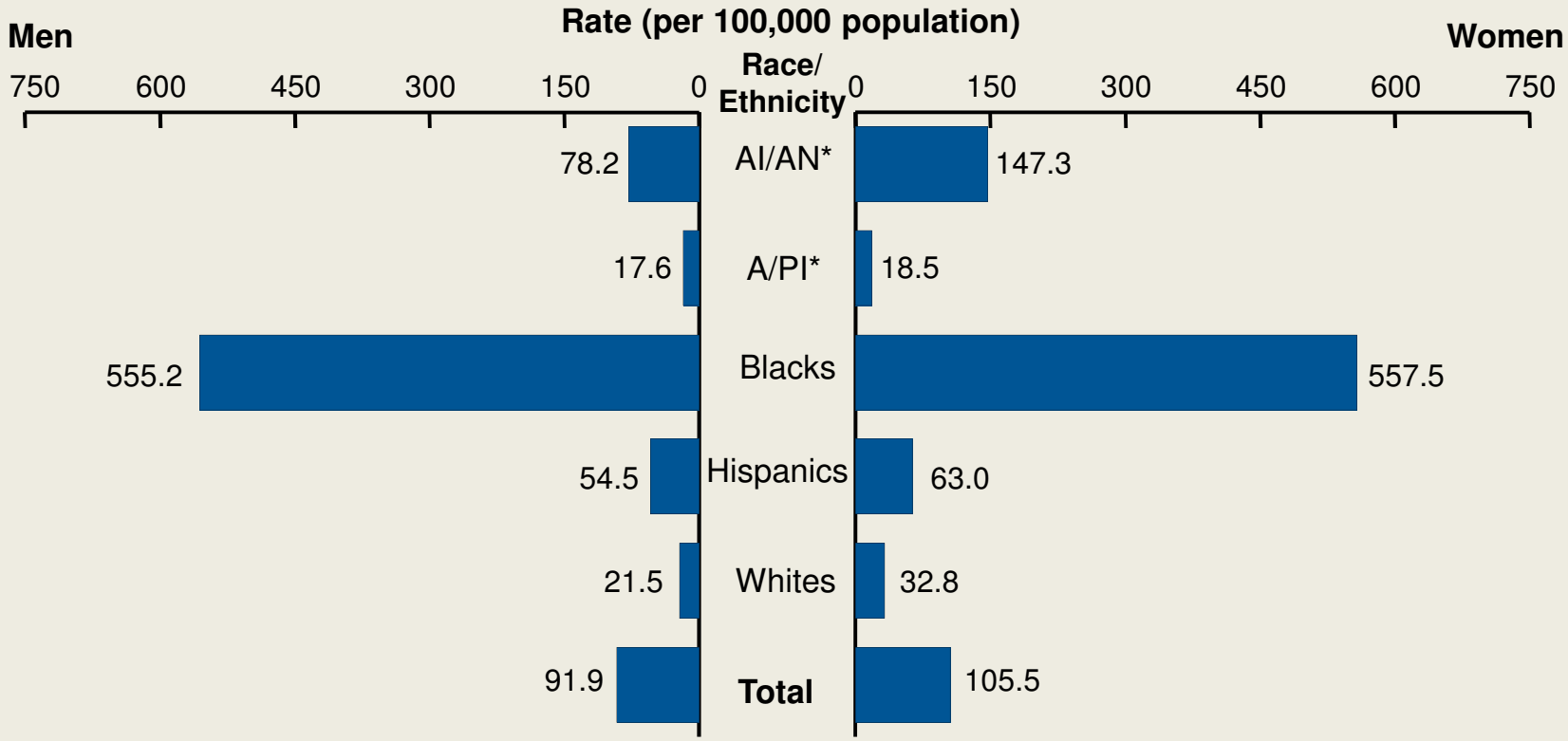


Gonococcal Isolate Surveillance Project (GISP)—Percentage of Urethral *Neisseria gonorrhoeae* Isolates Obtained from MSM* Attending STD* Clinics, 1990–2009



* MSM = men who have sex with men; STD = sexually transmitted disease.

Gonorrhea—Rates by Race/Ethnicity and Sex, United States, 2009



* AI/AN = American Indians/Alaska Natives; A/PI = Asians/Pacific Islanders.

Screening

Consider local rates of infection when making screening decisions

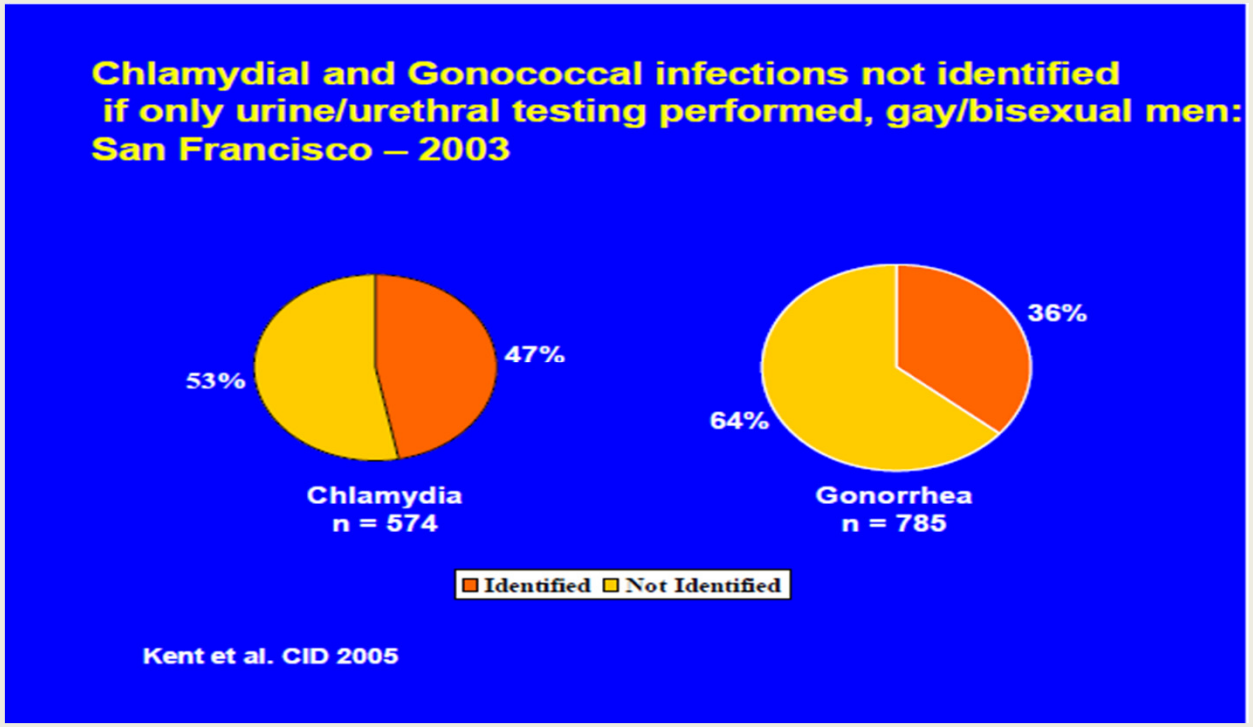
USPTF does not recommend widespread asymptomatic screening in low incidence communities and low risk individuals (men and women)

Screen high risk individuals:

- previous GC infection
- diagnosis with other STIs
- new or multiple sexual partners and inconsistent condom use
- MSM

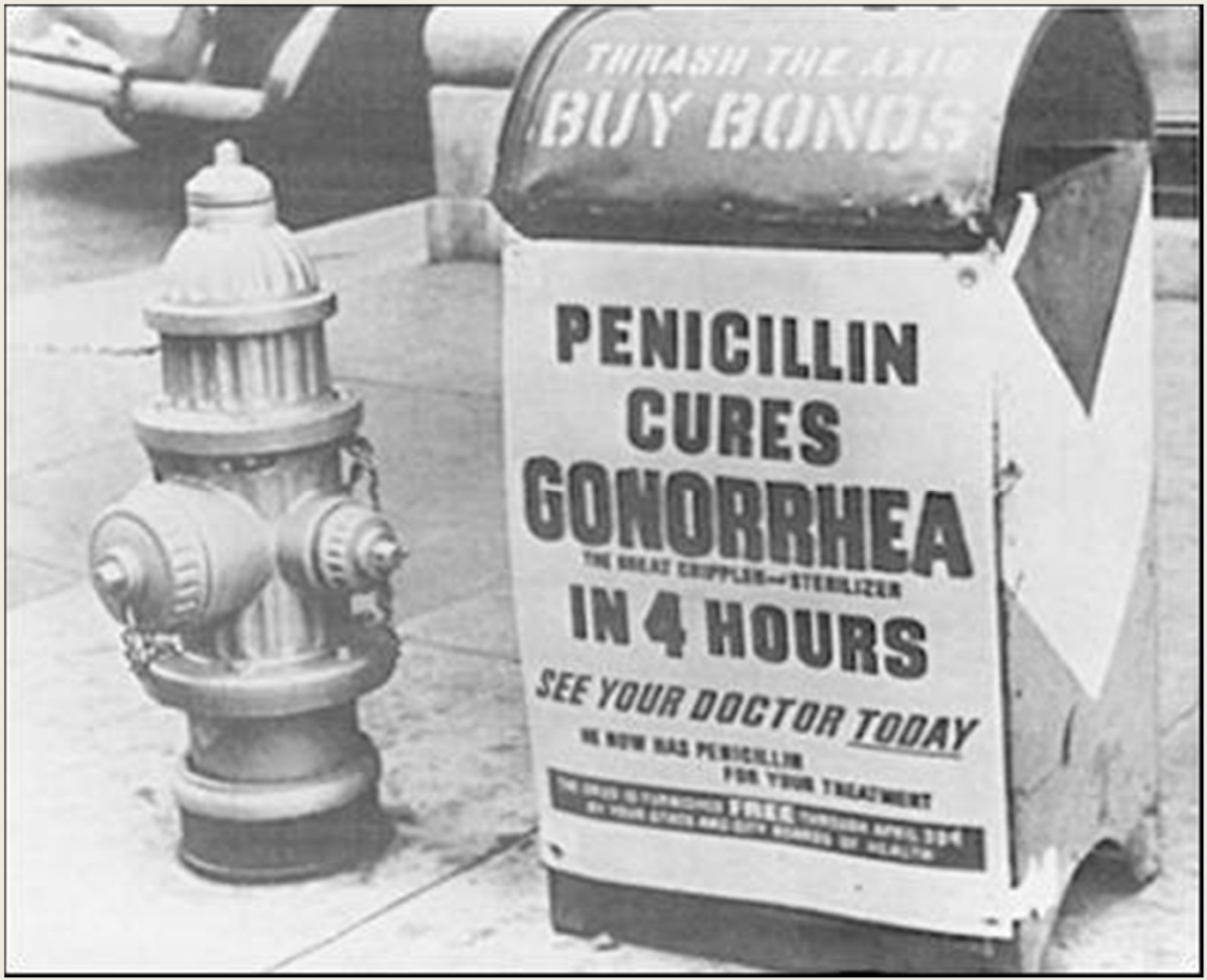
Diagnosis

- ✓ Nucleic Acid Amplification Test (NAAT) preferred
  - Cervical, urethral, urine, rectal, pharyngeal and vaginal swabs (check with your lab)
  - NAAT cannot offer antimicrobial susceptibility results. Perform a culture and sensitivity in cases of documented or suspected treatment failure.
  - Test all sites of contact



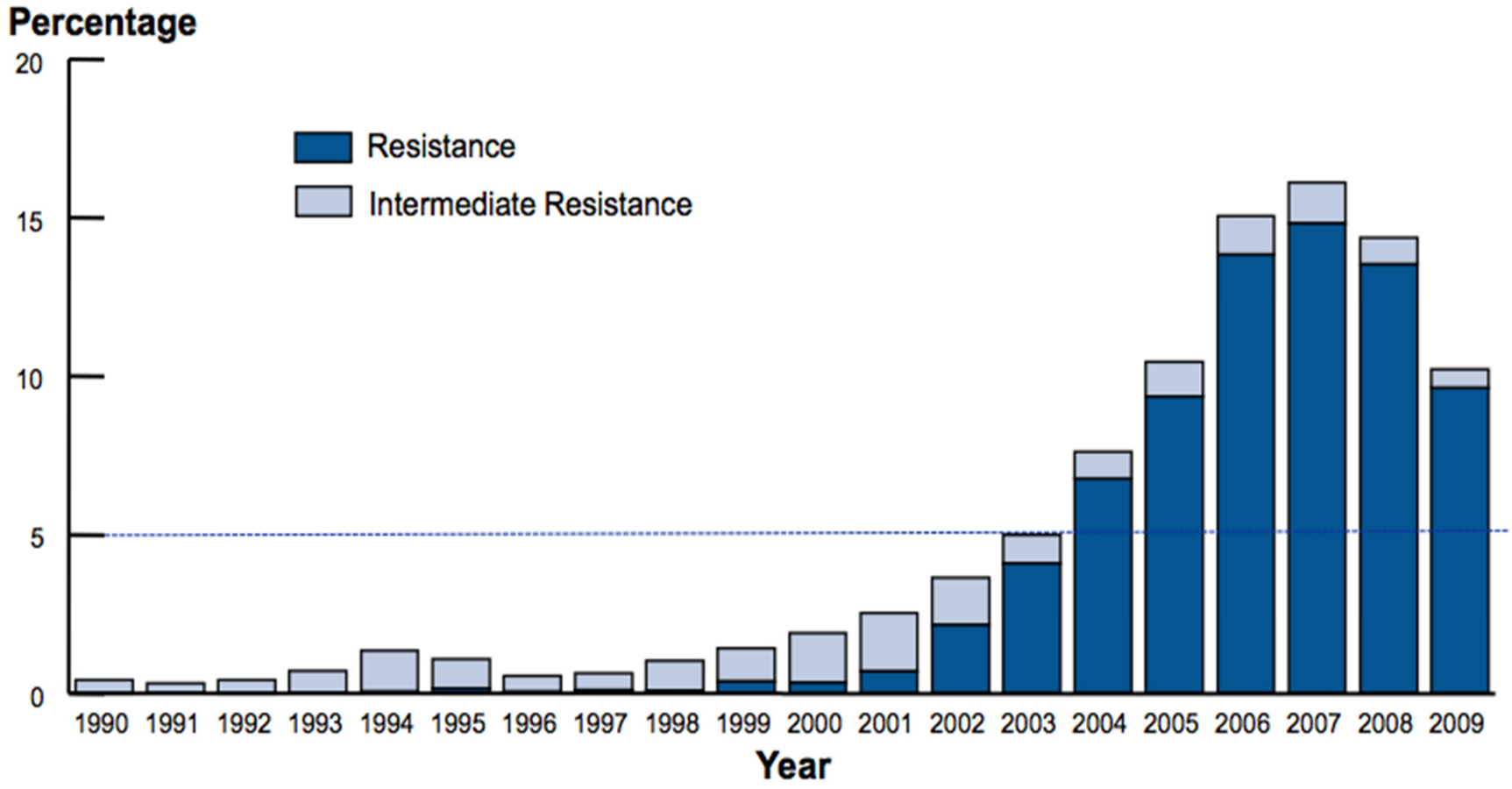
ACHA 2010:

- 70 % of all college students who had anal intercourse in the 30 days prior to the survey did not use a condom
- 42% of all college students engaged in oral sex in the 30 days prior to the survey, 94 %of these did not use a condom


BUY BONDS
PENICILLIN
CURES
GONORRHEA
IN 4 HOURS
SEE YOUR DOCTOR TODAY

Creeping MIC’s

Gonococcal Isolate Surveillance Project (GISP)—Percentage of *Neisseria gonorrhoeae* Isolates with Resistance or Intermediate Resistance to Ciprofloxacin, 1990–2009



NOTE: Resistant isolates have ciprofloxacin minimum inhibitory concentrations (MICs) >1 µg/ml. Isolates with intermediate resistance have ciprofloxacin MICs of 0.125–0.5 µg/ml. Susceptibility to ciprofloxacin was

Treatment

Uncomplicated Gonococcal Infections of the Cervix, Urethra, and Rectum

Recommended Regimens

Ceftriaxone 250 mg IM in a single dose

OR, IF NOT AN OPTION

Cefixime 400 mg orally in a single dose

OR

Single-dose injectible **cephalosporin** regimens

PLUS

Azithromycin 1g orally in a single dose

OR

Doxycycline 100 mg orally twice a day for 7 days

- Coinfection with CT is common, but dual treatment necessary <u>even if CT is negative</u>
- Routine cotreatment may hinder the development of antimicrobial–resistant gonorrhea and may enhance treatment efficacy for pharyngeal infection when using cephalosporins

Save the Cephalosporins ….

- 50 treatment failures with cephalosporins in Japan- now use IV only
- Ensure partner treatment and test for reinfection
- Report in vitro resistance or treatment failure to the CDC
- There are little/no effective alternative tx options …

PCN and Cephalosporin Allergy

- 10 % potential for cross-sensitivity risk with 1st generation cephalosporins among PCN allergic patients
- No evidence of increased anaphylaxis risk among PCN allergic patients with 2nd and 3rd generation cephalosopins (ceftriaxone) used to treat N. Gonorrhoeae
- Anaphylaxis with a cephalosporin is an extremely rare event
- Consider referral to ID specialty if type 1 reaction to PCN/Cephalosporins and in need of tx for GC

Follow-Up

- Test for other STI's
- Counsel risk reduction strategies
- Partner(s) who have had contact within the past 60 days to be treated (empirically)
- To abstain from sex until therapy is completed and they and their partners no longer have symptoms
- Retest 3 mo post treatment (NO sooner than 3 weeks following tx if using NAAT)

Non-specific urethritis (NSU/NGU)

- More common than chlamydia or gonorrhea

- Multiple etiologies, including sexually acquired
  - adenovirus, HSV, trichomonas (5-20%), anaerobes, ureaplasma (0-20 %)
  - enteric bacteria; also non-infectious causes

  - *Mycoplasma genitalium*
    - Causes 5-25% of NGU; maybe cervicitis, PID
    - no commercial diagnostic tests yet available
    - Found in 15% of asymptomatic men
    - public health impact not clear
    - azithromycin more effective than doxycycline

Nonspecific Urethritis in Men

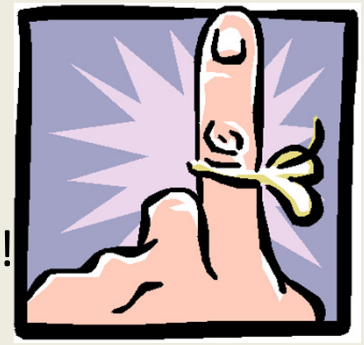
Symptoms :

- Mild urethral irritation
- “Doesn’t feel right”
- Frank dysuria and discharge

Diagnosis :

- Mucopurulent discharge on exam
- Meatal inflammation
- >5 WBC/hpf on Gram stain
- > 10WBC/hpf on initial-void urinalysis

Dysuria in young men is STI unless proven otherwise !



Treatment of male urethritis

Recommended Regimens

Azithromycin 1 g orally in a single dose

OR

Doxycycline 100 mg orally twice a day for 7 days

Alternative Regimens

Erythromycin base 500 mg orally four times a day for 7 days

OR

Erythromycin ethylsuccinate 800 mg orally four times a day for 7 days

OR

Levofloxacin 500 mg orally once daily for 7 days

OR

Ofloxacin 300 mg orally twice a day for 7 days

Persistence or recurrence

… 30 %

- Consider change to doxy if azithromycin previously used
- Consider tinidazole early

Recommended Regimens

Metronidazole 2 g orally in a single dose

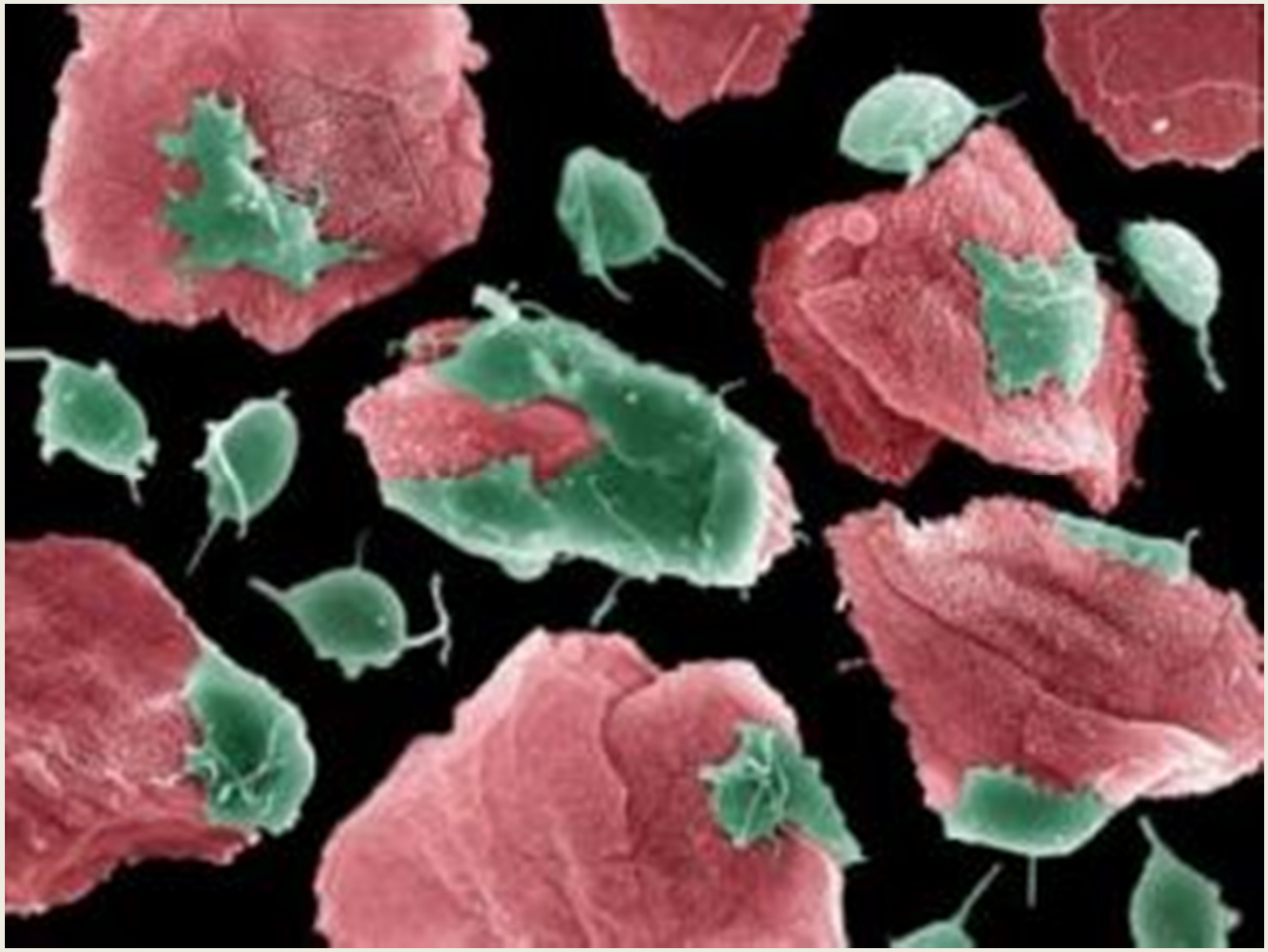
OR

Tinidazole 2 g orally in a single dose

PLUS

Azithromycin 1 g orally in a single dose (if not used for initial episode)

Moxifloxin 400 mg QD times 7 d if suspect M. gen resistant to azithromycin



Trichomonas

Symptoms- Women:

- Vaginal/vulvar erythema (75%)
- Frothy yellow/green discharge (25%)
- Vulvar itching (20-50%)
- Dysuria (<25%)
- Dyspareunia (<25%)
- Up to 50 % women asymptomatic

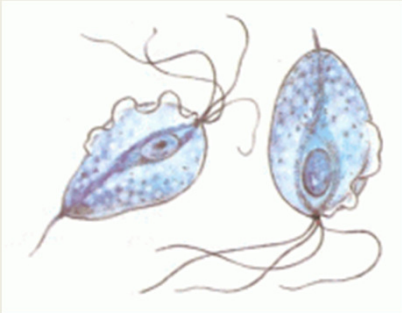
Symptoms- Men:

- Urethral discharge (65-100 %)
- Urethral itching (98 %)
- Dysuria (5%)
- Asymptomatic (more than 50%)

Diagnosis

- Vaginal pH >5 (60-90%)
- “Strawberry cervix (5%)

- Wet prep= 60% sensitivity, requires immediate look
  - “whiff” often positive, many WBC
- 4/2011… NAAT/PCR sensitivity >83% Specificity >97%. Some POC
- Men- wet mount not advised, no POC available



Treatment

Recommended Regimens

Metronidazole 2 g orally in a single dose

OR

Tinidazole 2 g orally in a single dose

Alternative Regimen

Metronidazole 500 mg orally twice a day for 7 days*

* Patients should be advised to avoid consuming alcohol during treatment with metronidazole or tinidazole. Abstinence from alcohol use should continue for 24 hours after completion of metronidazole or 72 hours after completion of tinidazole.

Follow-Up

- Treat partners empirically
- Abstain until both partners compete tx and are asymptomatic

- 5-10 % resistance
- 17 % reinfection rate at 3 mo
- Consider test for reinfection at 3 mo following tx
- Treat longer in cases of treatment failure

Vaginitidities

Bacterial Vaginosis

Symptoms

- Increased vaginal odor
- Increased vaginal discharge
- Itching/burning often absent or mild
- Most women asymptomatic

Risk factors

- Sexual activity
- new or multiple sex partners
- douching
- lack of condom use
- lack of vaginal lactobacilli
- Lesbian relationships= 2.5 times greater risk

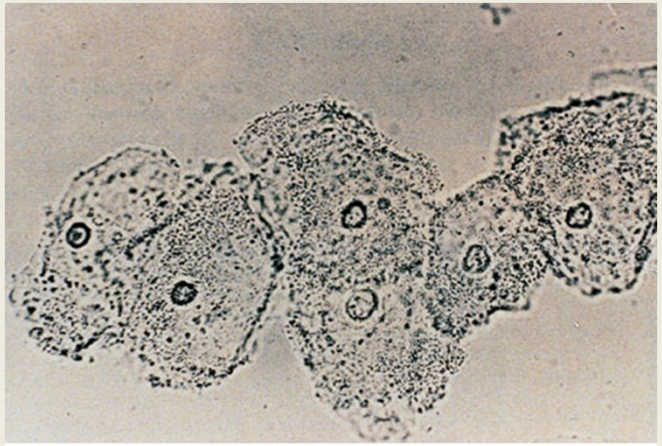
Sex Transm Infect 2007;83:470–475.

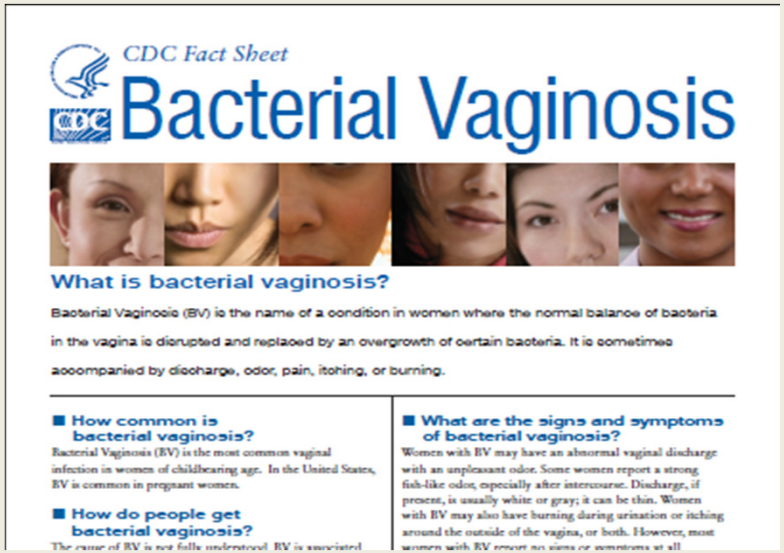
Diagnosis- Amsel's Criteria (3 of 4 = 90% accuracy)

- Homogeneous vaginal d/c (milky white)
- Positive "whiff"
- > 20% clue cells on microscopy
- pH > 4.5

  - Absence of lactobacilli
  - No increase in WBC

  ✓ Gram stain definitive
  ✓ Culture not recommended (poor specificity)





CDC Fact Sheet

Bacterial Vaginosis

What is bacterial vaginosis?

Bacterial Vaginosis (BV) is the name of a condition in women where the normal balance of bacteria in the vagina is disrupted and replaced by an overgrowth of certain bacteria. It is sometimes accompanied by discharge, odor, pain, itching, or burning.

■ How common is bacterial vaginosis?

Bacterial Vaginosis (BV) is the most common vaginal infection in women of childbearing age. In the United States, BV is common in pregnant women.

■ How do people get bacterial vaginosis?

■ What are the signs and symptoms of bacterial vaginosis?

Women with BV may have an abnormal vaginal discharge with an unpleasant odor. Some women report a strong fish-like odor, especially after intercourse. Discharge, if present, is usually white or gray; it can be thin. Women with BV may also have burning during urination or itching around the outside of the vagina, or both. However, most

http://www.cdc.gov/STD/bv/STDFact-Bacterial-Vaginosis.htm

Treatment

- Only treat symptomatic women unless pregnant
- Consider treating women at higher risk for other STI's

  Increased risk for acquiring HIV, GC, CT and HSV-2

Recommended Regimens

Metronidazole 500 mg orally twice a day for 7 days*

OR

Metronidazole gel 0.75%, one full applicator (5 g) intravaginally, once a day for 5 days

OR

Clindamycin cream 2%, one full applicator (5 g) intravaginally at bedtime for 7 days†

* Consuming alcohol should be avoided during treatment and for 24 hours thereafter.

† Clindamycin cream is oil-based and might weaken latex condoms and diaphragms for 5 days after use (refer to clindamycin product labeling for additional information).

Alternative Regimens

Tinidazole 2 g orally once daily for 2 days

OR

Tinidazole 1 g orally once daily for 5 days

OR

Clindamycin 300 mg orally twice daily for 7 days

OR

Clindamycin ovules 100 mg intravaginally once at bedtime for 3 days

Efficacy at one month

70-80 %

65-70%

Follow-Up

- Treatment of male partners has not been proven to be beneficial in the prevention of recurrences

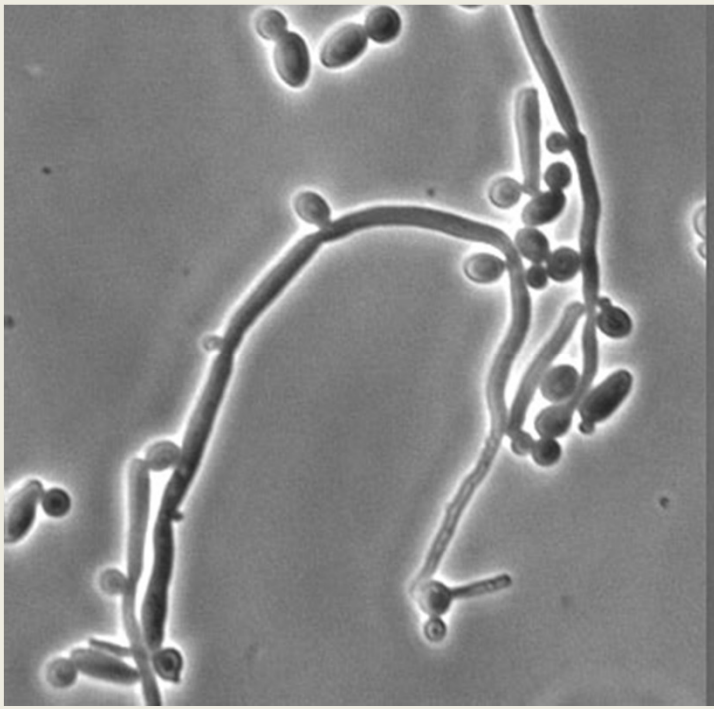
Some data suggests that women with multiple recurrences after completing a recommended regimen may benefit from:

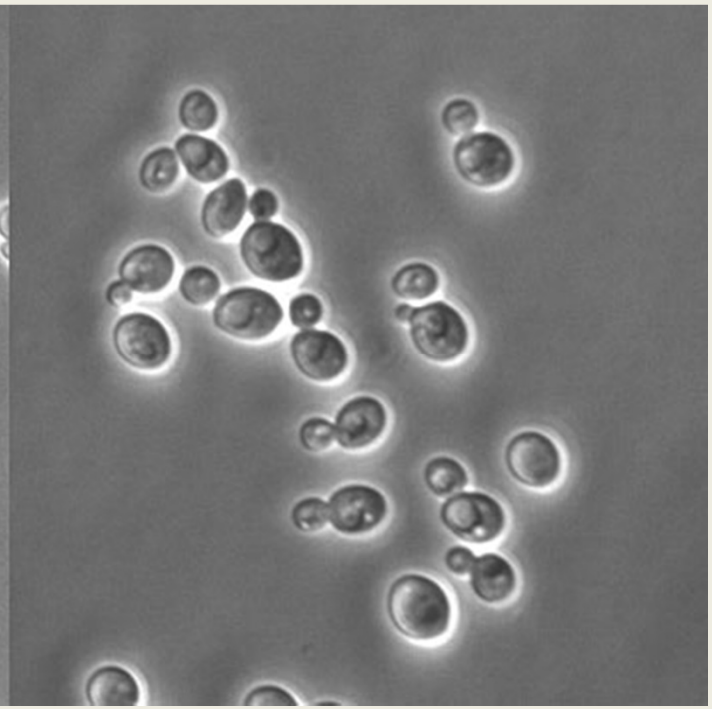
- Metronidazole gel twice weekly for 4-6mo.
- Oral nitroimidazole (most common = flagyl) followed by intravaginal boric acid and suppressive metronidazole gel
- NuvaRing
- Oral probiotics (Microbes and Infection 8 (2006) 1450e1454)

Recurrence may occur after discontinuing suppressive treatment

Yeast

- Accounts for 1/3 of vaginal infections
- 50 % of university aged women will have at least 1 diagnosed yeast infection by age 25
- At least ½ of patients referred to specialty clinics for chronic or recurrent candidiasis actually experience symptoms on the basis of another process …





C . albicans
C. tropicalis

C. glabrata
C. parapsilosa
C. krusei

Pruritus, clumpy white discharge
Vestibular erythema, skin fold fissures

10x lens, KOH pH <5 (normal)
73% of all yeast infections

Irritation, burning, some erythema
Less discharge, less itching, “raw”
Often asymptomatic
40x lens best seen in saline pH <5
“bowling pin”

approx 20 % of all yeast infections

10-20 % will harbor asymptomatic yeast species

Treatment

Uncomplicated VVC

- Sporadic or infrequent vulvovaginal candidiasis
  OR
- Mild-to-moderate vulvovaginal candidiasis
  OR
- Likely to be *C. albicans*
  OR
- Non-immunocompromised women

Recommended Regimens

Over-the-Counter Intravaginal Agents:

Butoconazole 2% cream 5 g intravaginally for 3 days
OR
Clotrimazole 1% cream 5 g intravaginally for 7–14 days
OR
Clotrimazole 2% cream 5 g intravaginally for 3 days
OR
Miconazole 2% cream 5 g intravaginally for 7 days
OR
Miconazole 4% cream 5 g intravaginally for 3 days
OR
Miconazole 100 mg vaginal suppository, one suppository for 7 days
OR
Miconazole 200 mg vaginal suppository, one suppository for 3 days
OR
Miconazole 1,200 mg vaginal suppository, one suppository for 1 day
OR
Tioconazole 6.5% ointment 5 g intravaginally in a single application

Prescription Intravaginal Agents:

Butoconazole 2% cream (single dose bioadhesive product), 5 g intravaginally for 1 day
OR
Nystatin 100,000-unit vaginal tablet, one tablet for 14 days
OR
Terconazole 0.4% cream 5 g intravaginally for 7 days
OR
Terconazole 0.8% cream 5 g intravaginally for 3 days
OR
Terconazole 80 mg vaginal suppository, one suppository for 3 days

Oral Agent:

Fluconazole 150 mg oral tablet, one tablet in single dose

Complicated VVC

- Recurrent vulvovaginal candidiasis

  OR

- Severe vulvovaginal candidiasis

  OR

- Non-albicans candidiasis

  OR

- Women with uncontrolled diabetes, debilitation, or immunosuppression

Initial treatment - longer (7-14 days topical or diflucan q 3rd day times three)

Followed by **maintenance regimen** of 150 mg diflucan weekly times 3-6 months

If suspect non-albicans candida:

Many non albicans species unresponsive to azole tx, despite invitro sensitivities (characteristic of organism, not immunocompromise of the host. Resistant albicans is uncommon except in host immunocompromise)

- Try azole first.
- Consider fungal cx to confirm
- Boric acid- 600mg in a gelatin capsule (size 0) inserted vaginally QD times 2-4 weeks (70% cure)
- Nystatin vaginal tablets 100,000u vag, tab QD times 2-4 weeks

Probiotics have not been shown to be effective…

Journal of Antimicrobial Chemotherapy (2006) 58, 266–272

Don’t forget the zebras …

- Cytolytic vaginosis- sx of yeast
  - No yeast forms, abundant lactobacilli
  - Epithelial cells – nuclei without cytoplasm
- Lactobacilliosis- sx of yeast
  - No yeast forms
  - Abundant elongated lactobacilli

- Atrophic vaginitis
- Desquamative Inflammatory Vaginitis (DIV)
- Lichen planus
- Eczema
- Psoriasis

Genital Dermatology Atlas
Libby Edwards. 2nd edition, 2011
Lippincott Williams&Wilkins

SCREENING RECOMMENDATIONS BY POPULATION

Screening: MSM

Annually, or every 3-6 months if appropriate:

- HIV
- Syphilis (RPR or VDRL)
- Urine NAAT for GC&CT
- Rectal NAAT GC&CT if appropriate
- Pharyngeal NAAT GC if appropriate
- Hep B Surface Antigen
- Hep C if active or past drug user
- Vaccination for Hep A and Hep B if not previously done
- Consider HPV vaccine with Gardasil

Screening: Women Under 25

- Annual CT
- Consider GC (at risk = previous GC, other current STIs, new or multiple partners, inconsistent condom use, commercial sex work, drug use)
- Discuss HIV
- HPV Vaccine if not already done
- Pap starting at 21, every other year

Screening: MSW under 25

- Discuss HIV
- Consider HPV vaccine

Questions ?