

# Dealing with HIV and other STIs in the Adolescents

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# HIV/STIs in ADOLESCENTS

- ❖ Epidemiology
- ❖ Approach to teens: Sexual History Taking
- ❖ STI Screening Recommendations
- ❖ Management Recommendations
  - ❖ HIV/AIDS
  - ❖ Genital Ulcers
  - ❖ Urethritis and cervicitis
  - ❖ Vaginal discharge
  - ❖ Other STIs

# Epidemiology of Adolescent HIV/STI's

- ❖ STI is a common worldwide occurrence
- ❖ Adolescents\*: highest burden of STI's
- ❖ Probability of STIs:
  - 12.5% at age 15 years
  - 1.2% at age 24 years

## **WHO DEFINITION:**

\***Adolescents**: 10-19 years; **Youth**: 15-24 years.

# Prevalence of STIs Among the Different Groups

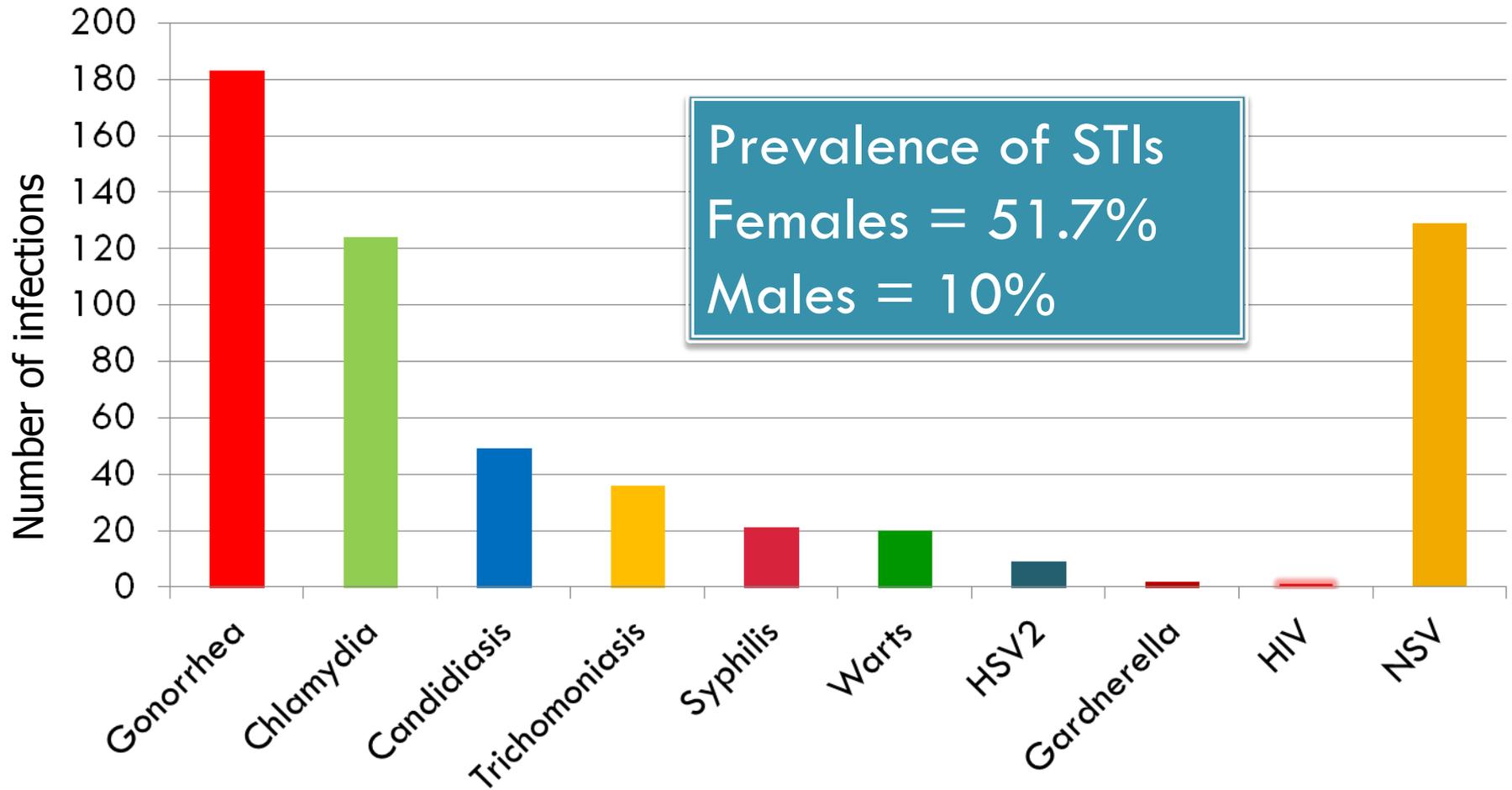
## RTI/STI Prevalence Survey in Selected Sites in the Philippines February to May 2002 (n = 300)

STI	Female (Gen. Pop'n)	Male (Gen. Pop'n)	Female (Youth)	Male (Youth)
Chlamydial infection	5.75	4.4	7.7	9
Gonorrhea	0.75	1.1	0.7	1.7
Syphilis	0.17	0.2	N/D	N/A
Hepatitis B	3.2	9.6	N/D	N/A
Trichomoniasis	3.18	N/A	N/D	N/A
Bacterial Vaginosis	28.56	N/A	N/D	N/A
Candidiasis	17.16	N/A	N/D	N/A

Wi TEC, Saniel OP, Ramos ER et al. RTI/STI Prevalence in Selected Sites in the Philippines . Department of Health, Women's Health and Safe Motherhood Project, National AIDS/STI Prevention and Control Program and Philippine National AIDS Council Secretariat in collaboration with Family Health International. 2002

# Sexually Transmitted Infections among Filipino Sex Workers

n=484



Monzon OT, Santana RT, Paladin FJ et al. The Prevalence of Sexually Transmitted Diseases (STDs) and HIV Infection among Filipino Sex Workers. *Phil J Microbiol Infect Dis* 1991; 20(2):41-44

# Estimated Youth STI Incidence, 2000

## Sexually Experienced Population

~25%  
15-24  
Years



Account for:



## STI Incidence

~48%  
New  
Infections

~52%  
New  
Infections



5% **Gonorrhea**  
7% **Genital herpes**

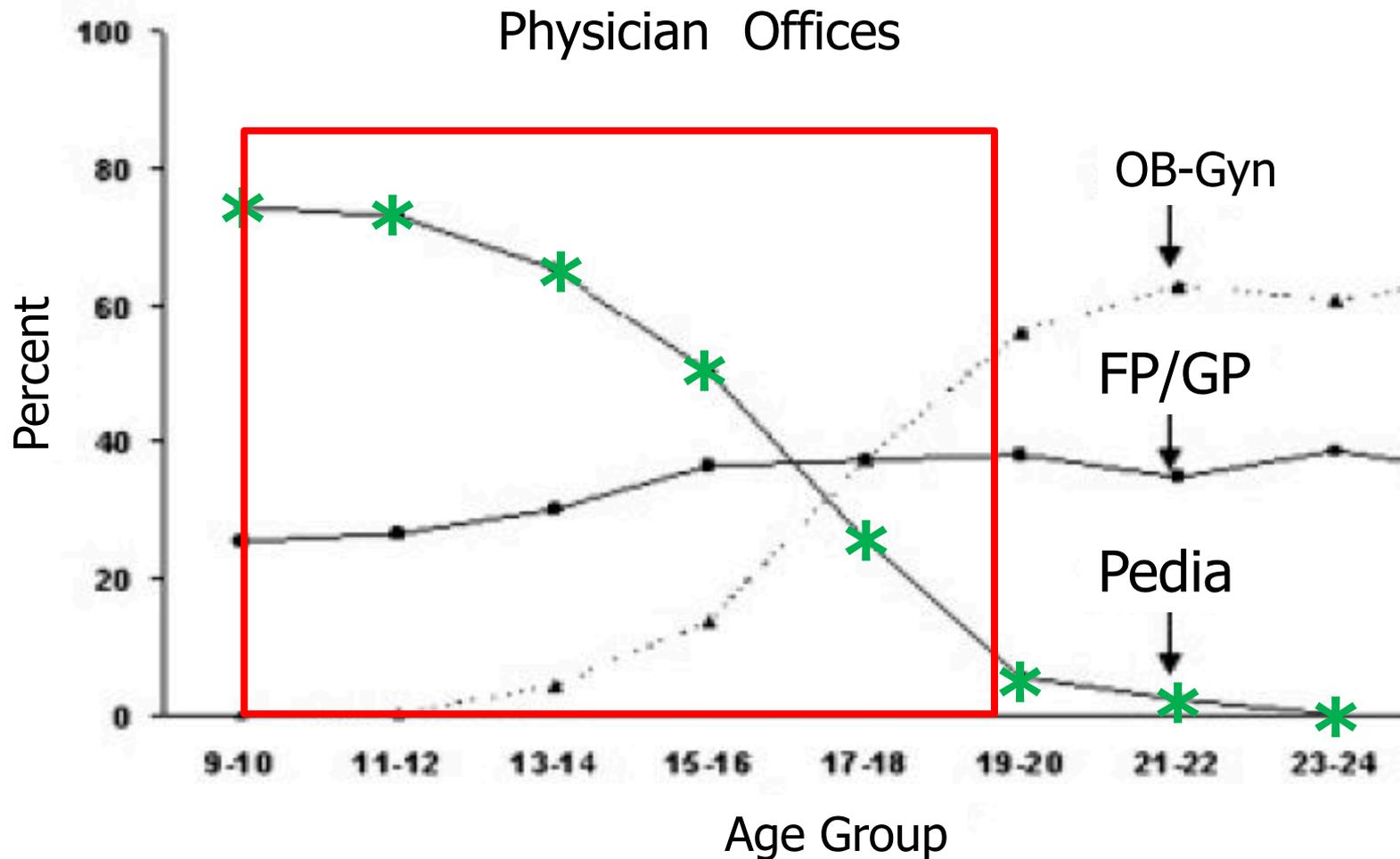
16% **Chlamydia**

21% **Trichomoniasis**

51% **HPV**

\*Also included  
<1% each HIV,  
Syphilis,  
Hepatitis B

# STI Care: Young Adolescents



# Adolescents: Psychosocial and Cognitive Transition

- Dependent child → independent, decision-making adults
- Peer influences → own individual beliefs

## **Resistance to STI care due to:**

- embarrassment (stigma)
- confidentiality issue
- concerns about pelvic exams

# Taking a Sexual History

- Interview the patient alone.
- Make no assumptions.
- Start with safe questions.
- Don't act surprised.
- Use easily understood language.
- Avoid lecturing.

The more you do it, the more you develop your own technique.

# STI History

## 5 P's

- ❖ Partners
- ❖ Sexual Practices
- ❖ Past history of STIs
- ❖ Pregnancy
- ❖ Protection from STIs

## Symptoms:

- ❖ Vaginal/penile discharge
- ❖ Rash, sore throat, fever
- ❖ Painful defecation
- ❖ Dysuria, hematuria
- ❖ Dyspareunia

Good screening practices require  
Good ASKING practices.

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# STI Screening\* for Adolescents

- ❖ Annual Chlamydia screen: for all sexually active females < 25 years
- ❖ Annual GC screen: all at-risk sexually active females
- ❖ Discuss HIV screening with all adolescents and encourage testing for those at risk
- ❖ All individuals seeking STI care should be HIV-tested.
- ❖ Begin cervical cancer screening at age 21

\*STI screening recommendations. 2010 STD Treatment Guidelines.  
Centers for Disease Control and Prevention

# STI Screening\* for Adolescent Boys

- ❖ Insufficient evidence to recommend routine Chlamydia screen
- ❖ Consider screening in settings with high Chlamydia prevalence
  - ▣ Adolescent clinics, correctional facilities, STD clinics, MSM
  - ▣ **High Chlamydia prevalence:** at least 1% prevalence of infection among patient population served

\*STI screening recommendations. 2010 STD Treatment Guidelines.  
Centers for Disease Control and Prevention

# Recommended Screen for Other STIs

- Routine screening of asymptomatic adolescents for certain STIs is not recommended.  
(*syphilis, trichomoniasis, BV, HSV, HPV, HAV, HBV*)
- If a patient has a history of STI, all other STI's should be screened, do Pap's and fully immunize for Hepatitis B

\*STI screening recommendations. 2010 STD Treatment Guidelines.  
Centers for Disease Control and Prevention

# HIV/STIs in ADOLESCENTS

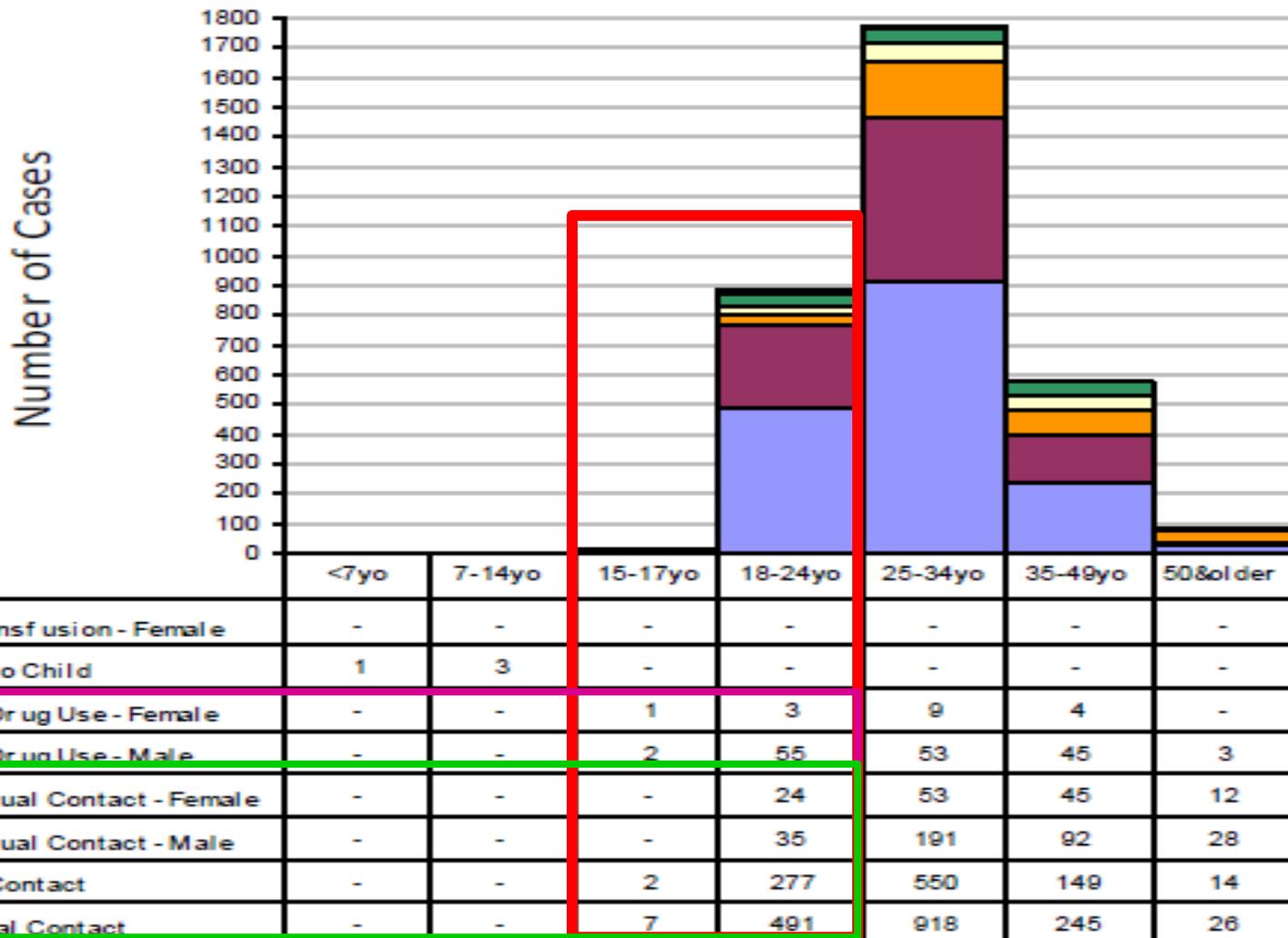
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# HIV/AIDS Cases in the Philippines

Demographic Data	Dec 2012	Jan-Dec 2012	Cumulative 1984–2012
<b>Total Reported Cases</b>	<b>293</b>	<b>3,338</b>	<b>11,702</b>
<b>Asymptomatic Cases</b>	<b>279</b>	<b>3,152</b>	<b>10,534</b>
<b>AIDS Cases</b>	<b>14</b>	<b>186</b>	<b>1,168</b>
<b>Males</b>	<b>283</b>	<b>3,186</b>	<b>10,076*</b>
<b>Females</b>	<b>10</b>	<b>152</b>	<b>1,615*</b>
<b>Youth 15-24yo</b>	<b>79</b>	<b>897</b>	<b>2,814</b>
<b>Children &lt;15yo</b>	<b>0</b>	<b>4</b>	<b>62</b>
<b>Reported Deaths due to AIDS</b>	<b>0</b>	<b>11</b>	<b>353</b>

*\*Note: No data available on sex for (11) cases.*

# HIV Transmission by Age Group, 2012 (n=3,338)



# Adolescent HIV/AIDS

- Rates lowest in adolescents, but have increased almost 4x in the last decade.
- HIV diagnosis in teens often reflects a newly acquired infection.
- Most new adult HIV: Later stages of disease



Acquisition during older adolescence/young adult.

# The HIV-Infected Adolescent

Recognize the different biomedical and psychosocial needs of **perinatally-infected** vs **behaviorally-infected** youth.

- ❖ Most acquired HIV behaviorally
  - Many with recent HIV infection
- ❖ Some infected perinatally or via blood products
  - Usually heavily treatment-experienced

# Transmission Category by Clinical Status of HIV-Positive Adolescents

	Vertical (n=149)	Blood Products (n=294)	Sexual, Males (n=140)	Sexual, Females (n=332)
Median CD4 Count	201/mm <sup>3</sup>	252/mm <sup>3</sup>	410/mm <sup>3</sup>	464/mm <sup>3</sup>
Percent symptomatic	84	60	30	26
% with AIDS	63	51	23	20

Source: Rogers AS et al. A profile of human immunodeficiency virus-infected adolescents receiving health care services at selected sites in the United States. *J Adolesc Health* 1996; 19:401-8.

# Recommendations for Initiating ART



“ART is recommended for  
all HIV-infected individuals.

# Anti-Retroviral Therapy (ART)

- ❖ Improves/preserves immune function → better clinical outcomes
- ❖ Reduces risk of HIV transmission
- ❖ ARV combinations are effective and well tolerated
- ❖ Adult ART guidelines: appropriate for post-pubertal adolescents
- ❖ Early puberty: Dosing should be based on Tanner stages
  - Tanner stages 1-2: Pediatric dose
  - Tanner stages 3-5: Adult dose

# Current ARV Medications

## **NRTI**

- Abacavir (ABC)
- Didanosine (ddI)
- Emtricitabine (FTC)
- Lamivudine (3TC)
- Stavudine (d4T)
- Tenofovir (TDF)
- Zidovudine (AZT, ZDV)

## **NNRTI**

- Delavirdine (DLV)
- Efavirenz (EFV)
- Etravirine (ETR)
- Nevirapine (NVP)
- Rilpivirine (RPV)

## **Protease Inhibitor (PI)**

- Atazanavir (ATV)
- Darunavir (DRV)
- Fosamprenavir (FPV)
- Indinavir (IDV)
- Lopinavir (LPV)
- Nelfinavir (NFV)
- Ritonavir (RTV)
- Saquinavir (SQV)
- Tipranavir (TPV)

## **Integrase Inhibitor (II)**

- Raltegravir (RAL)
- Elvitegravir (EVG)

## **Fusion Inhibitor**

- Enfuvirtide (ENF, T20)

## **CCR5 Antagonist**

- Maraviroc (MVC)

# Initial Treatment Regimen Choices

- 2 NRTIs + 1 NNRTI
- 2 NRTIs + 1 PI
- 2 NRTIs + 1 II

## Recommended Regimens for ART-naive individuals

- AZT + 3TC + EFV
- AZT + 3TC + NVP
- TDF + 3TC (or FTC) + EFV
- TDF + 3TC (or FTC) + NVP

# Current Recommendations: Preferred Initial Regimens

NNRTI based	EFV	+	TDF/FTC
PI based	ATV/r	+	TDF/FTC
	DRV/r	+	TDF/FTC
II based	RAL	+	TDF/FTC
Pregnant women	LPV/r	+	AZT/3TC

3TC can be used in place of FTC and vice versa

# Treatment-Experienced Patients

- Most patients on ARV maintained virologic suppression for at least 3-7 years
- ARV regimens should suppress HIV indefinitely, assuming adequate adherence
- Patients with ARV failure:
  - ▣ Assess adherence → simplify the regimen
  - ▣ Consider adding potent RTV-boosted PIs or drugs with new mechanisms of action (integrase inhibitor, CCR5 antagonist, fusion inhibitor, 2nd-gen NNRTI)

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- 
- Syphilis
  - Herpes
  - Chancroid
  - Donovanosis

# Diagnosis of Syphilis



- Dark field microscopy
- Non-treponemal: RPR/ VDRL
  - ▣ Quantitative
  - ▣ Follow titers to assess treatment response
- Treponemal: FTA-ABS, TPHA
  - ▣ Qualitative
  - ▣ Very sensitive
  - ▣ Used to confirm syphilis diagnosis
  - ▣ Remains positive after treatment



**EIA**

# Clinical Signs of Syphilis

- ▣ Primary: chancre, painless ulcer
- ▣ Secondary: 1-2 month post infection
  - ❖ rash, condyloma lata, lymphadenopathy, fever, splenomegaly, headache, arthralgia, neurologic ssx
- ▣ Latent: seropositive but no symptoms.
  - ❖ Early latent (1 year after infection)
  - ❖ Late latent (after one year or of unknown duration)
- ▣ Tertiary: gumma lesions (skin, bones, internal organs) and cardiovascular disease (aortitis)



# Syphilis: Treatment



- Primary, Secondary, Early Latent:
  - ▣ Benzathine PCN 2.4 M units IM single dose
  
- Late latent, tertiary:
  - ▣ Benzathine PCN 2.4 M units IM weekly x 3 wks.
  
- Neurosyphilis:
  - ▣ Aqueous crystalline penicillin G 18–24 million units per day, administered as 3–4 million units IV every 4 hours or continuous infusion, for 10–14 days

# Genital Herpes



- Most genital HSV are caused by HSV-2, but 30% are caused by HSV-1
- Adolescents make up 25% of new diagnoses.
- Diagnosis:
  - ▣ serologic testing for type-specific HSV antibody
  - ▣ culture for HSV or PCR testing for HSV



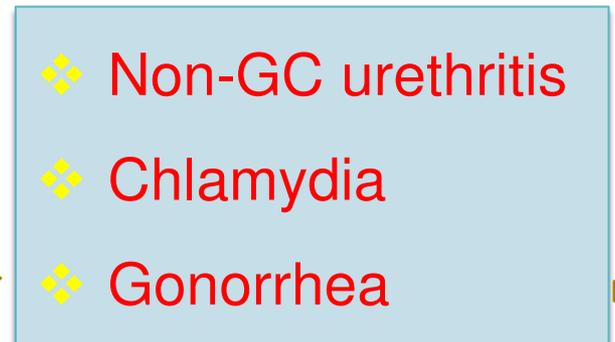
# Management of Genital Herpes\*

Antiviral Drug	1 <sup>st</sup> Episode	Episodic Therapy for Recurrences	Suppressive Therapy
Acyclovir	400mg TID 7-10d 200mg 5x/d 7-10d	400mgs TID 5d 800mgs BID 5d	400mg BID
Famciclovir	250 mg TID 7-10d	1g BID 1d 500mgs then 250mg BID 2d	250mg BID
Valacyclovir	1 gm BID 7-10d	500mgs BID 3d 1 gm 5d	500mg to 1g OD

\*2010 STD Treatment Guidelines. Centers for Disease Control and Prevention.

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Pelvic Inflammatory  
Disease



# Urethritis

- ❖ Mucopurulent or purulent urethral discharge
- ❖ Urethral secretions  $\geq 5$  WBC/oif
- ❖ + Leukocyte esterase test on first-void urine or  $\geq 10$  WBC / hpf



Screen for  
Gonorrhea and Chlamydia

# Cervicitis

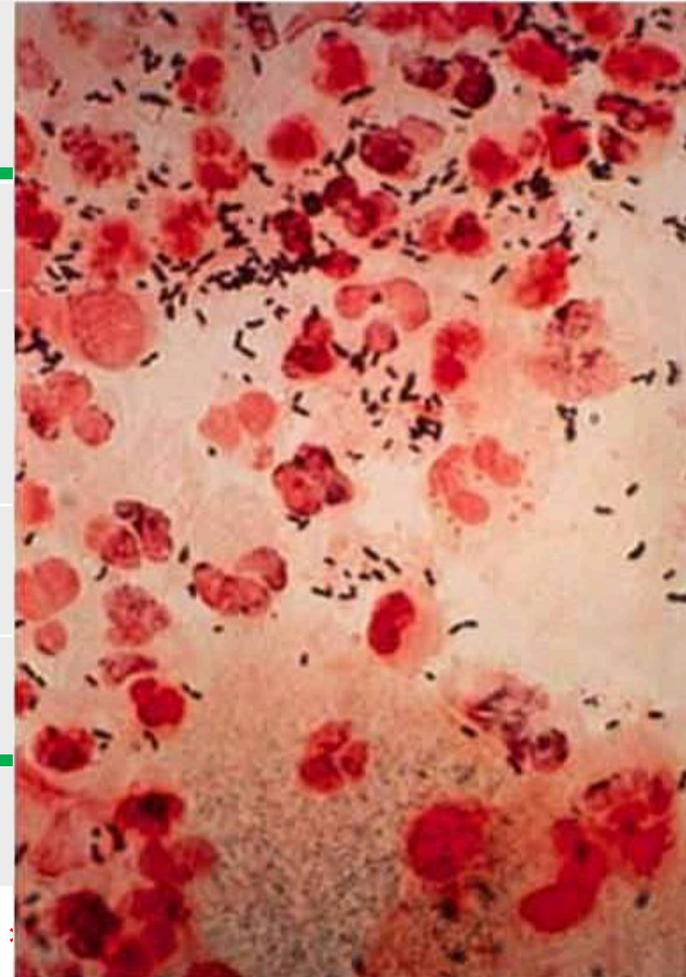
- ❖ Purulent or mucopurulent endocervical exudate
- ❖ Sustained endocervical bleeding easily induced by gentle passage of a cotton swab through the cervical os



- Test for Gonorrhea and Chlamydia
- Evaluate for BV and Trichomonas
- Assess for Pelvic Inflammatory Disease

# Diagnosis of Urethritis & Cervicitis

Laboratory Tests	Microscopy
Cervical swab	X
Urethral swab, Urethral discharge	X
Urine	X
Pharyngeal swab	X
Rectal swab	

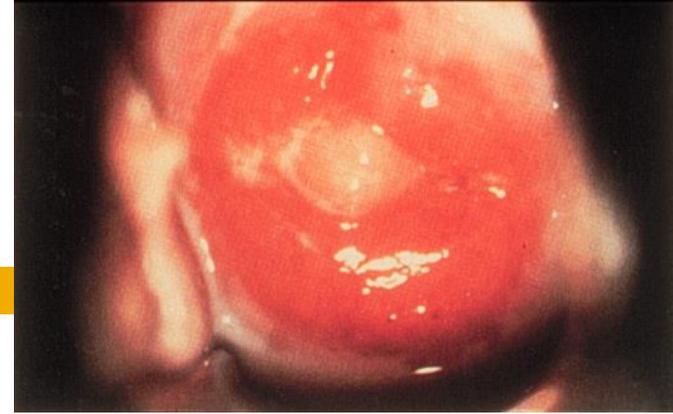


# Chlamydia and Gonorrhea: New Testing Option

- **Nucleic acid amplification tests (NAATs)**
  - ▣ most sensitive CT laboratory tests
  - ▣ Vaginal swabs: preferred female specimen
  - ▣ Urine: preferred male specimen
- **Rectal and oropharyngeal swab NAATs**
  - ▣ Rectal swabs: for GC and CT NAATs
  - ▣ Oral swabs: for GC NAATs



# Chlamydia Infections



- NGU is caused by *C. trachomatis* in 15-40% of cases.
- Majority (60 – 80%) are asymptomatic.
- May present with urinary symptoms
- Female: 20-50% leads to PID  
20% of PID patients become infertile
- Male: Symptoms can progress to epididymitis or orchitis

# Management of Non-gonococcal Urethritis

## □ Recommended Regimens

- ❖ Azithromycin 1 g orally single dose or
- ❖ Doxycycline 100 mg BID for 7 days

## □ Alternative Regimens

- ❖ Erythromycin 500 mg QID for 7 days or
- ❖ Levofloxacin 500 mg OD for 7 days or
- ❖ Ofloxacin 300 mg BID for 7 days

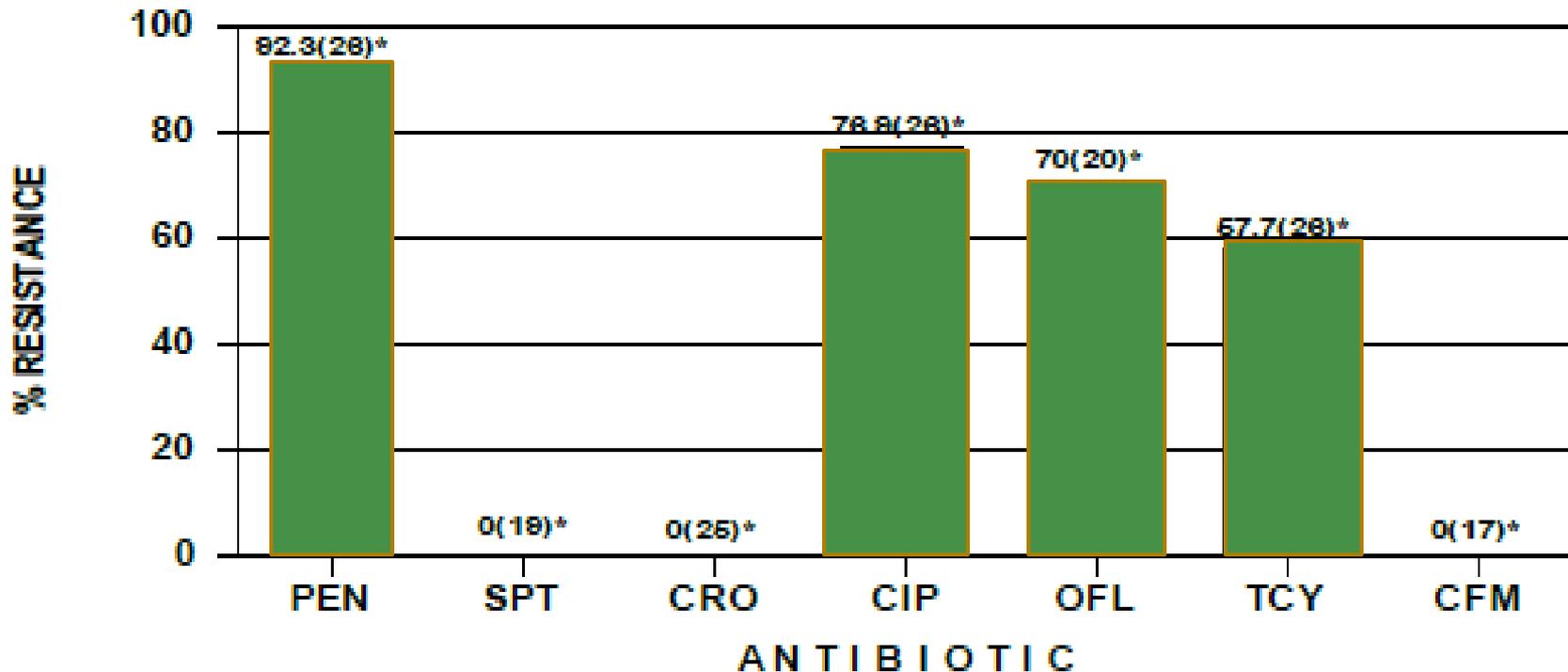
NO SEX for 7 days after single dose Azithromycin,  
or until 7 day completed regimen AND until all partners are  
treated to minimize re-infection.

# Gonorrhea



- 50% of women are asymptomatic
- Rates highest in teens and young women
- Often a co-infection with Chlamydia and other STI's.
- Increasing fluoroquinolone resistance

# Percent Resistance of *Neisseria gonorrhoeae* All Institutions, Jan-Dec 2011



PEN=Penicillin SPT=Spectinomycin CRO=Ceftriaxone  
CIP=Ciprofloxacin OFL=Ofloxacin TCY=Tetracycline CFM=Cefixime

\*% R(N)

# Treatment for Gonorrhea

- Gonococcal antimicrobial resistance remains an issue
- Penicillin, tetracycline or quinolones are no longer gonorrhea treatment options !!!
- CDC recommends **DUAL THERAPY** regardless of anatomic sites

# Gonorrhea: Treatment Recommendation

**Ceftriaxone 250mg** IM single dose

OR

**Cefixime** 400 mg orally in a single dose or  
Single-dose injectable **cephalosporin** regimen

PLUS

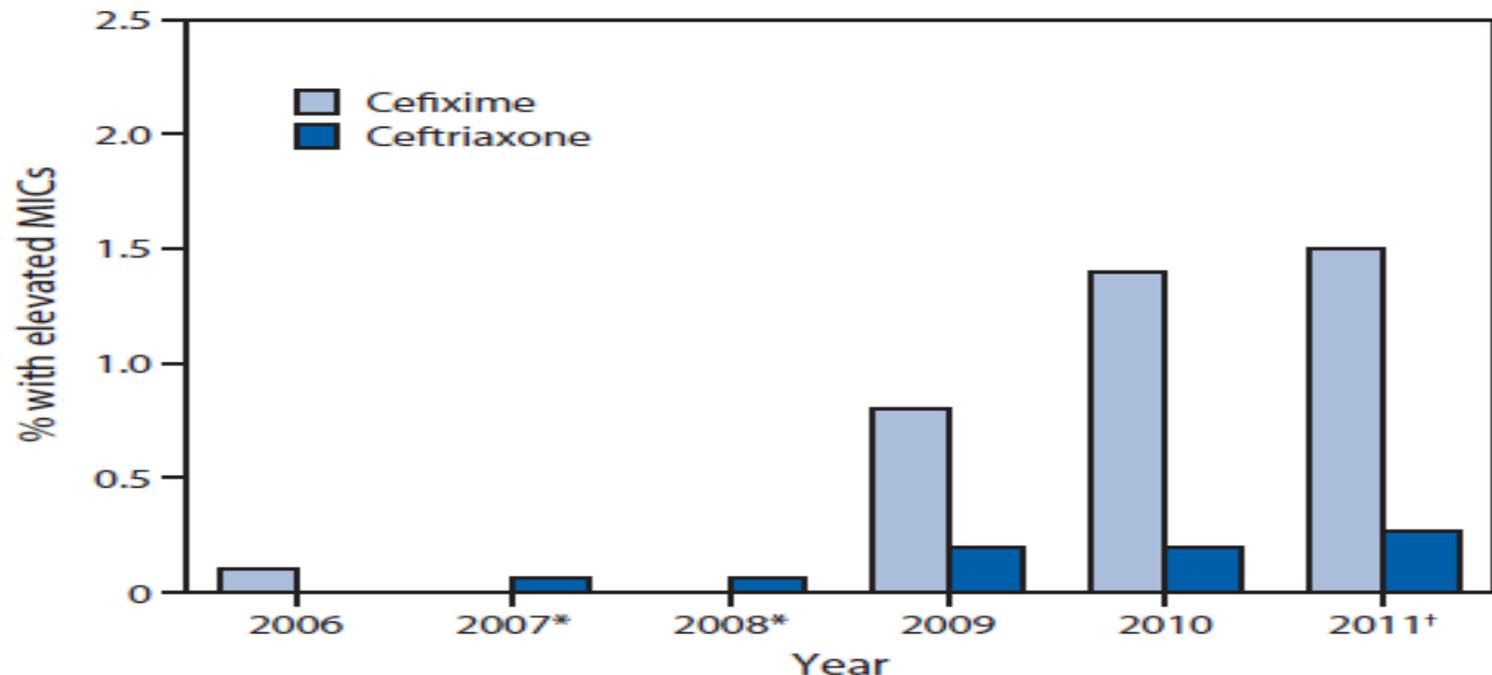
**Azithromycin** 1g orally in a single dose

or

**Doxycycline** 100 mg orally twice a day for 7 days

# Update to CDC's *Sexually Transmitted Diseases Treatment Guidelines, 2010*: Oral Cephalosporins No Longer a Recommended Treatment for Gonococcal Infections

FIGURE. Percentage of urethral *Neisseria gonorrhoeae* isolates (n = 32,794) with elevated cefixime MICs ( $\geq 0.25 \mu\text{g/mL}$ ) and ceftriaxone MICs ( $\geq 0.125 \mu\text{g/mL}$ ) — Gonococcal Isolate Surveillance Project, United States, 2006–August 2011



Abbreviation: MICs = minimum inhibitory concentrations.

\* Cefixime susceptibility not tested during 2007–2008.

† January–August 2011.

MMWR 2012;61:590-594

JAMA. 2012;308(18):1850-1853.

# Gonorrhea: Treatment Recommendation

**Ceftriaxone 250mg** IM single dose

OR

**Cefixime** 400 mg orally in a single dose or  
Single-dose injectable **cephalosporin** regimen

PLUS

**Azithromycin** 1 g orally in a single dose

Because of the high prevalence of tetracycline resistance among GC isolates with elevated MIC to cefixime, the use of azithromycin as the second antimicrobial is preferred.

## Rationale for

# Ceftriaxone 250mgs Recommendation

- Decreasing susceptibility of GC to cephalosporins
- Reports of ceftriaxone treatment failures
- Improved efficacy of ceftriaxone 250 mg in pharyngeal infection
- Simple and consistent recommendation regardless of anatomic site involved

# Gonorrhea Develops Rapid Resistance to Azithromycin\*

- ❖ Azithromycin monotherapy is not recommended because of concerns about rapid emergence of macrolide resistance
- ❖ Azithromycin-resistant variant of gonorrhea developed in just 12 days\*

\*Olusegun Soge, PhD. 2012 National STD Prevention Conference, March 14, 2012

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- ❖ Bacterial Vaginosis
- ❖ Trichomoniasis
- ❖ Candidiasis

# Vaginal Discharge Diagnostic Tests

- pH of vaginal secretions
- Wet mount with NSS
- KOH smear
- Gram's stain microscopy

## **Diagnostic Opportunities**

Point-of-Care Rapid test

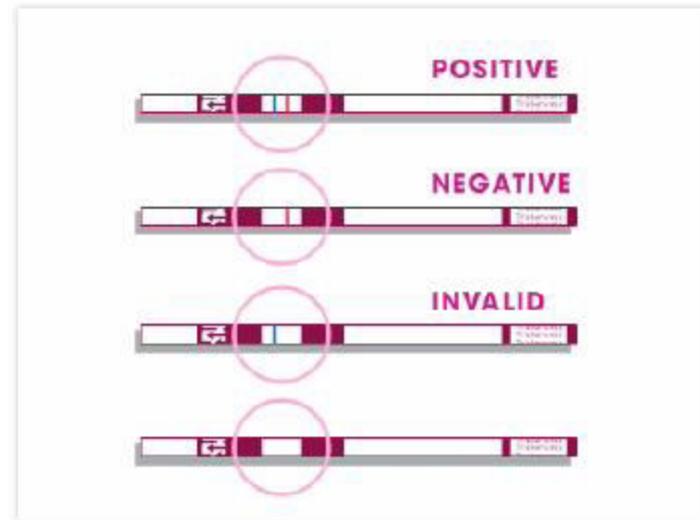
# OSOM Trichomonas Rapid Test (Genzyme Diagnostics, Cambridge, Massachusetts)

- Immunochromatographic capillary flow dipstick technology



OSOM® Trichomonas Rapid Test

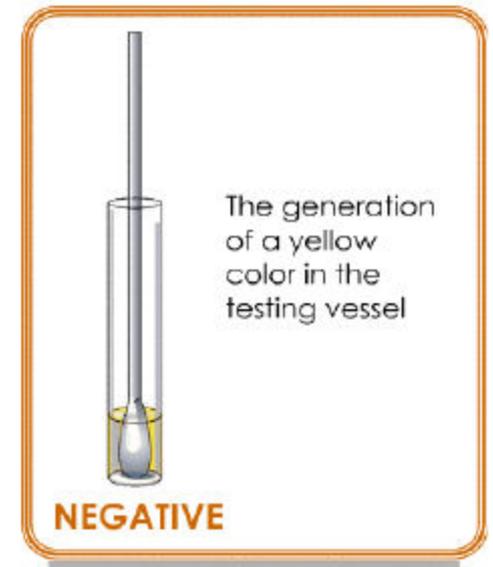
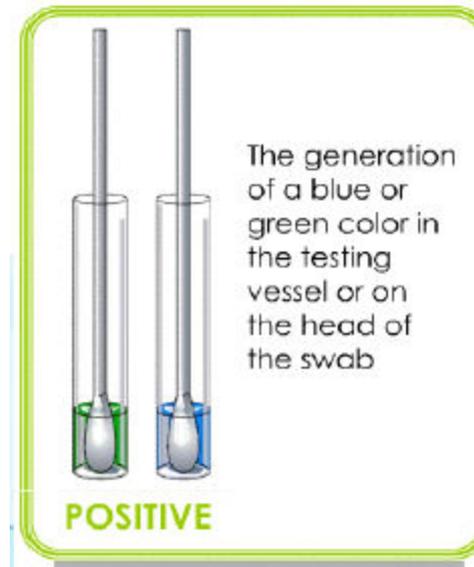
## OSOM® Trichomonas Test



# OSOM BV BLUE Test

(Genzyme Diagnostics, Cambridge, Massachusetts)

- Detects elevated vaginal fluid sialidase activity (enzyme produced by BV-associated pathogens)



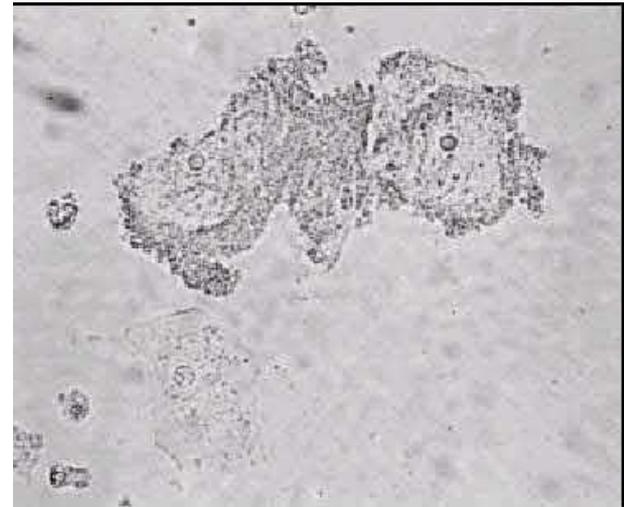
# Bacterial Vaginosis

- Most prevalent cause of vaginal discharge/malodor.
- Gram stain (gold standard)
  - ▣ lactobacilli (i.e., long Gram-positive rods)
  - ▣ Gram-negative and Gram-variable rods and cocci (*G. vaginalis*, *Prevotella*, *Porphyromonas*, and peptostrep)
  - ▣ curved Gram-negative rods (i.e., *Mobiluncus*)
- Amsel's Diagnostic Criteria

# BV: Amsel's Diagnostic Criteria

Presence of at least 3 is diagnostic

1. homogeneous, thin, white discharge that smoothly coats the vaginal walls
2. presence of clue cells → microscopic examination
3. pH of vaginal fluid  $>4.5$
4. a fishy odor of vaginal discharge after addition of 10% KOH (i.e., the whiff test).



# Bacterial Vaginosis

## Recommended Regimen

- ❖ **Metronidazole 500 mg oral BID x 7 days** or
- ❖ **Metronidazole gel** intravaginally, OD x 5 days or
- ❖ **Clindamycin cream** intravaginally hs x 7 days

### **Alternative Regimens**

**Tinidazole 2 g po OD x 2 days** or

**Clindamycin 300 mg po BID x 7 days**

# Trichomoniasis: Recommended Regimen



- Metronidazole 2 g orally in a single dose  
or
- Tinidazole 2 g orally in a single dose

## Alternative Regimen

- Metronidazole 500mg po bid x 7 days

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- ❖ HPV infection
- ❖ Genital Warts
- ❖ Hepatitis A
- ❖ Hepatitis B
- ❖ Hepatitis C
- ❖ Ectoparasitic infections

# HPV: Genital Warts



- ❖ Common STI

- 6.2 million new infections annually



- ❖ Preventable through HPV immunization

# Genital Warts- Treatment

- ❖ Cosmetic or alleviation of symptoms - No “cure” available
- ❖ Patient applied treatments
  - Podofilox 0.5%
  - Imiquimod
  - Sinecatechins 15% ointment\*
- ❖ Provider applied treatments
  - Trichloroacetic acid
  - Podophyllin 10-25%
  - Cryotherapy
  - Laser
  - Surgery/Electrocautery

\*Yan, etal Dermatology 2006; 213:218—223

\*Tatti etal, ObGyn 2008;111(6): 1371-1379

# Hepatitis A/B/C

- All 3 viruses can be transmitted sexually
- Hepatitis A / B : vaccine preventable
- Hepatitis C:
  - ▣ Rates rising dramatically in adolescence.
  - ▣ Risk factors:
    - ▣ IVDU sex partner
    - ▣ HCV-infected sex partner
    - ▣ HSV positive

# Expedited Partner Therapy

“Treatment of sex partners without prior health provider examination or assessment.”

## Patient-Delivered Partner Therapy

- Give index case medication intended for partners  
or
- Write prescription for partner

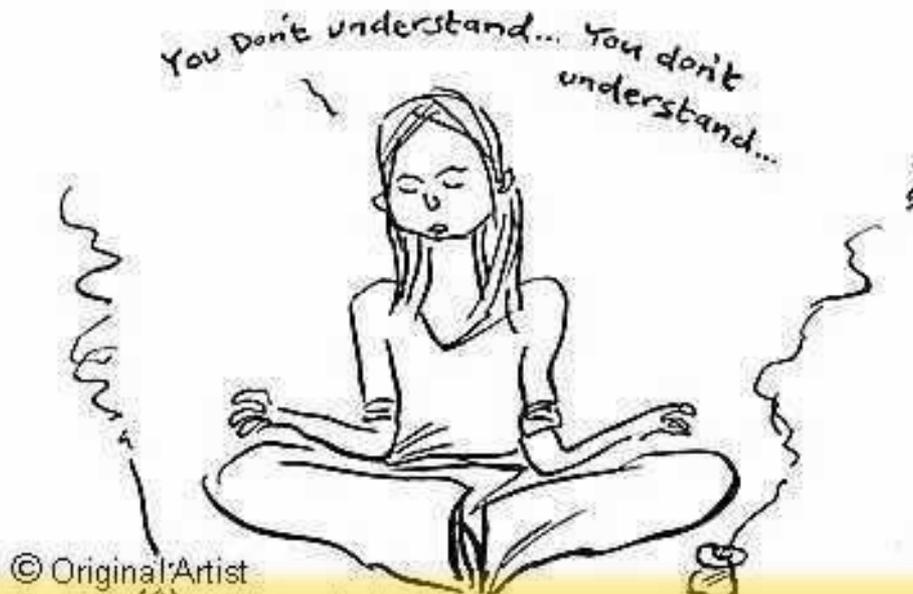
# Take Home Messages

- STIs affect adolescents.
- Ask appropriately. Screen appropriately.
- Annual Chlamydia and GC screens are recommended for all sexually active female adolescents.
- HIV test should be considered in all at-risk adolescents.
- ART is recommended for all HIV-infected individuals.
- NAAT is a sensitive testing option for GC and CT
- Dual therapy is recommended for gonorrhea.

# When dealing with HIV / STIs in the Adolescents....

Adolescence: unique and vulnerable time.

## THE TEENAGER MANTRA



An Integrated Approach to STI Care should address the emotional and psychosocial needs of all adolescents.