STD Update for Clinicians and Counselors

Satellite Conference
Wednesday, January 11, 2006
2:00 - 4:00 p.m. (Central Time)

Produced by the Alabama Department of Public Health
Video Communications & Distance Learning Division

Faculty

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Objectives

- Identify infection trends, causative organisms, incubation period, signs and symptoms, diagnosis, complications, and treatment for common STDs.
- List risk factors for and preventive measures against acquiring STDs.
- Discuss the relationship between human papilloma virus (HPV) and cervical cancer.

Objectives

- Discuss the relationship between chlamydia and infertility, ectopic pregnancy and chronic pelvic pain.
- Describe the potential effects of STDs on fertility, pregnancy, and on the neonate.

Sexually Transmitted Infections

HIV
Syphilis
Herpes
BV
Trichomonas
Gonorrhea
LGV
HPV
Chancroid
Chlamydia
Hepatitis

Content

- Drips
  - Gonorrhea
  - Chlamydia (including complications)
  - Trichomonas
  - Bacterial vaginosis
- Ulcers
  - Syphilis
  - Herpes
  - Chancroid

Content

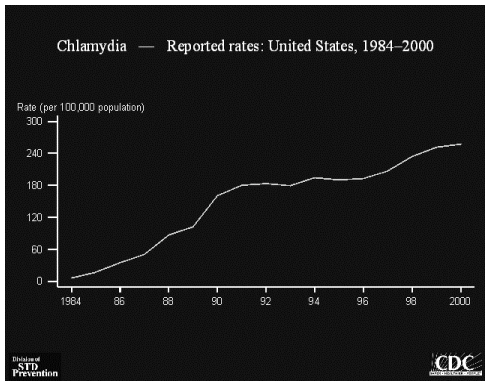
- Human Papilloma Virus (HPV)
  - Genital warts
  - Relationship to cervical cancer
- Pregnancy
- STD prevention

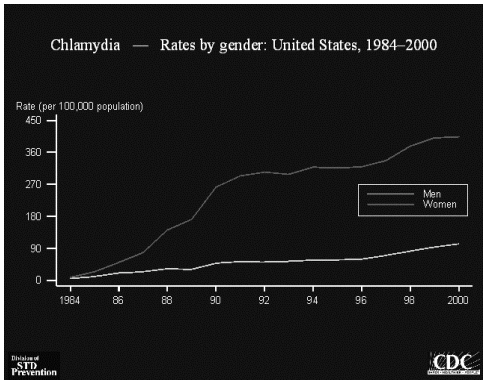
Drips

- Chlamydia
- Gonorrhea
- Trichomonas
- Bacterial vaginosis

Chlamydia

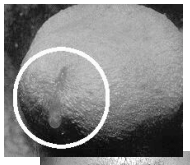
- Most common STD (4 million cases/yr)
- Infection caused by the intracellular parasite chlamydia trachomatis
- Asymptomatic infection with serious sequelae
- Co-infection often seen with gonorrhea
- Along with gonorrhea accounts for 80% of all notifiable diseases reported to the CDC in 2000





Clinical Manifestations Males

- Males
  - Can be asymptomatic
  - Urethritis
  - Epididymitis
  - Proctitis
  - Lymphogranuloma venereum (LGV)



Epididymitis

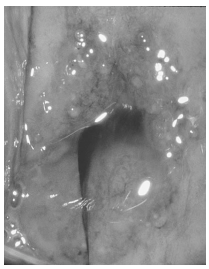
- Inflammation of the epididymis
- In sexually active men etiology generally gonorrhea or chlamydia
- Presents with pain and swelling in the epididymis and scrotum
- May be preceded by urethral discharge, dysuria, or urgency

Epididymitis Physical Findings

- Systemic symptoms, especially fever, often present
- Severe tenderness and swelling of the affected epididymis
- A reactive hydrocele may be present
- For diagnosis, culture a urine sample and check urethral smear

Clinical Manifestations Females

- Females
  - Frequently asymptomatic
  - Cervicitis
  - Proctitis
  - May present with sequelae



Long-Term Consequences In Females

- PID
- Chronic pelvic pain
- Ectopic pregnancy
- Tubal-factor infertility
- Pregnancy outcomes
  - Neonatal chlamydial infection

Screening

- Sexually active adolescent women should be screened at least annually, even if symptoms are not present.
- Annual screening of all sexually active women aged 20-25 years is also recommended.
- Screening of older women should be done if risk factors are present (e.g., those who have a new sex partner and those with multiple sex partners)

Diagnosis:

- Culture
  - High specificity
  - Relatively low sensitivity (70%)
  - Invasive
  - Long turnaround time
  - Relatively high cost

Diagnosis:

- Nucleic Acid Amplification Tests (NAATs)
  - Specificity of 98%
  - Sensitivity of 96%, Cost-effective
  - Specimens: endocervical swabs, urethral swabs (men), or urine (both men and women); vaginal specimens ok; not rectal or oropharyngeal

Asymptomatic Screening for Chlamydia

- Can use urine or vaginal swab
  - Urine specimens must be FIRST CATCH
- Potentially avoid pelvic exam in asymptomatic individuals
- Patient can collect specimen themselves

Treatment: Urethritis, Mucopurulent Cervicitis

- Single dose 1g Azithromycin
- Doxycycline 100mg BID x7days
- Rescreening suggested by CDC 3-4 months after treatment, especially in adolescents
- Treat for co-infection with GC

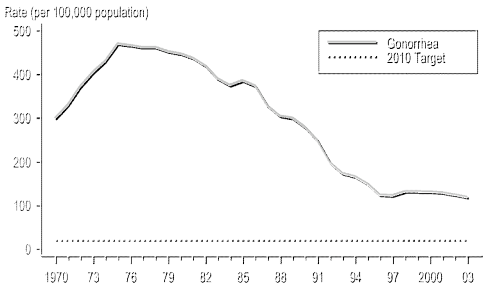
Treatment: Epididymitis

- >35yo
  - fluoroquinolone for 10-14 days
- <35yo
  - treat empirically for chlamydia with Doxycycline for 10-14 days
  - if GC suspected, add Ceftriaxone 250mg IM
- Analgesics
- Scrotal elevation

Treatment: Pelvic Inflammatory Disease

- Outpatient treatment viable if temp <38, WBC <11,000, able to tolerate po
- Levofloxacin 500mg QD plus Metronidazole 500mg BID x14d

Gonorrhea Rates 1970–2003



Note: The Healthy People 2010 target for gonorrhea is 19.0 cases per 100,000 population.

Gonorrhea Clinical Signs

- Urethritis
  - Incubation: 1-14 d (usually 2-5 d)
  - Sx: dysuria and urethral discharge (5% asymptomatic)
- Asymptomatic or nonspecific in women until complications develop
- Often co-infected with chlamydia- dual therapy recommended

Systemic GC

- Results from GC bacteremia
- Asymmetric migratory polyarthralgia
- Skin rash
- Tenosynovitis
- Joint effusion/septic arthritis
- DIAGNOSIS: cervical, urethral, pharyngeal and rectal cultures

GC- Diagnosis

- Direct microscopy and culture
- Obtain specimens from all appropriate genital and extra-genital sites
- NAATs

Gonorrhea Treatment Options

- Ceftriaxone 125mg IM x1
- Doxycycline 100mg PO BID x7d
- Ceftizoxime 500mg IM x1
- Azithromycin 2g PO x1

Trichomoniasis

- Caused by protozoan T. Vaginalis.
- Affects 2-3 million American women annually.
- Associated with a high prevalence of other STDs and facilitates transmission of HIV.
- Identified in 30-40% of male sexual partners of infected women.

Trichomonas Diagnosis

- Elevated vaginal pH
- Increase in WBCs
- Motile trichomonads in 50-70% of cases

Treatment

- Metronidazole 500mg BID x7d or 2g PO x1
- Increased cure rate (>90%) when both partners treated
- Side Effects: metallic taste, nausea, EtOH intolerance

Trichomoniasis and Pregnancy

- Adverse pregnancy outcomes:
  - Premature rupture of the membranes
  - Preterm delivery
  - Low birthweight
- Treatment: 2g Metronidazole (avoid in first trimester)

Bacterial Vaginosis

- Most common cause of vaginal discharge or malodor.
- 50% of women are asymptomatic.
- Caused by a change in vaginal flora
- May be transferred sexually.
- Associated with abnormal Pap smear.

Diagnosis: 3 of 4 Criteria Must be Met

- Positive "whiff" test
- Grey/white, thin, noninflammatory discharge
- Presence of clue cells on wet mount
- Vaginal pH >4.5

Treatment: BV

- In non-pregnant women to
  - Relieve vaginal symptoms and signs of infection
  - Reduce the risk for infectious complications after abortion or hysterectomy
- In pregnancy to reduce the risk of
  - Premature rupture of the membranes
  - Preterm labor and birth
  - Postpartum endometritis

BV Treatment Regimens

- Flagyl 500mg BID x7d (84-96%)
- Clindamycin 300mg BID x7d (94%)
- Metrogel 5g QHS x5d (75%)
- Clindamycin 2% vaginal cream 5g QHS x7d

Genital Ulcer Diseases – Does It Hurt?

- Painless
  - Syphilis
  - Lymphogranuloma venereum
  - Granuloma inguinale
- Painful
  - Chancroid
  - Genital herpes simplex

"He Who Knows Syphilis, Knows Medicine"

Sir William Osler

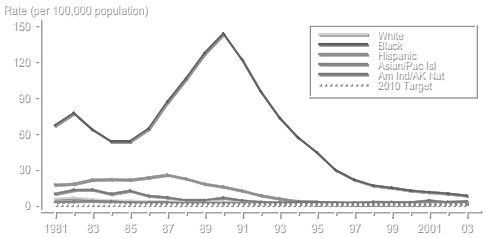
Syphilis

- Causative organism is Treponema pallidum.
- Visualization by dark-field microscopy.
- Primary mode of transmission is sexual, followed by transfer across the placenta, then nonsexual contact.

Primary and Secondary Syphilis Rates by State, 2003

Note: The total rate of primary and secondary syphilis for the United States and outlying areas (Guam, Puerto Rico and Virgin Islands) was 2.5 per 100,000 population. The Healthy People 2010 target is 0.2 case per 100,000 population.

Primary and Secondary Syphilis Rates by Race and Ethnicity



Note: The Healthy People 2010 target for P&S syphilis is 0.2 case per 100,000 population.

Primary Syphilis: Chancre

- Single, painless, clean based ulcer with induration at site of innoculation
- Painless regional lymphadenopathy (80%)
- Incubation period of 3 to 90 days

Secondary Syphilis

- 2wks-6 mos after primary infection.
- Skin rash involving palms and soles.
- Alopecia.
- Mucosal lesions.
- Generalized lymphadenopathy.
- Primary chancre may or may not still be present.

Syphilis Latent Stage

- Latent Syphilis: period from disappearance of secondary symptoms until cure or tertiary symptoms.
- Early latent: within 1 year of infection.
- Late latent: after 1 year of infection.

Tertiary Syphilis

- Cardiovascular:
  - Syphilitic aortitis of ascending aorta
  - Aortic regurgitation
- Neurologic:
  - Asymptomatic
  - Aseptic meningitis
  - Paresis mimicking progressive dementia with psychotic features
  - Tabes dorsalis

Diagnosis: Non-Treponemal Tests

- VDRL
- RPR
- Not sensitive in early syphilis
- False positive reactions

Diagnosis: Treponemal Tests

- Serum Fluorescent Treponemal Antibody Absorption Test (FTA-ABS)
- Higher sensitivity and specificity.
- Used as confirmatory test.
- False positives with autoimmune disease, viral infections, and pregnancy.

Diagnosis: Neurosyphilis

- Patients with late latent or unknown duration with any neurological symptoms need evaluation.
- Reactive serologic tests.
- Abnormalities of CSF cell count and protein levels.
- Reactive CSF VDRL.

Treatment

Primary, secondary and early latent (<1yr)	Benzathine PCN 2.4mu IM or Doxy 100mg PO BID x2w
Late latent (>1y) or latent of unknown duration	Benzathine PCN 2.4mu IM x3 doses weekly or Doxy 100mg PO BID x4w
Tertiary syphilis (not neuro)	Benzathine PCN 2.4mu IM x3 doses weekly or Doxy 100mg PO BID x4w
Neurosyphilis	PCN G 3-4mu IV q4h for 10-14d or Procaine PCN 2.4mu IM daily plus probenecid 500mg PO QID x10-14d

Expected Serologic Response to Treatment

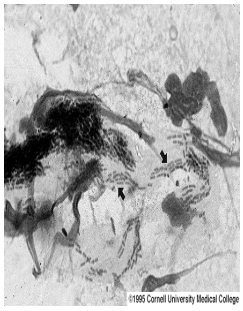
Disease stage	6 mos posttreament	12 mos posttreatment	24 mos posttreatment
Primary	4-fold decrease in titer	6-fold decrease in titer	8-fold decrease in titer
Secondary	6-fold decrease	8-fold decrease	
Early latent		4-fold decrease	

Chancroid

- Incubation period is 2-5 days.
- Begins as a papule which forms an inflamed pustule that ruptures to form a small, dirty, shallow-based ulcer with a foul smelling, necrotic exudate.

Chancroid: Diagnosis

- Causative agent: Hemophilus ducreyi.
- Gram stain of purulent material reveals Gram negative coccobacilli, often in "school-of-fish" pattern.



Chancroid

- ~50% of patients have unilateral or bilateral lymphadenopathy.
- Genital ulcers associated with chancroid may potentiate the spread of HIV.
- Treatment: Ceftriaxone 250mg IM x1 or Azithromycin 1gm PO x1 or Ciprofloxacin 500 mg PO bid x 3d.
- About 15% will be co-infected with syphillis.

Epidemiology

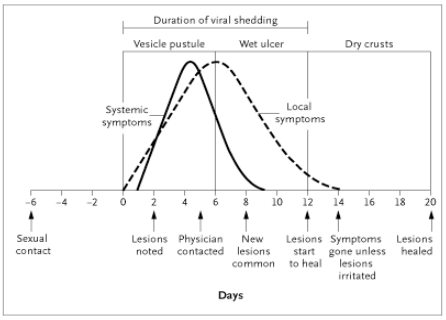
- Caused by HSV-1 or HSV-2.
- Primary route of acquisition of HSV-2 is through genital-genital sexual contact.
- HSV-1 primarily acquired through oral-genital contact.
- Most cases subclinical.
- Transmission primarily from subclinical infection.

Epidemiology of Genital Herpes

- 1 in 4 persons >30yo in the US has HSV-2.
- One of the 3 most common STDs.
- Risk of infection correlates with the number of lifetime sexual partners.

Genital Herpes Simplex – Initial Infection

- "Classic" presentation: macules and papules that progress to vesicles, pustules and ulcers.
- Symptomatic cases sometimes severe with prolonged, systemic manifestations.
- Vesicles ⇒ painful ulcerations ⇒ crusting.
- Constitutional symptoms.



Kimberlin and Rouse NEJM 350 (19): 1970, Figure 2 May 6, 2004

Herpes Complications

- Aseptic Meningitis
- Neonatal HSV
- HIV Infection
  - High HIV titers found in genital herpes ulcerations

HSV: Diagnosis

- Tzanck smear
  - Multinucleated giant cells ~2/3rds of the time when vesicles are present
  - Often negative at the stage of crusting
- Viral Culture
  - Becomes insensitive within days of onset
- PCR
- Type-specific antibody assays

Therapy Initial Episode

- Acyclovir 200mg 5x/day or 400mg TID x7-10d
- Valacyclovir 1g BID x7-10d
- Famciclovir 250mg TID x7-10d
- Increased rate of healing, but does not prevent recurrences

Herpes: Recurrent Infection

- Recurrence seen in ~50% of people with symptomatic HSV within 6 months.
- May be symptomatic or more commonly asymptomatic.
- Duration of viral shedding is shorter and there are fewer lesions present.
- Recurrence rates decrease over time.

Episodic Recurrence Therapy

- Acyclovir 400mg TID x5 days or 800mg TID x2 days or 200 mg 5x/d x5 days.
- Valacyclovir 500mg BID for 3 days or 1g daily x 5days.
- Famciclovir 125mg BID x5 days.
- Only shortens duration if started within 24h.

Suppressive Therapy

- Acyclovir 400mg BID ($1500) or Valacyclovir 1g QD ($2500) or Famciclovir 250mg BID ($2700).
- Offer to those with >6 recurrences/year or severe outbreaks.
- Can reduce frequency of symptoms by 85%.
- Reduced subclinical viral shedding.
- Reduces risk of transmission of HSV to uninfected partners.

Reducing Transmission

- Recommend consistent condom use.
- Use of antiviral suppressive therapy to reduce viral shedding.
- Vaccine currently under study.

Incidence of STDs During Pregnancy

STDs	# Pregnant Women
Bacterial vaginosis	800,000
Herpes Simplex	800,000
Chlamydia	200,000
Trichomoniasis	80,000
Gonorrhea	40,000
Hepatitis B	40,000
HIV	8,000
Syphilis	8,000

Effects on Pregnancy

- Early onset of labor
- Premature rupture of the membranes
- Uterine infection after delivery
- Congenital infection

Recommendations

- CDC recommends that ALL pregnant women be screened on their first prenatal visit for STDs (HIV, syphilis, Hep B +/- C, Chlamydia, GC, BV if premature delivery in the past).
- Treat appropriately to prevent maternal and fetal complications.
- Recommendations for prevention.

Human Papilloma Virus (HPV)

- HPV is highly prevalent, found in nearly two- thirds of female college students.
- Sexually transmitted virus.
- Most HPV infections are transient, with median duration of 8 months.

Human Papilloma Virus (HPV)

- Risk for persistent HPV infection (>6 mos):
  - Older age
  - Infection with multiple types of HPV
  - High risk type infection
  - Duration of infection

Role of HPV in Cervical Cancer

- Causal relationship identified between genital HPV infection and cervical dysplasia and cervical cancer
- Several types of HPV
  - Low risk are types 6 and 11
  - Highest risk are types 16, 18, 33, 52, 59

Role of HPV in Cervical Cancer

- Infection with 16 and any other high risk type further increases the risk for developing cervical cancer.

Virology: HPV Types 6 and 11

- Prototypical low risk types.
- Primarily cause benign exophytic genital warts or condylomata acuminata.
- Diagnosis of genital warts can be confirmed by biopsy.
- Depending on the size and anatomic location, genital warts can be painful, friable, and pruritic, although they are commonly asymptomatic.

"Cauliflower" condyloma of the penis

Small papillomas on penile shaft

Verrucous vulvar warts

HPV Warts Treatment

- Primary goal - removal of symptomatic warts.
- If left untreated, visible genital warts may resolve on their own, remain unchanged, or increase in size or number.
- Currently available therapies for genital warts may reduce, but probably do not eradicate, infectivity.
- An acceptable alternative is to forego treatment and await spontaneous resolution.

Treatment Options

- Patient-applied
  - Podofilox 5% solution or gel
  - Imiquimod 5% cream

Treatment Options

- Provider-applied
  - Podophyllin resin 10%--25%
  - Trichloroacetic acid (TCA) or Bichloroacetic acid (BCA) 80%-90%
  - Cryotherapy with liquid nitrogen or cryoprobe
  - Surgical removal either by tangential scissor excision, tangential shave excision, curettage, or electrosurgery

Treatment Follow-up

- Follow-up visits are not required for patients using self-administered therapy.
- Recurrence of genital warts within the first several months after treatment is common and usually indicates recurrence rather than reinfection.
- The value of disclosing a past diagnosis of genital HPV infection to future partners is unclear.

HPV Types 16 and 18

- Prototypical high-risk types.
- HPV 16 most prevalent virus to infect the uterine cervix.
- Closely associated with all intraepithelial and invasive squamous neoplasia.
- Also associated with glandular neoplasia.

Risk Factors for Cervical Cancer

- Genital HPV infection.
- Low socioeconomic status.
- Multiple sexual partners.
- Early onset of sexual intercourse.
- Smoking.

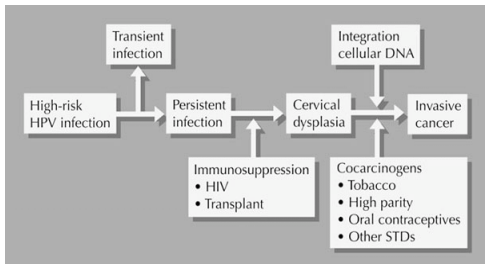
Cervical Cancer Facts and Figures Worldwide

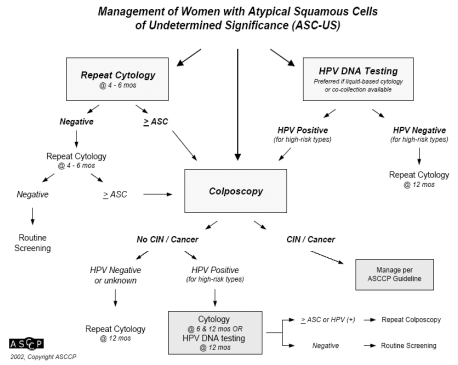
- Third most common cancer worldwide.
- Second most common cause of cancer-related deaths in women (200,000/yr).
- >450,000 cases are diagnosed annually.

Cervical Cancer Facts and Figures Worldwide

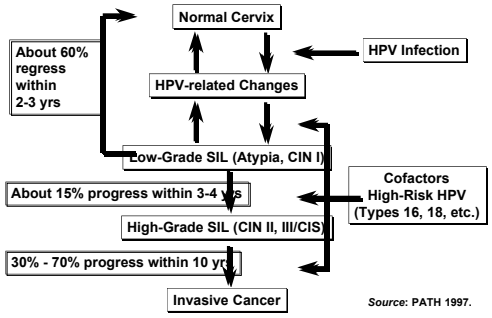
- 80% of cases occur in developing countries.
- About 50% of US women in whom cervical cancer develops have never been screened.

Model of Cervical Cancer Carcinogenesis





Current Understanding



Source: PATH 1997.

Male Factors

- Circumcision
  - HPV about 4 times more prevalent in uncircumcised men.
  - Circumcision associated with moderate, but non-significant decrease in risk of cervical cancer in female partners.
  - Circumcision acts as a modifying factor, reducing the prevalence of HPV.

Prevention of Cervical Cancer

- Cervical cancer is a preventable disease.
- Primary prevention:
  - Education to reduce high risk sexual behavior..
  - Measures to reduce/avoid exposure to HPV and other STDs.

Prevention of Cervical Cancer

- Secondary prevention:
  - Treatment of precancerous lesions before they progress to cervical cancer (implies practical screening test).

Counseling

- HPV is a very common viral infection that most adults will have at some time in their lives.
- Most women who are infected with HPV will not develop cervical cancer.

Counseling

- Continue to take steps to reduce exposure to this and all STDs (barrier protection).
- Regular cervical cancer screening with the pap smear and treatment of precancerous lesions is the most effective strategy for preventing cervical cancer.

Epidemiology

- Five of the top ten most reported diseases in US in 1995 were STDs.
- Incidence of STDs are ~15 million per year.
- Women and infants bear a disproportionate burden of STD-associated complications.

Preventing Transmission

- Abstinence from sexual intercourse (i.e., oral, vaginal, or anal sex) is the best way to prevent infection.
- Long-term, mutually monogamous relationship with an uninfected partner.
- Counseling that encourages abstinence is crucial for persons being treated for an STD or whose partners are undergoing treatment.

Condoms

- Prevent the sexual transmission of HIV infection.
- Can reduce the risk for other STDs (i.e., gonorrhea, chlamydia, and trichomonas).
- Less effective in preventing infections transmitted by skin-to-skin contact (e.g., herpes, HPV, syphilis, and chancroid).

Spermicides

- Vaginal spermicides containing nonoxynol-9 are not effective in preventing cervical gonorrhea, chlamydia, or HIV infection.
- Frequent use of spermicides containing N-9 has been associated with genital lesions, which may be associated with an increased risk of HIV transmission.

Spermicides

- Condoms lubricated with spermicides are no more effective than other lubricated condoms in protecting against the transmission of HIV and other STDs.

ID and Treatment of Sex Partners

- Learn from persons seeking treatment for STDs about their sexual partners.
- Help to arrange for evaluation and treatment of those partners.
- Providers should encourage their patients to make partners aware of potential STD risk and urge them to seek diagnosis and treatment.

Prevention

- Educate and counsel persons at risk on ways to adopt safer sexual behavior.
- Identify asymptomatic infected persons and symptomatic persons unlikely to seek diagnostic and treatment services.
- Effective diagnosis and treatment.
- Evaluation, treatment, and counseling of sex partners.
- Pre-exposure vaccination of persons at risk for vaccine-preventable STDs.

MMWR May 2002 STD Treatment Guidelines

Upcoming Programs

Enhancing Fitness with EnhanceFitness
Thursday, January 26, 2006
12:00 - 2:30 p.m. (Central Time)

HIV/AIDS
Wednesday, February 1, 2006
2:00 - 4:00 p.m. (Central Time)

For complete listing of upcoming programs visit: www.adph.org/alphtn