STD CO-INFECTIONS IN HIV/AIDS INFECTED PATIENTS

KM Mevoli[1], AC Thornton[2], J Collins[2], C Elliott[3], GG Caldwell[1]

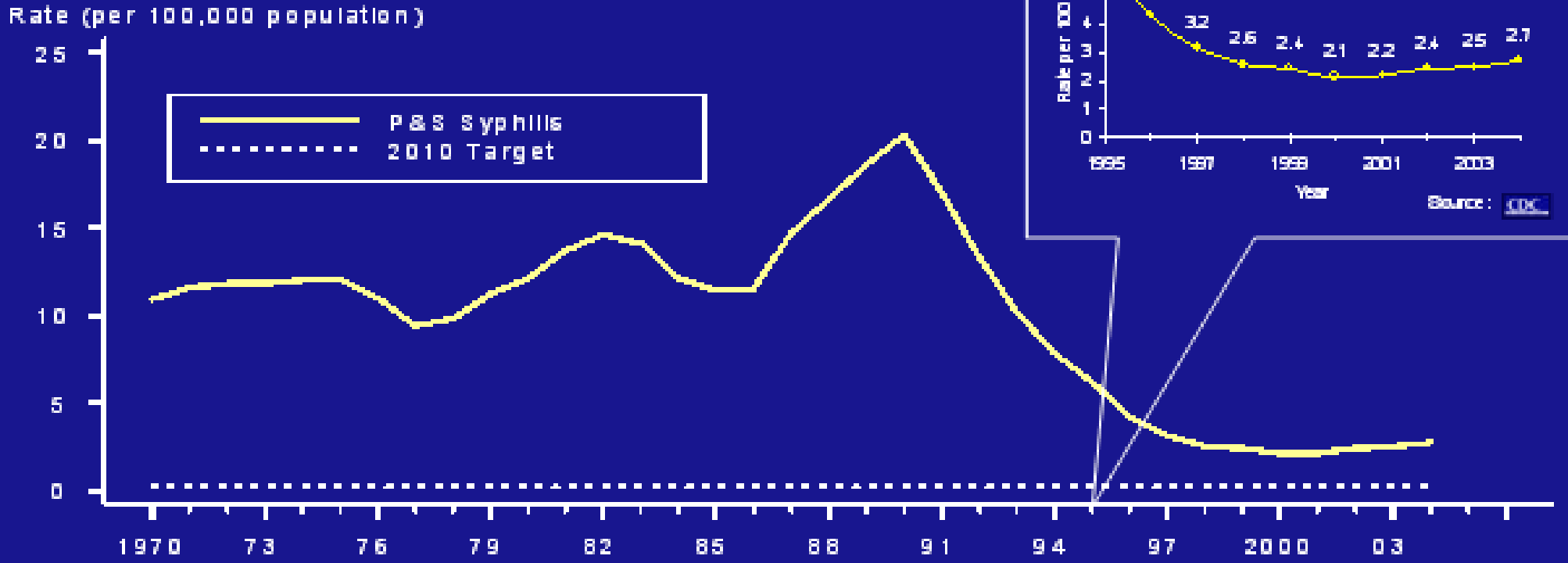
[1] University of Kentucky College of Public Health, Department of Epidemiology,
[2] University of Kentucky Bluegrass Care Clinic,
[3] Lexington-Fayette County Health Department Annex, Targeted Prevention (HIV/STD Clinic)

Objectives

- As the quality adjusted life years among persons with Human Immunodeficiency Virus (HIV) have improved since the introduction of Highly Active Antiretroviral (drug) Therapy, or HAART, the potential for transmission of Sexually Transmitted Disease (STD) co-infections has consequently increased. This study examined the role of HIV/AIDS in rising vulnerability to STD co-infections in persons attending two HIV-STD clinics in a small metropolitan area of the Southeastern United States.

Why Syphilis? Why Now?

Primary and secondary syphilis — Rates: United States, 1970–2004 and the Healthy People 2010 target



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

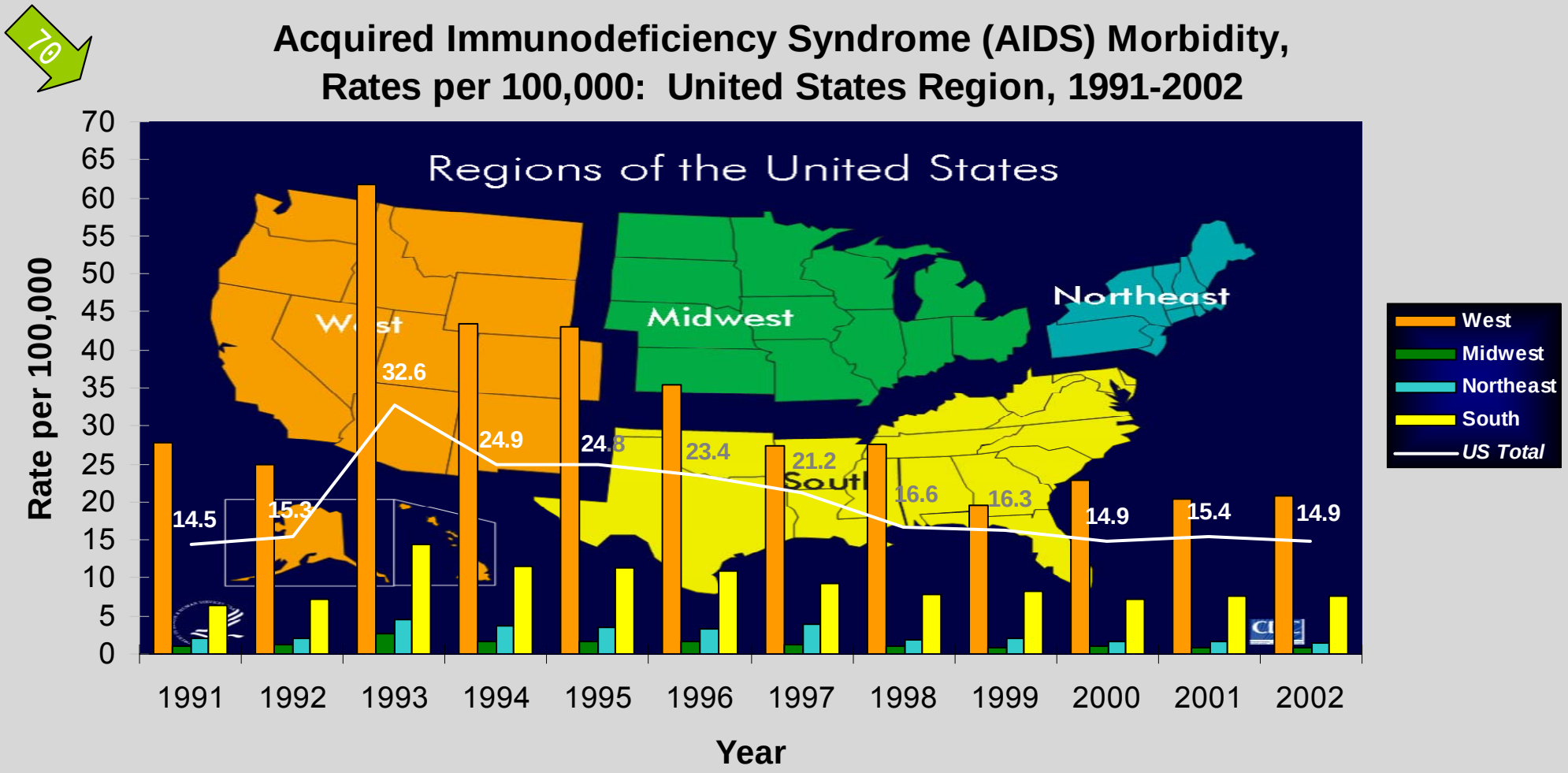
Division of STD Prevention

CDC

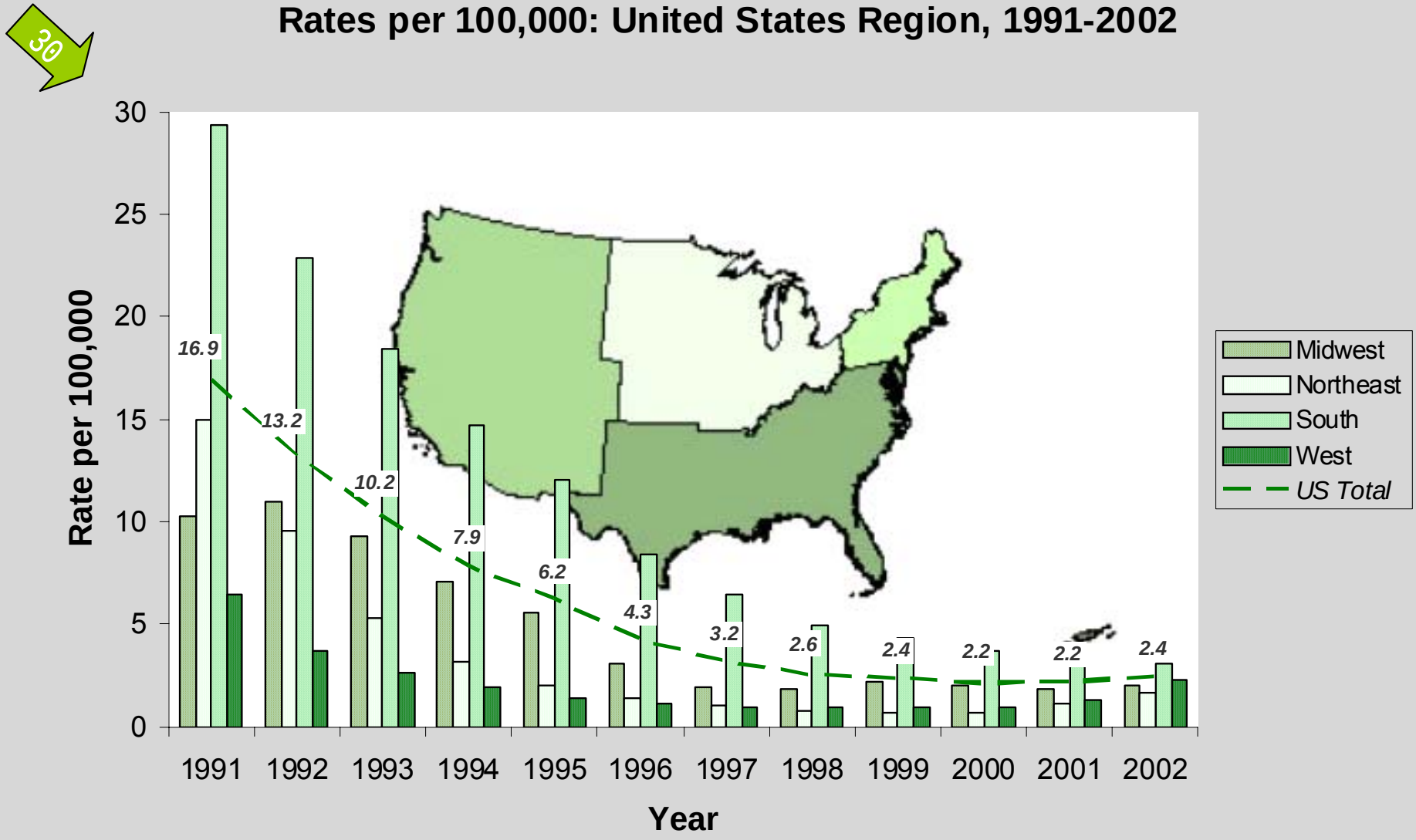
Why Syphilis? Why Now?

- Among other STDs, P&S syphilis cases are on the rise.
- P&S syphilis rates declined by 89.2% from 1990 through 2000 and were at an all time reported low in 2000.[7,8]
- Although P&S syphilis declined in the US from 1990 through 2000, the rate of P&S syphilis has increased each year since 2001, primarily among men.
- The rate of P&S syphilis has risen 70% among males (from 3.0/100,000 in 2001 to 5.1/100,000 pop. in 2005).[7]
- Decline among African Americans from 1999 until 2005, although the rate of P&S syphilis is still higher among African Americans than whites (29x↑(1999) to 5.4x↑(2005)).[7]
- An increase has occurred among white men (from 3.1 in 2004 to 3.3 cases/100,000 pop. in 2005).[7]

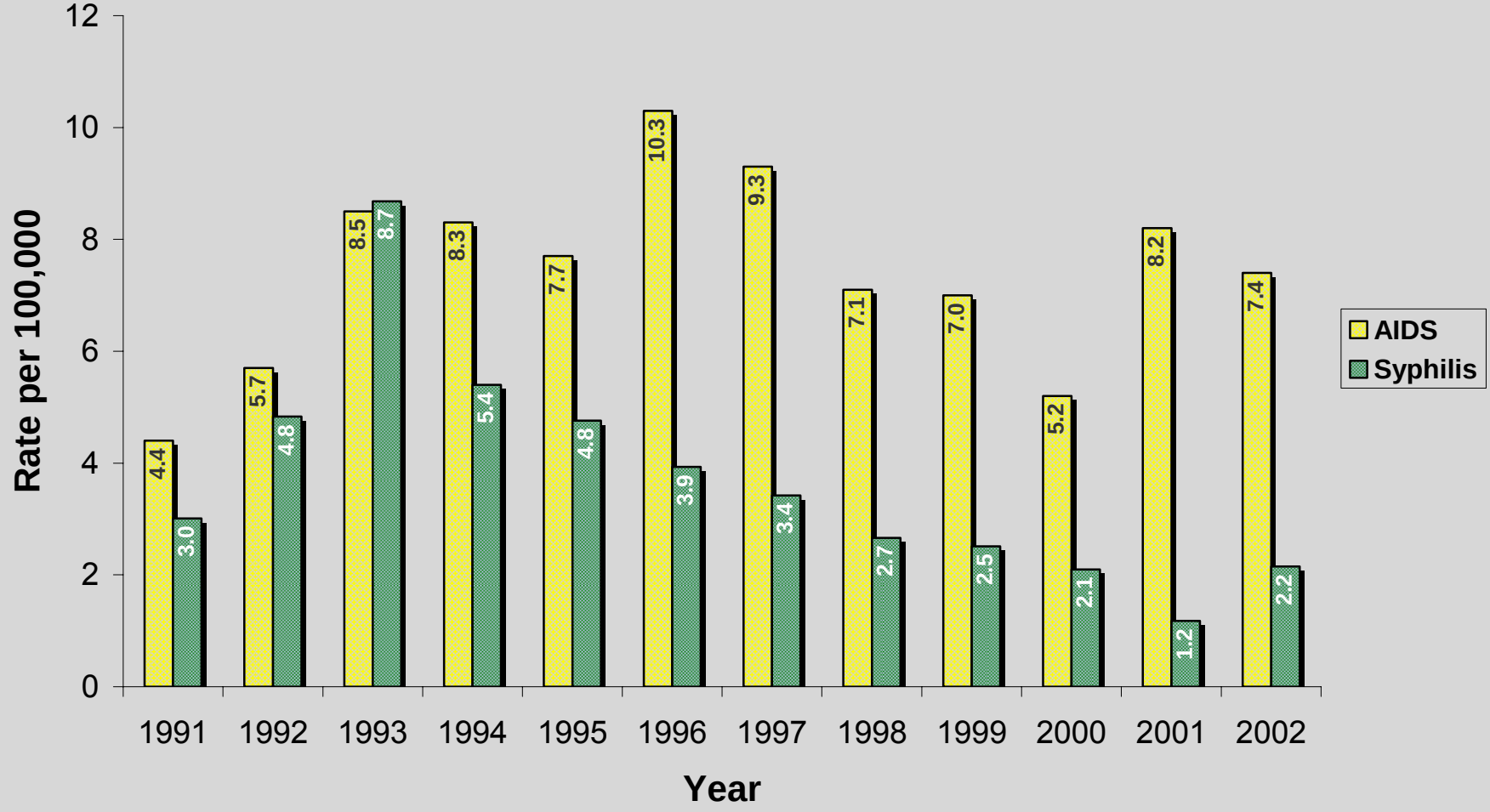
National Overview: AIDS



National Overview: P&S Syphilis



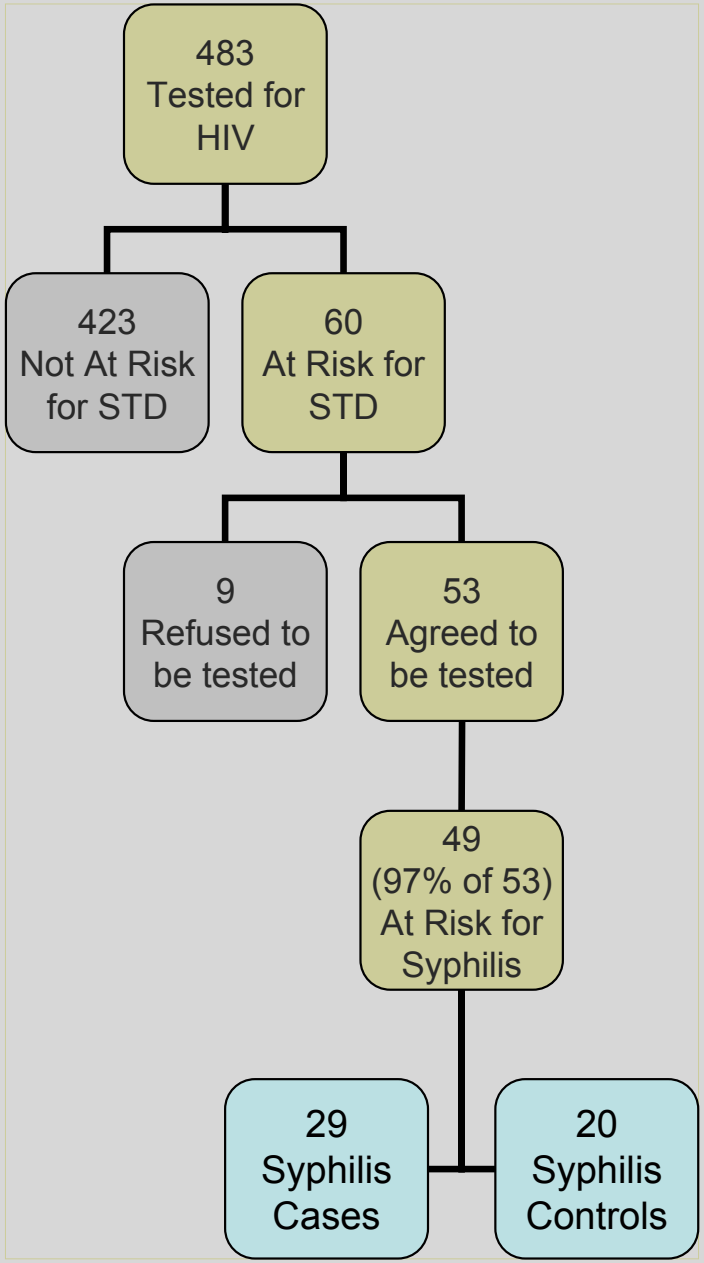
State Overview: AIDS & P&S Syphilis



Methods

- This investigation was comprised of three different study designs: cross-sectional (n = 49), matched case control (n = 68), and count-comparison (state and region/nation population-based data). Statistical analyses included descriptive statistics and stepwise and multiple logistic regression using SAS version 9.1 software.

Sample Demographics (Clinic A)



Cross-Sectional Sample

Sample Demographics (Clinic A)

Table 1. Demographics of Clinic A Patients				
	Cases (n=29)	%	Controls (n=20)	%
Gender*				
Female	**8**	28%	**6**	30%
Male	**21**	72%	**13**	65%
Age (in Years)*				
<20	**1**	3%	**1**	5%
20-29	**10**	34%	**6**	30%
30-39	**12**	41%	**7**	35%
40-49	**5**	17%	**3**	15%
50-59	**1**	3%	**1**	5%
Race/Ethnicity*				
Black	**16**	55%	**7**	35%
Hispanic	**2**	7%	**0**	0%
White	**10**	34%	**10**	50%
Residence*				
Kentucky	**29**	100%	**18**	90%
Other Co-infections*				
Chlamydia	**1**	3%	**0**	0%
Gonorrhea	**3**	10%	**0**	0%
Hepatitis A/B/C	**2**	7%	**0**	0%

Note: Cases = positive for syphilis and Controls = negative for syphilis.

Sample Demographics (Clinic B)

Table 2. Matching Criteria for Clinic B				
	Cases (n=34)	%	Controls (n=34)	%
Gender				
Male	**34**	100%	**34**	100%
Age (in Years)				
20-29	**3**	9%	**3**	9%
30-39	**15**	44%	**14**	41%
40-49	**12**	35%	**13**	38%
50-59	**4**	12%	**4**	12%
Race/Ethnicity				
Black	**9**	26%	**9**	26%
Hispanic	**3**	9%	**3**	9%
White	**22**	65%	**22**	65%

Sample Demographics (Clinic B)

Table 3. Demographics of Clinic B Patients	Cases (n=34)	%	Controls (n=34)	%
Residence				
Fayette County	**21**	62%	**14**	41%
Other	**13**	38%	**20**	59%
Poverty Level (Federal)				
1-100%	**12**	35%	**11**	32%
101-300%	**9**	26%	**11**	32%
Over 300%	**3**	9%	**3**	9%
Unknown	**10**	29%	**9**	26%
Employment Status				
Full-Time	**12**	35%	**12**	35%
Part-Time	**1**	3%	**1**	3%
Unemployed/Disabled	**9**	26%	**6**	18%
Other/Unknown	**12**	35%	**15**	44%
Education				
High School	**13**	38%	**11**	32%
College Degree	**6**	18%	**5**	15%
Unknown	**15**	44%	**18**	53%
Insurance				
Private	**13**	38%	**20**	59%
Medicaid/Medicare	**5**	15%	**5**	15%
No Insurance	**15**	44%	**6**	18%
Unknown	**1**	3%	**3**	9%

Table 3. (Continued)				
Smoking Status				
Smoker	**16**	47%	**19**	56%
Marital Status				
Single	**25**	74%	**24**	71%
Married	**4**	12%	**4**	12%
Divorced/Widowed	**0**	0%	**3**	9%
Unknown	**5**	15%	**3**	9%
Risk Factors				
Heterosexual	**4**	12%	**10**	29%
IDU/MSM/IDU&MSM	**29**	85%	**22**	65%
Other	**1**	3%	**2**	6%
Current HAART				
Yes	**23**	68%	**29**	85%
AIDS Status				
Persons with AIDS	**10**	29%	**18**	53%
Other Co-infections				
Chlamydia	**2**	6%	**1**	3%
Gonorrhea	**5**	15%	**3**	9%
Herpes	**5**	15%	**6**	18%
HPV	**5**	15%	**10**	29%
Hepatitis A/B/C	**22**	65%	**20**	59%

Note: Cases = positive for both HIV and syphilis and Controls = positive for HIV and negative for syphilis.

Results

- Among persons tested for HIV-STD co-infections at Clinic A, syphilis encompassed 93% of STD testing. The odds of having HIV/AIDS and contracting an STD were 5.33 (95% CI 1.554-18.304 (p=0.05)). The odds of having HIV/AIDS and contracting syphilis were 5.70 (95% CI 1.602-20.279 (p=0.005)). Among those at Clinic B who were HIV positive, the number of HIV-syphilis co-infections has increased in proportion since 2003.

Conclusions

- There was an increase in the number of syphilis cases among HIV-positive individuals for both Clinic A and Clinic B, and an increase in odds of 5.70 for having HIV/AIDS and contracting syphilis (Clinic A). P&S syphilis cases have increased in these two samples of HIV-positive persons and might be increasing elsewhere.

Limitations

- **This study is incomplete to date**: Although all data from the first and second studies (Clinics A&B) have been collected, county data is still being collected and further statistical analyses are necessary, including multiple and stepwise logistic regression.
- Convenience sampling
- Loss to follow-up (Clinic A)
- Cannot infer causality due to the design of the cross-sectional study
- In the future, It will be necessary to continue with data collection and perform statistical analyses on all data sets to evaluate whether or not there is an actual increase in the rate of syphilis (& other STDs) among persons with HIV/AIDS.

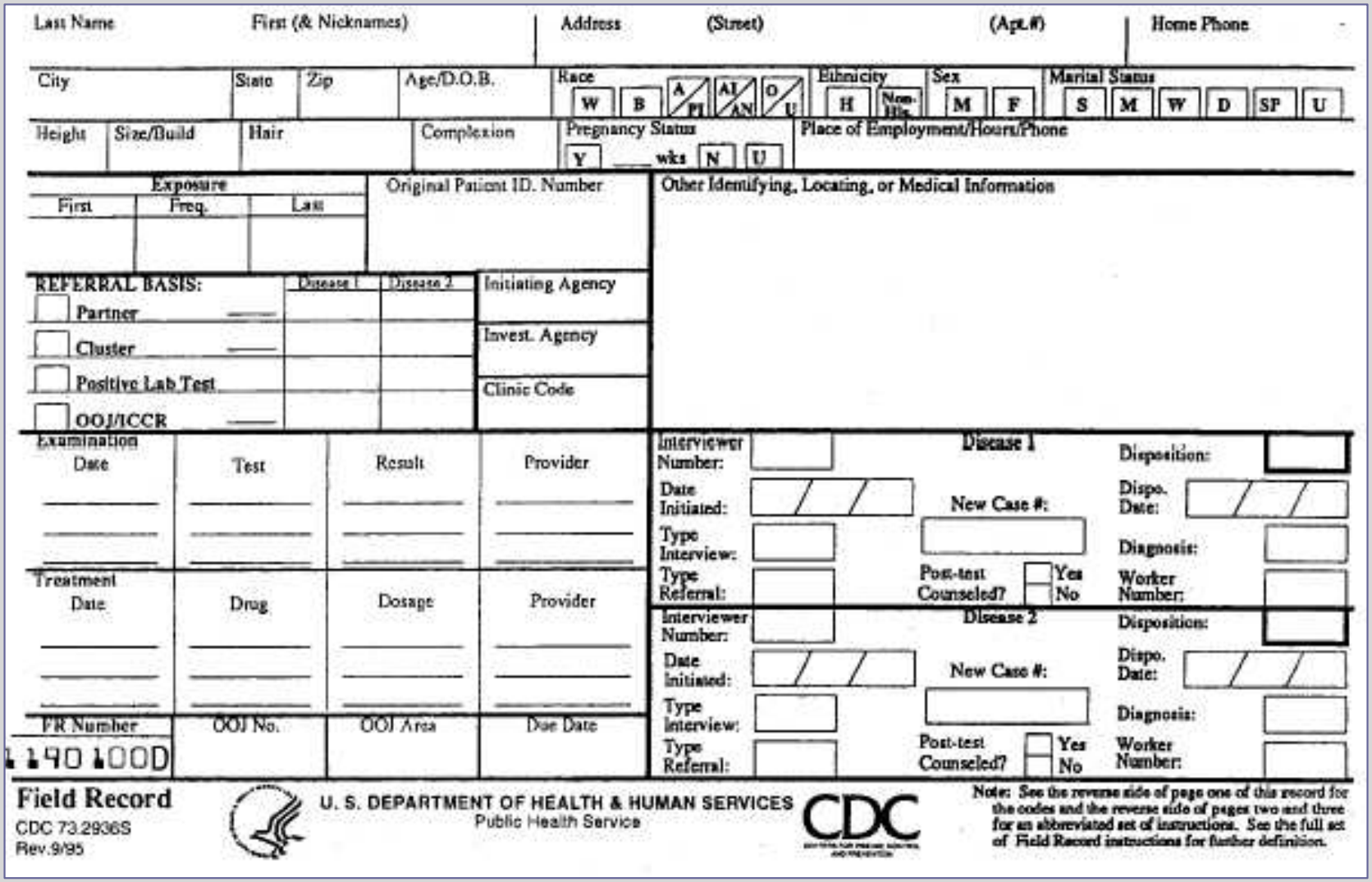
Lessons Learned

- Data collected at a clinic where anonymous testing occurs is oftentimes incomplete, lost to follow-up, difficult to process, and is not necessary a true representation of the population served.
- It is difficult to prevent the spread of HIV/STDs without understanding human behavior; human behavior is neither planned, predictable, nor rational at all times.
- It is important to continue educating persons with & without HIV/AIDS to practice safe sex in order to increase prevention and decrease the incidence of co-infections.

Public Health Recommendations

- Although HIV and many other STDs are on the national notifiable disease list, HIV-STD co-infections are not.
- Better prevention strategies such as outreach intervention programs, screening methods, and advancements in public health surveillance procedures are recommended to decrease the morbidity and mortality of HIV-STD co-infections.
- The changing demographics of P&S Syphilis might suggest the need to reevaluate targeted prevention strategies of P&S Syphilis in the United States.

Figure F. CDC Field Record (Clinic A)



Last Name | First (& Nicknames) | Address (Street) (Apt.#) | Home Phone

City | State | Zip | Age/D.O.B. | Race: W B A/PI AI/AN O/U | Ethnicity: H Non-Hisp. | Sex: M F | Marital Status: S M W D SP U

Height | Size/Build | Hair | Complexion | Pregnancy Status: Y ___ wks N U | Place of Employment/Hours/Phone

Exposure: First | Freq. | Last

Original Patient ID. Number

Other Identifying, Locating, or Medical Information

REFERRAL BASIS: | Disease 1 | Disease 2 | Initiating Agency | Invest. Agency | Clinic Code

- Partner ___
- Cluster ___
- Positive Lab Test
- OOJ/ICCR ___

Examination: Date | Test | Result | Provider

Treatment: Date | Drug | Dosage | Provider

FR Number 1190100D | OOJ No. | OOJ Area | Due Date

Interviewer Number: | Date Initiated: | Type Interview: | Type Referral: | Post-test Counseled? Yes No | New Case #: | Disease 1 | Disposition: | Dispo. Date: | Diagnosis: | Worker Number:

Interviewer Number: | Date Initiated: | Type Interview: | Type Referral: | Post-test Counseled? Yes No | New Case #: | Disease 2 | Disposition: | Dispo. Date: | Diagnosis: | Worker Number:

Field Record
CDC 73.2936S
Rev.9/95

U. S. DEPARTMENT OF HEALTH & HUMAN SERVICES
Public Health Service

CDC

Note: See the reverse side of page one of this record for the codes and the reverse side of pages two and three for an abbreviated set of instructions. See the full set of Field Record instructions for further definition.

References

1. Palella FJ, Delaney KM, Moorman AC, Loveless MO, Fuhrer J, Satten GA, et al. Declining morbidity and mortality among patients with advanced human immunodeficiency virus infection. N Engl J Med. 1998;338(13):853-860.
2. Michaels SH, Clark R, Kissinger P. Declining morbidity and mortality among patients with advanced human immunodeficiency virus infection [letter]. N Engl J Med. 1998;339(6):405-6.
3. Huang L, Quartin A, Jones D, Havlir DV. Intensive care of patients with HIV infection. N Engl J Med. 2006:355(2):173-81.
4. Buchacz K, Greenberg A, Onorato I, Janssen R. Syphilis epidemics and human immunodeficiency virus (HIV) incidence among men who have sex with men in the United States: implications for HIV prevention. Sex Transm Dis. 2005;32(10):S73-9.
5. Fleming DT, Wasserheit JN. From epidemiological synergy to public health policy and practice: the contribution of other sexually transmitted diseases to sexual transmission of HIV infection. [Review]. Sex Transm Inf. 1999;75;3-17.
6. Centers for Disease Control and Prevention (CDC). HIV prevention through early detection and treatment of other sexually transmitted diseases —United States recommendations of the Advisory Committee for HIV and STD Prevention. MMWR Recomm Rep. 1998;47(RR-12):1-24.
7. CDC. Sexually Transmitted Disease Surveillance, 2005. Atlanta, GA: U.S. Department of Health and Human Services, November 2006.
8. Brown DL, Frank JE. Diagnosis and Management of Syphilis. Am Fam Physician 2003;68:283-90,297.
9. Williams LA, Klausner JD, Whittington, WLH, Handsfield HH, Celum C, Holmes KK. Elimination and Reintroduction of Primary and Secondary Syphilis. Am J Public Health. July 1999;89(7).
10. CDC. National overview: STD surveillance 2004. 2004 [cited 2006 Oct 11]. Available from: http://www.cdc.gov/std/stats/natoverview.htm.
11. US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for HIV, STD and TB Prevention (NCHSTP), Division of STD/HIV Prevention, Sexually Transmitted Disease Morbidity 1984 - 2003, CDC WONDER On-line Database.

Acknowledgements

- Capstone Committee Members:
  - Dr. Glyn Caldwell, (committee chair)
  - Dr. Alice Thornton (infectious disease faculty mentor)
  - Dr. Claudia Hopenhayn
  - Dr. Adam Branscum
- Kentucky Department of Public Health:
  - David Raines, STD Program Manager
  - Sigga Jagne, HIV/AIDS Branch Manager
- Special Thanks:
  - Carolyn Elliott
  - Dr. Richard Crosby
  - Jana Collins
- Note: This study is in fulfillment of my capstone project, a requirement for completion of a Master of Public Health degree at the University of Kentucky.

Contact Information

Krista Mevoli, MPH Candidate

Educational Program Assistant, UK CCTS

Krista.Mevoli@email.uky.edu