

HIV Surveillance

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The findings and conclusions presented are those of the author and do not necessarily represent the views of the Centers for Disease Control and Prevention



Questions

Understanding the Epidemic and Measuring Outcomes

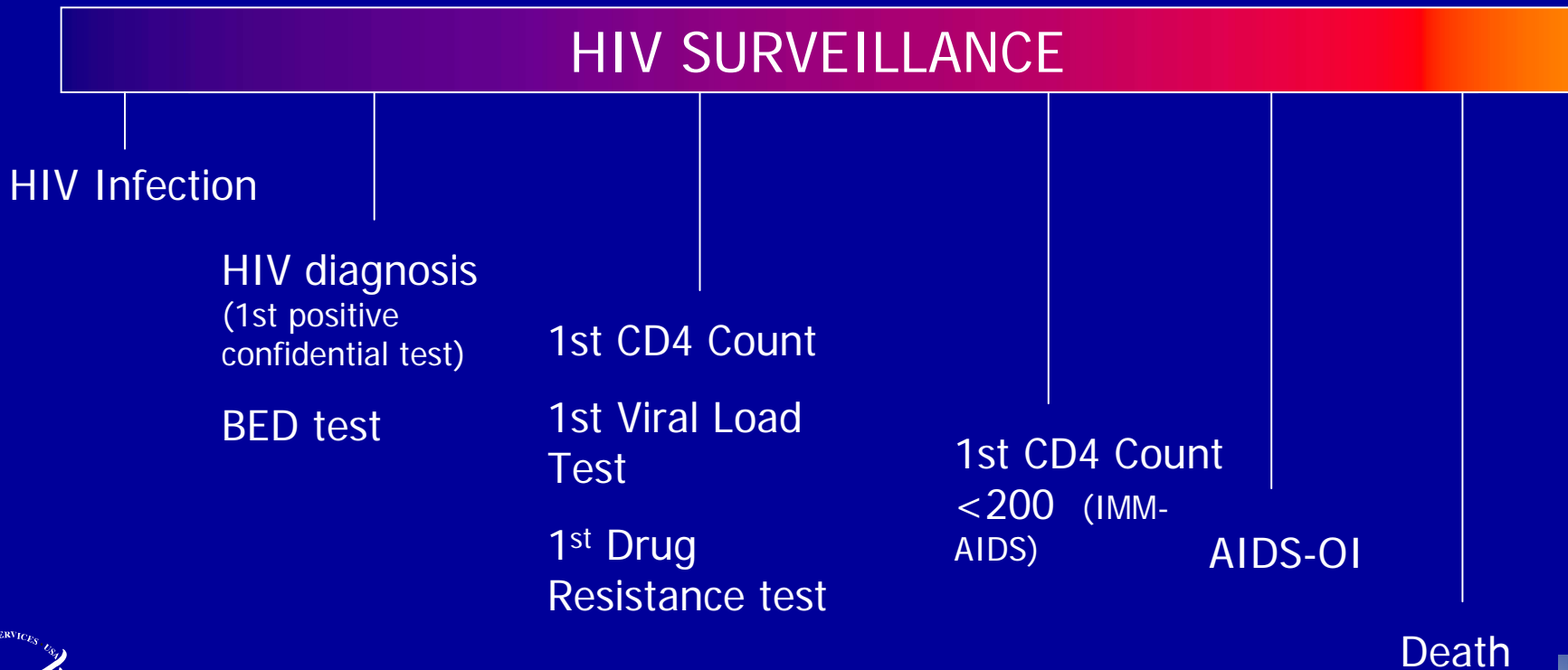
- Surveillance data used in domestic research
 - Research design issues
 - Specific interventions or populations of interest

Development of research to address the most critical needs

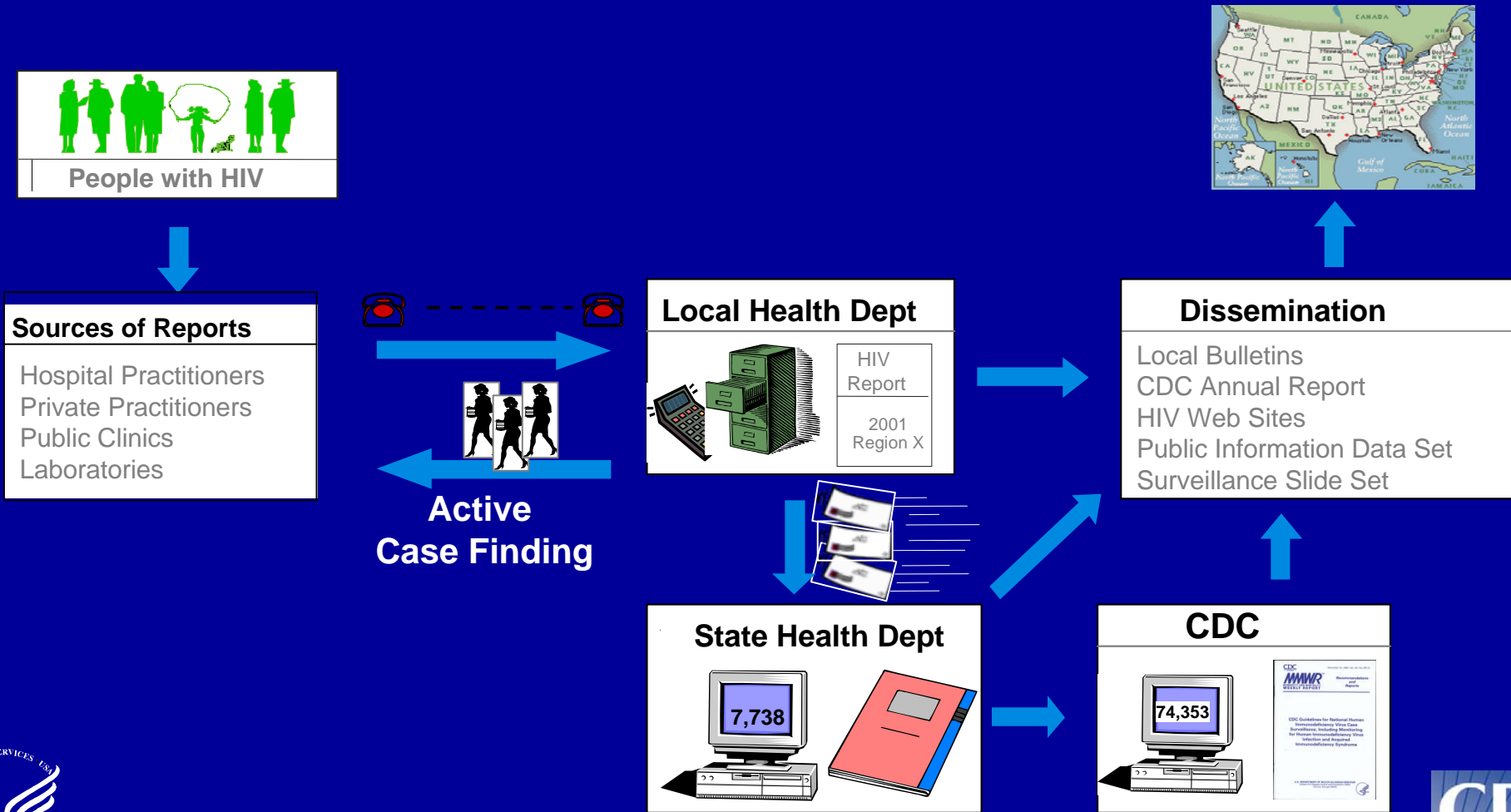
- In regards to your area of expertise, what 3 gaps in domestic HIV prevention research are critical to address in context of the network?
- How can this area contribute to advancing the domestic prevention agenda?
- How can we capitalize on network resources and characteristics? (formative research, populations of interest and multi-center RCTs)
- Where do we go from here?



Measures of Spectrum of HIV Morbidity and Mortality



HIV Surveillance Information Flow



HIV Surveillance Program Components

Program component	Areas	Funding
Core HIV case surveillance	65	36M
Incidence surveillance	25	13M
Resistance surveillance	11	2M
Enhanced perinatal surveillance	15	2M

Reporting of diagnoses of HIV infection

- As of April 2008, all states, DC, 5 U.S. dependent areas have implemented name-based HIV reporting and report cases to CDC
- Mature reporting (4 years reporting to CDC): 37 states for 2008; all for 2012



Revised HIV Surveillance Case Definition

TABLE. Surveillance case definition for human immunodeficiency virus (HIV) infection among adults and adolescents (aged ≥ 13 years) — United States, 2008

Stage	Laboratory evidence*	Clinical evidence
Stage 1	Laboratory confirmation of HIV infection <i>and</i> CD4+ T-lymphocyte count of ≥ 500 cells/ μ L <i>or</i> CD4+ T-lymphocyte percentage of ≥ 29	None required (but no AIDS-defining condition)
Stage 2	Laboratory confirmation of HIV infection <i>and</i> CD4+ T-lymphocyte count of 200–499 cells/ μ L <i>or</i> CD4+ T-lymphocyte percentage of 14–28	None required (but no AIDS-defining condition)
Stage 3 (AIDS)	Laboratory confirmation of HIV infection <i>and</i> CD4+ T-lymphocyte count of < 200 cells/ μ L <i>or</i> CD4+ T-lymphocyte percentage of < 14 †	<i>or</i> documentation of an AIDS-defining condition (with laboratory confirmation of HIV infection)†
Stage unknown§	Laboratory confirmation of HIV infection <i>and</i> no information on CD4+ T-lymphocyte count or percentage	<i>and</i> no information on presence of AIDS-defining conditions

* The CD4+ T-lymphocyte percentage is the percentage of total lymphocytes. If the CD4+ T-lymphocyte count and percentage do not correspond to the same HIV infection stage, select the more severe stage.

† Documentation of an AIDS-defining condition (Appendix A) supersedes a CD4+ T-lymphocyte count of ≥ 200 cells/ μ L and a CD4+ T-lymphocyte percentage of total lymphocytes of ≥ 14 . Definitive diagnostic methods for these conditions are available in Appendix C of the 1993 revised HIV classification system and the expanded AIDS case definition (CDC. 1993 Revised classification system for HIV infection and expanded surveillance case definition for AIDS among adolescents and adults. MMWR 1992;41[No. RR-17]) and from the National Notifiable Diseases Surveillance System (available at http://www.cdc.gov/epo/dphsi/casedef/case_definitions.htm).

§ Although cases with no information on CD4+ T-lymphocyte count or percentage or on the presence of AIDS-defining conditions can be classified as stage unknown, every effort should be made to report CD4+ T-lymphocyte counts or percentages and the presence of AIDS-defining conditions at the time of diagnosis. Additional CD4+ T-lymphocyte counts or percentages and any identified AIDS-defining conditions can be reported as recommended. (Council of State and Territorial Epidemiologists. Laboratory reporting of clinical test results indicative of HIV infection: new standards for a new era of surveillance and prevention [Position Statement 04-ID-07]; 2004. Available at <http://www.cste.org/ps/2004pdf/04-ID-07-final.pdf>.)



CDC. 2008 Revised Surveillance Case Definitions for HIV Infection, Incorporating the HIV Classification System and the AIDS Case Definition for Adults and Adolescents, HIV Infection Among Children Aged < 18 Months, and HIV Infection and AIDS Among Children > 18 Months but < 13 Years, United States. MMWR 2008;57(No. RR-10).



Information Collected

- All HIV cases
 - Demographics
 - Risk factors
 - Lab data: diagnostic tests (incl. last neg. if available), CD4, VL
 - Note: Most information on CD4 and VL from lab reporting to local jurisdictions
- Incidence data
 - Self-reported last negative and first positive tests
 - ARV use
 - BED results
- Resistance data
 - Genetic sequences—drug resistance and subtype
- Enhanced perinatal data
 - Clinical information on mother and child



Reporting of CD4 and VL

- CDC required collection
 - CD4 closest to diagnosis
 - First CD4 <200
 - VL closest to diagnosis
- CDC recommended collection
 - All follow up CD4 and VL values
- Reporting laws and practices (58 areas: 50 states, 6 cities, DC, Virgin Islands, Puerto Rico)
 - All CD4 values: 32 (vs. <200/<14% or other threshold)
 - Any VL result: 41 (detectable: 11; not required/specified: 6)
 - In practice, some areas with more restrictive regs. collect all



Examples of Data Use

National and Local Data Analyses

HIV diagnoses and deaths: trends; by demographics, transmission category, stage of disease (late diagnosis);

Entry into care: a reported CD4 or Viral Load test result within a certain time period (e.g., 3 months or 12 months) of HIV diagnosis

Regular/retention in care: two test results (CD4 or Viral Load) within the past year

- Limitation: Not all states require laboratories to report all CD4 and Viral Load test results

Treatment: Surveillance data provides limited information on

- Quality of care
- Treatment--some areas follow-up cases routinely and collect treatment related information



Examples of Data Use (cont)

HIV incidence: national estimates and local estimates, where available

- Design issues:
 - Local estimates may be unstable for subgroups
 - BED assay for population estimates, not individual outcomes

HIV drug resistance: currently implemented in 11 areas

- Design issues: expand collection of information to additional areas

Geographic analyses:

- Distribution of cases
- Community viral load
- Design issues: current address not collected by all areas, would need to be implemented



Medical Monitoring Project

To address:

- Are patients receiving care and treatment in accordance with United States Public Health Service (USPHS) guidelines?
- Are patients receiving care in Ryan White funded facilities receiving the same quality of care as patients in private facilities?
- What are the barriers to receiving care and services?



Medical Monitoring Project (cont.)

Design

- Representative sample of HIV-positive adults in care
- Interview and medical-record-abstraction
- Assessments of: adherence; sexual behavior; drug use; care-seeking; clinical outcomes; treatment; CD4 cell count and VL; opportunistic illnesses; type and quality of care received; and met and unmet needs for HIV care and prevention services



Behavioral Surveillance

The National HIV Behavioral Surveillance (NHBS) system

- Conducted in 25 cities
- Serial cross-sectional study on what people do that puts them at risk for HIV
- Three cycles focusing on different risk groups: MSM, IDU, heterosexuals at risk of HIV infection

Behavioral Risk Factor Surveillance System (BRFSS)

- On-going, telephone health survey system
- Data collected monthly in all 50 states, D.C., Puerto Rico, Virgin Islands and Guam
- State and local areas may add questions to the standard questionnaire.



Advantages and Limitations of Surveillance Data

Advantages

- Routinely collected
- Population-based
- Data completeness and quality easily improved

Limitations

- Data collection limited to OMB approved items
- Lag times in reporting, especially death information
- Person must be tested to be reported to surveillance system
- Cannot release individual's information, except for approved public health or research activities (e.g., surveys)



Specific interventions or populations of interest

- Burden of disease—numbers vs. rates vs. trends
- Local dynamics

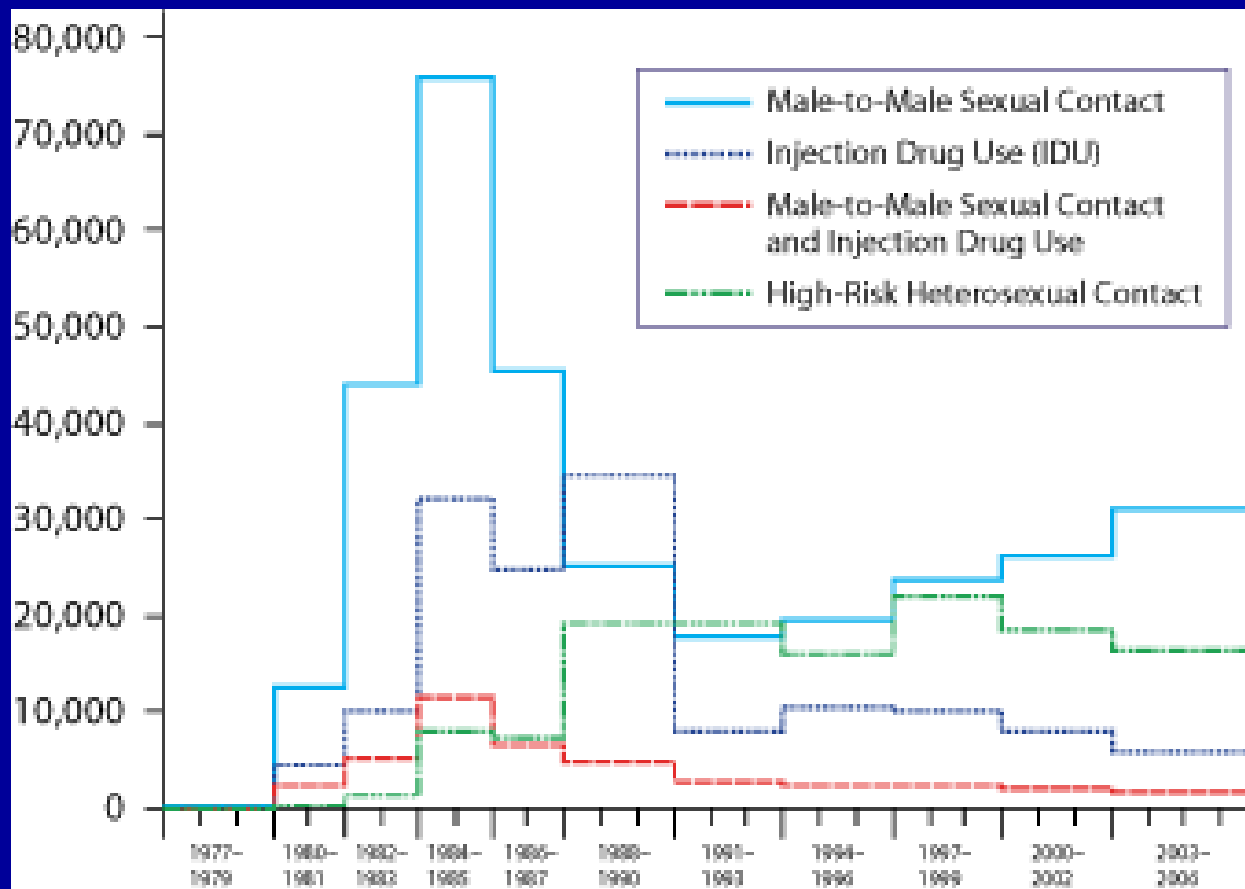


Populations

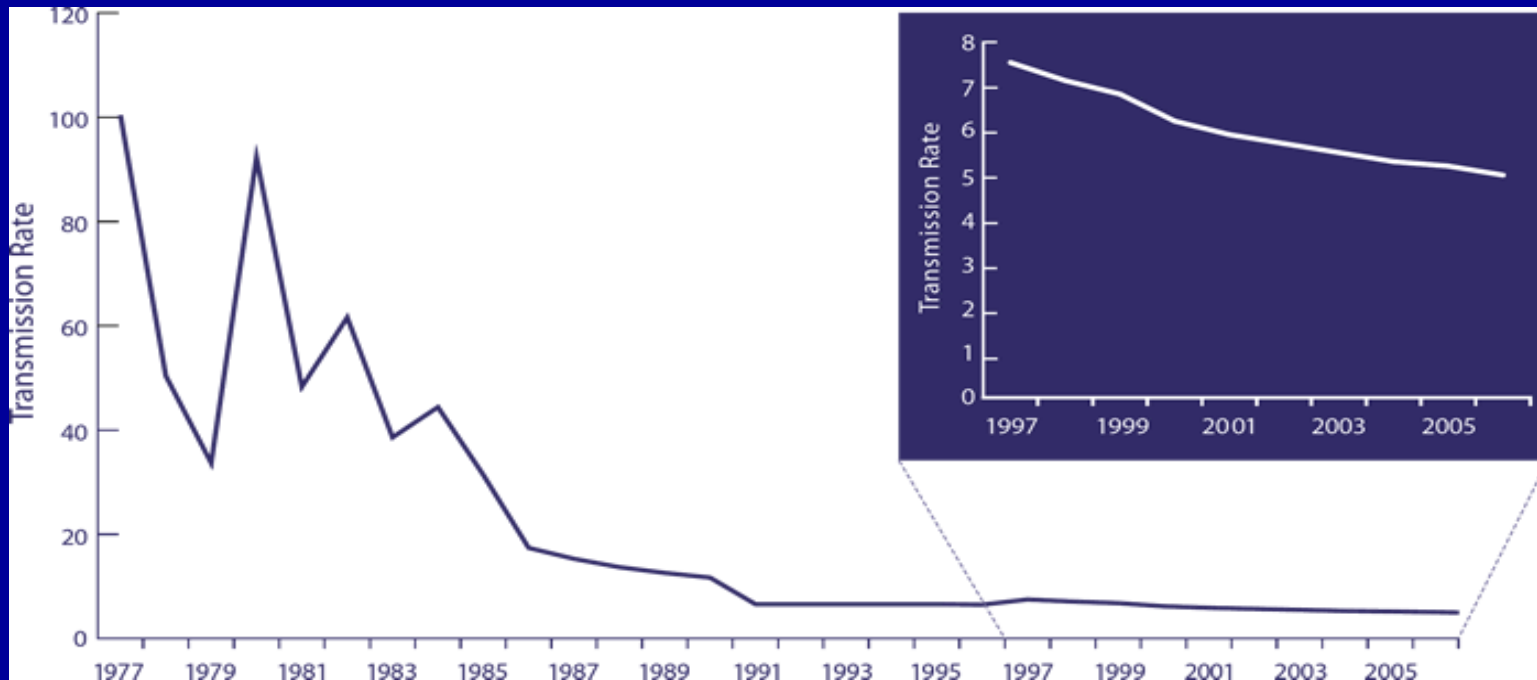
- Risk Groups
 - MSM represent 53% of HIV diagnoses, 34 states, 2007
 - 692 HIV diagnoses per 100,000 MSM
 - Only risk group with **increasing incidence** since the early 1990s
- Race/Ethnicity
 - Blacks/African Americans represent 51% of HIV diagnoses, 34 states, 2007, with a diagnosis rate of **76.7 per 100,000** (vs. 9.2 in whites)
 - Hispanics/Latinos, 27.7 per 100,000; Native Hawaiian/other PI, 34.6; American Indian/Alaska Native, 12.8



Estimated Number of New HIV Infections, Extended Back-Calculation Model, by Transmission Category, 1977–2006

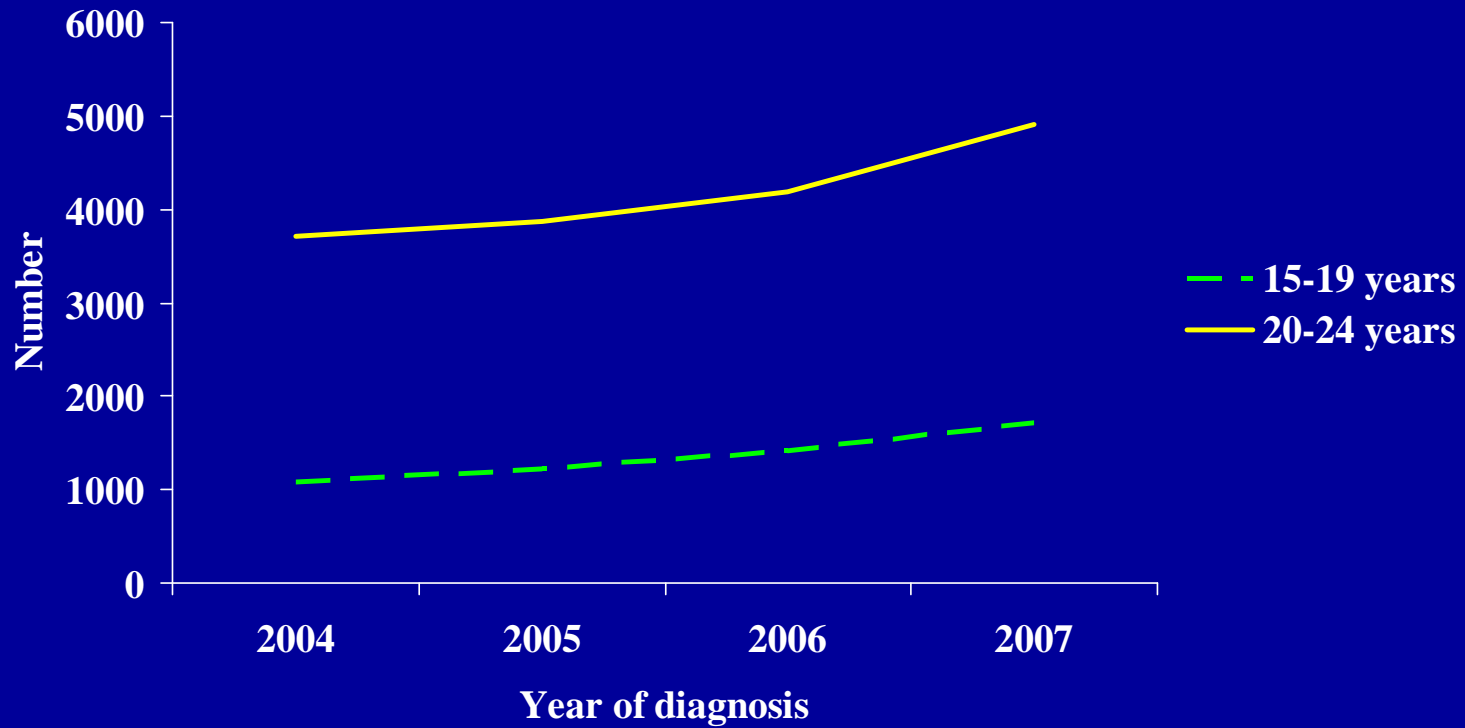


Annual Transmission Rates per 100 Persons Living with HIV, 1977–2006



Populations, cont.

Estimated diagnoses of HIV infection among youth, 34 U.S. States,
2004-2007



Populations, cont.

- Local Epidemics

- Persons living with HIV, San Francisco, 2008, and District of Columbia, 2007

	San Francisco	DC	California	34 States, 2007
MSM	73%	37%	65%	46%
Heterosexual	3%	28%	10%	28%
Risk not identified	3%	14%	8%	2%



Source: Local surveillance reports



How do we reduce incidence, transmission rate, late diagnosis, unaware?

- Is there advantage to network testing?
- Models for linkage and retention in care
- Early entry to care
- Expanded reach for prevention for positives

- Use surveillance data for
 - Process and outcome measures
 - Partner services
 - Patient recruitment (e.g., interview studies)



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