The National Cascade – How are we doing?

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Disclosures

Dr. del Rio has served as a consultant for Viiv Healthcare and is a member of the Board of Directors of IASUSA and ACTHIV
Outline

• US HIV Epidemiology:
  • Geography
  • High risk groups (e.g. Black MSM)

• Role of social determinants of health in disparities

• HIV Care Cascade:
  • by Gender, age, geography

• Role of Integrated health system
  • Provider shortage

• Political commitment
HIV in the United States

- ~ 1,122,900 adults and adolescents were living with HIV at the end of 2015
  - 45% reside in Southern States
- In 2014, an estimated 37,600 new HIV infections occurred
  - A decline of 10% from 2010
  - 70% among gay and bisexual men
- In 2016, 39,782 people received an HIV diagnosis
  - > 50% in Southern States
  - > 60% among gay and bisexual men
  - ~40% of these among black/AA
Rates of New HIV Diagnoses - 2015
Estimated Lifetime Risk of HIV Acquisition of HIV Based on 2015 Rates

## HIV Incidence

<table>
<thead>
<tr>
<th></th>
<th>Black MSM</th>
<th>White MSM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incidence rate</td>
<td>6.6% / year</td>
<td>1.7% / year</td>
</tr>
<tr>
<td>New HIV infections</td>
<td>24</td>
<td>8</td>
</tr>
<tr>
<td>% HIV-positive at end of study</td>
<td>11.3%</td>
<td>3.6%</td>
</tr>
<tr>
<td><strong>Age 18 – 24</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incidence rate</td>
<td>12.1% / year</td>
<td>1.0 % / year</td>
</tr>
<tr>
<td>New HIV infections</td>
<td>16</td>
<td>1</td>
</tr>
<tr>
<td>% HIV-positive at end of study</td>
<td>16.6%</td>
<td>1.6%</td>
</tr>
<tr>
<td><strong>Age 25+</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incidence rate</td>
<td>3.5% / year</td>
<td>1.9% / year</td>
</tr>
<tr>
<td>New HIV infections</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>% HIV-positive at end of study</td>
<td>6.0%</td>
<td>4.5%</td>
</tr>
</tbody>
</table>

Sullivan, P, et al. PLOS One, March 2014
### What explains HIV incidence?

<table>
<thead>
<tr>
<th>Factor</th>
<th>Rate (% / year)</th>
<th>Rate Ratio</th>
<th>Helps explain disparity?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black participant</td>
<td>6.6</td>
<td>3.8</td>
<td>--</td>
</tr>
<tr>
<td>White participant</td>
<td>1.7</td>
<td>ref.</td>
<td></td>
</tr>
<tr>
<td>Health Insurance</td>
<td>2.6</td>
<td>ref.</td>
<td>YES</td>
</tr>
<tr>
<td>No health Insurance</td>
<td>6.3</td>
<td>2.4</td>
<td></td>
</tr>
<tr>
<td>UAI</td>
<td>5.3</td>
<td>4.8</td>
<td>NO</td>
</tr>
<tr>
<td>No UAI</td>
<td>1.1</td>
<td>ref.</td>
<td></td>
</tr>
<tr>
<td>Older partners (≥10 y)</td>
<td>8.6</td>
<td>2.8</td>
<td>NO</td>
</tr>
<tr>
<td>No older partners</td>
<td>3.1</td>
<td>ref.</td>
<td></td>
</tr>
<tr>
<td>Black partners</td>
<td>8.6</td>
<td>4.5</td>
<td>YES</td>
</tr>
<tr>
<td>No black partners</td>
<td>1.9</td>
<td>ref.</td>
<td></td>
</tr>
</tbody>
</table>

**Social determinants**

**Individual risk behaviors**

**Partner pool / network**

*Source: Sullivan, P, et al. PLOS One, March 2014*
The Spectrum of Engagement in HIV Care and its Relevance to Test-and-Treat Strategies for Prevention of HIV Infection
Edward M. Gardner, Margaret P. McLees, John F. Steiner, Carlos del Rio, and William J. Burman
Clinical Infectious Diseases. 2011;52:793-800
Engagement in HIV care and Treatment in the US

~20% of those infected don’t know it
~25% do not link to care within 6-12 months of diagnosis
~50% not engaged in regular HIV care
~25% of ART eligible not on ART
~80% UDVL

Gardner et al. CID 2011
APPROXIMATELY 850 – 900K PEOPLE WOULD BE NEED TO BE PLACED ON ART FOR 90% COVERAGE

Clinical Infectious Diseases  2011;52(6):793–800
The Spectrum of Engagement in HIV Care and its Relevance to Test-and-Treat Strategies for Prevention of HIV Infection

Edward M. Gardner,1,3 Margaret P. McLees,1,3 John F. Steiner,2 Carlos del Rio,4,5 and William J. Burman1,3

1Denver Public Health and 2Kaiser Permanente Colorado, Denver; 3University of Colorado Denver, Aurora, Colorado, and 4Rollins School of Public Health of Emory University, and 5Emory Center for AIDS Research, Atlanta, Georgia

Clinical Infectious Diseases 2011;52(6):793–800

Figure 3. Six simple simulations (a–f) assessing different levels of engagement in care
U.S. HIV Care Continuum, 2014

National goals

- 90% (≥1 visit)
- 80% (≥2 visits ≥90 days apart)

HIV Care Continuum for Blacks and Whites in the US

Estimated HIV transmission and incidence as per the observed HIV care continuum

9710 and 9833 new HIV transmissions per year attributable to HIV-infected white and black MSM

Incidence: WMSM = 0.32 per 100 pop per year  
BMSM = 2.57 per 100 pop per year

Even if disparities in Care Continuum are addressed the estimated HIV incidence would be 5.8 times higher for BMSM compared to WMSM

Longitudinal Retention and Viral Suppression

Colasanti, J, et al. CID 2016

Retention

Viral Suppression (state surveillance)

+ state surveillance

* state surveillance

retention

N = 655

N = 633

N = 595

N = 582

84%

64%

60%

48%

49%

42%

88%

76%

* P < 0.0001

* P < 0.0001

* P < 0.0001
Continuous View Unmasks Racial Disparity in Retention

Colasanti, J, et al. CID 2016
HIV in the US

• The US HIV epidemic is increasingly affecting populations which have historically suffered from health disparities.

• ~ 40,000 new infections per year
  • MSM comprise ~ 62% of new infections
  • Blacks and Hispanics account for > 50% of new infections
Why is the epidemic in the US in 2018 so unequal in terms of geography, and race/ethnicity?
“One of the strangest things about the H.I.V. epidemic in the Deep South…is how easily most Americans have elided it…It’s a plague from some anterior time, some exterior continent, something our kids will read about in books or that we glimpse as history…”

Sarah Stillman, The New Yorker, 2014
No simple answer but social determinants of health are important drivers
Note. Receipt of medical care was defined as ≥1 test (CD4 or VL) in 2014. Retained in continuous medical care was defined as ≥2 tests (CD4 or VL) ≥3 months apart in 2014. Viral suppression was defined as <200 copies/mL on the most recent VL test in 2014.
Global Progress

44% of all living with HIV being virally suppressed

U.S. Progress

38% of all living with HIV being virally suppressed
Diagnosed Infection among Persons Aged ≥13 Years Living with Diagnosed or Undiagnosed HIV Infection, by Sex, 2014—United States

Note. Estimates were derived using HIV surveillance and CD4 data for persons aged ≥13 years at diagnosis in the 50 states and the District of Columbia.
Diagnosed Infection among Persons Aged ≥13 Years Living with Diagnosed or Undiagnosed HIV Infection, by Age, 2014—United States

Note. Estimates were derived using HIV surveillance and CD4 data for persons aged ≥13 years at diagnosis in the 50 states and the District of Columbia.
Diagnosed Infection among Persons Aged ≥13 Years Living with Diagnosed or Undiagnosed HIV Infection, 2014—United States

Note. Estimates were derived by using HIV surveillance and CD4 data for persons aged ≥13 years at diagnosis in the 50 states and the District of Columbia.
Linkage to HIV Medical Care within 1 Month after HIV Diagnosis during 2015, among Persons Aged ≥13 Years, by Sex—37 States and the District of Columbia

Note. Linkage to HIV medical care was defined as having a CD4 or VL test ≤1 month after HIV diagnosis.
Disparities in HIV care Continuum: youth and AA do worse
Linkage, retention and viral suppression is worst in the South
Having an integrated healthcare system matters
The HIV Care Cascade Measured Over Time and by Age, Sex, and Race in a Large National Integrated Care System

AIDS PATIENT CARE and STDs
Volume 29, Number 11, 2015
© Mary Ann Liebert, Inc.
DOI: 10.1089/apc.2015.0139

HIV Care Continuum Applied to the US Department of Veterans Affairs: HIV Virologic Outcomes in an Integrated Health Care System

J Acquir Immune Defic Syndr • Volume 69, Number 4, August 1, 2015
Viral Suppression among RWHAP Clients, by State, 2010 and 2016—United States and 2 Territories

Viral suppression: ≥1 OAHS visit during the calendar year and ≥1 viral load reported, with the last viral load result <200 copies/mL.

* Puerto Rico and the U.S. Virgin Islands.
Having political commitment matters
HIV Care Continuum in San Francisco, CA

Continuous Retention in HIV care by region

Figure: Prevalence (bars), adjusted prevalence ratio estimates (diamonds), and 95% confidence intervals (CI) for HIV viral suppression (VS), conditional on continuous retention (CR), within regions of the US and Canada.

*Adjusted for age, sex, race, HIV acquisition risk, calendar year, total time in cohort, baseline ART (>6 months), and baseline CD4+ count (<200, 200-350, or >350 cells/mm³). Clinics contributing data mapped as red dots within regions.
Meeting Future HIV Care Providers Demand Predictions from the MMP Provider Study and the HRSA HIV Workforce Study

- Estimate modest but Insufficient Increase in HIV Care Providers
  - Assumes stable ID and primary care positions

- Estimate 190 net new providers = capacity to provide care to 65,000 additional patients over 5 years

- Prevalence estimated to increase by 30,000 annually so need for care of ~ 100,000 patients by 2019.


Conclusions

• Despite scale-up of HIV testing knowledge of serostatus still has significant room for improvement.
  • If 85% of those living with HIV know their serostatus there are ~180,000 persons that don’t.
  • This is particularly true for young people and men.

• Closing the gap will require:
  • Prioritizing HIV testing
  • New technologies
  • Innovative service delivery strategies
Conclusions

• Retention in care is the “Achilles heel” of the HIV care continuum and improving it will be critical in achieving the goals of the National HIV/AIDS Strategy.

• Addressing social determinants of health and insuring access to healthcare are critical in confronting the HIV epidemic in the US.
  • “If the majority of determinants of health are social, so must be the remedies” Sir Michael Marmot
  • Giving health insurance to everyone would make a huge difference

• We need to start thinking more about a “longitudinal care continuum” rather than a cross-sectional one as long-term virologic suppression is what matters.

• Political commitment matters.
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