ACTHIV 2016: A State-of-the-Science Conference for Frontline Health Professionals
Looking in the Right Places: Practical Outreach for Testing and Prevention

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Disclosures

• I have the following financial relationships to disclose:
  • Research and Programmatic Grants to Emory University:
    • NIH
    • CDC
    • MAC AIDS Fund
    • Gilead Sciences
• I will not address off label use or investigational use in my presentation
Learning Objectives

1. Name two sources of epi mapping data available to the clinical provider.

2. Describe one example of how epi mapping has been used to target testing or prevention activities with success.

3. Explain how outreach to people living with HIV can be guided by epi mapping to increase cost effectiveness.
Learning Objective 1

Name two sources of epi mapping data available to the clinical provider.
Audience response

Which of the following data sources provide directly comparable estimates of HIV prevalence at the ZIP code level?
A. State HIV surveillance Reports
B. CDC HIV surveillance report
C. WHO HIV surveillance report
D. None of these sources
• View results in your browser: https://api.cvent.com/polling/v1/api/polls/spyqrsdx
About AIDSVu

AIDSVu is a compilation of interactive, online maps that allows users to visually explore the HIV epidemic in the U.S. alongside critical resources such as HIV testing and treatment center locations.

AIDSVu’s mission is to make HIV prevalence data widely accessible and locally relevant.

AIDSVu provides users with an intuitive, visual way to connect with complex information about persons living with an HIV diagnosis at national, state and local levels.
Historical Context

2011 updates:
- 12 cities with Zip Code level data
- County-level data
- Testing locator

2012 updates:
- 15 cities
- Census tract data (2 cities)
- Treatment locator
- Social determinants of health

2013 updates:
- 20 cities
- New diagnosis & transmission category
- HIV Continuum
- White House National HIV/AIDS Strategy Report

2014 updates:
- 33 cities
- Neighborhood data (2 cities)
- Census tract data (3 cities)
- City evaluations (2 cities)
- 17 city profiles

2015 updates:
- 34 cities
- Neighborhood data (2 cities)
- Census tract data (3 cities)
- 29 enhanced city profiles
- Population Profile Pages
- Redesigned interface

2016 updates:
- 38-40 cities
- ZIP Code new diagnoses
- State-level mortality
- 2-way stratification at state level
- Neighborhood data (2 cities)
- Census tract data (3 cities)
- 35 enhanced city profiles

Coming June 2016
http://www.cdc.gov/nchhstp/atlas/
### Summarized Data

### Persons living with diagnosed HIV

<table>
<thead>
<tr>
<th>Disease</th>
<th>Area</th>
<th>Year</th>
<th>Race</th>
<th>Sex</th>
<th>Age Group</th>
<th>Transmission Categories</th>
<th>Cases</th>
<th>Population</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persons living with diagnosed HIV</td>
<td>Anderson County</td>
<td>2013</td>
<td>All races/ethnicities</td>
<td>Both sexes</td>
<td>All age groups</td>
<td>All transmission categories</td>
<td>241</td>
<td>49,925</td>
<td>483</td>
</tr>
<tr>
<td>Persons living with diagnosed HIV</td>
<td>Andrews County</td>
<td>2013</td>
<td>All races/ethnicities</td>
<td>Both sexes</td>
<td>All age groups</td>
<td>All transmission categories</td>
<td>5</td>
<td>13,005</td>
<td>38</td>
</tr>
<tr>
<td>Persons living with diagnosed HIV</td>
<td>Angelina County</td>
<td>2013</td>
<td>All races/ethnicities</td>
<td>Both sexes</td>
<td>All age groups</td>
<td>All transmission categories</td>
<td>131</td>
<td>71,033</td>
<td>184</td>
</tr>
<tr>
<td>Persons living with diagnosed HIV</td>
<td>Aransas County</td>
<td>2013</td>
<td>All races/ethnicities</td>
<td>Both sexes</td>
<td>All age groups</td>
<td>All transmission categories</td>
<td>23</td>
<td>21,065</td>
<td>108</td>
</tr>
<tr>
<td>Persons living with diagnosed HIV</td>
<td>Archer County</td>
<td>2013</td>
<td>All races/ethnicities</td>
<td>Both sexes</td>
<td>All age groups</td>
<td>All transmission categories</td>
<td>Data suppressed</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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It is very important to note that if a selection is made that includes any **suppressed** data, then the rate and case count will contain the value 'suppressed', even if data are available for part(s) of the selection.

Rates calculated in the summarized tables using the advanced query may not align 100% with rates provided by the atlas due to the rates in the atlas being based on unrounded estimated case counts. Because the estimates for states were calculated independently of the national estimate, the sum of the state totals may not equal the national total.
Summary: Learning Objective 1

- Within-state comparable data:
  - State surveillance reports (county, +/- ZIP code)
  - City Health Department surveillance reports
- Nationally comparable data (maps, tabular):
  - County level: AIDSVu, NCHHSTP Atlas
  - ZIP Code level: AIDSVu (35+ cities), HIV Continuum
  - Census Tract: AIDSVu
- State-specific resources: Many are available, see http://www.cdc.gov/hiv/pdf/statistics_2011_hiv_surveillance_report_vol_23.pdf, page 84 for your state, territory or city!
Learning Objective 2

Describe one example of how epi mapping has been used to target testing or prevention activities with success.
Audience response 2

Data about the prevalence of HIV infection is useful for which of the following types of targeting?

A. Targeting HIV testing programs
B. Targeting condom distribution programs
C. Targeting outreach for linkage to care for those living with HIV
D. All of the above
• View results in your browser: https://api.cvent.com/polling/v1/api/polls/sp-r7bxr0
Philadelphia ZIP code Demonstration
Use Case: HIV Testing

Using data to target door-to-door HIV testing in high prevalence areas (Philadelphia):

• AIDSVu data from city directly
• Prevalence is relatively stable (2011)
• Fine geographic level (census tract)
• Residence at diagnosis

Source: Amy Nunn, Brown University
Minority neighborhoods in the U.S. are hit as hard by HIV as gay enclaves.

HIV rates in some urban American neighborhoods rival those of Haiti and Ethiopia, according to a researcher at Brown University in Providence, R.I.

And while affected communities include big-city gay enclaves, such as New York's Chelsea district, minority neighborhoods in the Bronx and Harlem make the list, too. The difference is that those in mostly white neighborhoods are more likely to be tested and treated than those in minority
Use Case: Predicting Current Prevention Needs

Analysis of relationships between “Tweets” and HIV prevalence:

- AIDSVu county-level prevalence data from CDC partnership
- Coarser geographic areas
- 2010 data
- Residence at diagnosis

### All collected tweets

N = 553,186,061 (100%)

### USA geolocated tweets

N = 2,157,260 (0.4%)

### Includes keyword

N = 9,880 (0.5%)

<table>
<thead>
<tr>
<th>Drug keyword</th>
<th>Sex keyword</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 1,342 (14%)</td>
<td>N = 8,538 (86%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>From county with HIV data</th>
<th>From county with HIV data</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 1,233 (92%)</td>
<td>N = 7,811 (92%)</td>
</tr>
</tbody>
</table>

Fig. 1. Flowchart of tweets, USA, 2012.

Table 2
Multivariate analysis of factors associated with county HIV prevalence, United States, 2012. The model includes an offset of the number of people living in that county to adjust for population.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Coefficient</th>
<th>Standard error</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of HIV-related tweets</td>
<td>265.0</td>
<td>12.4</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Percent living in poverty</td>
<td>2.1</td>
<td>0.4</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>GINI index</td>
<td>4.6</td>
<td>0.6</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Percent without health insurance</td>
<td>1.3</td>
<td>0.4</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Percent with a high school education</td>
<td>−1.1</td>
<td>−3.1</td>
<td>&lt;.01</td>
</tr>
</tbody>
</table>
Learning Objective 3

Explain how outreach to people living with HIV can be guided by epi mapping to increase cost effectiveness.
Which group is most at risk for having unsuppressed viral load, given that they have been diagnosed with HIV infection?

A. 13-24 year olds
B. 25-44 year olds
C. 45-59 year olds
D. 60+ year olds
• View results in your browser: https://api.cvent.com/polling/v1/api/polls/sp-obvg5d
MAPPING THE HIV CARE CONTINUUM

A new way to identify places where we can improve HIV testing, care and treatment.

NEW HIV DIAGNOSIS - LATE HIV DIAGNOSIS - LINKED TO HIV CARE - ENGAGED IN HIV CARE - SUPPRESSED HIV VIRAL LOAD

WASHINGTON, D.C.
VIEW THE MAP
VIEW THE CHART

PHILADELPHIA, PA
VIEW THE MAP
VIEW THE CHART

ATLANTA, GA
VIEW THE MAP
VIEW THE CHART
The HIV Care Continuum Among Those Newly Diagnosed with HIV, by Demographic Groups, Philadelphia, 2006-2010

<table>
<thead>
<tr>
<th>Gender</th>
<th>Race</th>
<th>Age Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td></td>
<td>New HIV Diagnoses $^1$</td>
</tr>
<tr>
<td>Male</td>
<td>Black</td>
<td>Overall</td>
</tr>
<tr>
<td>Female</td>
<td>White</td>
<td>Overall</td>
</tr>
<tr>
<td>Hispanic</td>
<td>Hispanic</td>
<td>Overall</td>
</tr>
<tr>
<td>13-24</td>
<td>Hispanic</td>
<td>Overall</td>
</tr>
<tr>
<td>25-44</td>
<td>Hispanic</td>
<td>Overall</td>
</tr>
<tr>
<td>45-59</td>
<td>Hispanic</td>
<td>Overall</td>
</tr>
<tr>
<td>60+</td>
<td>Hispanic</td>
<td>Overall</td>
</tr>
</tbody>
</table>

$^1$ New HIV Diagnoses: Percentage of individuals diagnosed with HIV in the specified year.
$^2$ Late HIV Diagnoses: Percentage of individuals diagnosed with HIV who were diagnosed late (after first symptoms or CD4 count below 200). Late diagnosis is defined as a first HIV diagnosis occurring more than 3 months after the individual’s first symptoms or CD4 count below 200.
$^3$ Linked to HIV Care: Percentage of individuals diagnosed with HIV who are linked to HIV care within 3 months of diagnosis.
$^4$ Engaged in HIV Care: Percentage of individuals linked to HIV care who are engaging in care (at least two visits within a 12-month period).
$^5$ Suppressed HIV Viral Load: Percentage of individuals engaging in care whose viral load is suppressed (below 200 copies/mL).
Use Case: Telemedicine In Alabama

Rates of Persons Living with an HIV Diagnosis, by County, Alabama, 2010 (AIDSVu)

Using Maps to Focus HIV Care Resources

While HIV remains concentrated in urban centers, accessing appropriate care in rural areas remains a challenge, particularly in the South. Medical AIDS Outreach in Montgomery, Alabama used mapping to improve delivery of HIV-related clinical care expertise via telemedicine. This was done by overlaying an AIDSVu state map of HIV cases by county with a state map of healthcare provider shortage areas by county. Medical AIDS Outreach assessed how these data overlapped to determine where rural telemedicine clinics would have most impact to fulfill unmet needs for HIV care.
Identify Health Professional Shortages

Rates of Persons Living with HIV

Health Professional Shortages Areas
Identify Telemedicine Hubs

Telemedicine Hubs and Spokes

Health Professional Shortages Areas
Medical AIDS Outreach reaching patients in rural Alabama through telemedicine

Source: AL.com, June 24, 2014.
Rural Health Information Hub: https://www.ruralhealthinfo.org/community-health/project-examples/775

New HIV infections, Kenya, 2013

The Configuration of Interventions Across Locations

For a cost of $600M between the years 2015-2029, the total additional health gain for the Focused approach is almost 100,000 extra infections averted - a 14% increase. There would be one third fewer new HIV infections in the year 2029 under the Focused approach relative the Uniform approach.

Precision medicine, precision epidemiology
Acknowledgements

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