HIV Genotype Surveillance
The North Carolina perspective

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Outline

What
• HIV genotypes and clusters?

Why
• How do we use genotype information to decrease HIV in North Carolina?

How
• How best to implement these tools, what are considerations?
Key Points

- Genetic information is increasingly available to identify and learn about disease transmission patterns.
- Our goal is to end HIV; good and rapid access to care is one of the best tools to end HIV.
- HIV genotype information can help prioritize linkage to care activities.
- Communication between community members, care providers, and public health agencies is essential to having strong programs for linking to care and to using genotype data effectively.
<table>
<thead>
<tr>
<th><strong>Diagnose</strong> HIV as early as possible</th>
<th><strong>Treat</strong> HIV quickly and effectively</th>
<th><strong>Protect</strong> people at risk</th>
<th><strong>Respond</strong> quickly to clusters of new cases</th>
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</thead>
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Outline

What
• HIV genotypes and clusters

Why
• Data to care, NC epidemiology, what can clusters add?

How
• How best to implement these tools, what are considerations?
Genotypes are used for understanding disease and stopping outbreaks

- Genetic analysis is becoming widely used to understand and treat disease
  - E. coli, salmonella
  - Measles
  - Cancer treatment
What is an HIV genotype and where does it come from?

- A genotype is a string of DNA, the genetic sequence of the virus in a person’s body
- Normally used to identify appropriate medication
What is a genetic cluster?

- Genotypes can be used to focus testing to help control HIV
  
  - Those with similar enough HIV genotypes can be linked into molecular clusters, or groups of people with similar HIV genotypes.
  
  - New HIV diagnoses linked within a molecular cluster can indicate that HIV transmission is occurring within that cluster
  
  - We can prioritize testing, linkage to care, and other supportive resources for clusters with new diagnoses
For example: San Antonio TX cluster

Molecular cluster identified using HIV genotypes

Cluster highlighted needs in underserved community

Newly diagnosed:
Link to care
Offer PrEP to contacts

Previously diagnosed and not virally suppressed:
Relink to care
Offer PrEP to contacts

Community-wide, needs included increased...
Testing
Education
PrEP/PEP

Mobilized the community

Become a Fast-Track City

Increased investment of resources

Community-level outcomes:
Outline

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Data to care: Using HIV Surveillance Data to Support the HIV Care Continuum

What is the goal:

- Increase the number of people living with HIV who are linked to care that is good for them
- Increase the number of people living with HIV who have an undetectable viral load

How:

Use the information we have to reach out to the right people

<table>
<thead>
<tr>
<th>% OF PEOPLE WITH HIV</th>
<th>STATUS OF CARE</th>
<th>ACCOUNTED FOR X% OF NEW TRANSMISSIONS*</th>
</tr>
</thead>
<tbody>
<tr>
<td>15%</td>
<td>didn’t know they had HIV</td>
<td>38%</td>
</tr>
<tr>
<td>23%</td>
<td>knew they had HIV but weren’t in care</td>
<td>43%</td>
</tr>
<tr>
<td>11%</td>
<td>in care but not virally suppressed</td>
<td>20%</td>
</tr>
<tr>
<td>51%</td>
<td>taking HIV medicine and virally suppressed</td>
<td>0%</td>
</tr>
</tbody>
</table>

*Values do not equal 100% because of rounding

SOURCE: Vital Signs, 2019
The South is the epicenter of the U.S. HIV epidemic

Rate of Persons Living with an HIV Diagnosis by County, 2015
North Carolina has a significant HIV burden

People newly diagnosed with HIV in North Carolina
And significant disparities by race/ethnicity

People newly diagnosed with HIV by race/ethnicity
North Carolina

*Non-Hispanic/Latino
Data Source: enhanced HIV/AIDS Reporting System (eHARS) (data as of June 26, 2019).
HIV in North Carolina, 2018

*Based on most recent address in eHARS as of December 31 of the given year.
**New cases are only among adults and adolescents (13 years and older).
North Carolina HIV Continuum of Care 2018* (Diagnosed through 2018 and living in 2018)

*2018 data are preliminary (do not include vital records or national death matches). 2018 data includes labs and services from CAREWare (all Ryan White services excluding Part A), HIV Medication Assistance Program (HMAP), and Medicaid data sources.

**At least 1 care marker in 2018.

***Retained in care is defined as being virally suppressed within 12 months or having 2 or more care visit (VL or CD4 test) at least 90 days apart in 2018.

Legend: year shown refers to the year in which care measures were evaluated; cases were diagnosed and reported between the year prior. The data represent all cases diagnosed and reported through 12/31/2018, and had care markers or were virally suppressed during calendar year 2018.

Data Sources: enhanced HIV/AIDS Reporting System (eHARS) (June 2019) and NC ECHO (July 2019).
All the people with HIV in NC
Each dot represents 10 people; undiagnosed are dark grey
People with HIV in NC who appear to not be linked to care (38%)
North Carolina DPH interventions to improve access to care and decrease stigma, 2016-2018

- Decriminalization of HIV status if virally suppressed
- Cultural competency training for care providers
- Funding for community-based agencies offering support for people at highest risk
- More effective use of reported information to focus linkage counselor efforts
- Increase in the number of linkage counselors
HIV Case Surveillance
Data for Public Health Action

Sources of Reports
- Hospitals
- Private Practitioners
- Public Clinics
- Laboratories

Active Case Finding

Local Health Dept.
- HIV Report
  - 2013 Region X

CDC

Individual data reports
- Partner services
- Case management
- Diagnosis facilities
- Care providers

Not in care

Aggregate data reports
- Prevention planning
- Resource allocation
- Outcome evaluation

People with HIV

NASHP
NATIONAL ACADEMY FOR STATE HEALTH POLICY
North Carolina linkage counselor outcomes: 2018- August 2019

Outcomes of linkage counselor assignment to person with HIV

- Total appearing out of care
- Found to be in care
- Still out of care, linkage counselor reaches out
- Attended medical care appointment after linkage counselor contact

77%

Number of people living with HIV

- Linkage counselor priorities:
  - Gay, bisexual, and other men having sex with men
  - Women of reproductive age
  - Other young people

- 4,445 (77%) in care after review

- Process is clearly inefficient

- Are we reaching the right people?
Interventions on the care continuum

Prevention:
- PrEP, PEP
- Vaccine
- Partner choice

Testing that finds infected people
- HIV genotypes can be used to focus testing

Better drugs
- Drugs that are easier to take

Accessible, supportive and thoughtful care
- HIV genotypes can be used to focus care support

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<tr>
<th>Total Number of People Living with HIV in NC</th>
<th>Diagnosed &amp; Reported</th>
<th>At Least 1 Care Visit **</th>
<th>Retained in Care***</th>
<th>Virally Suppressed</th>
</tr>
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<tr>
<td>36,000</td>
<td>36,000</td>
<td>24,000</td>
<td>68%</td>
<td>62%</td>
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People with HIV in NC who are linked to a growing genotype cluster
People with HIV in NC who are linked to a growing genotype cluster AND are not suppressed
Contacts

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Fact sheets and slides:
https://epi.publichealth.nc.gov/cd/stds/factsheets.html

Website:
https://epi.publichealth.nc.gov/cd/stds/figures.html