

# HIV Cluster Detection and Response: Connecting data, partners and programs to identify and close gaps in HIV prevention

Southeast AETC  
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Ending  
the  
HIV  
Epidemic



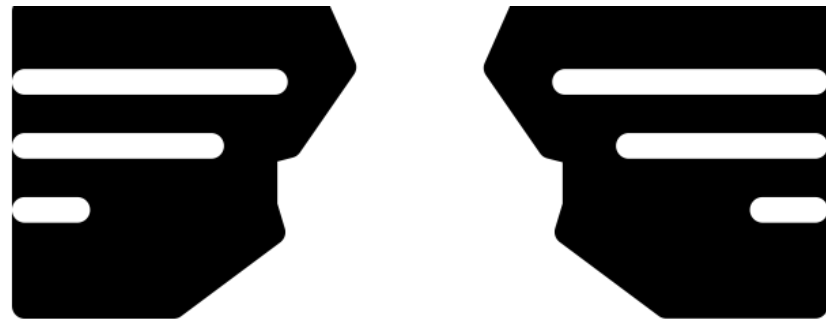
# What is Cluster Detection and Response?

**Cluster detection and response offers a framework to guide tailored implementation of proven HIV prevention strategies where transmission is occurring most rapidly**



# Why is Responding to Clusters Important?

**Standard Treatment & Prevention Services**

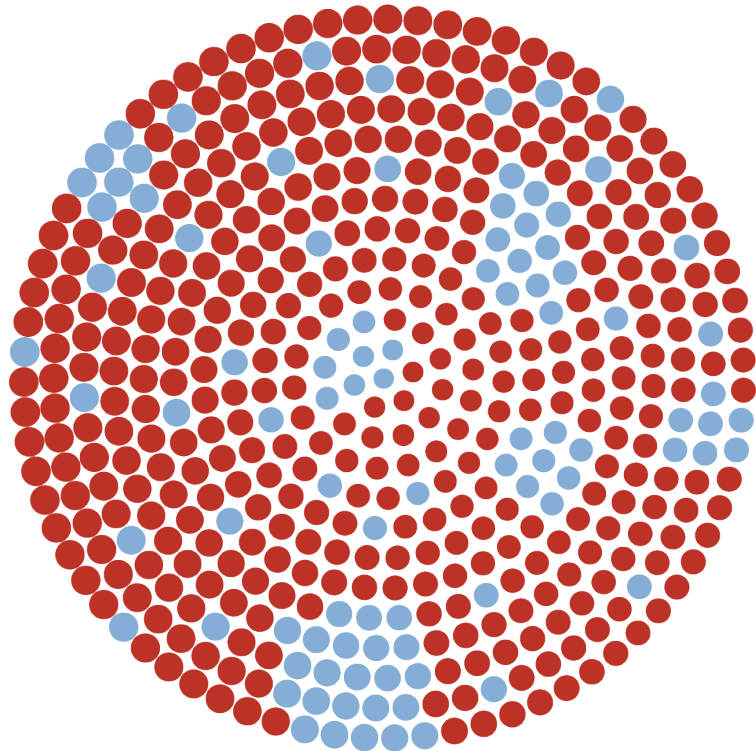


**Tailored Treatment & Prevention Interventions**



# HIV Is Transmitted Through Networks

Transmission is not uniform

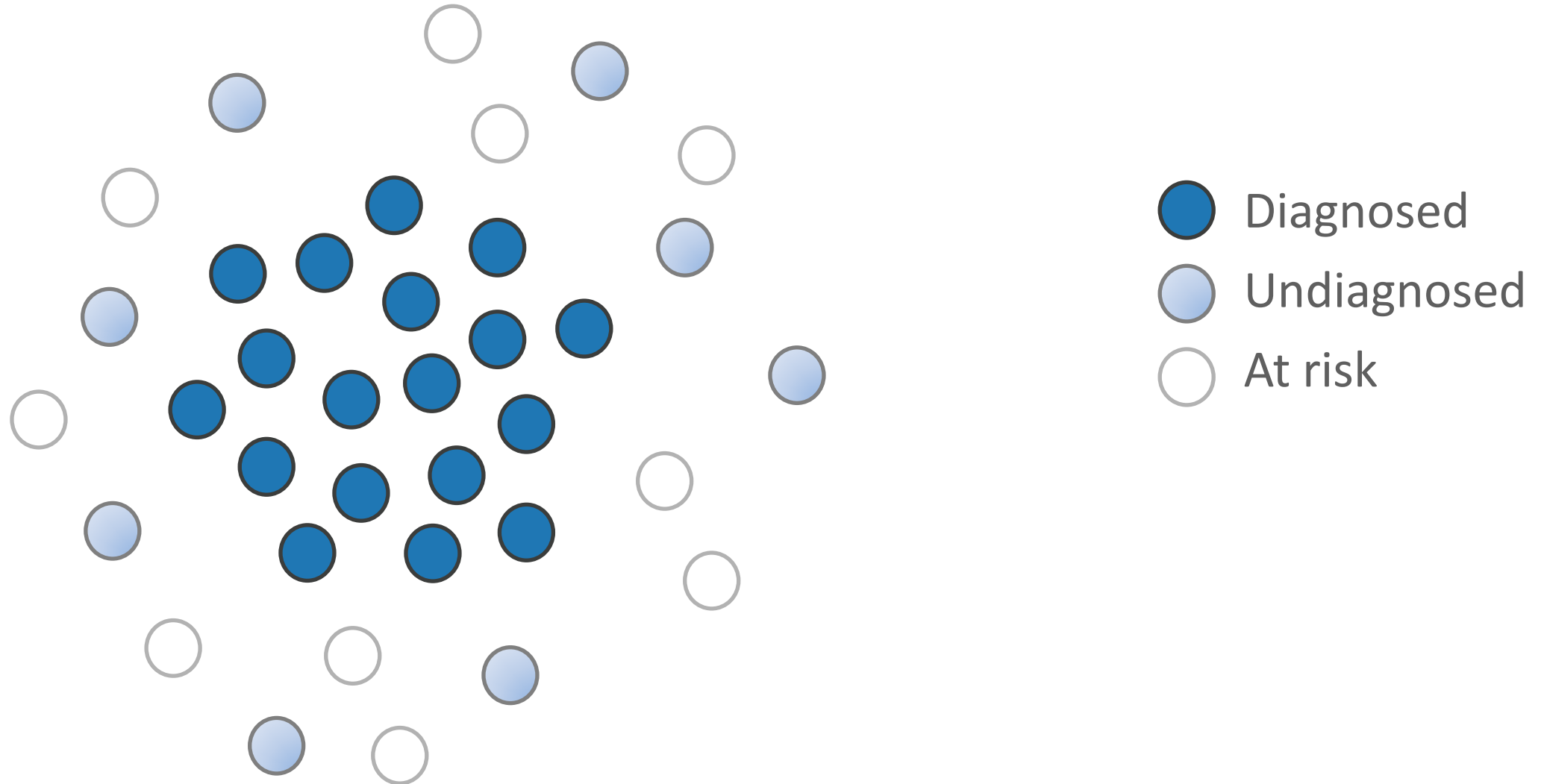


Identify networks in which HIV is spreading quickly



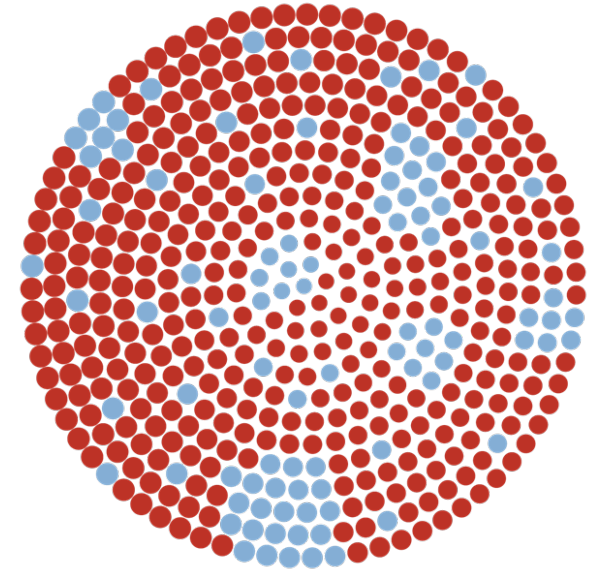
Help people get into care and prevent HIV

# Networks Include People With and Without HIV



# Response Activities Should be Tailored to Networks Experiencing Rapid Transmission

- Cluster detection and response goes beyond identifying subpopulations with high numbers of diagnoses
- Groups experiencing rapid transmission
  - Do not mirror those with higher diagnoses
  - Change over time and show substantial geographic variation
- Identifying networks not reached by existing services presents an opportunity to improve health equity

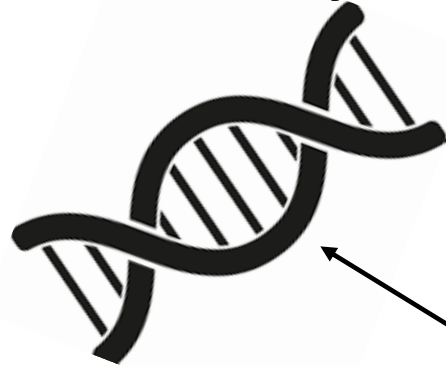




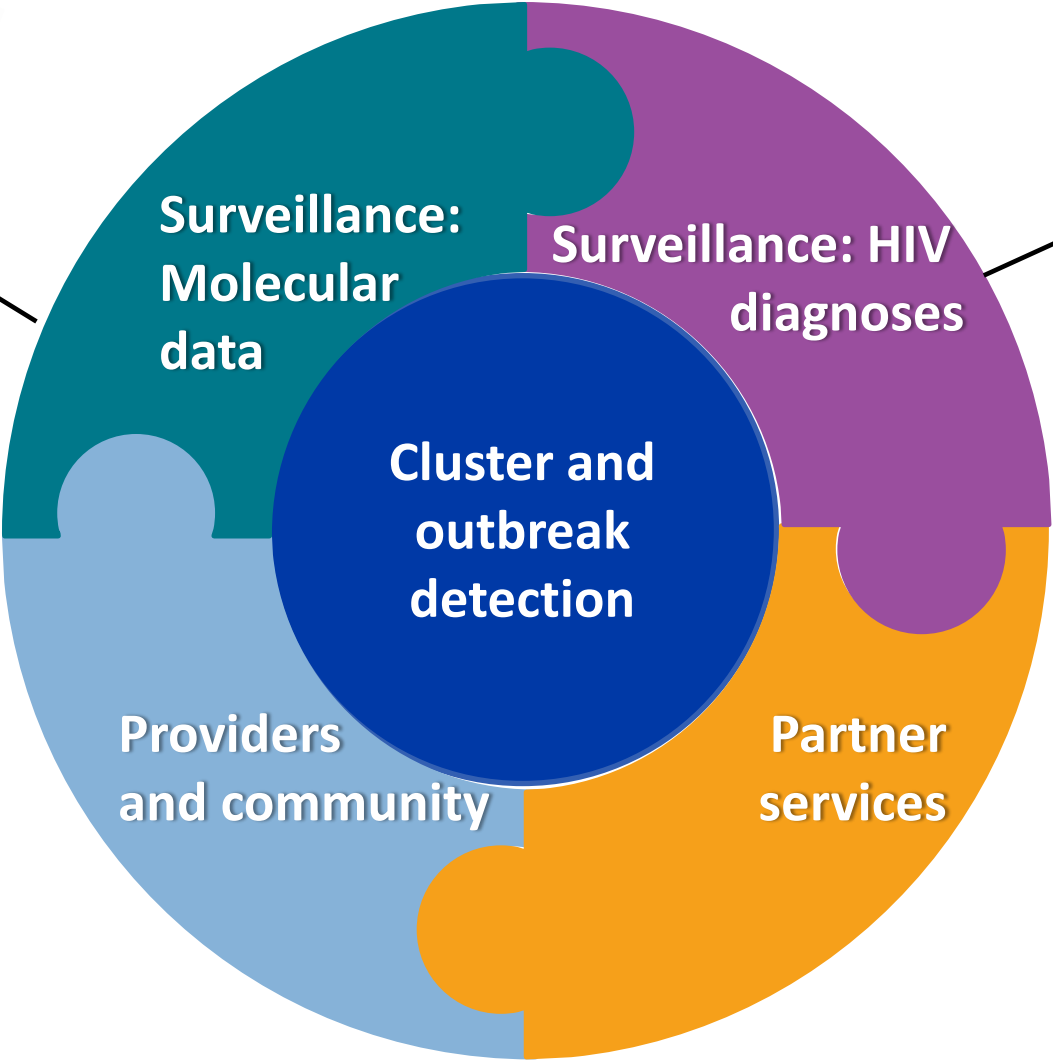
# How Are Clusters Detected?



**Molecular analysis**



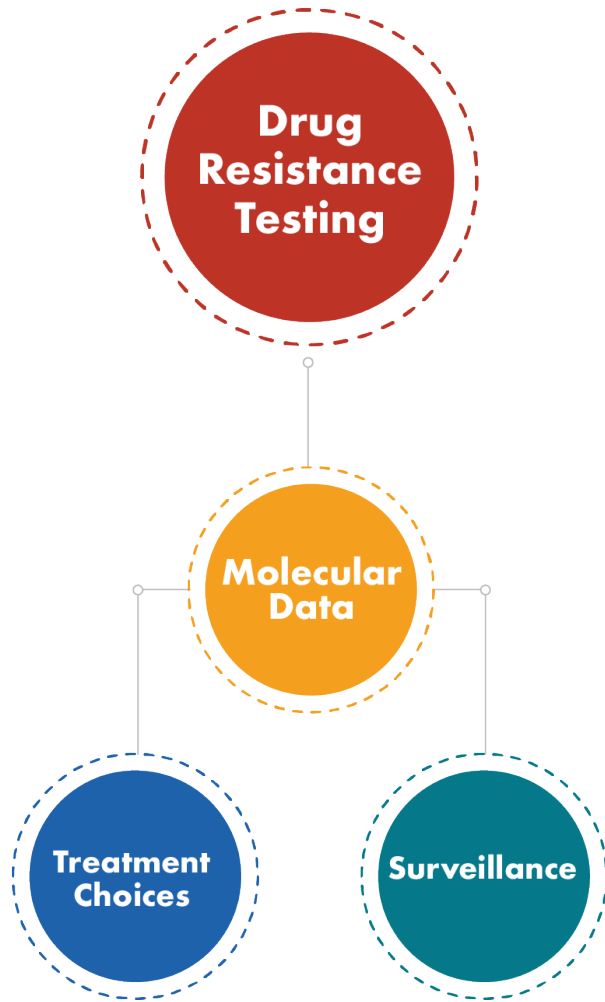
**Time-space analysis**





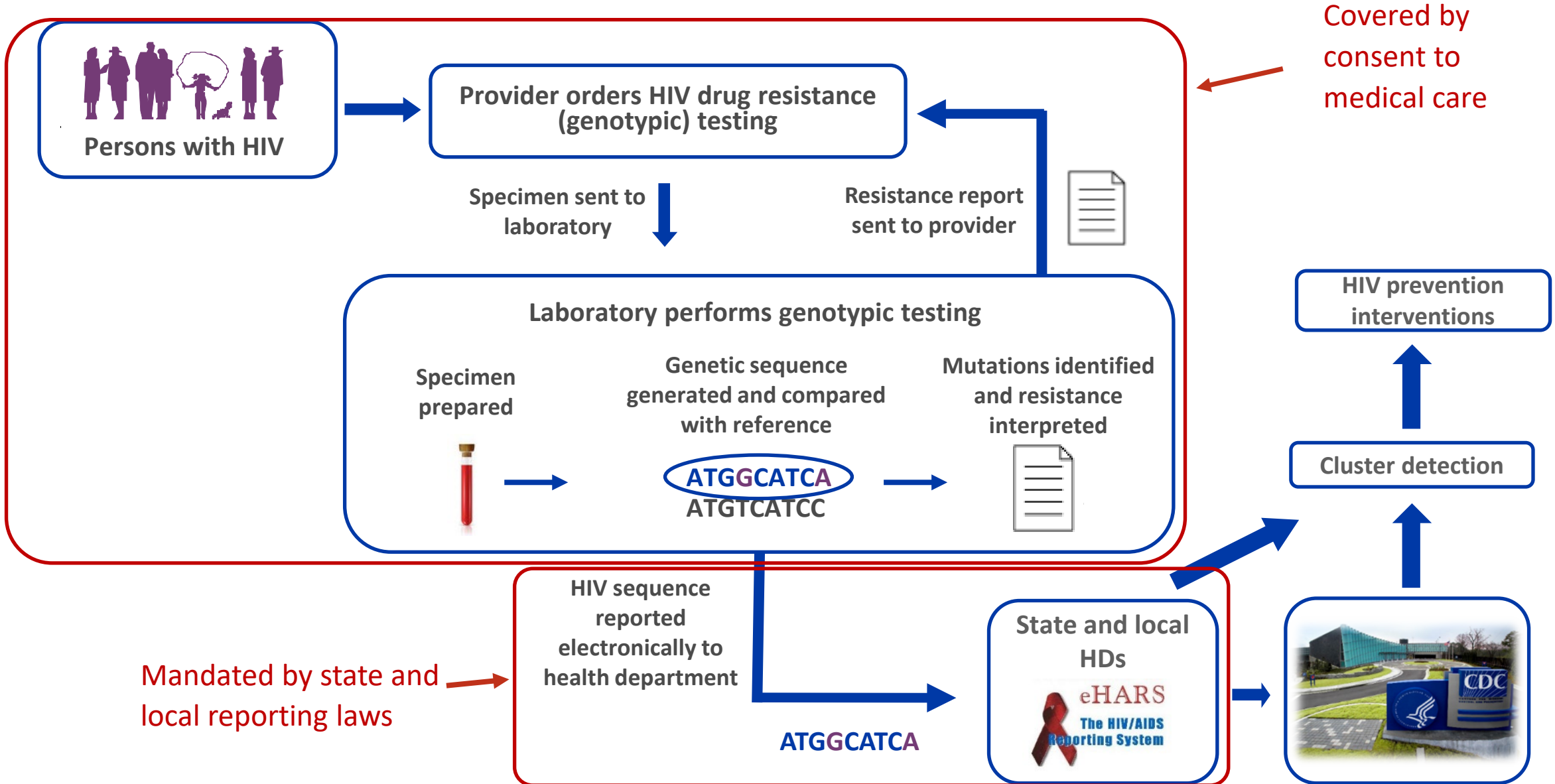
# Molecular Cluster Detection

# HIV Molecular Data Usually Come from Drug Resistance Testing



- Standard part of clinical care in the United States
- Public health agencies can conduct secondary data analysis

# How is molecular data collected by the National HIV Surveillance System?

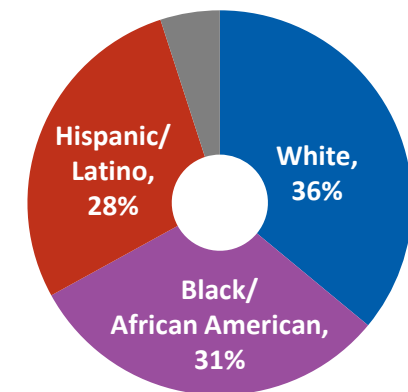


# HIV Clusters and Outbreaks Affect Many Different Populations

- Outbreaks among people who inject drugs have been highly visible in recent years
- Sexual transmission is the mode of HIV transmission for >75% of people in molecular clusters of rapid transmission
- Clusters affect people from diverse racial/ethnic groups
- Using a variety of methods to identify clusters is important to improve services for all populations experiencing rapid transmission

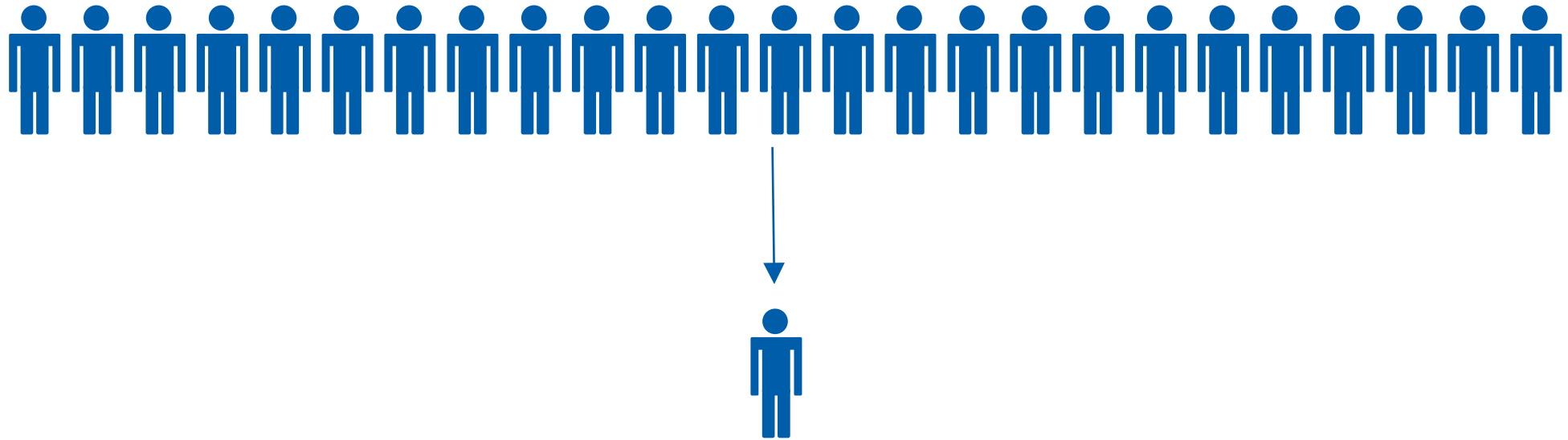


People in clusters of rapid transmission



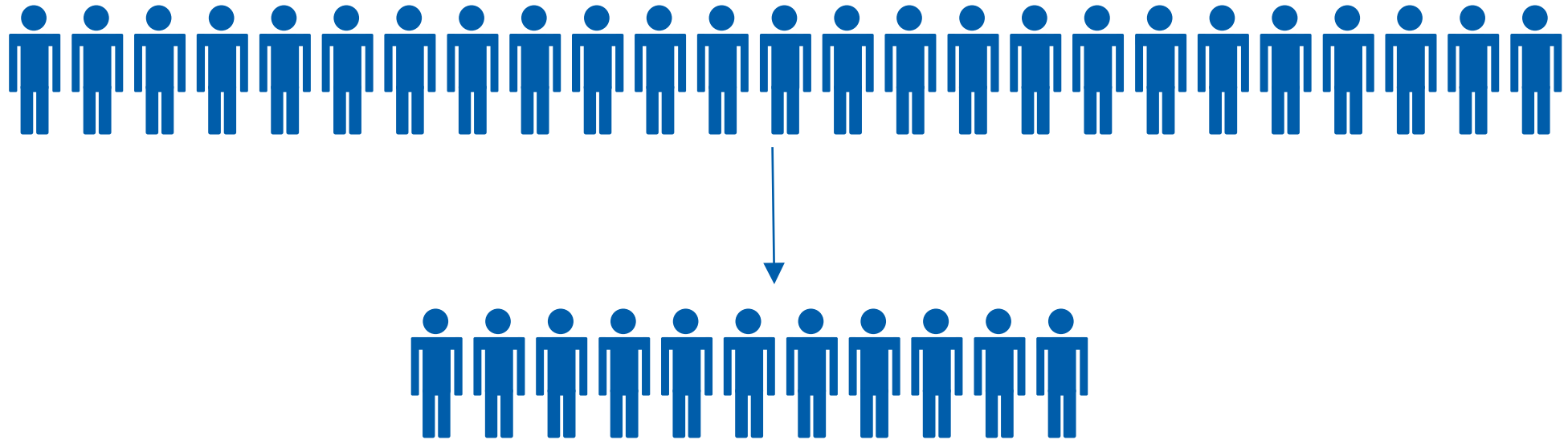
# HIV Transmission Rate in the United States

4 transmissions per 100 people living with HIV per year



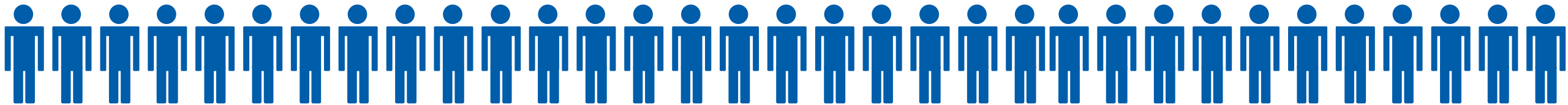
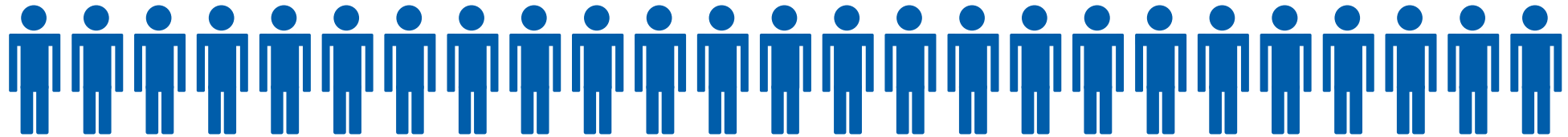
# HIV Transmission Rate in First 60 Priority Molecular Clusters

44 transmissions per year per 100 persons living with HIV



# HIV Transmission Rate in Some Clusters Is Even Higher

134 transmissions per year per 100 persons living with HIV





# Molecular Analysis Detects Clusters That Would Otherwise Be Missed

- None of the first 60 molecular clusters recognized through epidemiologic methods alone
- **Rapid transmission can be hard to detect without sequence data**





# **Core Strategies for Cluster Detection and Response**

# Core Cluster Detection and Response Strategies

## Fundamental Building Blocks

- Internal partnerships
- External partnerships and community engagement
- High-quality, timely data
- Data integration
- Flexible funding

## Investigate and Intervene in Networks

- Understand networks
- Support linkage to and retention in critical services

## Identify and Address Gaps in Programs and Services

- Identify and swiftly address gaps
- Use cluster information to guide future activities

# Community Engagement is Essential



# Incorporating Community Feedback



- 2018 ● Additional implementation guidance including community engagement, assessing data protections
- 2020 ● Expanded expectations for community engagement and active involvement in EHE NOFO
- 2021 ● Additional guidance on sequence collection, use, and release

To end the HIV epidemic, public health, criminal justice, and legislative systems must work together to ensure that laws protect the community, are evidence-based and just, and support public health efforts.

## Modernizing Laws and Policies

- CDC provides data, tools, and other information to states so that they can review and revise criminalization laws (when warranted) and ensure strong data protections.\*
- CDC reviews HIV-related criminalization laws to determine their alignment with current scientific evidence.
  - See CDC website to find aggregate state level data.\*\*

**Laws Modernized  
or Repealed  
2021–2022**

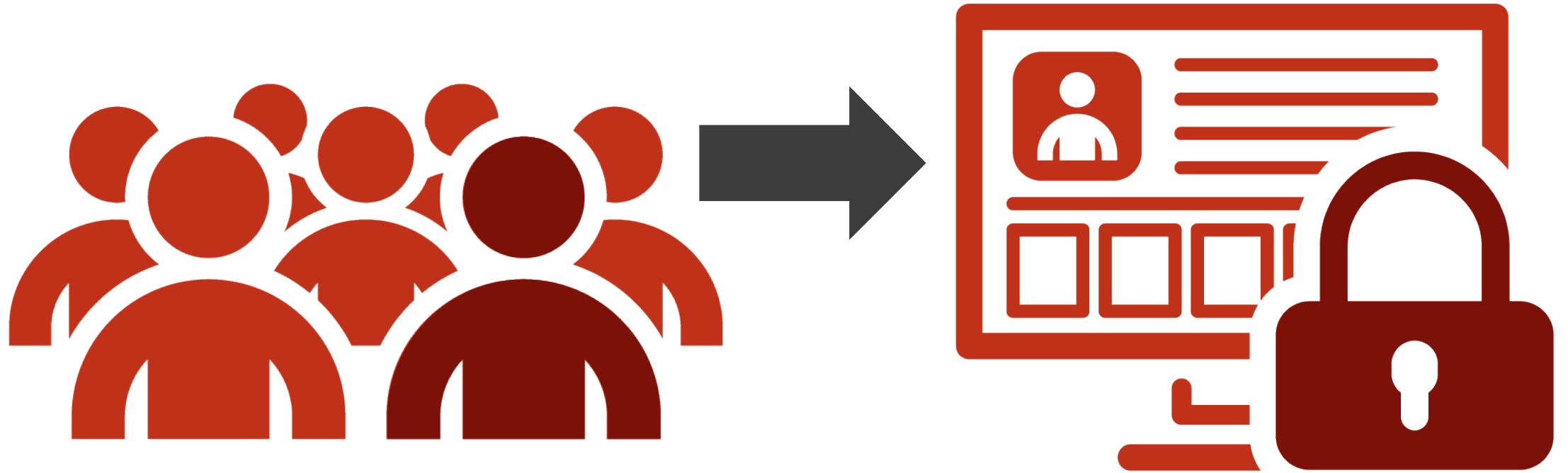
Georgia  
Illinois  
Missouri  
Nevada  
New Jersey  
Virginia

**Legislation  
Proposed  
Pennsylvania**

\* <https://www.cdc.gov/hiv/pdf/funding/announcements/ps18-1802/cdc-hiv-sequence-guidance.pdf>

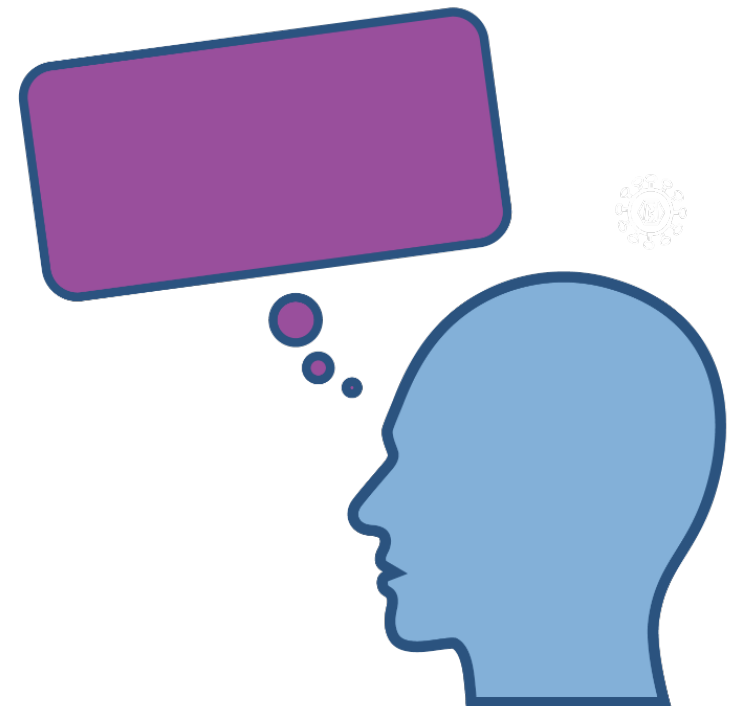
\*\* <https://www.cdc.gov/hiv/policies/law/criminalization-ehe.html>

# U.S. HIV Public Health Data Are Strictly Protected



# Involving Communities Is Essential and Can Help to Address Stigma

- Involving local community members and organizations in planning, implementing, and evaluating response activities can strengthen the delivered interventions
  - Can help design messaging and materials to avoid further stigmatizing affected communities and deliver services effectively





# HIV Cluster Detection and Response Web Resources

[www.cdc.gov/hivcluster](http://www.cdc.gov/hivcluster)



- Stories from the field
  - San Antonio, TX
  - Lawrence/Lowell, MA
  - Minneapolis, MN
- FAQs

# Response to a Molecular Cluster Led to Accelerated Linkage to Care in Texas

- Cluster affected Hispanic/Latino gay and bisexual men
- Providers, community members, and HD staff established the End Stigma, End HIV Alliance
- This large cluster would not have been detected without molecular data

**From 13 days**

<https://www.cdc.gov/hiv/policies/cdr/spotlights/index.html>

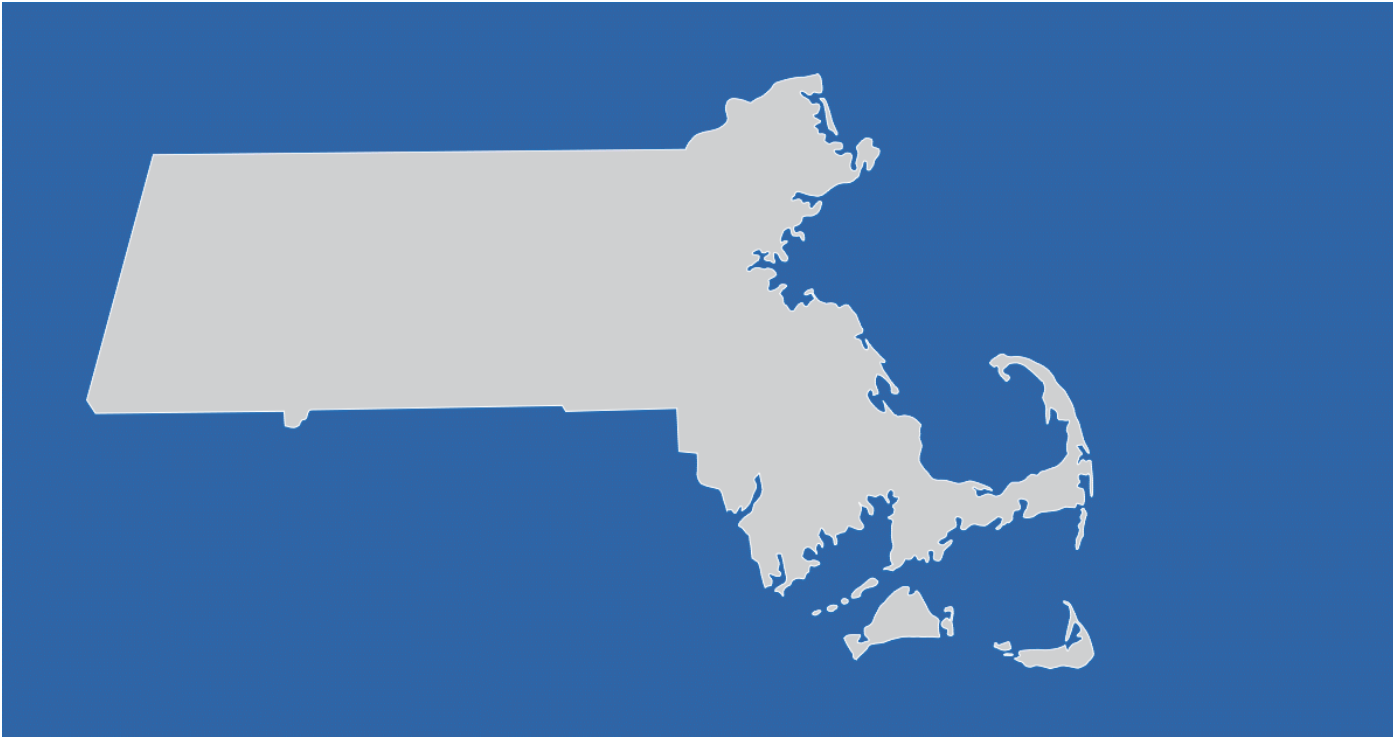
Pack *et al.* Natl HIV Prev Conf 2019

# People Receiving Response-Related Services Believe in the Value of this Work

- Among people contacted for CDR interviews in Seattle:
  - 100% agreed or strongly agreed that “it is important for the health department to follow up with people who may be part of HIV clusters”
  - 83% agreed or strongly agreed that “it is important to me to know that I may be part of a cluster”

“You are the biggest blessing that happened to me this year.” – CDR interviewee who was out of care for many years

# Response to an Outbreak Led to Expansion of Syringe Services Programs in Massachusetts



- Outbreak affected people who inject drugs
- Qualitative interviews conducted with people who inject drugs, providers, and other stakeholders
- Molecular data demonstrated the extent of the outbreak, leading to statewide service expansion

<https://www.cdc.gov/hiv/policies/cdr/spotlights/index.html>

Cranston *et al.* MMWR 2019; Alpren *et al.* AJPH 2020

# Networks: Example of Understanding Networks

## Michigan Response



- Identified rapid transmission affecting Black/African American transgender women
- Engaged rapidly and repeatedly with community partners serving trans communities
- Connected with people in the network to understand the community's needs
- Developing mobile services with comprehensive, gender-affirming care
- Created community-oriented messaging campaigns and expanded HIV self-testing

# Response to an Outbreak Led to Community-Centered Program Changes in Minnesota

- Affected persons who inject drugs, including people experiencing homelessness; disproportionately occurred among the Urban American Indian population
- HIV services integrated into clinics serving persons experiencing unstable housing and the Urban American Indian population

**“PrEP typically is provided within a clinic-based model, but our clients don’t go to clinics, so we’ve learned to offer it using a street-based model.”**

— SARAH JANE KEAVENY  
MINNEAPOLIS, MN

<https://www.cdc.gov/hiv/policies/cdr/spotlights/index.html>

# Response Outcomes



- Reduced diagnoses or transmission, or a lack of new linked cases
- Improved HIV testing and diagnosis
- Improved viral suppression, or improved linkage to and retention in HIV care
- Improved PrEP uptake or SSP utilization
- Improved prevention and care for other conditions, such as hepatitis A vaccination, hepatitis C treatment, improved opioid use disorder treatment, prevention of endocarditis



**Conclusions**



# Ending the HIV Epidemic: Response Guides Other Strategies



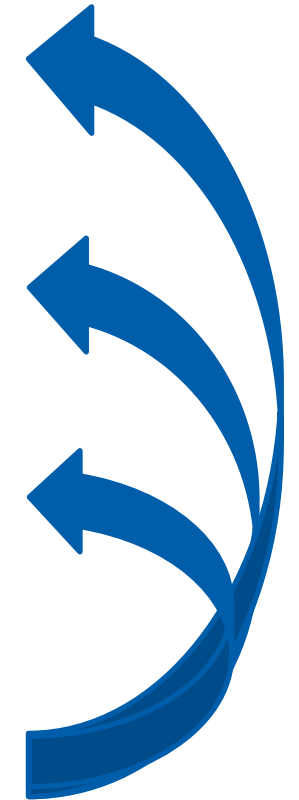
**Diagnose** all people with HIV as early as possible.

**Treat** people with HIV rapidly and effectively to reach sustained viral suppression.



**Prevent** new HIV transmissions by using proven interventions, including pre-exposure prophylaxis (PrEP) and syringe services programs (SSPs).

**Respond** quickly to potential HIV outbreaks to get needed prevention and treatment services to people who need them.



# Cluster and Outbreak Response Can Help Bring the Nation Closer to Ending the HIV Epidemic



A cluster or outbreak is a failure of our care and prevention services that needs to be addressed to improve access to services and stop transmission.



Cluster and outbreak detection allows us to identify when HIV is spreading quickly.



Cluster and outbreak response involves curating care and prevention services to be more accessible to the people who need them most.



[www.cdc.gov/hivcluster](http://www.cdc.gov/hivcluster)

For more information, contact CDC  
1-800-CDC-INFO (232-4636)  
TTY: 1-888-232-6348 [www.cdc.gov](http://www.cdc.gov)



The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.