

HIV Cluster and Outbreak Detection and Response Plan

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INTRODUCTION & PURPOSE

I. What is an HIV Cluster and Outbreak Detection and Response Plan?

Cluster detection is an emerging program sponsored by the Centers for Disease Control and Prevention (CDC) and highlighted in the Respond Pillar of the Ending the HIV Epidemic initiative which aims to specifically identify areas of accelerated HIV transmission in order to target prevention activity and ultimately decrease HIV transmission and new HIV infections. The CDC requires jurisdictions funded via PS18-1802, including Los Angeles County Department of Public Health (LAC DPH), to develop an HIV Cluster and Outbreak Detection and Response Plan. Each funded jurisdiction is required to develop and maintain a comprehensive and tailored plan that is useful and feasible to implement. This plan describes programs to support HIV cluster and outbreak response and procedures for detecting, prioritizing, and implementing response activities. LAC followed the template provided by the CDC to organize our cluster and outbreak detection and response plan.

Note to the reader: LAC DPH adapted this plan from the CDC supplied PS18-1802 Cluster and Outbreak Detection and Response Template provided to CDC funded jurisdictions in January 2020. LAC DPH will regularly update this 'living' document, as we continue to incorporate new information and strategies and learn new approaches for successful HIV cluster and outbreak detection and response.

II. What is Molecular HIV Surveillance?

Molecular HIV Surveillance (MHS) is one method of cluster detection described in the plan and, while not the sole means of identifying clusters of HIV transmission, it is the method that drives most routine cluster identification and response activity.

MHS builds upon HIV genotype surveillance. As a standard practice in HIV care, medical providers obtain laboratory genotype testing of their HIV positive patients to determine whether an individual's HIV strain is resistant to certain drugs. The genotype testing, which results in a genetic sequence report about the individual's HIV viral strain, is reported to the LAC Department of Public Health (DPH) along with all HIV laboratory and care test results in accordance with California's Health and Safety Code. Through a comparison of the genotype reports of people living with HIV in the local area, it can be determined if there are multiple people with a highly similar HIV strain. Because the HIV virus' genetic sequence constantly evolves, people whose viral strains are highly similar are likely to be in the same social HIV transmission network (i.e., transmission cluster). Transmission clusters with numerous newly diagnosed HIV individuals may indicate that recent and rapid HIV transmission is occurring among a group of individuals in a given area. Therefore, when a cluster is identified, it can inform the delivery of public health services and interventions to stop the chain of transmission in the area and prioritize services to those that need them the most. In sum, MHS is a new tool in the HIV prevention toolbox, allowing LAC DPH to identify opportunities for public health intervention. This document aims to outline how the LAC DPH plans to responsibly incorporate MHS into existing HIV detection and prevention initiatives.

III. About this plan

Section 1 describes internal structures, policies, and collaborations that ensure a strong foundation for HIV cluster and outbreak response activities within the health department. Section 2 describes partnerships with external agencies and community partners well-positioned to support HIV prevention activities needed to respond to HIV clusters and outbreaks. Section 3 describes our plan for detecting HIV clusters and outbreaks; the prioritization of clusters for follow-up is presented in Section 4, and planning an appropriate cluster response is described in Section 5. Procedures for an escalated response requiring dedicated planning is covered separately in Section 6. Finally, Section 7 describes planning for monitoring and evaluation, and opportunities to improve future prevention efforts.

The cluster response workgroup is the planning group that developed the first DRAFT version of this HIV Cluster and Outbreak Detection and Response Plan. The names of workgroup members who contributed to the development and writing of the plan are provided in the table below.

Key contributors to the development of this plan	
Date of Initial Plan: 9/30/2020	
Title/Program	Name
HIV/STD Surveillance Chief	Kwa Sey, PhD, MPH
Data to Action Team Lead	Kathleen Poortinga, MPH
DCS Chief	Magdalena Esquivel

Medical Director	Sonali Kulkarni, MD, MPH
Associate Medical Director	Rebecca Cohen, MD, MPH
Program Monitoring and Evaluation Lead	Wendy Garland, MPH
PHI Manager	Sameh Mansour
HIV Surveillance Coordinator	Virginia Hu, MPH

IV. Stakeholder Engagement

Successful implementation of an HIV Cluster and Outbreak Detection and Response requires strategies that empower the community to engage in actions that impact disease transmission in their own social networks. In order for this plan to be successful, LAC leadership must engage with all stakeholders – HIV care and service providers, community advocates and resource providers and, most importantly, the HIV positive community,- to work in partnership to translate cluster detection data into appropriate, well-received, and impactful action. This must happen with attentiveness to sensitive data and the rights of people living with HIV (PLWH) to privacy and legal protection.

In developing this plan, the health department engaged the following key stakeholders and stakeholder groups: Los Angeles County Commission on HIV (COH) and the Los Angeles County Ending the HIV Epidemic (EHE) Steering Committee. The Commission reflects the thoughts, views and actions of approximately 50 dedicated individuals who represent different Los Angeles County communities, people with HIV, providers serving them, public health interests and other perspectives impacted by the HIV epidemic. The EHE Steering Committee includes a broad range of new community members who represent target populations and organizations who have agreed to champion and advise on LAC’s EHE focused initiatives, which includes Cluster and Outbreak Response under EHE’s Pillar 4. LAC DPH originally introduced the topic to the COH in September 2019. In November 2020, the EHE Steering Committee was formed. To date, the Steering Committee has held several meetings to learn and advise on Los Angeles County EHE activities including Cluster Detection and Response efforts. In January 2023, DHSP put together a Statewide Community Advisory Board on Cluster Detection and Response in Partnership with the California Department of Public Health, Office of AIDS. This Community Advisory Board will meet quarterly to discuss CDR and Molecular Surveillance activities in the State of California.

SECTION 1: Internal Collaboration to Support Cluster and Outbreak Detection and Response

I. Oversight and management

Los Angeles County Department of Public Health (LAC DPH) has maintained a broad-based structure to managing HIV investigations. As an integrated HIV and STD program, surveillance, Public Health Investigation (PHI), and care and prevention services reside under one division, the Division of HIV and STD Programs (DHSP); this will allow for a unified and comprehensive response to outbreaks. This plan formalizes DHSP's structure to identify and respond to HIV clusters and/or outbreaks and the authors will continue to document updates based on lessons learned, capacity and community changes, new tools and technology, new partners, and updated guidelines from state and federal partners. The aims of this plan are to enhance our response to improve HIV testing coverage, linkage to prevention and care services, optimize the timeliness from HIV diagnosis to treatment, and ultimately maximize viral suppression to reduce further spread of HIV.

DHSP has established an internal DHSP cluster response workgroup that meets once a month to discuss updates on cluster finding activities and interventions. The purpose of these monthly joint meetings is to do the following:

- Develop/improve this cluster and outbreak detection and response plan
- Review cluster analysis findings and assign a level of concern to each cluster
- Design and implement cluster response
- Analyze cluster profiles to identify gaps in current DHSP prevention and care services and develop action steps to remedy gaps or improve services
- Develop and implement community engagement plans, and incorporate input from community stakeholders

The cluster response workgroup is primarily comprised of staff from three sections within DHSP: Surveillance, Direct Community Services (DCS), Clinical Quality Oversight. These staff hold primary responsibility for implementation of the HIV Cluster and Outbreak Detection and Response Plan. Section roles and responsibilities are described below.

Surveillance Section: Core HIV surveillance, STD surveillance, Bio-behavioral surveillance, Data to Action Lead: HIV/ STD Surveillance Chief

Primary Response Team: Data to Action Team Lead (Supervising Epidemiologist) and designated Epidemiologists and Epidemiology Analysts

The Data to Action team within the Surveillance section leads the collaboration of CDR efforts within DHSP. This work primarily involves conducting molecular and time-space cluster detection, performing initial cluster investigation through integrating data from multiple systems, communicating with internal workgroup staff, communicating with partners at CDPH regarding state-level cluster investigations, developing and maintaining dashboard tools for disseminating cluster data to collaborating partners, referring priority cluster cases to Direct Community Services for client-level follow-up, performing other analytical tasks as needed, and leading monthly CDR workgroup meetings. Furthermore, surveillance staff within the core HIV surveillance team provide coordination with laboratories to ensure

completeness of genotype reporting, coordination with providers submitting Adult HIV Case Report Forms, and expertise in all surveillance data elements which are housed in the Enhanced HIV/AIDS Reporting System (EHARS).

Direct Community Services Section: Public Health Investigation Team, HIV/STD Testing Team, Linkage & Re-engagement Program, Rapid & Ready

Lead: DCS Chief

Primary Response Team: PHI Manager, Testing & Navigation Section Manager, designated PHI's, Health Navigators, Test Counselors, Rapid Navigation Specialists

Direct Community Services (DCS) includes a spectrum of services provided by DHSP DCS staff.

Partner Services: DCS includes Public Health Investigators (equivalent to Disease Investigation Specialists). PHIs provide syphilis case investigations, HIV and syphilis Partner Services (PS), and link clients to STD treatment and HIV medical care. PHIs participate in special events and can be activated for preparedness and Incident Command System activities; during the COVID-19 pandemic response, PHIs were utilized in a variety of roles including contact tracing, outbreak investigation, and critical surveillance activities. The Partner Services protocol outlines all training requirements, service standards, and duty statements. The Partner Services protocol is provided in Appendix A. Within the Partner Services section, there are two units dedicated to HIV Partner Services. A portion of these PHIs are part of a Rapid Response team who focus on addressing cluster investigations. The Partner Services section also manages specialized program services through the Community Embedded Disease Investigation Specialist (CEDIS) contracts. These CEDIS are contracted staff who are trained as functional PHI's but are employed by and housed within community STD clinics. These CEDIS provide real-time updates regarding case finding, partner elicitation and notification, and qualitative input regarding possible sexual and needle-sharing partners. This rich information is already incorporated into the cluster analysis. Other units within the Partner Services section include PHIs who work in correctional settings; conduct syphilis case analysis and triage; conduct SY/CS specialized investigation interventions; and a HIV case report surveillance investigation unit. PHIs work close with other areas of DCS.

HIV/STD Testing: The HIV/STD Testing team consists of trained and certified HIV/STD test counselors and phlebotomists who conduct testing in a variety of specialized program locations, such as the county jails and community events. These test counselors screen and diagnose clients with HIV/STDs, provide education and resources, and refer individuals to biomedical prevention, STD treatment, and HIV medical care. This team identifies gaps in testing services, coordinates with community partners to offer onsite and mobile unit testing and are readily available for outreach and testing events as part of this response plan. This testing program coordinates with the DHSP medical provider to offer field-based treatment and evaluations. Furthermore, PHIs participate in testing events to conduct record searches in surveillance and other case management systems to offer historical patient information, provide onsite interviews, link or re-engage into care and treatment.

Linkage & Re-engagement Program: The Linkage and Re-engagement Program (LRP) consists of highly skilled staff including a Senior Clinical Social Worker, Clinical Social Workers, and Health Navigators. The LRP program was launched in 2016, informed by a three-year demonstration project to pilot new linkage and reengagement strategies; it is designed as a service of last resort among the regular linkage/re-engagement system and providers. The LRP services are critical to cluster detection and response work

as many clients identified are not newly diagnosed and may experience complex lives, face multiple needs including housing, food, mental health services, and other essential services. As Partner Services focuses on persons more recently diagnosed (12 months and under), LRP primarily serves persons out of care and/or diagnosed over 12 months. This continuum of services is optimal to address the spectrum of clients slated for follow-up.

Rapid & Ready: The Rapid and Ready Program is part of the national Ending the HIV Epidemic (EHE) initiative in Los Angeles County. The goal of this newer program is to link newly diagnosed persons to an HIV provider for rapid ART initiation. Rapid & Ready is housed in DCS and is an entry point for clients, many of whom are identified by HIV testing sites, community clinics, medical centers, and emergency departments. Services include field/home visits to offer linkage and navigation to an HIV medical home with specialized assistance to enroll properly in medical insurance and other benefits; accompany clients to clinic visits to address any barriers to entering care; and work closely with PHIs to coordinate the Partner Services interview. Rapid and Ready Navigator Specialists contribute their expertise by supporting the testing and Partner Services efforts to ensure an efficient entry into HIV medical care.

In the event of a high priority cluster or outbreak, DHSP DCS will identify PHIs, testing staff, LRP and Rapid & Ready Navigators to support the response. With the DCS staffing and program structure, DHSP can reassign staff to focus on the outbreak response. As needed, CEDIS staff can also be directed to reprioritize case assignments to both coordinate clinic efforts and provide timely information on clients with profiles matching the characteristics of the outbreak response. The CEDIS can enhance their Partner Services interviews by integrating additional questions, recruiting for peer outreach activities, and enhancing their linkage to care for same day antiretroviral therapy (ART) and other needed services, including drug treatment, housing, and mental health.

DHSP will also work with DPH leadership to develop agreements with DPH partners, including Community Field Services (CFS) to respond to clusters of high priority or outbreaks. CFS is a sister division of the DPH that also houses PHIs who are communicable disease generalists who are also well trained in STD/HIV partner services; as needed, DHSP can work with CFS leadership to change staff assignments to meet outbreak response needs. Furthermore, DHSP will retain a work order with an approved, County vendor to hire temporary field staff to add staff capacity, when needed. These staff will be onboarded, trained to focus on the outbreak response and assigned to a team. The DCS Chief will monitor the ongoing need and plans for these temporary staff.

Clinical Quality Oversight Section: Medical Director, Training, Public Health Detailing

Lead: Medical Director

Primary Response Team: Associate Medical Director

The DHSP Medical Director provides clinical oversight as well as offers programmatic recommendations for both internal services as well as for external community providers based on the situational analysis. This section is a core stakeholder in our response as they facilitate information between DHSP and medical providers and professional groups; develop, disseminate, and conduct detailing activities for new campaigns; conduct highly specified HIV and STD case investigations by using Public Health Nurses; and train community staff in new or innovative programmatic responses related to HIV testing, linkage to care, and Partner Services. The Associate Medical Director serves as the key liaison to the Los Angeles County Jail Correctional Health team and works closely with medical providers such as street medicine

teams, clinics co-located within housing sites, LGBTQ+ organizations, drug treatment providers on a variety of initiatives. The Medical Director and Associate Medical Director work with another program within the public health department, the Substance Abuse Prevention and Control (SAPC) Division, to coordinate with them on ways to prepare their staff, which includes treatment and prevention program managers and analysts, on their role in a cluster or outbreak response.

Housed within the Clinical Quality Oversight Section is the Ending the HIV Epidemic (EHE) Team. The Ending the HIV Epidemic Initiative was designed to reach the goal of reducing new HIV transmissions and acquisitions in the United States by 75 percent in five years (by 2025) and by 90 percent in ten years (by 2030). It consists of four key strategies designed to accomplish these goals referred to as pillars: Diagnose, Prevent, Treat, and Respond. The Los Angeles County EHE Team is comprised of the Program Manager, EHE Pillar Leads, Health Education Specialists, Patient Navigators, Social Workers, a Program Assistant, and a Health Communication Specialist. The Respond Pillar Lead works to coordinate CDR efforts across different areas of DHSP, develop and implement strategies to reach Respond Pillar goals, and engage the community.

If enhanced cluster/outbreak response is necessary, a secondary team will be activated to respond. The secondary team will be comprised of members from the *Senior Management Team, Community Contracted Services, and Planning Development and Research*, each described below.

Senior Management Team: Division Chiefs, Office of the DHSP Director

Lead: Director

Secondary Response Team: Chief of Staff, Senior Managers

The DHSP Director is responsible for the overall success and management of operations. The Director is engaged in directly assessing HIV surveillance data and provides guidance for an appropriate programmatic response. Additionally, this position reviews and approves staff and resource needs for ongoing staffing structures and for emerging public health actions. The Director is the liaison to the Commission on HIV, Department of Public Health Leadership, DPH communications office, as well as other external partners and will serve as a facilitator for alerts and notifications of designated Outbreaks. The Chief of Staff will support the ongoing communication across the office, provide access to information and cross-program organization. The Communications Specialist will support with development and dissemination of any external communications materials that are needed during cluster/outbreak response activities. The Senior Management Team oversees areas within the DHSP program structure and will be called upon to provide support based on the response needs. Furthermore, the Finance Chief (or designee) will work with program areas to review costs related to scaling up our local response.

Contracted Community Services: HIV Testing, Prevention, and Comprehensive Care Services

Lead: CCS Chief

Secondary Response Team: Section Managers, Unit Supervisors, Program Managers

DHSP directly funds over 60 contracted agencies to provide a continuum of HIV and STD services for Los Angeles County residents. As needed and appropriate, the Contracted Community Services (CCS) Chief

can direct these contracted providers to redirect service provision to support outbreak response, with oversight and technical assistance of their respective Program Managers. These service providers are funded because of their experience working with specific target populations and geographic areas most affected by HIV. Primary services include HIV testing, post-exposure prophylaxis (PEP) and pre-exposure prophylaxis (PrEP), linkage to care, HIV specialty medical care, medical care coordination, psychosocial services, housing, and substance use treatment. These services will play an important role in addressing the transmission dynamics of the clusters.

Planning, Development, and Research: Grants Management, Data Management, Program Monitoring and Evaluation

Lead: PDR Chief

Secondary Response Team: Data & Evaluation Managers, Grant Managers

Key staff of the Planning, Development and Research (PDR) Section are informed regarding local cluster detection and planned response for enhanced activities. Grant Managers will provide expertise regarding grant funds and deliverables. Additionally, these staff will facilitate meetings with CDC and/or HRSA Project Officers as necessary. Data Management staff will modify existing programmatic data reporting/collection processes to support outbreak management. Program Evaluation unit staff will provide data to correlate testing levels and linkage to care outcomes from county-supported programs, and to inform a hypothesis for related detection analysis. Additionally, there is an evaluation team made up of epidemiologists and a research analyst working in this unit as a part of the Ending the HIV Epidemic Initiative that assist with monitoring and evaluation of CDR efforts.

Other Resources:

The framework established through this plan will institute information sharing across the County and will request additional support from tertiary partners. As the investment of services and resources are increased, DHSP will inform external partners and request support from the broader community. To ensure transparency, intentional outreach to affected populations, and for community engagement, DHSP will alert County residents of cluster and outbreak and response actions through the DPH websites, listservs, targeted newsletters, community meetings, and through health alerts.

Other Key Leaders in a response may include the following, depending on level of response needed:

- *DPH, Director and Health Officer*
- *DPH Community Field Services- Area/Regional Health Officers, PHI Managers, and PHI's*
- *DPH Substance Abuse Prevention and Control (SAPC)*
- *DPH Communications Office*
- *Department of Mental Health (DMH)*
- *County Board of Supervisors (as necessary)*
- *Local City Officials (per geographic cluster activities)*
- *California State Office of AIDS, Other surrounding health jurisdiction officials*
- *Funders: CDC, HRSA*
- *County Counsel (as necessary)*

II. Staff capacity and training

Staff from the key sections of DHSP described in Section I are trained in their roles in CDR Plan. Roles and responsibilities are provided to staff indicated in Appendix B. This list includes staff contributing to leadership, coordination, and front-line cluster response activities.

Initial and ongoing training are required for these staff, depending on their specific role in cluster response. All staff listed are required to complete DHSP data security and confidentiality training upon hire and annually. Surveillance staff participate in Secure HIV-Trace trainings and monthly CDC calls where Secure HIV-Trace updates are on the agenda. A complete training plan is incorporated into DHSP's Partner Services Protocol (Appendix A).

Further, all county staff performing PHI duties and Partner Services (i.e., not just DHSP PHI) need to be aware of this CDR plan and their potential role in implementation. Beginning in March 2023, DHSP's training unit is offering a new one-week HIV/STD Knowledge and Skills Training for new PHIs. After all new PHIs have gone through the training, existing PHIs will also go through the training. One of the components of that training is a session on cluster detection and response.

If DPH staff capacity is overwhelmed during outbreak response, there are a few avenues available to expand the DPH staffing structure, allowing Los Angeles County to scale up local reach and provide a greater impact:

- DHSP retains the ability to request CDC staff from the West Regional Management Office, Disease Intervention & Response Branch, as necessary, to be deployed to Los Angeles County. These DIS and Public Health Analysts will be incorporated into response teams and directed to assignment areas based on need.
- DHSP can coordinate a regional response through partnerships with the State Office of AIDS, and regional health departments within Los Angeles County and adjacent to the County. These efforts will offer a broad approach, allow for timely information to be shared, and expand the service response to identify original clients and their partners to conduct more expansive interviews and link a continuum of services.

III. Funding for cluster response activities

DHSP operations are primarily funded by State and Federal grants, as well as the use of Los Angeles County net costs. Preplanning for budgeted staff items and correlating the focus area of their work is a quarterly activity for most sections within DHSP and is conducted using a Quarterly Time Survey. While these time surveys do not calculate detailed assignments, they do offer a framework for developing a weekly version of a time survey to maintain tracking of staff time for cluster response efforts. CDR Workgroup leads will assess response actions, develop a staffing plan, identify additional resources needed, and forecast the budget based on the associated costs. In the case of a Critical level response, leads will provide updates to the DHSP Director, Grant Managers, and Finance.

As cluster investigations are initiated, and in the case a Critical outbreak is declared, staff will begin to log their hours, their activities and interventions, and their time dedicated to planning response actions. As direct service specialists, DCS staff will submit weekly time surveys to be used for documentation and to analyze efforts and costs associated with the outbreak investigation. The logs will be compiled and be reported during the bi-monthly cluster response workgroup meetings. These weekly reports will be provided to the DHSP Director, Grant Managers, and Finance notated with weekly outcomes and brief staffing plans and activities for the week ahead. Bi-weekly meetings will be conducted to coordinate and

schedule follow-up meetings with Project Officers as needed. DPH departmental meetings may be held to address workload and case assignments and to determine impact of outbreak response upon regular, ongoing HIV PS. These internal meetings will cover reallocation of staff time to outbreak response, case investigation priorities, and workforce impact. Budget discussions may be covered in these meetings to ensure maximizing available grant dollars and grant deliverables.

Funding for CDR efforts also comes from HRSA EHE funding targeted for Los Angeles County. DHSP has utilized this funding to hire a EHE Respond Pillar Lead. This person is primarily responsible for community engagement efforts around CDR, representing the Respond Pilar in EHE meetings and events, and helping implement special projects around CDR efforts.

IV. Data Sharing

Data regarding clusters is inherently sensitive, and, as with all HIV surveillance data, protecting data security and confidentiality is essential. Key internal DHSP collaborators for cluster response outside HIV surveillance include HIV prevention staff who perform HIV/STD partner services activities and clinical staff. DHSP has protocols in place for sharing data across internal departments (e.g., HIV surveillance, HIV prevention). Within our program, DHSP restricts access to cluster data to only those employees whose duties require access. Additionally, DHSP requires staff to be trained with DHSP Security and Confidentiality Policies and Procedures and sign the Security and Confidentiality Agreement annually and prior to accessing any HIV Surveillance data.

V. Data protection

Los Angeles County DPH has long-established procedures in place to ensure that HIV surveillance data is handled in a secure manner. These protections are in conformity with best practices, statutory confidentiality provisions (HSC sections 121022 and 121025), and CDC guidelines. They include, but are not limited to, data security policies and procedures (e.g., technical, physical, and administrative controls to prevent unauthorized access, records retention/destruction, secure communication protocols, mandatory information security training of authorized staff), institutional data sharing and use agreements facilitated by compliance and privacy officers, confidentiality compliance oversight and monitoring (e.g., ongoing compliance review, security breach protocols), and security standards in aggregate data release for reporting and programmatic purposes. Unlawful disclosure of HIV public health information is strictly forbidden and is subject to civil and/or criminal penalties. DHSP staff working with HIV surveillance data are required to take necessary steps to ensure that data are maintained in a secure environment consistent with these guidelines. DHSP has protocols in place for sharing data across multiple departments (e.g., HIV surveillance, HIV prevention). Further, within our program, DHSP restricts access to cluster data to only those employees whose duties require access.

California statutes provide protection for personally identifiable information and treat any personal information collected as part of a disease report or investigation as confidential medical information. CDPH is expressly prohibited from releasing public health HIV data under any circumstances, including pursuant to any subpoena, search warrant, or discovery proceeding. Per HSC Sections 121022, 121023, and 121025, California law clearly states that HIV-related public health information “shall not be disclosed, discoverable, or compelled to be produced in any civil, criminal, administrative, or other proceeding.” Some limited exceptions may apply, such as a protective order.

In 2017, several laws related to HIV criminal exposure were repealed and amended. There is no longer a specific law related to criminalizing either HIV transmission or HIV exposure. California has a law titled “Intentional transmission of an infectious or communicable disease” that encompasses intentional transmission of any infectious or communicable disease. For further information:

https://www.cdph.ca.gov/Programs/CID/DOA/CDPH%20Document%20Library/SB%20239%20OA%20Fact%20Sheet%202017_ADA-ADA.pdf

SECTION 2: External Partnerships to Support Cluster and Outbreak Detection and Response

I. Community Engagement

Key to successful cluster detection and response planning is engagement and collaboration with community and stakeholders outside of DHSP. This includes but is not limited to people with lived experience, community-based organizations, physician leadership from our Ryan White Ambulatory Outpatient Medicine network, staff from other programs within DPH such as Public Health Investigator Administration, Acute Communicable Disease Control (ACDC) and Substance Abuse Prevention and Control (SAPC), staff from other local health jurisdictions, and state and federal partners.

To strengthen community participation in CDR work, DHSP has helped form a Statewide Community Advisory Board (CAB) on Cluster Detection and Response in partnership with the California Department of Public Health, Office of AIDS. This CAB was formed in January 2023 and consists of ten members, the majority of which are residents of Los Angeles County. Members include both individuals with lived experience as well as those who work in the field of HIV. The goal of this Community Advisory Board is to provide information on CDR and Molecular Surveillance and gather feedback that will be incorporated into jurisdictional CDR efforts and into future versions of this CDR plan. The CAB is holding quarterly meetings as well as smaller group discussions on specific topics.

Based on the settings in which DHSP shared information on Cluster Detection and Response activities thus far, the key findings are described below.

- 1) The public has limited knowledge and understanding of public health HIV/STD reporting and case management practices. When discussing the reporting requirements and data public health has available about PLWH, opinions varied, with some expressing ambivalence about how much community residents would cooperate with DPH staff on naming their contacts or getting referrals to services; others felt that DPH should do more to contact and offer assistance to PLWH. Opinions regarding this may have shifted over time, as we found that during post-COVID conversations, community stakeholders and members were more likely to understand the basic tenants of contact tracing and were more comfortable with the idea of the public health department doing outreach to community members regarding communicable diseases.
- 2) Certain technical terms commonly used by DPH staff when discussing cluster detection elicited confusion and concern, specifically “genotype” and “surveillance.” Some community members expressed concern that the public health department was able to examine the DNA of individuals with HIV, which necessitated repeated explanations about the difference between an HIV viral genotype and the genotype of the individual person living with HIV. The term “surveillance,” while commonly used among public health department personnel, carries a very different connotation in the general population, especially among communities of color and immigrants.
- 3) Any language shared with individuals that they are part of a cluster should be carefully worded to avoid stigmatization. However, it was recognized that it would be useful to share that their friends or contacts may be at heightened risk of HIV and that they could help by working with DPH. To reduce stigma, it has been suggested that language surrounding clusters should be focused on connecting people to HIV services rather than placing blame on groups or individuals

for high HIV transmission rates. Additionally, any health messaging efforts should be tailored to the community it hopes to reach.

- 4) Key stakeholders have expressed that they would like to play a role in Los Angeles County's response in the event of a large-scale HIV outbreak. Specifically, community members requested to review health messaging, disseminate information to affected populations, and assist in activating provider response.
- 5) There is still a need for education on Cluster Detection and Response among community members. It has been suggested that it is best to meet the community where they are at in small, intimate settings to disseminate pertinent information. Los Angeles County should continue to be transparent on its CDR activities to gain trust from the community.

II. Collaboration with external partners:

Continued engagement with key external partners may result in more efficient collaborations in a response situation when time is crucial. To facilitate collaborations with stakeholders outside of DHSP, existing meetings and workgroups have been identified with key partners in HIV prevention. Presentations and discussions have taken place and will continue to take place at these meetings as needed to ensure that these external partners are aware of the CDR plan and their potential roles in cluster response efforts. These existing meetings with external partners include:

- Ryan White Medical Advisory Committee – quarterly
- Cluster Calls with CDPH – quarterly
- Commission on HIV (local Ryan White planning council) – monthly
- Ending the HIV Epidemic Steering Committee – quarterly
- DPH Hepatitis C Workgroup – quarterly
- Regional Collaboration with Academic Partners – monthly
- Los Angeles County Jail's HIV Services Coordination - no regular meetings currently scheduled
- California STD and HIV Controllers' Association – monthly
- Los Angeles County Perinatal HIV Stakeholders Workgroup – quarterly
- Los Angeles County Engagement and Overdose Prevention Hubs Meeting- bi-monthly
- Los Angeles County Methamphetamine Task Force- quarterly
- Testing Coordinators Meetings – quarterly

In March 2021, DHSP began conversations with SAPC to identify ways to increase baseline and surge capacity among the engagement and overdose prevention hubs (i.e., syringe support programs) to conduct HIV testing and syringe exchange; they are the key stakeholders identified for collaboration because of recent national IDU outbreaks, such as the one that occurred in King County, Washington in 2019. We have also used recent HIV cases of public health importance, such as perinatal HIV transmission cases, to develop relationships with the County's Children's Medical Services which provides clinical oversight for children and families in the foster care system.

Further, DHSP has identified the following local resources and organizations that could be mobilized as partners for potential interventions:

- Community-based organizations that routinely work with populations disproportionately affected by HIV, including but not limited to LGBTQ+ service providers, organizations that work with transitional age youth;

- HIV/STD prevention partners, including HIV testing sites, STD clinics, PrEP providers, harm reduction programs, and health education and risk reduction programs;
- HIV care providers, including both Ryan White and non-Ryan White clinics;
- Homeless health care providers;
- Substance use disorder treatment and prevention providers, including methamphetamine treatment centers and Engagement and Overdose Prevention Hubs (formerly called syringe support programs);
- Social and entertainment venues, including commercial sex venues and social clubs;
- Community organizations that routinely provide social services and/or healthcare services to individuals with substance use disorder or severe mental health illness;
- County partners who provide or coordinate services to groups vulnerable to HIV/STD infections, including jails, diversion and reentry programs, foster care system, homeless service providers, and women's health programs; and
- Laboratory partners including Los Angeles County Public Health Laboratory that may support increased testing during an outbreak.
- Pasadena and Long Beach health departments. Note that the cities of Long Beach and Pasadena, while geographically located with Los Angeles County, are not served by the Los Angeles County Department of Public Health, as each of these cities has its own health department.

The DHSP CDR Workgroup will prepare a timeline to share our Cluster Detection and Response Plan with these key stakeholders.

III. Data Sharing:

DHSP collaborates with CDPH to share data between our county and CDPH and our county and other counties. DHSP also collaborates and shares data with the cities of Pasadena and Long Beach which have their own health departments. A Data Usage Agreement (DUA) is signed every 5 years between CDPH and Los Angeles County as part of State Block contract (Appendix C). This Agreement governs the data sharing and ensures procedures to protect the privacy and provide for the security of all Protected Data in compliance with all state and federal laws applicable to the Protected Data. DHSP has agreements in place for sharing data with other states through the existing processes for Routine Interstate Duplicate Review (RIDR) which must be carried out on a regular basis to prevent over counting and undercounting of cases at the national level. If necessary to share individual-level data with other states, DHSP will build on to the existing processes for RIDR.

DHSP does not plan to routinely share data with other external organizations however it does collaborate with external academic partners on projects that support HIV prevention research and have direct relevance to DHSP. The parameters of such collaborations are outlined in a Memoranda of Understanding which detail a data sharing agreement for data transfer, storage, access, use and retention to ensure the security and confidentiality of HIV-related information. For example, DHSP has collaborated with researchers at the University of California, San Diego (UCSD) on HIV network data analysis by sharing de-identified molecular surveillance data sets on persons tested for HIV drug resistance in LAC (See MOU in Appendix C). The specific aims of this collaboration were to explore statistical approaches for identifying rapidly growing transmission clusters and to guide cluster intervention strategies.

SECTION 3: Detecting and describing HIV clusters and outbreaks

In Los Angeles County, molecular HIV surveillance through HIV-TRACE, time-space cluster analyses, and other cluster detection methods are used as complementary approaches to identify growing transmission clusters of HIV infection.

Lead: HIV/STD Surveillance Chief

I. Time-space cluster analysis

Time-space cluster analysis of HIV diagnoses is a commonly used epidemiological tool for identifying potential HIV outbreaks. The premise of this approach is that abnormal increases in the number of reported HIV cases can easily be identified once cases are reported to the surveillance system and investigated to determine if there is an outbreak. Staff in surveillance use a CDC-provided SAS Program to detect unusual increases or changes in HIV diagnoses and reporting patterns at the local level. LAC modified the CDC SAS Program to provide an assessment at the Health District (HD) level. There are 26 Health Districts in the County. Individuals with a missing address will not fall into an HD and missing addresses often reflect cases who are experiencing homelessness. Therefore, we also include in our time-space cluster detection an analysis for those individuals categorized as homeless at the time of HIV diagnosis.

An **Epidemiology Analyst** in the Data to Action Unit performs time-space cluster detection monthly. The **Epidemiology Analyst** imports the time-space cluster analysis into a PowerBI dashboard report so that it can easily be shared and reviewed by the CDR workgroup. The output is reviewed by an **Epidemiologist** in the HIV Surveillance Unit. These key staff look at any “alerts” that are output from the CDC-provided SAS code. A time-space alert is generated when HIV diagnoses over the prior 12 months fall more than two standard deviations above the mean based on the previous three years of HIV diagnoses within that geographical area. Alerts are also generated for sub-populations of interest within each HD. Sub-populations of interest include injection drug users, men who have sex with men and inject drugs (MSM/IDU), and women. For HDs and sub-populations within HDs with an alert, an **Epidemiologist** conducts further investigation to assess if increases in HIV diagnoses may reflect true increases in infections.

It is important to understand that increases in reported HIV cases can be related to many factors other than increase in HIV transmission, including increases in HIV testing (e.g., implementation of routine opt-out screening in hospital settings). Time-space alerts are always reviewed within the context of testing trends. Another limitation to the time-space methodology is the delay between diagnosis and reporting new HIV cases to the Los Angeles Department of Health. The reported number of new diagnoses in the past 12 months typically underestimates of the true number diagnosed in the same time period. Strategies to improve the timeliness of reporting processes should be prioritized to increase the utility of time-space cluster analysis.

Our draft Standard Operating Procedures for time-space cluster analysis is included as Appendix D.

II. Molecular cluster detection/Molecular HIV surveillance

Molecular cluster detection methodology, or molecular HIV surveillance (MHS), utilizes HIV genotype sequence tests that are reported to the Los Angeles County HIV Surveillance program. The HIV genotype

is an important laboratory test that the American Medical Association (AMA), World Health Organization (WHO), and IAS (International AIDS Society) recommends be run on all individuals newly diagnosed with HIV infection— used in effectively choosing medication regimens. As a lab result indicative of HIV infection and HIV care, HIV genotype sequence tests have been required by California law to be reported by all laboratories since 2006. However, in Los Angeles County, only about 60% of new HIV diagnoses have a HIV genotype sequence that has been reported to the health department. Individuals who are diagnosed with HIV but not yet linked to HIV medical care do not have an HIV genotype sequence. There may also be some individuals who are in HIV care, but their provider has not ordered an HIV genotype test.

HIV genotype sequence data are reported via electronic laboratory reporting (ELR) in Los Angeles County. HIV genotype sequences are securely stored in the electronic HIV/AIDS registry system (eHARS) along with all other labs indicative of HIV infection (Antigen/Antibody detection assays) and labs indicative of HIV care (Viral Loads and CD4 counts). A **Research Analyst** in the Core HIV Surveillance unit is responsible for processing the HIV ELR data, including genotype sequence results and importing the data to eHARS on a monthly or bi-monthly basis. The Research Analyst performs quality checks on all data before import. Los Angeles County staff also works with CDPH to identify gaps and make improvements to the timeliness and completeness of HIV molecular data.

HIV genotype sequence data in eHARS is imported into a tool called Secure HIV-TRACE, which performs an analysis of HIV genotype sequence data for cluster detection. Secure HIV-TRACE is a CDC-developed tool that detects clusters by identifying individuals whose HIV genetic relatedness imply transmission connections. It is important to note that the degree of relatedness output by HIV-TRACE is not very specific—it cannot tell which person infected whom or even if the two people were directly or indirectly linked. However, by identifying individuals with related HIV viruses, the analysis shows clusters of individuals whose viruses are similar. HIV surveillance staff can then follow these clusters to see how fast they grow and help prevention staff understand which communities are experiencing higher rates of HIV transmission.

An **Epidemiology Analyst** in Data to Action runs Secure HIV-TRACE to identify new clusters and monitor existing clusters at least once per month, and up to twice per month if time and resources allow. A flowchart included as Appendix E details the flow of data in molecular cluster investigations, starting with receiving the genotyping test results. CDPH also runs Secure HIV-TRACE monthly and sometimes identifies molecular clusters in which Los Angeles County plays a significant role with individuals from other counties also linked to the network. The State output also shows when there are out of County cases linked to transmission clusters already identified by LAC, thus helping complete missing parts to the molecular cluster and transmission network. CDPH shares cluster information with LAC monthly through secure file sharing.

Each month the number of clusters identified by Secure HIV-TRACE exceeds what would be reasonable for public health investigation. Therefore, a system of prioritization is needed to identify clusters that are large enough to warrant attention from health department staff and that are growing at a rate higher than the generic epidemic. LAC DPH currently prioritizes clusters of concern according to the CDC national priority cluster criteria:

1. All individuals must be diagnosed within the past three years
2. Pairs of sequences within the cluster that are linked must be very closely related (0.5% genetic distance)
3. There have been at least five new HIV diagnoses added to the cluster within the past year

National priority clusters are all suggestive of recent, rapid transmission (i.e., “recent and rapid clusters”).

III. Other cluster detection methods

Partner Services staff, street medicine teams, healthcare providers, or others might identify suspected clusters through direct work with clients/patients and alert staff within the health department. On an ongoing basis, DCS - Partner Services section will serve as a primary source for identifying new clusters of HIV infection. Additionally, as they interview and access clients as key informants, PHIs will learn of service gaps, congregations of risk networks, emerging substances used on the streets, and incentives of most interest among the populations. LRP staff also provide input and enhance our ability to explore new partners, given their experience working with and among the most vulnerable clients, and service networks. Analysis of PS, LRP, and Rapid & Ready client documentation is a rich source of information to generate new approaches. These notes infuse not only details regarding clients within the system of care, but also provide previous associates/social networks, syphilis transmission patterns that can serve as a proxy to identifying HIV, hotspots, and help triangulate data. Analysis of HIV testing data also informs actions and opportunities to direct collaborations with testing sites and to offer on-site Partner Services or CEDIS expansion. When notified of a potential HIV cluster from one of these other detection sources, the **Data to Action team lead** will analyze whether network data available in HIV-TRACE supports the existence of the cluster. However, given the incomplete nature of genotype sequences, confirmation of a molecular cluster is not a requirement to determine the presence of the cluster.

Identifying innovative techniques for cluster detection will be a continuous exercise conducted through brainstorming sessions during monthly DCS staff meetings and unit case conferences. Ideas and recommendations generated from the DCS teams will be shared with the cluster response workgroup monthly; interventions will be contextualized with characteristics of the original HIV case investigation and client profile.

IV. Transmission clusters and social networks

Using cluster detection methodologies alone (i.e., Secure HIV-TRACE, time-space analyses) is an underestimate of the true size of an HIV cluster. For example, a molecular cluster contains only individuals who have been diagnosed with HIV, have entered HIV care, and who have had a genetic sequence test run by their care provider and reported by the laboratory to LAC DPH. This is a subset of what is likely a larger underlying transmission cluster of individuals who can benefit from public health action (Figure 1). To characterize the complete transmission cluster as well as persons who may be at risk for infection, data from partner services (PS) interviews is leveraged.

If a cluster is prioritized for public health action, the individuals in the surrounding transmission cluster, the middle ring in Figure 1, should also be included for a public health intervention so that they can benefit from increased testing, linkage to HIV care, and educational efforts. Finally, the outer ring of Figure 1 (lightest blue) consists of individuals who appear in the same social and/or sexual network as those in the molecular and transmission cluster but who are not infected with HIV. These individuals

will also benefit from the public health action stemming from cluster investigation and response by increased education/awareness and by LAC DPH offering Pre-Exposure Prophylaxis (PrEP) referrals.

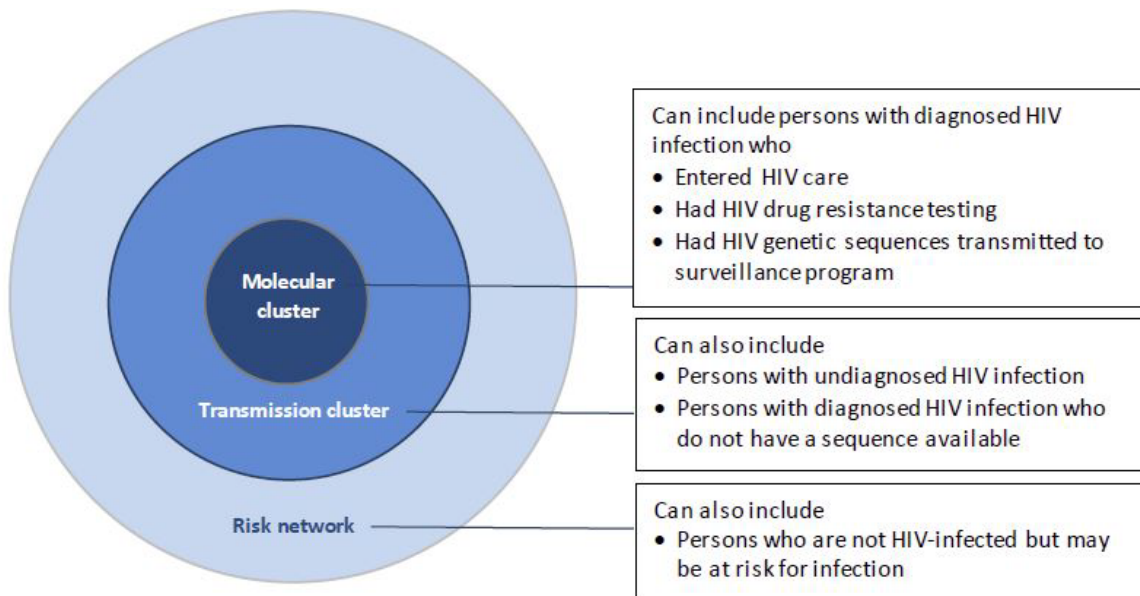


Figure 1. Molecular cluster and its underlying transmission cluster and social/risk network.

V. Reviewing relevant cluster data

Once a cluster of concern is identified, the next step is to gather additional data as part of cluster assessment. Not all newly detected clusters are of equal concern. Some priority clusters might be more likely to contribute disproportionately to new infections and poor outcomes than other clusters. Therefore, comprehensive assessment of each cluster, including its potential for growth and poor outcomes, is essential. An **Epidemiologist** and **Epidemiology Analyst** work together to perform the initial comprehensive assessment. In addition to time-space and molecular data elements, other data sources are used during the cluster assessment process (Table 1). The HIV surveillance database eHARS stores demographic and care data collected on HIV case report forms. This demographic information allows identified clusters to be described in terms of age, gender and racial breakdown of each cluster. It also allows staff to determine what risk factors may be contributing to increased transmission (men having sex with men, men having sex with women, needle-sharing among individuals who inject drugs, etc). The HIV laboratory surveillance database iHARS stores the results of all HIV laboratory results reported to LAC DPH and is more timely than the care data available in eHARS. Therefore, staff use laboratory information in iHARS to determine the proportion of clustered individuals who may be out of care or virally unsuppressed.

Table 1. Sources of data used in cluster review

Type of data	Database name	Who has access?
HIV Surveillance	eHARS	HIV Surveillance and read-only access for select staff in HIV prevention
HIV Laboratory Surveillance	iHARS	HIV Surveillance and read-only access for select staff in HIV prevention
Partner Services data	STD CaseWatch	Public Health Investigators

Ryan White data	HIV CaseWatch	Ryan White program staff and read-only access for select staff in HIV prevention
Electronic Medical charts	ORCHID	Select HIV surveillance and prevention staff
Locating information	LexisNexis	Select HIV surveillance and prevention staff
Client-level information on services provided to people experiencing homelessness in Los Angeles County	HMIS	Select HIV surveillance and prevention staff
Contracted HIV and STD Testing Services	HTS	Select staff in Planning, Development, and Research and select HIV surveillance staff

In Los Angeles County, Partner Services (PS) data is stored in STD CaseWatch (local surveillance data system developed for STD case management) and includes data from HIV PS interviews as well as STD PS interviews. PS data in STD CaseWatch and HIV surveillance data in eHARS are currently not directly linked. Therefore, staff abstract PS data for clustered individuals into a Microsoft Access database which can then be linked directly to data in eHARS to assess a fuller picture of the sexual or needle sharing at-risk social network in terms of geography, age, race, sex, and risk factors. A copy of the PS data abstraction form is included as Appendix F. The form is completed using information collected during an HIV PS interview. However, a person may have had multiple PS interviews if they had STD diagnoses as well. The data review also considers information collected/partners elicited during STD PS interviews if the interview was within a one-year timeframe before HIV diagnosis.

Once data is gathered from manual processes, a suite of internally developed SAS programs match cluster members eHARS, iHARS and Ryan White data. An **Epidemiologist** or **Epidemiology Analyst** then uses SAS and PowerBI to visualize and analyze cluster data.

VI. Steps to define transmission cluster and risk networks

After the initial data review, the next critical component of the data review process is to define the full transmission cluster and risk network. Individuals in the transmission cluster and risk network may be known to LAC DPH from PS activity. For example, review of PS data may result in the identification of named partners of persons in the molecular cluster. Therefore, defining the transmission cluster and risk network involves the following steps:

Step 1. For each case newly identified as part of a cluster, the **Epidemiology Analyst** completes a PS data abstraction form (Appendix F). This data review considers information collected/partners elicited during the 12-month timeframe before HIV diagnosis. Data is abstracted into the MS Access Database.

Step 2. Determine the HIV status of each named partner in the risk network. Search in STD CaseWatch, iHARS and eHARS to determine whether each partner is HIV positive, HIV negative, or unknown. Record data in the MS Access database.

- **Step 2a.** If the partner is HIV-negative, record the date of their most recent HIV- test and whether they were referred for PrEP. Each HIV-negative case will be referred to PS for re-testing every 6 months.
- **Step 2b.** If the partner is HIV-positive, determine if they are a “confirmed cluster case,” “possible cluster case,” or “not a cluster case.”

- Confirmed cluster case: HIV positive partner who have a genotype that links them to the cluster (these individuals will also be index cases).
- Possible cluster case: HIV positive partners who do not have a genotype.
- Not a cluster case: HIV positive partners with a genotype that is not linked to the molecular cluster. If they have a genotype and they are not connected to the network, then they will be excluded from the transmission cluster.

Step 3. Complete a PS data abstraction form for any additional confirmed or possible cluster cases identified as part of the transmission/risk network. Repeat Steps 1-3 as needed until there are no additional named partners.

SECTION 4: Review and prioritization of HIV clusters and outbreaks

Once detected, each cluster or outbreak requires critical assessment to determine where additional investigation is needed, and which public health actions should be applied to intervene in future transmission. The CDR workgroup routinely reviews cluster data, prioritizes clusters for follow up action, and tracks clusters during follow up.

Leads: HIV/STD Surveillance Chief, DCS Chief, Medical Director

I. Process for review and prioritization

As described in Section 3.II, Secure-HIV TRACE evaluates sequences for persons with HIV diagnosed in the most recent three years and uses a 0.5% genetic distance threshold for detecting molecular clusters since these clusters represent recent transmission events in the past few years. Priority clusters also have at least five people diagnosed in the last 12 months. Molecular clusters that meet these national priority criteria are considered recent and rapidly growing clusters. The DHSP cluster response workgroup meets at least monthly to review and discuss prioritization of all recent and rapid clusters, and other clusters of concern (e.g., time-space clusters), including both new and previously identified clusters. Our cluster response workgroup includes key health department leadership staff such as the **Medical Director** and **DCS Chief** who are directly involved in decision-making regarding cluster response and prioritization.

Molecular clusters are named using the date they were initially detected plus the cluster ID assigned by HIV Trace. Time-space clusters are named using the date they were initially detected plus 'TS' plus the geographic region in which they are located. This consistent naming approach is important for consistently tracking clusters over time.

As described in Section 3, a cluster includes not just those identified in the molecular cluster but also those in the transmission cluster and risk network. Therefore, critical assessment of the complete cluster includes HIV-infected sex or needle-sharing partners of persons in the molecular cluster plus all HIV-uninfected or HIV-unknown sexual or needle-sharing partners of persons in the identified molecular cluster or their immediate HIV-infected partners.

II. Prioritization of clusters

Once data have been systematically gathered for all persons in the transmission cluster and risk network, an **Epidemiology Analyst** or **Epidemiologist** will synthesize the data to characterize what is known about the transmission network and commonalities between cases. Staff synthesize data into a SAS dataset that feeds into a PowerBI dashboard report for visual analysis. The cluster response workgroup uses various charts, tables, and network visuals available in the PowerBI dashboard to assess the picture of each cluster to assess the level of concern surrounding the cluster. For example, a chart of infectiousness is a useful tool used to determine both the rate of cluster growth and potential for ongoing growth for an individual cluster (see Appendix G). In addition, the workgroup reviews qualitative data from PS interviews on places or venues where individuals report meeting partners, information surrounding drug use, incarceration history, etc. to help define the risk network. Narratives that describe each cluster are also developed. A cluster narrative includes a description of the population and geographic area involved, timing of HIV diagnoses in the cluster, findings related to the likely scope of the transmission cluster and risk network, and any key commonalities or factors pertinent to ongoing transmission in a cluster.

The cluster response workgroup reviews this information to assign a level of concern to each recent and rapidly growing cluster. The workgroup also determines the need to gather additional data and makes decisions regarding the need for enhanced investigation and response. The cluster response workgroup will consider some of the following characteristics related to the potential for ongoing transmission when assessing the level of concern:

- Evidence of a non-traditional demographic compared to our local HIV epidemiology. For example, cases clustered in a geographic area that is typically a low HIV prevalence region, or an increase among IDU or a specific low HIV prevalence demographic group;
- Proportion of cases diagnosed with acute or recent HIV infection. Recent infections could indicate ongoing transmission;
- HIV diagnosing facilities;
- Proportion of cases without evidence of a suppressed viral load;
- Proportion of cases contacted for a partner services (PS) interview;
- Number of cases who inject drugs or have a history of injection drug use;
- Number of cases who report methamphetamine drug use;
- Number of cases who are experiencing or have recently experienced homelessness;
- The presence of other vulnerable and underserved populations in the cluster (experiencing homelessness, transgender women, pregnant women, women engaging in sex work);
- Proportion of cases who are co-infected with syphilis; and
- Total number of claimed partners and the number of anonymous or unnamed partners in the network.

The cluster response workgroup considers the factors listed above and all information gathered about the cluster to assign a level of concern (LOC) to each cluster. The LOCs are defined in Table 2. Ultimately, the assigned LOC will correspond to what actions are taken to intervene in the cluster (see Section 5).

Table 2. Cluster concern levels and characteristics consistent with each level

Level of Concern	Characteristics
Low	Molecular criteria: National priority cluster (molecular cluster identified using a 0.5% genetic distance threshold and have at least 5 new diagnoses in the past 12 months) with little recent activity and does not meet criteria below.
Medium	Molecular criteria: Cluster identified using a 0.5% genetic distance threshold and has at least 8 diagnoses in the past 12 months AND/OR transmission cluster with concerning characteristics such as: <ul style="list-style-type: none"> • includes individuals who are part of a vulnerable or underserved population (pregnant woman, person engaging in sex work, person who injects drugs, person experiencing homelessness, justice-involved people, etc.) • A common venue identified for meeting partners (e.g., bath house, shelter/encampment, specific park). • Low cluster viral suppression, <60%) Time-Space Criteria: Number of new diagnoses in a geographic area (e.g., health district) is greater than 2 standard deviations AND is more than 2 diagnoses above the mean of the 3-year baseline in the past 12 months.
High	Molecular criteria: Cluster identified using a 0.5% genetic distance threshold and has at least 12 diagnoses in the past 12 months AND/OR

	<ul style="list-style-type: none"> • there is clear concern for continued ongoing transmission (high proportion of acute infection and very low cluster viral suppression, <50%) • impact on population groups known to be underserved with high potential for poor outcomes. <p>Time-Space criteria: Number of new diagnoses in a geographic area (e.g., health district) is greater than 3 standard deviations AND is more than 3 diagnoses above the mean of the 3-year baseline in the past 12 months AND there is clear concern for continued ongoing transmission (new diagnoses are recent infections, very low cluster viral suppression, <50%).</p>
Critical	<p>An urgent or emergency-level public health response is needed because there is a sudden, dramatic increase in HIV infections in a specific population or area.</p> <p>Molecular criteria: National priority cluster with at least 15 new diagnoses in the past 12 months with a high proportion of individuals who are vulnerable or part of underserved population (pregnant woman, person engaging in sex work, person who injects drugs, person experiencing homelessness, etc.)</p> <p>Time-space criteria: Number of new diagnoses in a geographic area (e.g., health district) is greater than 5 standard deviations AND is more than 5 diagnoses above the mean of the 3-year baseline in the past 12 months AND a high proportion of individuals who are vulnerable or part of underserved population (pregnant woman, person engaging in sex work, person who injects drugs, person experiencing homelessness, etc.)</p>

III. Tracking and managing clusters

When new information becomes available (for example, from recent PS interviews) or when new cases are added to a cluster, the cluster’s characteristics change over time. Therefore, the DHSP cluster response workgroup reviews these characteristics on a monthly basis. Assessing the LOC is dynamic and largely qualitative process based on the full picture of the cluster; the LOC may be revised as more information becomes available or the situation changes. Because the workgroup is typically working on several priority clusters at any given time, a summary sheet helps provide an overall snapshot of the full picture of priority clusters at any given time. This summary, or “snapshot” helps the workgroup see how the clusters are changing over time and helps prioritize those with greater concern for ongoing transmission. An example of a monthly cluster snapshot is included as Appendix H.

IV. Closing out clusters

For each cluster for which response activities are initiated, a decision will need to be made about when to cease response and tracking. The key factor will be whether transmission in the cluster has been successfully interrupted. When there are no recent diagnoses in the past 12 months, the cluster is closed and no longer included in the monthly cluster assessment. However, if in the future, new diagnoses are linked to this cluster, there is the possibility it could again reach priority status.

SECTION 5: Designing and implementing cluster response plans

Routine public health actions such as partner services, linkage to care activities, and prevention services are the key activities for responding to clusters that meet national priority criteria (i.e., recent and rapidly growing clusters). DHSP will create tailored cluster response plans based on the cluster level of concern. This section describes the process of designing an appropriate response and the range of interventions available.

Leads: Director, DCS Chief, CCS Chief, Medical Director, Associate Medical Director

I. Action planning process

As described in Section 4, the cluster response workgroup considers the information gathered about the cluster to assign a level of concern (low, medium, high, critical) to each cluster at monthly meetings. The level of concern guides what prevention/care actions and cluster-level/population-level actions the cluster response workgroup considers when developing a cluster action plan (see Table 3). Each level of concern builds upon the response actions of the previous level. For example, follow-up actions considered for a high-level cluster of concern include the follow-up actions indicated for low/medium-level clusters of concern as well.

Table 3. Follow-up Actions for Low, Medium, High, and Critical Clusters

Level of Concern	Prevention/Care Actions to Consider	Cluster-level/Population-level Actions to Consider	Staff involved
Low	Critical interventions for PLWH	N/A	Cluster Response Workgroup
Medium	Priority PS, enhanced linkage activities (LRP)	N/A	Regional HD staff, neighboring counties when applicable, CDPH cluster detection and response staff
High	Re-interviews for cluster members	Expand testing to affected population, expand PrEP resources to affected population, expand harm reduction such as syringe exchange if cluster is driven by injection drug use, media/social marketing campaigns to affected community, Health Alerts to providers; see section 5.VI	DHSP Director, key county and community leaders who work with the affected population
Critical	Critical priority activates Incident Command Structure; see Section 6	Critical priority activates Incident Command Structure; see Section 6	LAC DPH leadership, CDPH leadership, CDC project officers

As defined in Table 3, critical interventions for PLWH will be initiated for all clusters meeting national priority cluster criteria. Critical interventions include the following: 1) initiating PS for all persons in the transmission cluster for whom partner services was not already initiated, 2) linkage to HIV care for out of care persons in the transmission cluster, and 3) referring HIV-uninfected persons in the risk network for PrEP and syringe support services, if appropriate. HIV Surveillance initiates case referrals for critical interventions and routes them to DCS using a clustered HIV case follow-up form (Appendix I). Enhanced linkage activities will be considered for individuals in medium or higher clusters. Enhanced linkage activities are conducted by referring out of care cluster cases to the Linkage and Re-engagement Program (LRP; see description of LRP in Section 5.IV). For individuals in high and critical clusters, it may be beneficial to consider a re-interview, or an interview with a different approach, in particular if elicitation of sexual and social contacts was not incorporated in the original interview, and also to better understand the context of risk behaviors.

Clusters of high or critical level of concern have social-structural factors contributing to transmission. Therefore, broader population-level interventions will be considered in addition to targeted individual intervention. Population-based interventions will vary based on the specific factors and circumstances identified through cluster investigation. Table 3 and Section 5.VI provides examples of population-based interventions that the cluster response workgroup will consider during action planning for high and critical level clusters. Other population-based interventions may be appropriate depending on the circumstances of the transmission network.

The cluster response workgroup will be the key staff involved in determining follow-up actions for all clusters. Additional DHSP staff and staff from other agencies may also be included in cluster response when appropriate (Table 3). Developing cluster action plans for newly identified clusters and refining cluster action plans for previously identified clusters will occur at regular monthly cluster meetings. Roles and responsibilities for responding to low and medium-level clusters will be also assigned at regular monthly cluster meetings. In the case of high or critical level clusters, separate meetings with appropriate leadership team members will be necessary to track the progress of enhanced cluster response.

II. Data to guide cluster response

As described in Section 3, a variety of data sources are used to analyze and understand the factors responsible for clusters. In addition to the data gathered and reviewed in the initial stages of cluster investigation (Table 1), the cluster response workgroup continuously works to identify broader factors underlying rapid transmission (e.g., beyond linkage to care, are there common barriers to care that are contributing to people falling out of care?; if diagnosis is delayed, were there missed opportunities where people interacted with medical systems and could have been diagnosed earlier?). To answer these questions, the cluster response workgroup will assign team members to conduct enhanced investigations, as needed. Various data sources are available to help facilitate enhanced investigations, such as:

- Los Angeles County's Department of Health Services' countywide electronic health record system (called ORCHID) for medical chart abstraction
- Los Angeles Homeless Service Authority Homeless Management Information System contains detailed locating information and types of services accessed by persons who have experienced homelessness
- LAC DPH Hepatitis C surveillance database

- LRP database contains client level data and may make clear factors that contributed to delayed testing or suboptimal linkage or engagement in HIV care, and data collected from enhanced interviews.

Assessing the level of concern and determining cluster response is a dynamic process. Understanding of factors driving transmission could change as new information becomes available (for example, from recent PS interviews) or new cases are added to a cluster. As new data is gathered for open/active cluster investigations, an **Epidemiology Analyst** or **Epidemiologist** will update cluster data. Data for molecular clusters are updated at least once a month, following SECURE HIV-TRACE analysis. Updated synthesized information is reviewed during regular cluster response workgroup meetings and follow-up actions for intervention are refined as appropriate.

III. Monitoring cluster response

The **Data to Action team** is responsible for monitoring individual-level interventions for persons in the transmission cluster/risk network. Monitoring is achieved using a tracking table in an MS Access database. Every time a case is referred to the Partner Services team for linkage to care, PS interview, or referral to PrEP, an **Epidemiology Analyst** records the referral action in a 'Follow-Up' tracking table. The action is associated with a date the referral was made. The **PHI manager/ Supervising PHI** and **LRP team lead** are then responsible for updating the 'Follow-Up' table with a final disposition and date of closure after follow-up is complete. Additional notes are also recorded in this table as needed.

In the case of high or critical level clusters, population-level intervention strategies may be implemented, as well as other enhanced intervention activities. The **EHE team lead** is responsible for tracking progress of enhanced cluster response activities and holding the program accountable to their action plan, ensuring that follow-up on the progress of cluster response activities is included in routine meetings.

IV. Directing/re-directing routine program activities for cluster response

Existing HIV prevention and care processes as listed below will be leveraged to support cluster response.

- a. Partner Services: As described earlier, the Partner Services Section, has two units dedicated to HIV Partner Services. Cluster cases are integrated into the workflow of these PHIs. In some cases, a PS interview was not conducted for a newly diagnosed individual because the person was unable to be located or declined to be interviewed. In these circumstances, a PHI will attempt to interview. Depending on the workload and PHI capacity, re-interviewing is performed, primarily on a case-by-case basis.
- b. HIV care interventions: PS will refer clients to Linkage and Reengagement Program if these persons not been located, contacted, or refused services. Additionally, cluster cases who have fallen out of care and are virally unsuppressed may also be referred to LRP. LRP staff specialize in providing linkage-to-care services to the hardest to reach individuals, often accompanying patients to their appointments. Once cluster cases are assigned to LRP, there is a 90-day window during which LRP staff will make attempts to reach that person and link them to care. The LRP is staffed by a team of Health Navigators, Clinical Social Worker, and Senior Clinical Social Worker. They provide intensive case management and longitudinal support to PLWH who are out of care and often face challenging life circumstances and have multiple comorbid mental health or SUD conditions. The LRP defines a person as "linked to care" when they have seen the provider at least once. The LRP provides intensive case

management services for up to 6 months to ensure cases are “retained in care” (i.e., they have seen the provider at least twice), unless the client is pregnant. LRP clients who are pregnant are supported through the pregnancy to ensure a safe delivery and post pregnancy HIV care. Generally, follow-up for cluster cases will be considered resolved once a patient is linked to care.

- c. HIV testing and PrEP: DHSP funds a robust network of clinical and non-clinical partners to conduct 100,000 test events in healthcare and non-healthcare settings on an annual basis. DHSP also has its own HIV/STD test counselors who can be deployed to the response. DHSP will work to notify community and county health care partners who are actively working with high-risk clients or in a geographic area of concern to increase their testing of the affected population (e.g., jail health care services, homeless health care providers, and emergency departments). Existing testing services can be focused to support cluster response to provide testing and PrEP to high-risk partners/associates (e.g., street-based outreach, mobile testing unit, social network strategies, outreach via clinical partners or CBOs, HIV self-tests), sub-groups (e.g., venue-based testing, testing events, adding testing/PrEP services in targeted clinical settings), or populations (e.g., expanding testing/PrEP in clinics, hospitals, jails, CBOs).
- d. Harm reduction: If an identified priority cluster is driven by an injection drug use population, DHSP will work with local county and city agencies to expand harm reduction services, including syringe services and linkage to behavioral health, by working with community funded providers and County DPH Programs. This will include expanded testing opportunities, increased syringe exchange activities, and improved linkage to care for individuals with HIV or interested in PrEP.
- e. Social services: High Impact Prevention Risk Reduction providers, Prevention for Positives services, other community funded providers, LGBT+ community service providers, County programs, housing programs

V. Case Conferences

If needed, DHSP will initiate case conferences for patients who are part of a priority cluster, and based on laboratory data, are not virally suppressed. Case conferences include participation by the **Medical Director** or **Associate Medical Director** as well as key staff from HIV Surveillance and HIV Prevention. An **Epidemiologist** works to curate a list of persons in clusters of concern who are not virally suppressed or haven't had a viral load result in the prior 12 months.

In each case conference, the group does an assessment of the current needs for approximately 5-10 individual cases; and then creates an action plan based on each patient's needs. Typically for these cases, we first follow-up with their last care provider to check if they are already following up with the patient. If the provider has tried to get the patient back into care and failed, the Linkage and Re-engagement Program (LRP) will take on the case. If the provider was not aware of the patient's elevated viral load, we communicate importance of getting the patient back to see a provider as soon as possible. If the patient already has an upcoming appointment scheduled, we will follow-up with the provider to make sure that patient made their scheduled appointment. Senior members of the case conference team work to address structural barriers to care or quality improvement efforts that are identified during the meetings.

VI. Options for enhanced interventions

The **DCS Chief** and **Medical Director** may provide recommendations to the cluster response workgroup of tailored interventions as needed. Cluster investigation data (see Section 5.II) will guide how and when supplemental strategies will be employed. The following enhanced strategies will be considered to target specific gaps in response efforts:

- Create a local alert of outbreak and disseminate throughout community to HIV service providers and other partners who serve affected population.
- Inform DPH and regional health district leadership of outbreak and initiate communication plans and monitoring.
- Develop supplemental questions for Partner Services interviews based on the profile of the risk network. Use data collected to update profile of cluster and to inform actions for outreach and address barriers associated with client's needs.
- Conduct assessments with key informants to collect qualitative information from impacted communities and providers.
- Identify areas in need for field HIV testing. Implement testing plans with DHSP staff and community contracted partners.
- Identify areas and capacity for expanded testing with existing non-contracted healthcare or non-healthcare settings serving population at risk.
- Partner with harm reduction SSP providers and street medicine teams to integrate field-based HIV testing, linkage to PrEP and/or HIV care, and Partner Services.
- Conduct a Social Network Strategy (SNS) testing approach to increase HIV testing across the network.
- Co-locate HIV and STD testing at drug treatment facilities and homeless shelters, based on profile of the risk network. DHSP will train and provide test kits or place test counselors at facilities. If existing testing program is in place, provide technical assistance to enhance risk assessment and follow-up plans.
- Coordinate with emergency departments in the region, to review HIV routine testing, linkage to PS and care, and request brief risk assessments be conducted (document IDU, housing status, locating information, partner information) and documented in patient's chart. Conduct medical chart abstractions, review electronic medical records in ORCHID to assess care for overdoses and infections associated to injection drug use.
- Coordinate with housing providers to offer testing and other linkage services. Conduct informant interviews regarding access to services and injection drug using practices and needs.
- Identify and develop partnerships that can access PWID networks and develop profile of the injection network. Recruit persons who inject to participate in peer outreach and offer incentives to test, and link to PrEP or other medical, drug treatment, and mental health services. Monitor changes in the landscape of services, housing, policies, etc. to adjust outbreak response plans accordingly.
- Conduct phylodynamic analysis to identify emerging clusters and to improve outcomes for identifying missed opportunities to identify cluster associates in need of testing and linkage.
- Develop and implement social media messages, and information dissemination.

VII. Communication planning

Successful implementation of HIV Cluster and Outbreak Detection and Response requires strong communication within and among the Department of Public Health, the State of California, CDC and community stakeholders including HIV care and service providers, community advocacy and resource providers and, most importantly, the HIV positive community. Working in partnership to appropriately communicate the status, impact, and prevention strategies surrounding cluster detection data and activities following privacy and health protection laws is crucial to the success of these activities.

Ongoing engagement with community partners and key stakeholders prior to detecting an outbreak will allow them to understand and ask questions about cluster detection and response activities and may result in more efficient collaborations in an emergency-level response situation. Effective communication may also result in developing new collaborations/relationships or strengthen existing relationships. Such relationships will provide a strong foundation for future cluster response. DHSP's plan for community engagement can be found in Section 2.I.

DHSP has developed and will continue to develop communication tools to have on hand when discussing cluster detection and response activities with various partners, including:

- HIV Cluster and Outbreak Detection and Response Frequently Asked Questions: http://publichealth.lacounty.gov/dhsp/EHE/HIVDetectionResponseQA_Final.pdf
- Community presentations/townhall webinars regarding HIV Cluster and Outbreak Detection and Response

Beyond routine communication efforts, DHSP will also report clusters with a high level of concern to key internal and external partners in preparation for the possibility that the cluster elevates to critical level (outbreak). Depending on the specific factors and circumstances surrounding a cluster of high-level concern, the **HIV/STD Surveillance Chief** (with approval from the DHSP Director) may use the following communication strategies:

1. Inform DHSP Director of the potential outbreak and decide what alerts will be sent out to the community.
2. Inform DPH Disease Control Bureau Director
3. Inform other local health department leaders: Long Beach and Pasadena
4. Inform State and CDC partners
5. Develop a CDC Epi Alert and/or Health Alert
6. Provide regular updates (e.g., weekly) to internal Outbreak Team, DHSP Director and DPH Disease Control Bureau Director
7. Inform all partners if the potential outbreak is no longer a concern and terminate alerts.
8. If the cluster is declared an official outbreak, invoke the communication plan for an escalated response described in Section 6.

SECTION 6: Implementing an escalated response

In cases of more intense or escalated response, needs could surpass routine program capacity, and programs may require flexibility, including redistribution of program funds or enhanced partnerships with traditional and non-traditional partners.

Leads: Director, DCS Chief, CCS Chief, HIV/STD Surveillance Chief, Medical Director

I. Initiating an escalated response

An escalated cluster response will be activated when the cluster response workgroup determines the level of concern to be “critical.” Within one business day of identifying clusters that qualify for an escalated response, the **Data to Action team lead** will initiate a review of data to verify all data that is pertinent to the cluster and complete the review within five working days. The California Department of Public Health (CDPH) will immediately be informed of the signal under investigation and whether the cluster appears to have spread beyond Los Angeles County. Once data verification is complete the DHSP Director will review for approval and to request activation of the Incident Command Structure (ICS) by Department Director, who will identify the Incident Commander. The Incident Commander will communicate to DHSP and DPH leadership and CDPH on plans to activate an escalated response. The Incident Commander will also communicate to CDC within 72 hours of determination to activate the ICS. Communication to all parties will include what is known (i.e., how many cases have been identified thus far, which populations are most at risk, the determining factors that prompted the escalated response), what is not known, the immediate next steps that ICS will take, and how response activities will be monitored and communicated until response resolution. The Incident Commander will also communicate to CDPH and CDC whether they anticipate resources may be needed from CDC.

II. Escalated response options

Table 4 below outlines standard of care requirements and escalated response options for the individual level. Table 5 outlines population-level escalated response options and additional measures to consider in an escalated response. These tables are provided for reference only; specific elements of the escalated response will be tailored on a case-by-case basis, with action plans finalized by the DPH cluster response workgroup. Surge teams, pulling from existing staff within CCS, DCS, and Surveillance, will be activated once an escalated response is called and will be tasked to provide field level and central level monitoring support on these activities. Funding for escalated response plans will be supported through existing grants which have allocated funding for epidemic response activities.

Table 4. Escalated Response Options, Individual-Level

	Standard of care requirements	Individual-level escalated response options
Persons in a priority cluster	<ul style="list-style-type: none"> • Initiate PS for persons for whom PS was not already initiated • Linkage to care for out of care persons in the cluster • LRP activated for hardest to reach individuals in cluster • Provision of condoms and harm reduction services 	<ul style="list-style-type: none"> • Prioritize PS; conduct additional interviews or re-interviews • Fast-track rapid ART • If patient is out of jurisdiction, ensure that counterparts in other jurisdictions are notified to reach the patient for needed interventions
Partners newly diagnosed with HIV	<ul style="list-style-type: none"> • Initiate PS • Linkage to care • Initiate treatment • Perform routine laboratory tests (genotype, CD4, viral load) • Provision of condoms and harm reduction services 	<ul style="list-style-type: none"> • Prioritize PS; conduct additional interviews or re-interviews • Fast-track rapid ART • Counselling • If patient is out of jurisdiction, ensure that counterparts in other jurisdictions are notified to reach the partner for needed interventions
Partners living with HIV, not in care	<ul style="list-style-type: none"> • Initiate PS for persons for whom PS was not already initiated • Linkage to care for out of care persons in the cluster • LRP activated for hardest to reach individuals in cluster • Provision of condoms and harm reduction services 	<ul style="list-style-type: none"> • Prioritize PS; conduct additional interviews or re-interviews • Prevention with positives • Retention case management • If patient is out of jurisdiction, ensure that counterparts in other jurisdictions are notified to reach the partner for needed interventions
Partners living with HIV, in care	<ul style="list-style-type: none"> • Adherence monitoring • Routine laboratory testing (CD4, VL) • Provision of condoms and harm reduction services 	<ul style="list-style-type: none"> • Evaluate adherence • Prevention with positives • If patient is out of jurisdiction, ensure that counterparts in other jurisdictions are notified to reach the partner
Partners who test negative for HIV	<ul style="list-style-type: none"> • Referral to PrEP • Provision of condoms and harm reduction services 	<ul style="list-style-type: none"> • Schedule or perform rapid testing, including RNA test for acute infection • Fast track for same day PrEP • Enhanced counselling • If patient is out of jurisdiction, ensure that counterparts in other jurisdiction are notified to reach the partner for needed interventions

Table 5. Escalated Response Options, Population-Level

Population-level/Cluster-level escalated response options
<ul style="list-style-type: none">• Identify and report on the gaps in service delivery that may be contributing to recent transmission.<ul style="list-style-type: none">• For the populations represented in the molecular cluster: assess coverage of HIV testing services, timeliness of HIV diagnosis (early vs. late), linkage to care, treatment initiation, partner services, viral load testing, PrEP use, housing, harm reduction services, mental health resources.• Hold community-level consultations and mobilize stakeholders to contextualize the above gaps in services and develop targeted outreach programs and community-level interventions for specific populations with high need (e.g., for populations where diagnoses are late, expand testing services that cater to the needs of the population).• Ensure laboratory testing services are available and accessible.• Review baseline laboratory results to assess whether diagnosis is early vs. late.• Ensure strong linkage protocols across sites, including escorted referral, transport reimbursement, home or community-based care models, peer support activities• Availability of highly skilled case managers or navigators for follow-up of patients to ensure they are coming to their appointments, are provided with adherence counselling, and strong U=U messaging• Implement a monitoring system for active follow-up of patients to monitor PrEP use and ensure retesting is completed.
Additional measures
<ul style="list-style-type: none">• In-depth behavioral assessment• Social / risk network testing• Self-test kits• Other biomarker testing• Rapid ART scale-up• Additional biomarker testing: ART resistance testing• In depth analysis of VL dynamics (e.g., durability of VLS)• Community level consultations and interventions• Develop a targeted communication strategy for affected population groups• Strengthen local partnerships• Reallocation of resources• Request CDC assistance

The following considerations will be used to determine completion of escalated response activities:

- Are HIV care and prevention services available and easily accessible in the cluster location?
- Have all persons in the cluster had Partner Services initiated?
- Have persons with new diagnoses been identified through Partner Services been linked to care and initiated on ART?
- Have all persons in the cluster without evidence of viral suppression been successfully linked/re-linked to care?

- Have persons in the risk network been tested/re-tested and referred for PrEP intervention where warranted?
- Has transmission been successfully interrupted?
- Has a follow-up plan been discussed with local service providers on persons in the cluster?

III. Communicating during an escalated response

An Incident Command Structure will be activated to monitor an escalated response until resolution. Unless otherwise directed by the Department Director, the DHSP **Medical Director** (or designee) will serve as the **Incident Commander** providing oversight over all public health action and communication pertaining to the escalated response. Under the Incident Commander, leads from CCS, DCS, and Surveillance will provide oversight on the clinical, programmatic, and monitoring and evaluation components of the response, respectively. A communication team will also be established to convey messages and ensure transparency during all stages of the response. The communication team will develop specific communication messages based on the characteristics of the cluster and objectives of the escalated response. Prior to disseminating the messages, the team may pilot the key messages by sharing them with select community partners and other stakeholders for feedback. The team will also inform the media team on communication messages in preparation for possible media requests on the escalated response.

Leads will communicate updates to the Incident Commander who will communicate to the DHSP and DPH leadership. The Incident Commander will lead a briefing with cluster response workgroup at least three times a week in the acute phase in the response. More frequent briefings may be conducted, if needed. In these briefings the Incident Commander will lead a review of clinical, programmatic and data updates on the response activities, address notable issues and/or areas in need of urgent action, and report to higher-level leadership on a regular basis on status of response.

In addition to internal communication, continuous communication and transparency during all steps of the response to external stakeholders will be critical to ensure success in the escalated response efforts.

- Communication with other local health jurisdictions: The Incident Commander should contact other Southern California health jurisdictions to identify any similar patterns and coordinate response if needed. Information and resources should be shared as needed.
- Communication/Consult with the California Department of Public Health (CDPH): The Incident Commander should contact CDPH to identify any similar outbreaks that may be occurring in other counties within California. CDPH should be made aware of the decision to declare an escalated response in LAC. Ongoing communication should occur with CDPH to keep them informed and CDPH should be involved in any communication that occurs with the CDC.
- Communication/Consult with the CDC: The Incident Commander will ensure CDC is aware of the decision to declare an escalated response in Los Angeles County, will keep CDC partners informed of the progress of the escalated response, and will immediately notify CDC if any federal assistance is needed.
- Communication with Stakeholders:
 - Discuss the response plan with key persons from affected communities in the local area.
 - Inform public health officials, health care providers, clinical and laboratory managers, affected communities, and the media of the escalated response and outline the response plan.
 - Discuss with CBOs the ways they can assist with disease control and prevention efforts.

IV. Staff training for escalated response

Staff within DHSP's CCS, DCS, CQM, and Surveillance as well as staff from other parts of DPH (ex: Community Field Services, Clinical Services) will be placed on surge teams that will implement the escalated response. As part of DPH policy, these staff will already be trained on data security and confidentiality, stigma, and cultural competence. In addition, staff will be cross trained on cluster detection and response and incident command. Specific trainings that will enhance the quality of the programmatic response (e.g., refreshers on PS, LRP, PrEP, rapid ART, testing) and the use of data for communication and decision-making will be provided based on identified needs.

SECTION 7: Monitoring and evaluation of cluster response activities

Leads: Research and Evaluation Chief, HIV/STD Surveillance Chief, Medical Director

I. Monitoring a cluster or outbreak response

The cluster response workgroup utilizes a data dashboard that provides cluster data updated monthly. Each month, a cluster snapshot (see Appendix H) includes the following:

- Total number, size and cluster IDs of new clusters that meet priority criteria and newly identified during the reporting period
- Total number and growth of old clusters that LAC continues to monitor and growth of these clusters

Data streams feeding into the data dashboard includes HIV case surveillance data, HIV partner services data, medical chart review, Ryan White program data, HIV testing data, and STD surveillance data. Additional data will be collected during an escalated response and may include line list data from providers, investigation worksheets, targeted bio-behavioral surveys, qualitative assessments, and supplemental reports. The list of indicators that are monitored for each priority cluster includes the following. Refer to Appendix G for example from the dashboard.

- Number, percent of cluster members who are: acute HIV infections, co-infected with STD, homeless, using illicit drugs, were reached by PS, initiated PS services, linked to care, initiated treatment, out of care, re-linked to care, virally suppressed
- Number, percent of partners of cluster members that were elicited, contacted, tested/re-tested (if not known positive)
- Number, percent of HIV+ partners newly identified, acutely infected, linked to care, initiated treatment, virally suppressed, durably suppressed
- Number, percent of HIV- partners referred to PrEP, initiated on PrEP
- Of all partners of transmission cluster members who were not known to be HIV positive at the time of cluster identification, percentage tested or re-tested within 6 months of identification as part of the risk network. *(Required indicator for PS 18-1802 Reporting)*
- Of all partners of transmission cluster members who were determined to be HIV-negative and not on PrEP, percentage referred for PrEP within six months of identification as part of the risk network. *(Required indicator for PS 18-1802 Reporting)*

Data will be monitored and reported routinely to the DPH cluster response working group. The working group will use this data to assess whether control and prevention measures are reducing transmission in priority clusters. Where there is evidence of ongoing transmission, the cluster response will be evaluated and redirected, as needed, to ensure effectiveness. If there is continued evidence of ongoing spread despite redirection of interventions, the cluster will be reviewed to assess whether it has met the criteria for activating an escalated response.

The **Data to Action team lead** is responsible for ensuring that LAC reports analysis, investigation, and intervention results to CDC for all clusters of concern quarterly using the cluster investigation worksheet. The **Data to Action team lead** is also responsible for ensuring that cluster information has been reported in eHARS prior to worksheet submission each quarter. Reporting cluster data in eHARS will allow for calculation of the following indicator:

- Of all HIV-positive persons in transmission clusters who were not known to be virally suppressed at the time of identification as part of the cluster, percentage that achieved viral suppression within six months of identification as part of the cluster. (*Required indicator for PS 18-1802 Reporting*)

II. Evaluation of cluster and outbreak response

A standardized monitoring and evaluation (M&E) reporting process will be implemented to evaluate the response for clusters of high or critical concern. Following cluster close-out, the following indicators will be included in the M&E report and where appropriate, documented and reported to stakeholders.

- Process Evaluation and Performance Indicators:
 - Summary of cluster members including total number of members, demographics, geographic distribution, and risk factors
 - Summary of control measures implemented
 - Identification of barriers and facilitators
- Outcomes of the Cluster Investigation and Response
 - Short term outcomes/indicators: increased case identification, linkage/re-linkage to PrEP, linkage/re-linkage to care, and VLS through intensive public health follow-up by local staff
 - Medium term outcomes: reduction of new infection and new diagnoses due to successful intensive public health follow-up by local staff
 - Long term outcomes:
 - i. reduced incidence
 - ii. more successful local disease intervention from institutionalizing processes, strategies, and best practices

Additional program and outcome evaluation data will be monitored by the cluster response working group to inform the cluster detection and response plan. DHSP leads may conduct open forums with staff and with community engagement groups to evaluate specific cluster response efforts and determine intervention effectiveness and document lessons learned. Where process indicators highlight performance deficiencies, the cluster response workgroup will review staff performance, program performance, and quality of interventions to ensure that the public health response is appropriate, of high quality, and redirected as needed.

Evaluation findings may be disseminated in various forms, including internal reports to DPH and DHSP leadership, posting of a summary report on the Public Health Ending the HIV Epidemic (EHE) in Los Angeles County website and presenting main findings to community partners, including the Commission on HIV and EHE Steering Committee, and other meetings involving community stakeholders involved in the local HIV response.

Glossary/Abbreviations

ART	Antiretroviral therapy
CCS	Contracted Community Services. A section within DHSP with oversight of over 60 contracted agencies providing HIV and STD services for Los Angeles County residents.
CDC	Centers for Disease Control and Prevention
CDPH	California Department of Public Health
DCS	Direct Community Services. A section within DHSP which provides HIV/STD partner services and linkage to care.
DHSP	Division of HIV and STD Programs. The program within LAC DPH which houses HIV/STD surveillance, clinical, and prevention activities.
eHARS	Electronic HIV/AIDS registry system. National HIV/AIDS surveillance system.
EHE	Ending the HIV Epidemic
Genetic distance threshold	The level of genetic similarity used to identify closely related pairs of sequences. The genetic distance threshold used can vary based on the goal of the analysis.
HIV-TRACE	HIV TRANsmission Cluster Engine. A bioinformatics tool developed by researchers at the University of California, San Diego to analyze nucleotide sequences and identify clusters representing recent and rapid transmission. A secure local installation of HIV-TRACE at CDC is used to run routine analyses on local surveillance datasets
HD	Health district. There are 26 health districts in the county.
ICS	Incident command structure (will be activated to monitor escalated cluster response)
IDU	Injection drug user
LAC DPH	Los Angeles County Department of Public Health
LAC COH	Los Angeles County Commission on HIV (local Ryan White planning council)
LOC	Level of concern, assigned to each cluster
LRP	Linkage and Re-engagement Program. Specialized program to engage clients who require navigation support to enter or reenter into HIV medical care.
MHS	Molecular HIV Surveillance. A component of the National HIV Surveillance System. CDC funds selected state and local health departments to conduct molecular HIV surveillance activities.
MSM	Men who have sex with men
MSM/IDU	Men who have sex with men and inject drugs
National priority cluster	A molecular cluster that has met certain criteria and which should be flagged for preliminary investigation. Currently, CDC-defined priority clusters for high and medium morbidity jurisdictions are clusters identified at a 0.5% genetic distance threshold with ≥ 5 cases in the most recent 12-month period. Analyses of clusters meeting the abovementioned criteria indicates similar transmission rates that are approximately 7 - 8 times greater than the transmission rate among HIV infected individuals in the US.
PDR	Planning, Development and Research section in DHSP.
PHI	Public health investigators, equivalent to Disease Investigation Specialists (or DIS) in other jurisdictions
PLWH	People living with HIV
PS	Partner services
PrEP	Pre-exposure prophylaxis

Ryan White HIV/AIDS Program SAPC STD CaseWatch	Provides a comprehensive system of care that includes primary medical care and essential support services for people living with HIV who are uninsured or underinsured. Substance Abuse Prevention and Control, a program in LAC DPH. Includes data from all HIV PS interviews as well as STD PS interviews
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Acknowledgements

This plan was prepared by Kathleen Poortinga, Sonali Kulkarni, Kwa Sey, Maggie Esquivel, Julie Tolentino, Brian Valencia, Wendy Garland, Rebecca Cohen, Virginia Hu, Alex Serrano, Megan Foley, Sameh Mansour, and Mario J. Pérez of the Division of HIV and STD Programs, County of Los Angeles, Department of Public Health.

List of Appendices

Appendix A: Los Angeles County Partner Services Protocol

Appendix B: DHSP Outbreak Response Staff List

Appendix C: Data Sharing Agreements

Appendix D: Draft SOP for Time-Space Cluster Detection

Appendix E: Flow Chart for HIV Cluster Investigations

Appendix F: Partner Services Data Abstraction Form

Appendix G: Chart of Infectiousness and Cluster Data Visualizations

Appendix H: Active Clusters Snapshot

Appendix I: Clustered HIV Case Follow-up Form