HIV Cluster and Outbreak Detection and Response Plan

The OC Health Care Agency

Clinical Services Division, HIV Planning and Coordination

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Introduction

Human immunodeficiency virus (HIV) continues to be a significant public health concern in Orange County. Since the beginning of HIV reporting in 1981, the OC Health Care Agency (HCA) has documented 14,637 newly diagnosed HIV infections.

Approximately 7,044 individuals in Orange County are aware they are living with HIV, while an estimated 1,137 individuals remain undiagnosed. Since 2014, the HIV transmission rate has declined by 36.7%. However, concurrent diagnoses suggest gaps in early testing and engagement in care. Most individuals diagnosed with HIV receive care, but retention in HIV care declines across the HIV continuum of care. Most individuals who initiate treatment achieve viral suppression; however, some groups have lower rates of viral suppression. Disparities exist among demographic groups, with some populations experiencing lower rates of care retention. Despite a decrease in the HIV transmission rate by 36.7% since 2014, disparities persist across different demographics. African Americans/Blacks and Hispanics continue to be disproportionately affected by HIV. Males represent most cases, although there is a noticeable rise in cases among females and transgender individuals.

Orange County's Integrated HIV Prevention and Care Plan for 2020-2026 provides an overview of the current landscape of HIV services in the county and identifies goals and strategies to make progress towards ending the HIV epidemic. The Integrated Plan addresses the HIV Care Continuum including those that are at high risk for HIV and aligns with the goals outlined in the National HIV/AIDS Strategy (NHAS) for 2022-2025.

This plan reflects a shared commitment to rapid response, collaboration, and health equity in addressing HIV clusters and outbreaks. We acknowledge the continued contributions of all partners in strengthening our public health response and ensuring the well-being of our communities.

Cluster Definition and Identification:

A cluster is a group of HIV cases that occur close in time and location and may share common characteristics or risk factors. An alert is triggered when new diagnoses exceed two standard deviations above the historical average and are more than four cases above this average. A "cluster" is a group of related health events, while an "outbreak" occurs when these events exceed expected numbers in an area or group over time.

Healthcare providers, laboratories, and relevant entities must report suspected HIV cases to HCA within seven (7) days, including patient demographics, clinical information, and lab results. Early reporting is crucial for timely investigations and responses.

Methods for Detecting Clusters:

- **Community Notification:** Increases in HIV diagnoses among specific groups noticed by medical providers, public health staff, or community members.

- **Data Analysis:** Surveillance data analyzed by the Centers for Disease Control and Prevention (CDC), California Department of Public Health Office of AIDS (CDPH OA), and HCA to identify areas with rising HIV diagnoses.
- **Molecular Data:** Analysis of genotype sequences to identify transmission clusters, often revealing larger clusters than initially detected.

This plan outlines procedures to detect and respond to potential HIV clusters and outbreaks in Orange County. Rapid detection and effective response are essential to prevent further transmission and protect public health. The plan aligns with local, state, and federal HIV surveillance and outbreak control guidelines, serving as a program-level document to guide detection and response efforts.

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

Effective internal collaboration is critical for the successful detection and response to HIV clusters and outbreaks.

Staff Roles and Responsibilities:

- **HCA Chief Medical Officer:**
  - Designated Incident Commander.
  - Lead overall response efforts and coordinate with local, state, and federal health authorities.
  - Establish a command center for outbreak management.
  - Implement protocols for increased testing, treatment, and prevention strategies.
  - Allocates necessary resources, including personnel and medical supplies.
  - Monitors and analyzes outbreak data to inform decision-making.
- **Program Supervisor:**
  - Receives and reviews initial reports of suspected HIV cases from CDPH.
  - Oversees training for staff and partners on HIV surveillance and response protocols.
  - Coordinates internal communication and ensures adherence to the response plan.
  - Monitors and evaluates the effectiveness of response strategies.
- **Senior Epidemiologist:**
  - Provides monthly and annual reports on cases by mode of transmission and women of childbearing age to the Program Supervisor.
  - Conduct annual analysis using the 2 standard deviations method to identify categories that exceed the expected threshold.
  - Analyzes surveillance data to identify potential clusters.
  - Reviews the list of potential clusters provided by the State Office of AISDS and assists in prioritizing them for further investigation by the program supervisor.
  - Verifies new HIV cases reported by the state and escalates unreported cases to public health disease investigators.
- **Public Health Disease Investigators:**
  - Conduct interviews with PLWH to trace transmission of HIV.
  - Identify and notify contacts of potential exposure to HIV.
  - Collects and manages epidemiological data related to the outbreak.
  - Perform investigations to gather information on the outbreak's spread.

Reporting Requirements:

Reporting requirements can be found on the Confidential Morbidity Report (CMR), and should include patient demographics, clinical information, and laboratory results.

Data:

It is imperative that robust data sharing protocols are established to facilitate the analysis necessary for detecting HIV clusters. Key data sources include the Enhanced HIV/AIDS Reporting System (eHARS), California Reportable Disease Information Exchange (CalRedie), Cerner, Local Evaluation Online (LEO), and HIV Care Connect (HCC) . The Data Usage Agreement is updated every five (5) years, including laboratory results, patient demographics, clinical details, and other pertinent data. Data is communicated to the public through email and the OC Health Care Agency (HCA) website.

By ensuring clear roles, timely reporting, and continuous capacity building, the internal collaboration framework aims to facilitate rapid and effective responses to HIV clusters and outbreaks.

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

Key Collaborations

Community-Based Organizations (CBOs) provide essential support, education, and outreach within affected communities. Healthcare providers engage in real-time communication and data sharing to ensure a prompt response. Ending the HIV Epidemic Initiative (EHE) funding supports HIV cluster and outbreak response activities.

Engagement with Healthcare Providers

Healthcare providers play a critical role in outbreak management. Regular communication is established with medical professionals through health alerts and the HCA website, ensuring they have the latest information, testing guidelines, treatment recommendations, and resources.

Data Sharing and Collaboration

HCA's HIV Surveillance Program actively collaborates with local healthcare providers, laboratories, and community organizations throughout the outbreak response. Data sharing agreements are reviewed every five (5) years to ensure timely access to relevant information while safeguarding patient privacy and data security.

Partnerships and Stakeholder Engagement

The health department actively engages with a network of stakeholders, including healthcare providers, laboratories, community-based organizations, advocacy groups, and local government agencies. Collaborative relationships are established to ensure seamless information exchange, resource allocation, and coordinated response efforts.

Message Development

HCA’s Public Health Services (PHS) Messaging Group works closely with health experts to develop clear and concise messages that convey important information about the outbreak. These messages are tailored to various audiences, including the public, healthcare providers, affected communities, and at-risk populations.

Channels of Communication

A multi-faceted approach to communication is employed, utilizing various channels to reach different segments of the population. Press releases and statements are issued by PHS Messaging to provide official information to local media outlets, ensuring accurate reporting. HCA maintains a dedicated webpage with updated information about the outbreak and uses social media platforms to share information, engage with the public, and address questions and concerns. Health alerts are released to all providers via email. Town hall meetings, webinars,

and community events are organized as deemed appropriate to provide face-to-face interaction and address community concerns.

Cultural Sensitivity

Recognizing the diverse population of Orange County, communication efforts take cultural sensitivity into account. Messages are tailored to resonate with various ethnicities, languages, and cultural norms to ensure information is accessible and relevant to all.

Managing Misinformation and Disinformation

A proactive strategy to counter misinformation and disinformation will be implemented. Common misconceptions are addressed, and accurate information is provided to dispel rumors and myths that can hinder effective response efforts.

Section 3: Detecting and Describing HIV Clusters and Outbreaks

HCA maintains a robust surveillance system for monitoring HIV cases. This system relies on a network of reporting entities that collect demographic, clinical, and laboratory data from healthcare providers, laboratories, and other entities. This data is securely stored and regularly analyzed to identify trends and potential clusters of HIV cases. The objective of this surveillance system is to facilitate the early detection of any unusual increases in HIV cases, which could potentially signify the presence of a cluster or outbreak.

Time-Space Clusters

Time-space clusters are performed by the Senior Epidemiologist and sent to the Program Supervisor for further review. The Program Supervisor performs an investigation to identify whether it is a new case and possibly epidemiologically linked.

Molecular Cluster Testing

The State Office of AIDS performs molecular cluster testing and sends the Program Supervisor alerts via secured email. Once HIV is reported, the case goes to the Senior Epidemiologist who reviews and verifies if it has already been reported in the database. If it is not a reported case, it is escalated to a public health investigator.

Reporting Requirements

Healthcare providers and laboratories are required to report suspected or confirmed cases of HIV to the HCA within seven (7) days through The Enhanced HIV/AIDS Reporting System (EHARs) and CalREDIE. The reports include comprehensive demographic information, clinical data, and laboratory results of the diagnosed cases. The information contained in this dataset forms the foundation for the department's surveillance activities.

Data Storage and Analysis

The collected data is securely stored in a centralized state database maintained by the California Department of Public Health called eHARS. This database is regularly updated at the local level to ensure that the most current information is available for analysis. The department uses data analytics techniques, such as time-space clustering and genotyping, to identify patterns, trends, and potential clusters of HIV cases. Statistical methods and algorithms are utilized to compare current case numbers with historical data and expected rates, helping to identify any deviations that warrant further investigation.

Data Analysis and Visualization

The HIV Surveillance Program within HCA is responsible for regularly analyzing the collected HIV case data, which includes information on demographics, clinical characteristics, geographic location, and risk factors. Trend monitoring involves comparing current case numbers to historical data and expected rates. Geographic information system (GIS) technology is

employed to visualize the geographic distribution of HIV cases by HCA's Senior Epidemiologist. Mapping the cases helps identify spatial patterns that might suggest the existence of localized clusters. The Senior Epidemiologist compares the observed distribution with expected spatial patterns to identify areas where the disease burden is significantly higher than normal.

Epidemiological Examination

Beyond numerical patterns, the HIV Surveillance Program examines epidemiological characteristics shared by cases within a potential cluster, including common risk factors, transmission modes, and demographic profiles. A cluster might be characterized by cases that share certain characteristics or behaviors, indicating a potential common source or mode of transmission.

Reporting Entities Communication

The HIV Surveillance Program maintains open lines of communication with reporting entities to provide guidance, answer questions, and address any concerns related to the reporting process. Feedback from reporting entities is valuable in refining the reporting mechanisms and ensuring accurate and complete data collection.

Regular Data Analysis and Cluster Identification

Regular data analysis is performed by the Senior Epidemiologist and Program Supervisor to identify potential HIV clusters. Clusters are identified based on criteria such as a higher-than-expected number of cases within a specific time or geographic area or cases sharing certain risk factors. Statistical methods and algorithms are employed to aid in the identification of clusters.

Cluster identification is a pivotal step in HCA's HIV Surveillance Programs' efforts to detect potential HIV outbreaks. It involves the systematic analysis of HIV case data to identify patterns and anomalies that may indicate the presence of a cluster of cases. The program uses statistical methods and epidemiological investigation techniques to distinguish routine fluctuations from significant increases in cases that warrant further scrutiny.

Section 4: Review and Prioritization of HIV Clusters and Outbreaks

Review Process

The review process involves the Senior Epidemiologist who reviews data, performs time-spatial analysis, and sends summary reports to the Program Supervisor. The Program Supervisor then reviews alerts and escalates to the outbreak response team if necessary.

Prioritization Criteria

Clusters with unusual clinical, laboratory, or geographic characteristics are prioritized. A case is considered of public health importance if it meets at least one of the following CDC-established criteria:

- Clusters of unusual clinical, laboratory, or geographic occurrences with potential public health significance.
- Possible unusual transmission circumstances with scientific evidence to confirm or refute the transmission possibility.
- Cases without detectable antibody response on standard testing.
- Cases of HIV-2 and non-B subtypes in the United States.
- Infections in children (under 13 years) not attributed to perinatal mother-to-child exposure.
- Pregnant women.

Collaboration and Multidisciplinary Approach

Cluster identification involves internal collaboration among epidemiologists, medical professionals, and other public health experts. Their combined expertise ensures a comprehensive assessment of the data and a well-rounded perspective on the potential significance of identified clusters.

Identifying a Cluster

Using advanced data analysis techniques and epidemiological investigation methods, HCA's HIV Surveillance Program aims to identify potential HIV clusters accurately and precisely. This proactive approach enables prompt responses to situations that may lead to outbreaks, preventing further transmission and safeguarding community health.

When a potential cluster is identified, an investigation is launched by the Program Supervisor to confirm whether an outbreak is occurring. This involves a thorough analysis of epidemiological,

clinical, and laboratory data. The Program Supervisor collaborates with medical professionals and other experts to determine whether the cluster meets the criteria for an outbreak.

Closing a Cluster

Transmission cluster investigations are closed if there has not been a net increase in the size of the cluster for three (3) months, and if the characteristics of the cluster no longer meet criteria for an alert. Additionally, to close a cluster investigation, there must be no active action items or follow-up issues. Closure of the investigation is subject to approval by the CDPH State Office of AIDS, which ensures all necessary criteria are met. Once approved by CDPH, the cluster is no longer actively monitored and will only be re-evaluated if they meet the criteria for an alert.

Section 5: Designing and Implementing Cluster Response Plans

Response Team Activation

When a potential HIV outbreak is confirmed following cluster identification, HCA's HIV Surveillance Program activates an outbreak response team. This multidisciplinary team comprises highly trained professionals from various fields, each bringing their expertise to manage and mitigate the outbreak effectively.

Composition of the Response Team

The outbreak response team includes individuals with diverse skills and roles essential for a comprehensive response, typically including:

- **Epidemiologists:** Lead data analysis and surveillance activities to understand the outbreak's extent and characteristics.
- **Medical Professionals:** Provide clinical guidance, medical treatment protocols, and patient care.
- **Program and Division Managers:** Coordinate overall response efforts, liaise with other government agencies, and oversee resource allocation.
- **Communication Specialists:** Handle public relations, media outreach, and ensure clear and accurate information dissemination to the public.
- **Laboratory Experts:** Ensure efficient and accurate testing, analysis, and reporting of laboratory data.
- **Community Engagement Representatives:** Establish connections with affected communities, community-based organizations, and stakeholders to ensure culturally sensitive response strategies.

Roles and Responsibilities

Each team member has clearly defined roles and responsibilities to ensure effective collaboration and coordination, encompassing various aspects of outbreak management:

- **Surveillance, Data, and Quality Management:** Epidemiologists analyze data to understand the outbreak's progression, identify key trends, and ensure data quality.
- **Case Investigation/Management:** Public Health Nurses and Investigators identify potential sources of disease, contacts, and provide education on control measures.
- **Contact Investigation:** Public health staff coordinate efforts to contact exposed individuals, offering testing and guidance.

- **Logistics:** Public health staff manage the allocation of resources such as personnel, medical supplies, and testing kits.
- **Communication:** PHS Messaging develop accurate and timely messages for the public, healthcare providers, and stakeholders.
- **Evaluation for Rapid Anti-Retroviral Therapy (Rapid ART):** Staff provide expedited coordination for diagnosed individuals to ensure effective linkage and treatment initiation.
- **Specimen Collection:** Nurses and Medical Assistants provide timely collection of specimens for lab testing.
- **Laboratory Coordination/Liaison:** Lab experts oversee testing procedures, quality assurance, and efficient data sharing.
- **Community Engagement:** Representatives establish trust within affected communities, ensuring their concerns are addressed.
- **Provider Hotline:** Health care workers provide consultation and guidance to medical providers.

Cluster response activities are guided by epidemiologic data and shared with local stakeholders and the community. Priority clusters are matched with STD and HCV registries to check for STD/HCV history, partner services, PrEP history, and pregnancy status. Critical information needed to assess the clusters includes:

- Factors contributing to transmission,
- Partner services outcomes,
- Viral suppression data,
- Changes to the provision of HIV prevention services,
- Housing status, and
- Drug use.

Investigation Triggers

Data analysis identifying a cluster exceeding CDPH thresholds or exhibiting unusual patterns triggers a formal investigation by the outbreak response team. This involves more in-depth data collection and analysis to determine the cluster's significance and whether it constitutes an outbreak.

Section 6: Implementing an Escalated Response

Escalation Process

The criteria are determined by the Designated Incident Commander and consider rapid transmission rates, high case numbers, and the involvement of vulnerable populations, which may trigger an escalated response. In such cases, coordination involves senior health officials and internal and external partners to manage the escalated responses effectively.

Decision-Making Process

The response team employs a collaborative decision-making process, ensuring all perspectives are considered before making critical decisions. The Designated Incident Commander makes the decision to escalate an outbreak in collaboration with PHS messaging, the program manager, and the medical director. This approach fosters efficient response strategies that align with the goals of containment, mitigation, and prevention.

Thresholds and Indicators

The program follows thresholds and indicators established by CDPH to guide the identification of potential clusters. These thresholds are informed by historical data, population demographics, and established benchmarks. An unusually high number of cases within a short period or a specific geographic area may trigger further investigation.

Intensified Testing and Treatment

In response to a confirmed outbreak, the department intensifies HIV testing and treatment efforts, conducts targeted contact tracing, and increases public awareness campaigns to promote safe practices. Early detection through testing allows for prompt initiation of treatment, reducing the viral load and the potential for further transmission.

Contact Tracing and Notification

Contact tracing becomes a pivotal component of the outbreak response. Public Health Investigators and Epidemiologists work diligently to identify and reach out to individuals who may have been in close contact with confirmed cases. These individuals are provided with information about the outbreak, advised to get tested, and offered guidance on reducing the risk of transmission. Contact tracing helps break the chain of transmission by identifying and isolating potential new cases.

Public Awareness and Communication

Clear and accurate communication with the public is vital to manage public perceptions and provide guidance during an outbreak. PHS Messaging disseminates information about the outbreak, prevention measures, testing options, and available resources. This helps reduce anxiety, combat misinformation, and encourage cooperation.

Resource Allocation and Coordination

During outbreak management, resource allocation is crucial. The response team ensures adequate medical supplies, testing kits, personnel, and healthcare facilities are available to manage increased demand. Efficient coordination among departments, agencies, and organizations optimizes resource utilization.

Section 7: Monitoring and Evaluation of Cluster Response Activities

Monitoring a Cluster or Outbreak Response

After an outbreak response, an evaluation is conducted to assess the effectiveness of the measures taken. This evaluation identifies successes and areas for improvement. Data analysis helps evaluate intervention effectiveness, identify improvement areas, and inform future outbreak response plans.

Plan Maintenance

The Cluster and Outbreak Response Plan is reviewed and updated annually to incorporate new information, technological advancements, and best practices in HIV surveillance and outbreak control.

Ongoing Data Analysis and Assessment

Throughout the outbreak management phase, the Senior Epidemiologist analyzes data to monitor the outbreak's progression, evaluate the impact of response strategies, and identify any changes in transmission patterns. This ongoing assessment allows for necessary adjustments to the response efforts.

Evaluation and Adaptation

Communication efforts are continuously evaluated for their effectiveness by PHS Messaging. Effective communication ensures that accurate information reaches the public, empowering them to take necessary precautions, seek testing and treatment, and contribute to outbreak containment. Building public trust through transparent communication encourages community collaboration and enhances the overall response to the HIV outbreak.

Collaboration and Long-Term Support

Collaboration with affected communities remains paramount throughout outbreak management. The response team works closely with community leaders, organizations, and individuals to address their needs and concerns. Support services may be provided to help affected individuals access medical care, mental health resources, and social services.

Through targeted interventions, resource allocation, data analysis, and community engagement, HCA's outbreak management strategies aim to effectively control the spread of HIV.

Primary point of contact for this plan:

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