

HIV Cluster Detection and Response

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Objectives

- Describe HIV cluster detection methods.
- Describe current HIV clusters in West Virginia.
- Discuss the HIV Cluster Detection and Response Plan.

HIV Cluster Detection: Provider/Agency Identified

- If a health care provider or agency identifies an increase or cluster of cases, the information is reported via Case Report Forms to the HIV Surveillance Program.
- The case report forms are reviewed for completeness. If data is missing, the HIV surveillance staff will contact the provider and complete the form over the phone.
- The case(s) is then entered in the Enhanced HIV/AIDS Reporting System (eHARS). If it is a newly diagnosed case, it is then also entered in the West Virginia Electronic Disease Surveillance System (WVEDSS), and an HIV investigation is created and assigned to a Disease Intervention Specialist (DIS) supervisor for field follow-up for partner services.
- DIS supervisors review each newly assigned HIV investigation and assign it to an appropriate field DIS within their region.

- Once the patient(s) has been interviewed and the partners have been located, informed of their potential exposure, and tested, the DIS interview record and partner field records are reviewed by the DIS supervisor for completion.
- The DIS supervisor informs the HIV surveillance epidemiologists of the completed document. The HIV surveillance epidemiologists enter the HIV partner services interviews into eHARS.
- The HIV Surveillance Program will determine if the surveillance data supports what the provider or agency feels they are seeing locally. If surveillance data supports the provider/agency's report and a valid cluster is believed to be identified, a cluster outbreak response workgroup meeting will be scheduled to review the cluster.

HIV Cluster Detection: Partner Services

- If DIS identifies an increase in or cluster of cases, the DIS will submit field records and interview records and alert the DIS Supervisor.
- The DIS Supervisor will notify and share information with the HIV Surveillance Program to determine if surveillance data supports what DIS suspect they are seeing in their region.
- If surveillance data supports DIS findings and a valid cluster is believed to be identified, a cluster outbreak response workgroup meeting will be scheduled to review the cluster.

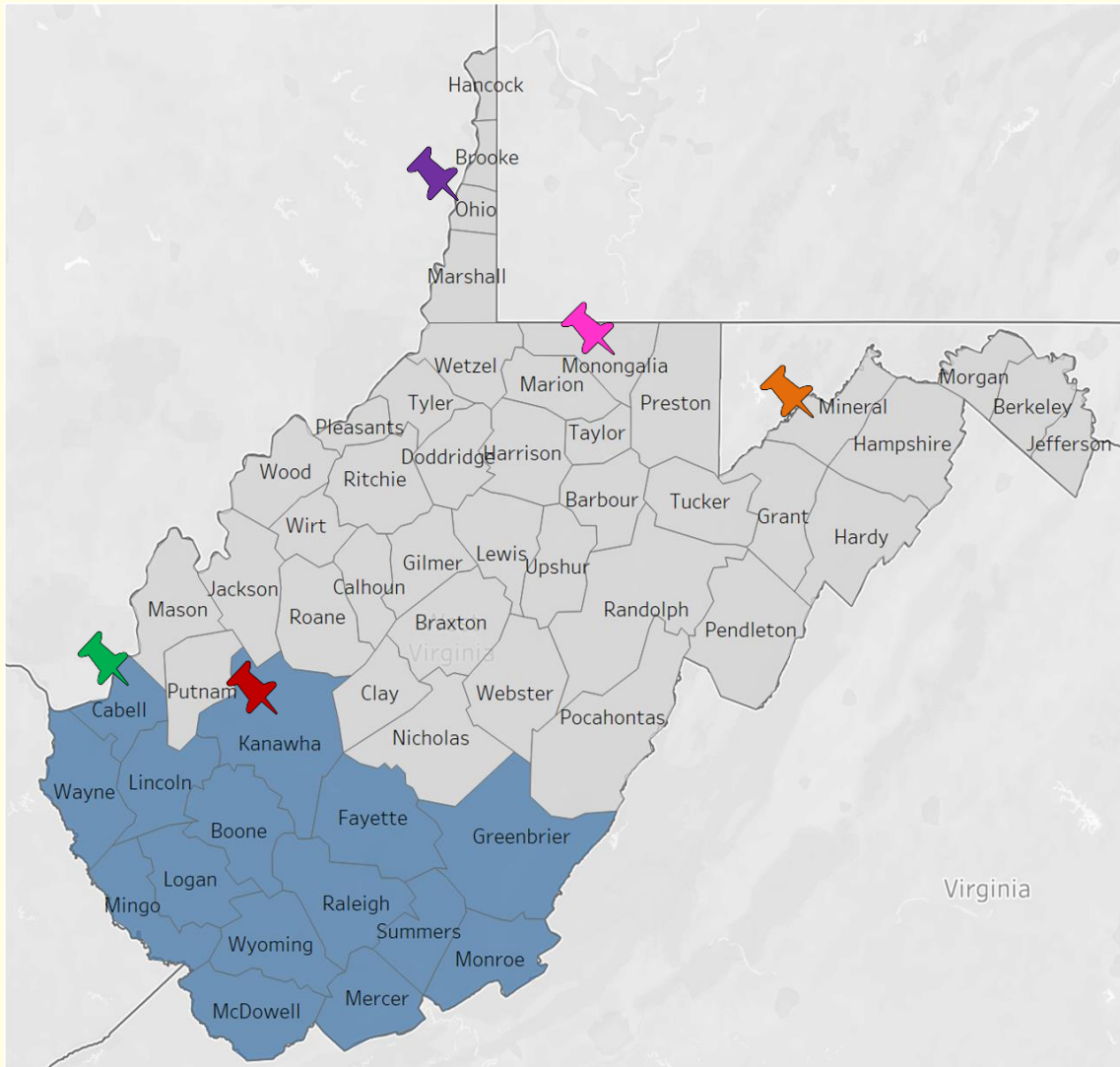
HIV Cluster Detection: Time-Space Clusters

- A time-space cluster occurs when the number of diagnoses of HIV infection in a particular geographic area (jurisdiction, county, regional) is elevated above levels expected given previous patterns.
- Time-space analysis is currently conducted bi-monthly, once at the beginning of each month and again at the middle of the month.
- Conducted using a program developed by the Centers for Disease Control and Prevention (CDC) that analyzes the eHARS person-based dataset to perform the following:
 - Determines the number of diagnoses in the past 12 months (e.g., June 2022–May 2023)
 - Compares this with the average number of diagnoses in the previous three 12-month periods (e.g., June 2019–May 2020, June 2020–May 2021, June 2021–May 2022)
 - Generates an alert if the number of diagnoses in the past 12 months exceeds the average number in the previous three 12-month periods by:
 - At least two standard deviations
 - More than two diagnoses

HIV Cluster Detection: Molecular Clusters

- Molecular HIV surveillance is conducted in collaboration with the HIV Incidence and Case Surveillance Branch (HICSB) at CDC using viral genetic sequence data to conduct HIV-1 genetic transmission network analysis at the national level.
- Secure HIV-TRACE (HIV Transmission Cluster Engine) is a web-based bioinformatics tool used by CDC and all state jurisdictions to facilitate the construction and analysis of HIV-1 genetic transmission clusters.
- Secure HIV-TRACE facilitates real-time analysis to better understand and respond to HIV transmission clusters.
- By comparing the viral sequence from every person in a surveillance cohort to every other sequence in the cohort, we can identify potential transmission partners: pairs of HIV-infected people whose viral genetic sequences are so similar as to imply a direct or indirect epidemiological link between them.
- Secure HIV-TRACE is utilized monthly to analyze molecular data for West Virginia.

West Virginia HIV Clusters, 2017-2023



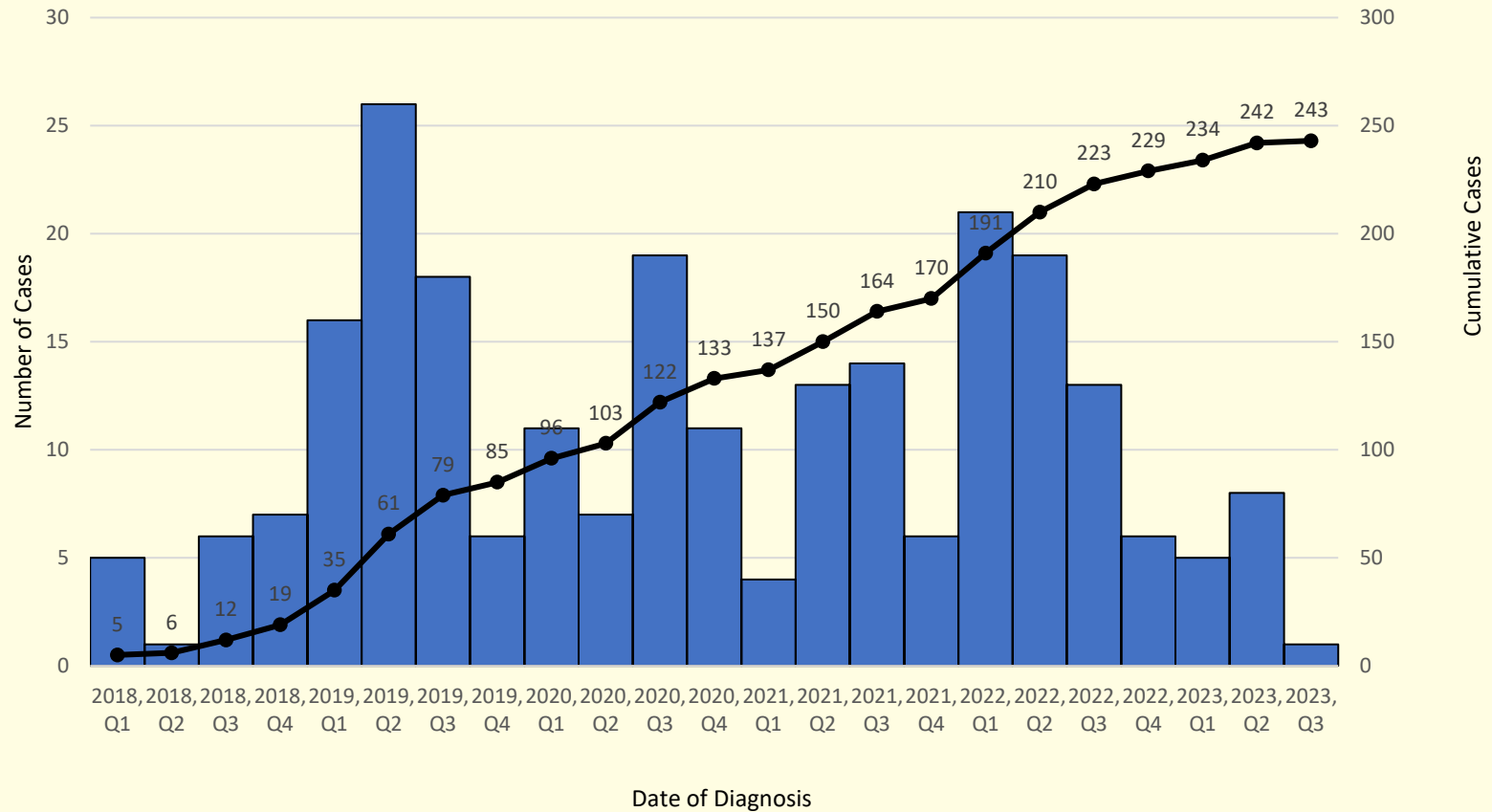
- Southern Counties Cluster 2017
- 📌 Ohio County Cluster 2018
- 📌 Cabell County Cluster 2018-present
- 📌 Kanawha County Cluster 2019-present
- 📌 Mineral County Cluster 2022-present
- 📌 Monongalia County Cluster 2023-present

Initial West Virginia HIV Clusters

- **2017 – Southern West Virginia – Multi-County Area: Increase in HIV diagnoses among gay and bisexual men**
 - Total Cases: 47
 - MSM: 62%
 - IDU: 19%
 - Occurred in an area where intravenous drug use (IDU) is common.
 - Concerned about possibility of spread into communities of people who inject drugs. Responded by:
 - Relocating HIV testing sites.
 - Increasing awareness of HIV testing.
 - Establishing syringe service programs where not already established.
- **2018 - Increase in Ohio County**
 - Total Cases: 5
 - MSM: 0%
 - IDU: 100%
 - IDU and sex work.
 - Expanded testing, promoted needle exchange, and notified partners/raised awareness.

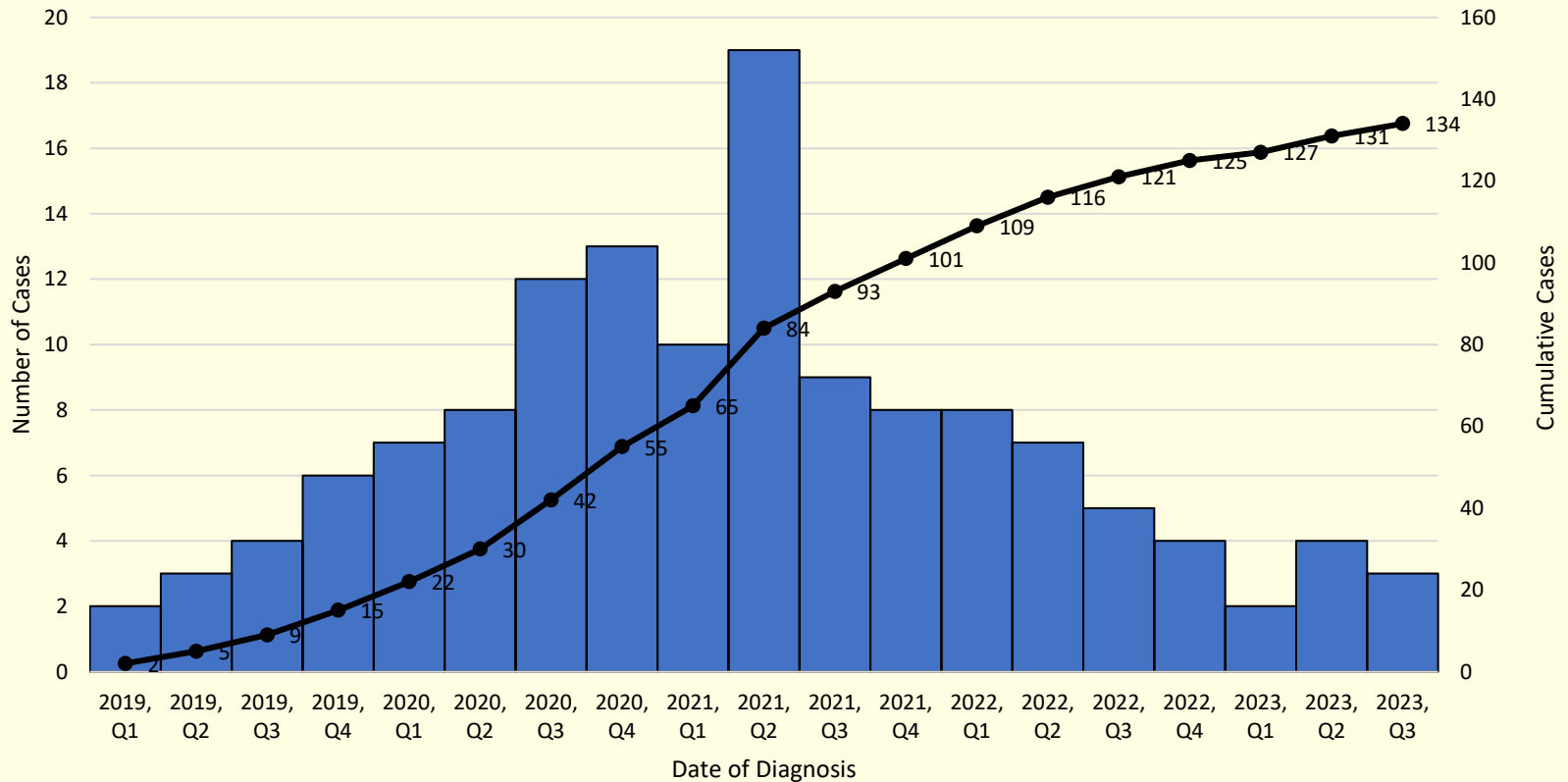
Cabell County Outbreak

Number of New HIV Diagnoses By Quarter, Cabell County, 1/1/2018-8/31/2023, N=243



Kanawha County Outbreak

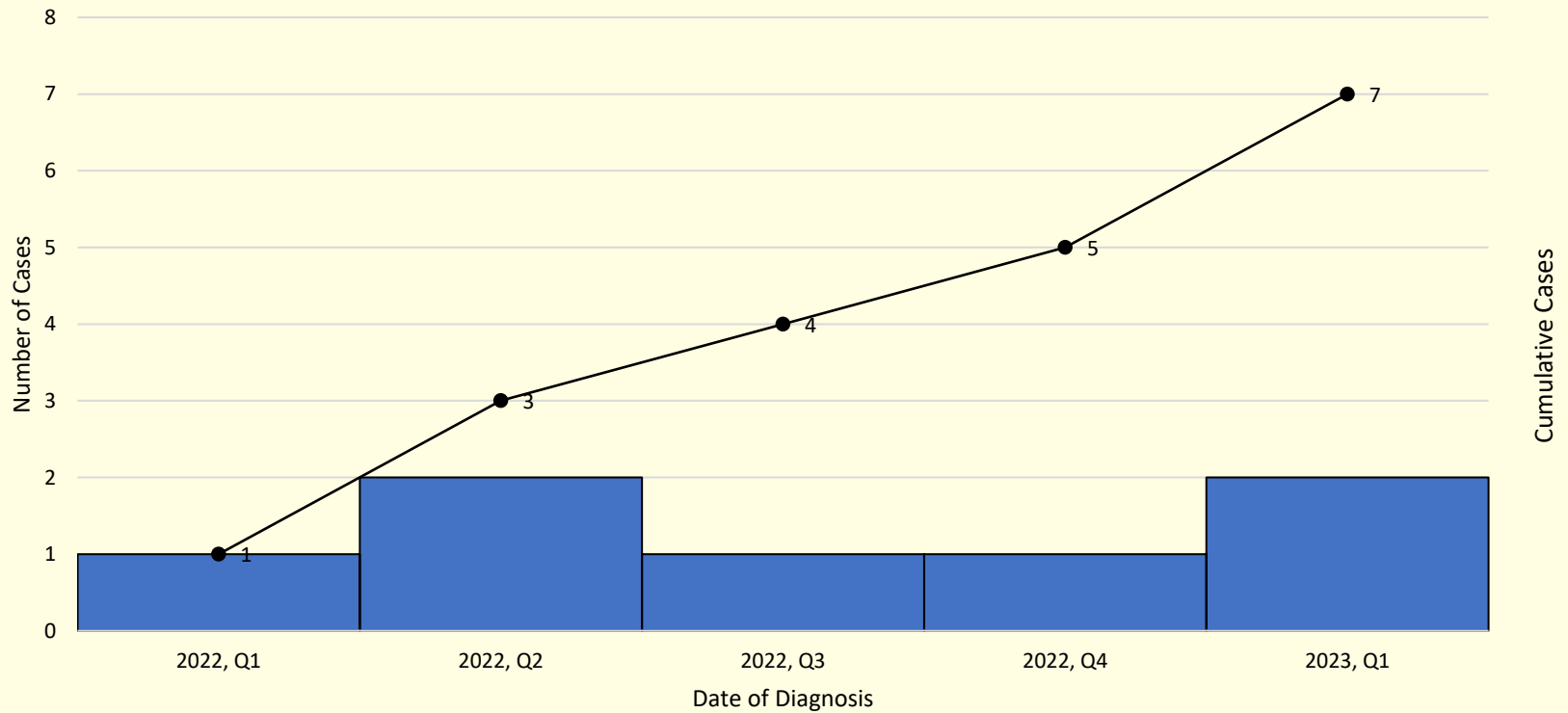
Number of New HIV Diagnoses by Quarter, Kanawha County*, 1/1/2019-8/31/2023, N=134



*residents or homeless in Kanawha County at time of HIV diagnosis

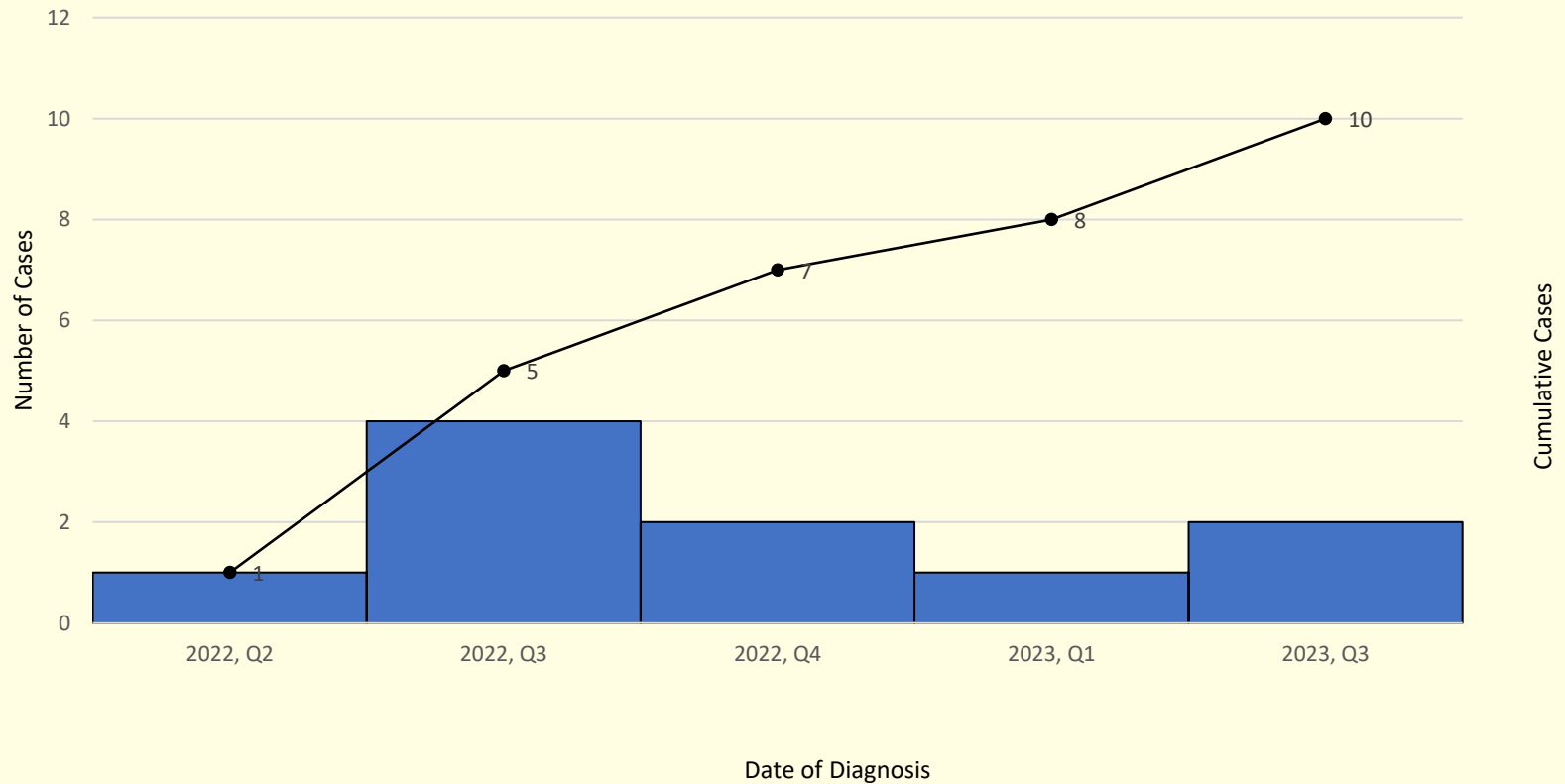
Mineral County Outbreak

Number of New HIV Diagnoses by Quarter, Mineral County, 1/1/2022-8/31/2023, N=7



Monongalia County Outbreak

Number of New HIV Diagnoses by Quarter, Monongalia County, 6/1/2022-8/31/2023,
N=10



- First complete version was submitted to CDC in October 2022.
 - Prior drafts were in progress since 2020.
 - Revisions have already started to be identified for the next version.
- Contributing Stakeholders Included:
 - Division of STD, HIV, Hepatitis and Tuberculosis (DSHHT) HIV Surveillance Program
 - DSHHT HIV Prevention Program
 - DSHHT STD Program
 - DSHHT Disease Intervention Specialist Supervisors
 - DSHHT Part B Ryan White Program
 - DSHHT Harm Reduction Program
 - Additional stakeholders will be engaged as they are identified and available for contribution.

HIV CDR Plan Contents

- SECTION 1: Internal Collaboration to Support Cluster and Outbreak Detection and Response
- SECTION 2: External Partnerships to Support Cluster and Outbreak Detection and Response
- SECTION 3: Detecting and Describing HIV Clusters and Outbreaks
- SECTION 4: Review and Prioritization of HIV Clusters and Outbreaks
- SECTION 5: Designing and Implementing Cluster Response Plans
- SECTION 6: Implementing an Escalated Response
- SECTION 7: Monitoring and Evaluation of Cluster Response Activities

HIV CDR Plan Implementation

- Guides the surveillance steps used to monitor for increases or clusters of new HIV diagnoses as well as the response steps used when an increase or cluster is verified.
- If a cluster is identified by time space analysis, molecular analysis, provider notification, or partner services, steps are outlined within the plan to guide response activities:
 - Perform in-depth surveillance review to verify credible alert.
 - Notify local jurisdiction if alert is credible – discuss the increase in diagnoses, community context that local jurisdiction will have, and assess any available resources within the community, testing and prevention plans, etc.
 - Develop a cluster case definition and cluster ID.
 - Notify CDC of detected cluster.
 - Implement cluster data report for impacted jurisdiction(s) and determine frequency of data sharing with the local jurisdiction.

Contact Information

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