Disease Surveillance and Investigation	DHS/CHB	Supervisor: Lisa Guli X5607 Epidemiologist: Jennifer Plaster x5664

Program Purpose	Prevent and control the spread of communicable diseases

Program Information	The Public Health Division's Disease Surveillance and Investigation (DSI) program is legally mandated by the *Code of Virginia* to monitor and investigate specific diseases or toxic exposures reported to have occurred in the community, with a primary goal of preventing and controlling additional cases that may lead to an outbreak.
	
	Hospitals, laboratories, and health care providers in Arlington are required to report nearly 80 suspected or confirmed cases of diseases or toxic exposures to the Public Health Division (PHD), as outlined on the Virginia Reportable Disease List.
	
	Reportable Disease Investigation
	There are two categories within the Virginia Reportable Disease List.
	• Thirty conditions are considered *rapidly reportable diseases* and have a strict requirement for immediate reporting to PHD because the diseases listed may spread very quickly from person-to-person or cause severe illness or death in those infected. DSI staff must start the case investigation immediately upon receipt of a report of a rapidly reportable disease.
	  ○ Examples of rapidly reportable diseases include measles, hepatitis A, Ebola, primary and secondary syphilis, and suspected agents of bioterrorism, such as anthrax. Clusters or suspected outbreaks of any illness, not only those on the Virginia Reportable Disease List, are also considered *rapidly reportable.*
	  ○ COVID-19 is a rapidly reportable disease.
	• The remaining conditions listed are required to be reported within three days.
	  ○ Examples include salmonellosis, campylobacteriosis, chickenpox, and giardiasis.
	
	Public health investigation of a reportable condition works to:
	• Confirm the diagnosis and treatment by a medical provider
	• Assess the patient's possible exposures and location before illness
	• Determine additional cases or persons exposed who may need additional follow-up for treatment for the same condition or preventive medical treatment, known as post-exposure prophylaxis (PEP)
	• Recommend specific infection control measures that would subsequently reduce the opportunity for the same illness to develop in friends, family and the community of the case
	
	Disease investigations also include potential rabies exposure investigations. Potential rabies exposures include all bites to humans by animals that can potentially carry rabies (mammals), regardless of perceived risk. Rabies is transmitted through any bite, scratch, or other circumstance where saliva or

central nervous system tissue from a rabid animal enters an open, fresh wound or comes in contact with a mucous membrane (eye, mouth, or nose). The highest risk for rabies in Virginia is from bats and carnivorous mammals such as raccoons, skunks, and foxes.

Outbreak Investigations

Community members, congregate facilities, and medical providers report when they believe there is an unusual increase in cases of similar illness. These *illness clusters* are investigated and monitored by DSI staff to determine if there is any transmission between cases or if there has been a common exposure, whether biological or chemical. If so, DSI staff will define the disease cluster as an outbreak and conduct a full investigation and actively monitor until additional cases have ceased to occur.

An outbreak is defined as the occurrence of more cases of illness than expected, with similar symptoms, a common exposure, and illness onset at or around the same time. DSI staff investigate to:

1. Determine what agent is causing the symptoms and illness
2. Identify a common exposure
3. Make recommendations to control and/or prevent further spread of illness

Investigations of rapidly reportable diseases and outbreaks receive priority attention. Depending on the scope and duration of the outbreak, this may result in the need to delay the investigation of some conditions on the reportable disease list that are not communicable or cause less severe illness. Some examples of investigations that may be delayed include chronic hepatitis B, chronic hepatitis C, and Lyme disease.

COVID-19 Pandemic: County response efforts to reduce transmission of COVID-19 continued into FY 2022. The equivalent of 0.5 FTE from the CD team worked in COVID response for the second half of FY 2022 but phased out at the end of the fiscal year.

Monkeypox Virus Outbreak 2022: In May 2022, public health authorities in several countries, including the United States, detected an uptick of cases in monkeypox virus occurring primarily in populations of men who have sex with men (MSM). While monkeypox was originally identified in 1958, large numbers of cases and sustained ongoing transmission across multiple countries did not occur outside of central and west Africa until the 2022 outbreak. Arlington's CD team first responded to the US outbreak in May 2022 through assessment of Arlington contacts to a case that resided in a neighboring district. In June 2022 Arlington more fully launched its own response to the monkeypox virus outbreak. The CD team led the initial response through provision of on-site testing, vaccination of high-risk close contacts, disease surveillance, case investigation and contact tracing. This new public health emergency continues into FY 2023 with an expanded response, with the addition of contracted staff for case investigation and contact tracing to support the CD team and the integration of expanded post-

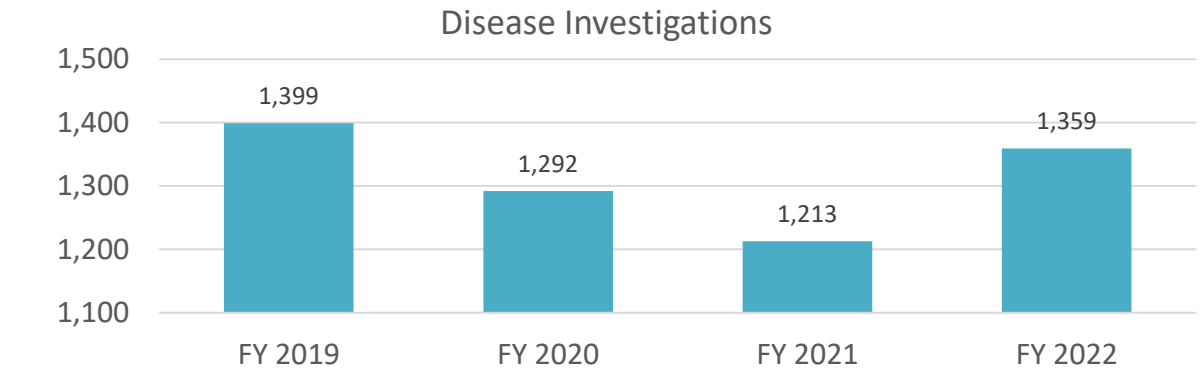
<table>
<tr><td></td><td>exposure prophylaxis vaccination into Arlington's established structure for points-of-dispensing (POD).

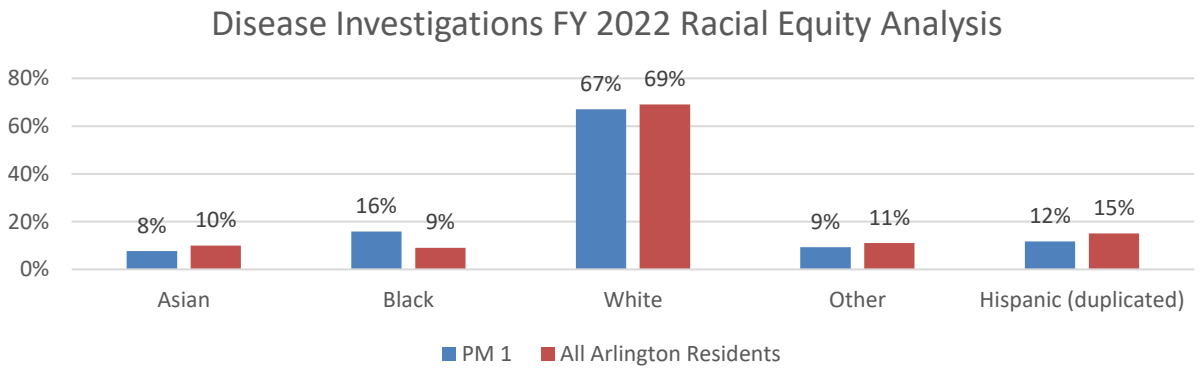
Community Partners
Animal Welfare League of Arlington (AWLA), Virginia Hospital Center, the INOVA systems, Division of Consolidated Laboratories, Virginia Department of Health (VDH), other Northern Virginia health departments, mandated reporters.</td></tr>
<tr><td>Service Delivery Model</td><td>• Services were delivered using a hybrid model (in-person and remote) in FY 2022.
• In FY 2022, one FTE Public Health Nurse position was converted to an Epidemiologist FTE.
• In FY 2023, services will continue to be delivered using a hybrid model of in-person and remote services, with team members present in the office for a minimum of two days each week.</td></tr>
<tr><td colspan="2">PM1: How much did we do?</td></tr>
<tr><td>Staff</td><td>Total 7 FTEs:
• 1 FTE Supervisor
• 2 FTE Program Epidemiologists
• 2 FTE Public Health Nurses (40% of 5 FTEs)
• 1 FTE Disease Intervention Specialist (DIS)
• 1 FTE VDH Contracted Disease Intervention Specialist (DIS)</td></tr>
<tr><td>Customers and Service Data</td><td>
<table>
<tr><th></th><th>FY 2019</th><th>FY 2020</th><th>FY 2021</th><th>FY 2022</th></tr>
<tr><td>Disease Investigations</td><td>1,399</td><td>1,292</td><td>1,213</td><td>1,359</td></tr>
<tr><td>Confirmed, Probable, and Suspect Cases</td><td>738</td><td>636</td><td>377</td><td>542</td></tr>
<tr><td>Clusters Reported</td><td>49</td><td>25</td><td>2</td><td>13</td></tr>
<tr><td>Confirmed Outbreaks</td><td>25</td><td>10</td><td>2</td><td>12</td></tr>
</table>
Data excludes COVID-related investigations, cases, clusters, and outbreaks.</td></tr>
<tr><td colspan="2">PM2: How well did we do it?</td></tr>
<tr><td>2.1</td><td>Initiation of investigation within required VDH timeframes</td></tr>
<tr><td>2.2</td><td>Outbreak investigations contained all required elements</td></tr>
<tr><td colspan="2">PM3: Is anyone better off?</td></tr>
<tr><td>3.1</td><td>Control measures recommended according to VDH criteria and timeframe</td></tr>
<tr><td>3.2</td><td>Completion of prophylaxis to prevent rabies as recommended</td></tr>
</table>

Disease Surveillance and Investigation

Measure	1	Disease Investigations

Data





Data Summary

- In FY 2022, 1,359 disease investigations were conducted.
- Data collected through the Virginia Electronic Disease Surveillance System (VEDSS).
- These data do not include COVID-19 investigations.
- In FY 2022, 22% of disease investigations have unknown client race/ethnicity and are not included in the above Racial Equity Analysis chart

What is the story behind the data?

- In FY 2022, the number of investigations was higher than FY 2020 and FY 2021, and more similar to FY 2019 data, before the COVID-19 pandemic. This increase may be due to residents returning to school, worksites and recreation in the community at pre-pandemic levels.
- Investigations were conducted for non-COVID reportable illnesses and potential rabies exposures. While data on most reportable conditions are presented with client race and ethnicity, this information was not obtained for potential rabies exposures in FY 2022.
- Non-TB communicable diseases are investigated when clients are ill or recently recovered, though possibly still infectious. Therefore, client services are provided over the phone, with limited and situation-specific need to interact with a client in-person, even when staff are present in the office. This is an unchanged service delivery model; remote/hybrid work has not significantly impacted services to our clients.

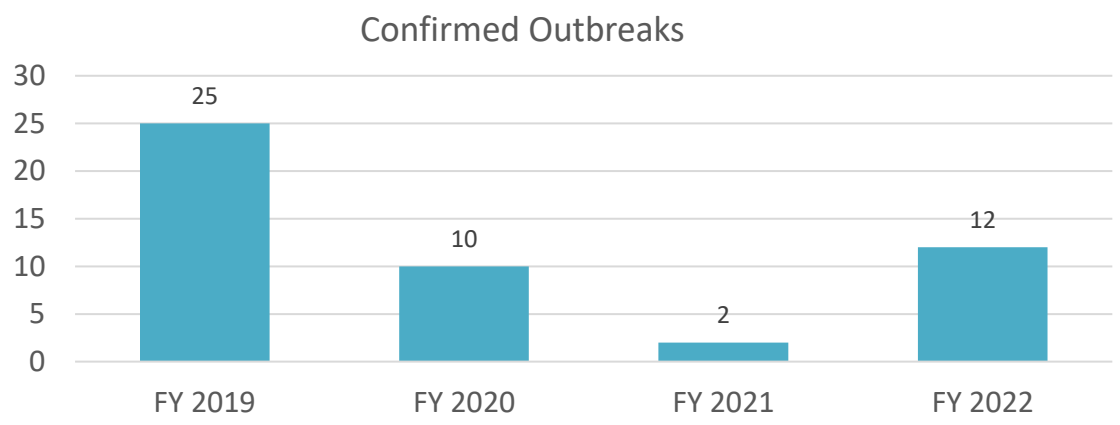
Recommendations	Target Dates
• Continue to investigate reportable diseases among Arlington residents. • Explore options to collect client race and ethnicity data for bite reports collected through AWLA and healthcare facilities	• On-going • FY 2023 Q3

Forecast
• In FY 2023, it is expected that the number of investigations will remain similar to FY 2022.

Disease Surveillance and Investigation

Measure	1	Confirmed Outbreaks

Data



Data Summary

- In FY 2022, there were 12 confirmed non-COVID outbreaks.
- Data collected by VDH in the Virginia Outbreak Surveillance System (VOSS).

What is the story behind the data?

- In FY 2022, the number of outbreaks reported and investigated was higher than in the previous two years, when more strict community infection control measures were in place for COVID-19. In FY 2022, with fewer restrictions in place to limit COVID, other disease outbreaks increased.
- The non-COVID outbreaks reported in FY 2022 were respiratory diseases, dermatological, or gastrointestinal illnesses that occurred in daycare, school, or long-term care settings.
- The program has continued to conduct site visits for facilities experiencing outbreaks. During site visits staff can observe where there is a need for improved infection control, provide in-person education and resources (including for specimen collection, when appropriate), and build relationships with partners in the community that serve special or vulnerable populations.

Recommendations	Target Dates
• Continue to investigate reported outbreaks and recommend infection control measures upon notification.	• On-going

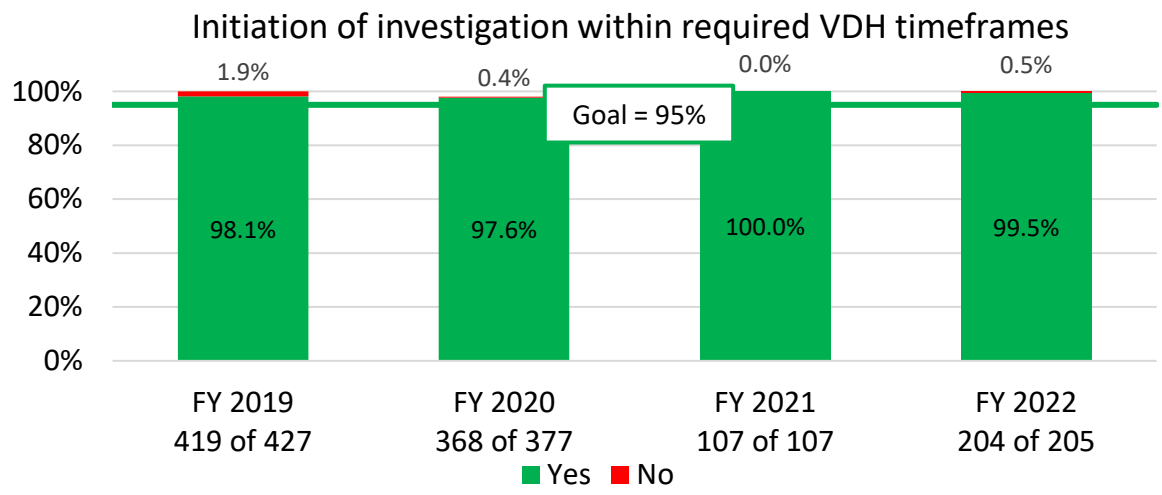
Forecast

- In FY 2023, the status of outbreak reports is unpredictable.

Disease Surveillance and Investigation

Measure	2.1	Initiation of investigation within required VDH timeframes

Data



Data Summary

- In FY 2022, 99% of case investigations (204 of 205) were initiated within VDH timeframes, exceeding the goal of 95%. A sample of case investigations are included in this measure.
- Data collected through the Virginia Electronic Disease Surveillance System (VEDSS).
- These numbers do not include chronic hepatitis B, chronic hepatitis C, Lyme disease, late syphilis, HIV, potential rabies exposures, or COVID-19.
- While active tuberculosis is a rapidly reportable disease in Virginia, it is excluded from this measure. Active TB investigations are reported in the Tuberculosis performance plan.

What is the story behind the data?

- Timeframes for investigating all diseases are within three days unless they are rapidly reportable and investigated immediately.
- Outbreaks involving rapidly reportable diseases are followed in real time, regardless of the date of arrival, to ensure immediate initiation of an investigation.
- The timeframes are based on the agent causing the illness, the time it takes from exposure to develop symptoms, and measures needed to control disease spread.
    - In FY 2022, of the 205 sample investigations, 10 were rapidly reportable disease investigations.
    - All 10 rapidly reportable diseases investigations were initiated within the VDH timeframe.
- Prompt disease investigation leads to early identification of sources and initiation of control measures, limiting or preventing further spread in the community.
- Disease reports are received in a variety of methods (electronic reporting, phone, fax, mail). Hard copies of reports received by fax or mail are manually entered into VEDSS.
- All investigations are documented in the local database and staff are automatically notified when cases are assigned.

- Currently VEDSS uses a sampling scheme to determine which cases are included in the report on timeliness. The report is continually being improved, resulting in a larger sample of cases this year.
- Best practices for investigating cases are routinely shared in team meetings.

Recommendations	Target Dates
• Continue to monitor and identify patterns that may indicate a larger cluster or outbreak in the community.	• On-going

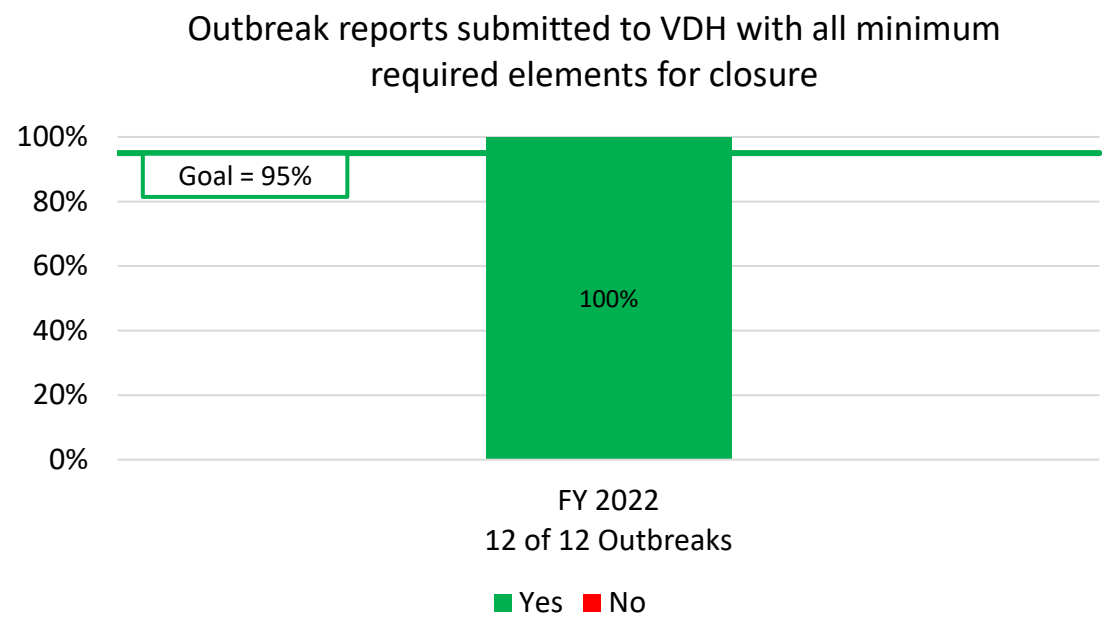
Forecast

- In FY 2023, the initiation of case investigations within required VDH timeframes will remain the same.

Disease Surveillance and Investigation

Measure	2.2	Outbreak investigations contained all required elements

Data



Data Summary

- This is a new indicator, replacing the previous indicator measuring if reports were sent in the mandated reported timeframe. Currently, VDH does not have a specific expected timeline for outbreak closures.
- In FY 2022, the CD team submitted all outbreak reports to the Virginia Outbreak Surveillance System (VOSS) with all minimum elements for outbreak closure, as outlined by VDH.
- Data collected by VDH in VOSS.

What is the story behind the data?

- The required elements of an outbreak investigation report tell the story of the outbreak – who was affected, where and how, and assist the CD team and VDH by providing a summary of lessons learned and best practices to implement for the future outbreaks.
- The required elements include details such as the duration of the outbreak, infection control measures recommended and implemented, and the total number of cases, hospitalizations and deaths associated with the outbreak.

Recommendations	Target Dates
• Continue to monitor and identify patterns or feedback from VDH that may indicate need for improved documentation	• On-going

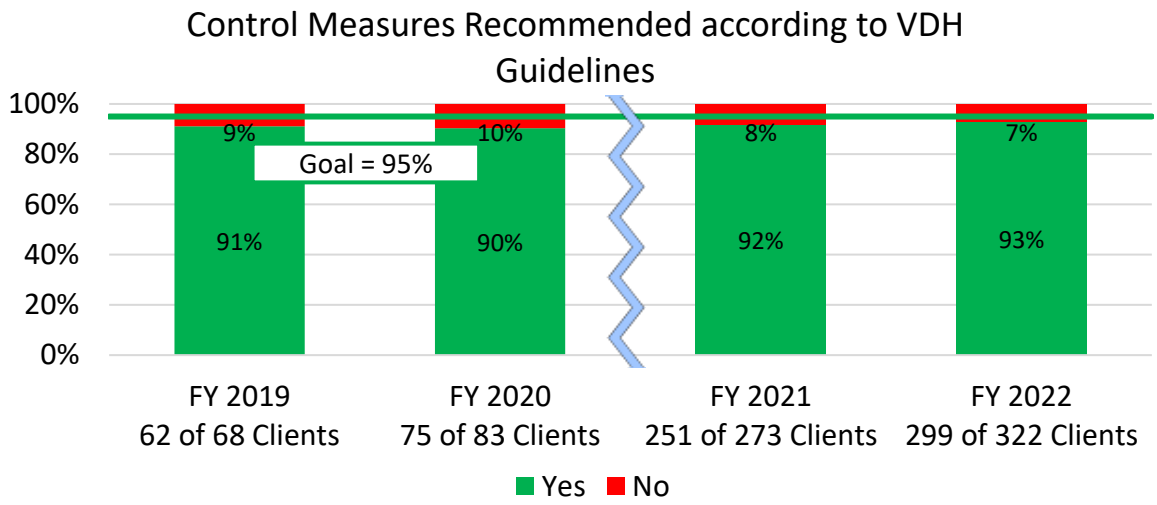
Forecast

- In FY 2023, the status of outbreak reports is likely to be similar to FY 2022.

Disease Surveillance and Investigation

Measure	3.1	Individual Disease Control measures recommended according to VDH criteria and timeframe

Data



Data Summary

- VDH tracks initiation of control measures as indicated for 10 diseases: botulism, shiga toxin-producing E. coli, hepatitis A, measles, meningococcal disease, tularemia, salmonellosis, typhoid fever, paratyphoid fever, and shigellosis.
- In FY 2021, this measure was updated to include all DSI investigations, excluding COVID-19. Previous years only report on the 10 diseases listed above.
- In FY 2022, 93% (299 of 322) of clients received recommendations for control measures according to VDH guidelines and within the appropriate timeframes.
- Data collected through the Virginia Electronic Disease Surveillance System (VEDSS) and the DSI local database.

What is the story behind the data?

- Disease specific control measures are client education and guidance, which, when implemented are intended to interrupt ongoing transmission of the disease.
- Control measures include actions such as handwashing, covering coughs/sneezes, staying home when sick, environmental cleaning, physical distancing, taking medications as advised and post-exposure prophylaxis (medications and vaccines to prevent infection after exposure) for exposed contacts.
- Giving control measures according to the VDH guidelines is dependent on reaching the client and documenting that control measures were given. All staff are reminded to consistently and appropriately document control measures. No patterns were noted on those cases without documented control measures.

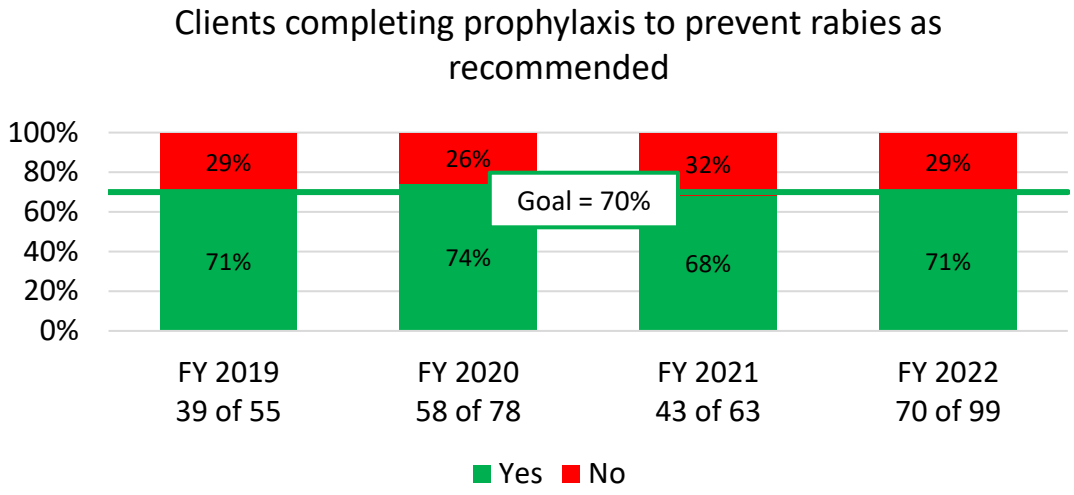
Recommendations	Target Dates
• Continue to report on all investigations and look for and address patterns.	• On-going

Forecast

- In FY 2023, control measures recommended per guidelines will remain the same.

Disease Surveillance and Investigation		
Measure	3.2	Completion of prophylaxis to prevent rabies as recommended

Data



Data Summary

- In FY 2022, 71% of clients completed prophylaxis to prevent rabies as recommended.
- Data is from the Potential Rabies Exposure Database.

What is the story behind the data?

- Post Exposure Prophylaxis (PEP) is recommended to prevent human rabies in those with suspected or confirmed exposure. A suspected exposure is when a person is bitten by an animal (domestic or wild) that cannot be *tested or observed* for rabies; it is assumed to be rabid, and PEP is recommended.
- All potential rabies exposures, for which the animal's health cannot be assessed, receive calls and letters according to protocol, explaining the risk and Public Health recommendations.
- Some bitten clients refuse to report a known domestic animal's whereabouts, for fear that AWLA will take it away. This is considered a "suspected exposure" and PEP is recommended, in accordance with VDH guidance; a client in this situation will often refuse PEP, as they feel they are not at risk for rabies.
- Once an exposed person develops symptoms, there is no effective treatment, and the disease is fatal. However, if PEP is given before symptoms develop, rabies is prevented.
- Staff continue to discuss challenges and strategies to overcome barriers and engage clients about accepting PEP recommendations.
- Ongoing quality assurance of database assures compliance with standard procedures.

Recommendations	Target Dates
• Continue to counsel persons with suspected exposures on severity of rabies virus and the importance of early intervention. • Continue to follow VDH guidance and comply with documentation standards for persons who do not complete treatment as recommended.	• On-going

• Work with providers and AWLA to ensure compliance with VDH standard that all bites are actively reported to public health, including detail on race and ethnicity of clients.	• Q3, FY 2023
Forecast	
• In FY 2023, the completion of prophylaxis to prevent rabies as recommended will remain the same.	