

Laboratory and epidemiology coordination leads to Timely *N. meningitidis* outbreak identification



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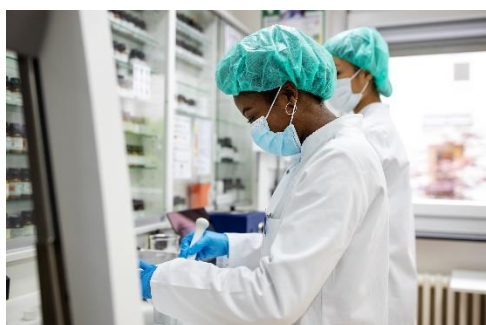
CATEGORY: Epidemiology and Laboratory Capacity (ELC)

The Virginia Department of Health used epidemiology and laboratory capacity to identify and respond to a *Neisseria meningitidis* outbreak in southeastern Virginia.

The “What”

Meningococcal disease is a serious infection caused by the bacterium *Neisseria meningitidis* that can lead to death or severe long-term health complications. On August 12, 2022, the Virginia Department of Health (VDH) was notified of two patients hospitalized in southeastern Virginia with meningococcal disease. The isolates for both cases were swiftly routed to the state public health laboratory, the Department of General Services, Division of Consolidated Laboratory Services (DCLS), for serotyping. Both cases were determined to be caused by *Neisseria meningitidis* serogroup Y. These results raised suspicions of a potential meningococcal disease outbreak as two additional, epidemiologically unrelated serogroup Y cases were reported in southeastern Virginia in the two months preceding this detection. In the ten years prior, southeastern Virginia averaged one meningococcal disease case per year.

VDH utilizes funding from the Epidemiology and Laboratory Capacity for the Prevention and Control of Emerging Infectious Diseases (ELC) cooperative agreement to support key epidemiology and laboratory staff positions to track and respond to diseases such as meningococcal disease. In accordance with meningococcal disease enhanced surveillance activities, key surveillance indicator variables were collected for the four meningococcal disease cases (e.g., clinical presentation, housing status, HIV status). No common risk factors or epidemiologic links were identified. DCLS forwarded the isolates to the Centers for Disease Control and Prevention (CDC) for whole genome sequencing (WGS) to determine their genetic relatedness. On September 2, 2022, VDH received WGS results confirming that the four cases were highly genetically related. VDH subsequently declared a community outbreak of meningococcal disease in southeastern Virginia.



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With continued surveillance and investigation efforts, 20 genetically related meningococcal disease cases were identified in southeastern Virginia from June 12, 2022, to July 21, 2023.

The “So What”

VDH’s Division of Surveillance and Investigation alerted local health departments in the southeastern region of the outbreak to ensure that all close contacts were offered post-exposure prophylaxis (PEP) in a timely manner. VDH disseminated a clinician letter on September 23, 2022 encouraging clinicians to maintain a high index of suspicion for meningococcal disease and ensure timely administration of routinely recommended meningococcal conjugate vaccine (MenACWY). Additionally, VDH notified HIV providers and emphasized the increased risk of meningococcal disease for people with HIV. VDH conducted active case finding in the southeastern region by monitoring surveillance systems and reviewing medical records of suspected meningitis and septicemia patients.

In December 2022, VDH initiated a vaccination strategy to provide MenACWY vaccine to all outbreak-associated close contacts that met vaccine eligibility criteria in order to increase protection against *Neisseria meningitidis* in the community. VDH distributed a press release on March 6, 2023 to raise public awareness of the outbreak and encourage people to not delay seeking care if they experience meningococcal disease symptoms. With continued surveillance and investigation efforts, 20 genetically related meningococcal disease cases were identified in southeastern Virginia from June 12, 2022, to July 21, 2023.

The “Now What”

To enhance laboratory capacity, DCLS has performed WGS for isolates from meningococcal disease cases in tandem with CDC for capability assessment and has instrumentation and laboratory staff in place to support WGS testing. However, DCLS does not have established, validated pipelines for genomic characterization and phylogenetic comparison of *N. meningitidis*. VDH

and DCLS are interested in using ELC funding to build this capacity in-house, with additional support from CDC and other state public health laboratory partners. VDH will continue active surveillance of *N. meningitidis*, conduct regular meetings with DCLS and CDC staff, and enhance interview questionnaires to ensure collection of key surveillance indicator variables.

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