

2022–2023 Statewide Outbreak of Meningococcal Disease Serogroup Y



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Clinical Features of Meningococcal Disease

- Meningococcal disease is a rare, but serious illness caused by the bacterium *Neisseria meningitidis*.
- The bacteria are carried in the nose and throat and spread through oral secretions.
- Most people exposed to the bacteria do not become ill, but a small proportion of infected people can develop a serious form of illness, such as meningitis or septicemia.
- Incubation period: 2-10 days (average 3-4 days).
- Detection or isolation of *N. meningitidis* from a normally sterile site (e.g., blood or CSF) is required for diagnosis.



June–August 2022: Cluster Detected in Eastern Virginia

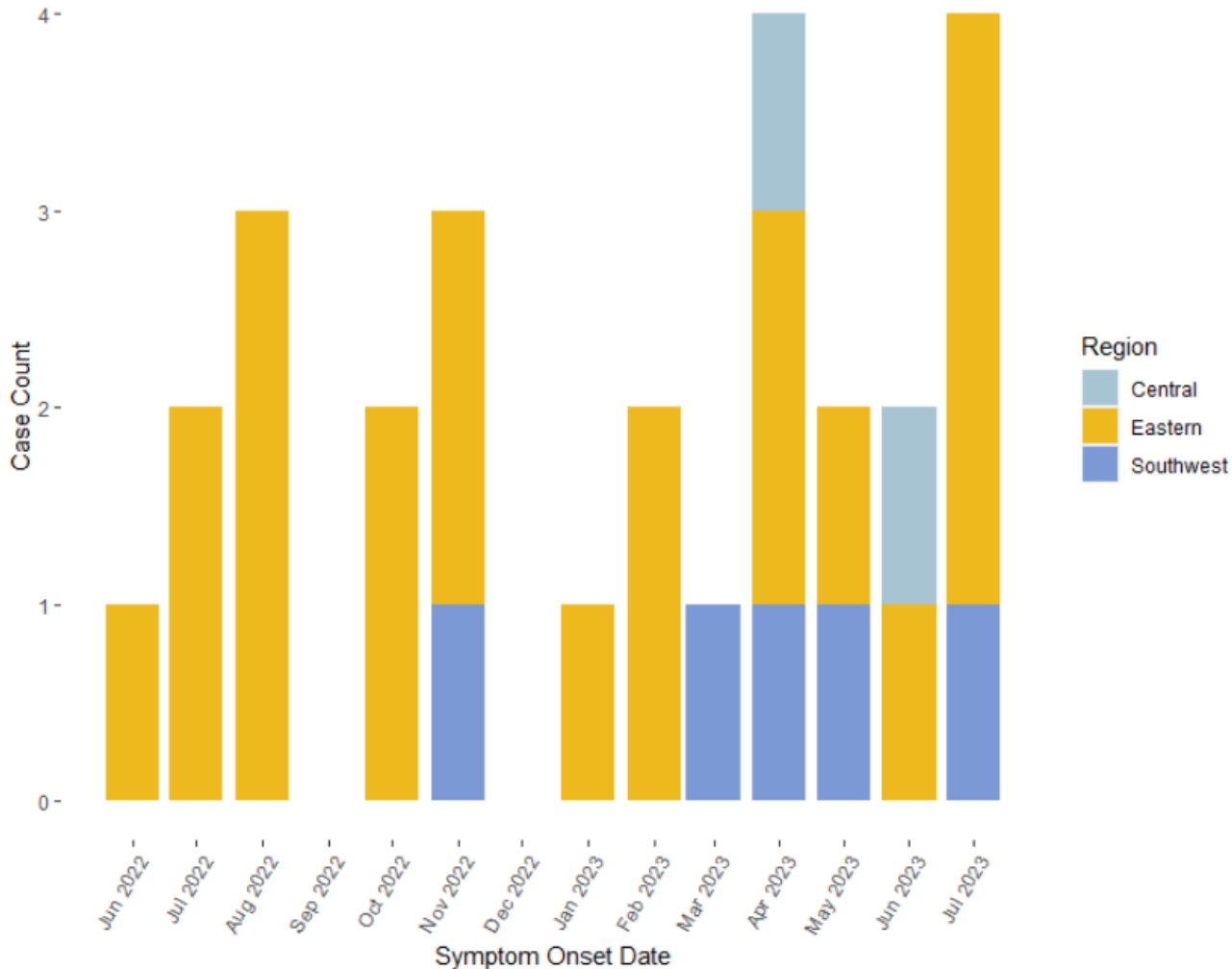
- On August 12, 2022, VDH Central Office was notified by the Division of Consolidated Laboratory Services (DCLS) of two *Neisseria meningitidis* isolates that were identified as serogroup Y. Both isolates were collected from residents of Hampton Roads hospitalized with meningococcal disease.
- These cases raised concern about a potential *Neisseria meningitidis* serogroup Y (NmY) outbreak because two additional, unrelated NmY cases were reported in eastern Virginia in June and July 2022.
- An outbreak of meningococcal disease is defined as above expected incidence of the same serogroup within a community during a three-month period.
- During the preceding ten years, eastern Virginia averaged one meningococcal disease case per year.

September 2022: Outbreak Declared in Eastern Virginia

- VDH did not identify any direct connections between the case-patients or a common risk factor that would link the case-patients together. All available NmY isolates were forwarded to CDC for whole genome sequencing (WGS) to determine their relatedness.
- On September 2, CDC notified VDH that WGS analysis characterized isolates from four cases as the same strain, sequence type 1466 within clonal complex 174. With this confirmation of close genetic relatedness among clinical isolates, a community outbreak was declared on September 23, 2022.
- Local health departments verified that all close contacts of patients had been offered timely postexposure prophylaxis (PEP), consisting of a short course of antibiotics (i.e., rifampin, ciprofloxacin, or ceftriaxone).
- VDH conducted active case finding by monitoring syndromic surveillance systems and reviewing medical records of suspected meningitis and septicemia patients.
- As the outbreak continued, additional communications to healthcare providers and the public were released on March 6, 2023, and an outbreak response website was launched. During this time, additional cases of ST1466 were reported in central and southwest Virginia, prompting concern of a statewide outbreak.

August 2023: Statewide Outbreak Declared

ST1466/CC174 NmY Cases, June 2022-September 2023



- Since June 2022, 27 outbreak-associated cases have been detected across eastern (20), central (2), and southwest Virginia (5), including 5 deaths.
- All isolates available for sequencing (25 out of 27) were found to be sequence type 1466 within clonal complex 174 and highly genetically related.
- A statewide outbreak of meningococcal disease serogroup Y was declared on August 30, 2023.

Epidemiologic & Clinical Characteristics of Outbreak Cases

Characteristic	Number (N=27)	Percentage
0-29 years	2	7%
30-60 years	20	74%
61+ years	5	19%
Female	14	52%
Male	13	48%
Black or African American	22	81%
White	5	19%
Unvaccinated	26	96%
Death	5	19%
HIV-positive	4	15%
Tobacco Use	17	63%
Marijuana Use	6	22%
IV Drug Use	2	7%

- The majority of cases have occurred in Black or African American adults between 30-60 years of age.
- Twenty-six case-patients were unvaccinated for serogroup Y.
- A number of case-patients had known risk factors for meningococcal disease, including HIV infection (15%) and tobacco smoking (63%).

Recommendations for Healthcare Providers


- Maintain a high-index of suspicion for meningococcal disease.
- Ensure timely routine administration of meningococcal conjugate vaccine (MenACWY) in adolescents and teens.
- Encourage vaccination for persons at increased risk for meningococcal disease due to certain medical conditions (e.g., people with HIV) in accordance with ACIP recommendations.

Meningococcal disease is a potentially deadly bacterial infection.


It is mainly caused by 5 types of meningococcal bacteria:
A - B - C - W - Y.

The outbreak in Virginia is caused by type Y.


Symptoms can come on fast and include:




HIGH FEVER




STIFF NECK




VOMITING




PURPLE, DARK BROWN OR BLACK RASH



HEADACHE & ALTERED MENTAL STATE



MUSCLE ACHES



It can kill in as little as 24 hours or cause permanent complications:
brain damage, hearing loss, learning disabilities or limb amputations.

Contact your local health department at (804) 864-8141 or visit vdh.virginia.gov to learn more.

Vaccination Strategy

- VDH alerted HIV providers of this increase in meningococcal disease and emphasized the need for timely administration of MenACWY vaccine for people with HIV.
- In December 2022, VDH began recommending 1 dose of MenACWY vaccine to close contacts, in addition to post-exposure prophylaxis (PEP). This is an effort to vaccinate people who may be a part of an unknown social network at increased risk for future exposures to *Neisseria meningitidis*.
- Following the statewide outbreak declaration, VDH released additional recommendations for persons at increased risk for meningococcal disease:
 - In areas that reported an outbreak-associated case, local health departments are offering 1 dose of MenACWY vaccine to adults at increased risk due to certain medical conditions.
 - Local health departments that have identified localized areas of increased transmission (e.g., two or more cases within a neighborhood or group of census blocks) are offering vaccine to all adult residents in those communities.

Unique Features of Outbreak Strain ST1466/ CC74

- Five case-patients died from complications of meningococcal disease, indicating that this strain might have a higher case fatality rate (CFR) (19%) than is commonly observed in serogroup Y cases (10-12%).
 - The relatively high CFR may reflect a hypervirulent strain or difficulties or delays accessing medical care.
- Most case-patients (18) presented with septicemia rather than meningitis, with common symptoms including fever, nausea, vomiting, diarrhea, and muscle aches.
- *Neisseria meningitidis* serogroup Y most commonly affects adults over 65 years of age. In this outbreak, the median age of case-patients is 43 years, and more than three quarters of case-patients (22) are under 65 years of age.

Key Takeaways

- A rapid public health response, including timely gathering of patient interview risk factor information and a comprehensive epidemiologic investigation, is necessary for controlling meningococcal disease outbreaks.
- It is critical for LHDs to ensure rapid prophylaxis of close contacts and to verify that they are up to date with recommended meningococcal vaccination.
- Increasing provider education about vaccine recommendations for persons at an increased risk for meningococcal disease could potentially increase coverage and prevent cases in high-risk populations.
- During outbreaks in which a common risk factor is not identified, WGS results can be critical in determining genetic relatedness among clinical isolates and guiding decisions about outbreak declaration and control strategies.
- When a target population for vaccination cannot be identified, jurisdictions may consider alternative approaches to prevention based on outbreak epidemiology.

Thank you!



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