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Changes in the distribution of *Neisseria meningitidis* serogroups in the United States from 2018 through 2022

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## Background

*Neisseria meningitidis* (Nm) is a Gram-negative diplococcus that exclusively infects humans and is the causative agent of invasive meningococcal disease (IMD), a rapidly progressing, life-threatening disease. Of the 6 meningococcal serogroups that can cause IMD, serogroups B, C, and Y account for the majority of IMD cases in the United States. Correct identification and molecular characterization of serogroups are important components of an effective public health response.

## Aim/Methods

IMD isolates are routinely submitted to CDC through two surveillance programs, Active Bacterial Core surveillance (ABCs) and Enhanced Meningococcal Disease Surveillance (EMDS), that cover all states and jurisdictions. Isolates received at CDC undergo whole genome sequencing (WGS) to determine serogroups, molecular sequence types, and phylogenetic clustering. In this study, we evaluated the relative prevalence of serogroups among IMD cases as identified by WGS from 2018–2022 (n=1091) to determine their distribution change over time.

## Results

During 2018, NmB accounted for 37% (95/255) of reported IMD cases, followed by NmC at 29% (74/255) and NmY at 13% (34/255). In 2019, NmB and NmC were evenly distributed at 25% (70/277) and 26% (73/277), respectively, with NmY accounting for 22% (61/277). In the following year of 2020, there was a decrease in NmB to 20% (38/191) and in NmC to 25% (47/191) while NmY surged to 26% (49/191). In preliminary data for 2021 and 2022, NmB was 17% (26/153) and 16% (31/215), while NmC was the predominant serogroup at 45% (69/153) and 37% (80/215), respectively, with NmY at 16% (25/153) and 22% (47/215). Overall, between 2018–2022, NmB and NmC were the two predominant serogroups, accounting for roughly 55% of the invasive isolates received at the CDC.

## Conclusions

While NmB was the predominant cause of IMD during 2015-2018, a shift to NmC has been observed based on our preliminary WGS data for years 2021-2022. The relative NmC increase since 2021 is possibly due to a large, ongoing NmC outbreak in Florida that began in late 2021. Overall, our data indicates that NmB and NmC account for the majority of IMD in the United States, with NmC having become the dominant serogroup in recent years.