**Results of *Neisseria gonorrhoeae* antibiotic susceptibility testing in Massachusetts, January 19, 2023 – January 18, 2024**

**Background**:

In 2022, a novel strain of multi-drug-non-susceptible *Neisseria gonorrhoeae* was identified in two Massachusetts residents. At the time that these cases were identified, the scope of antibiotic non-susceptible *N gonorrhoeae* in Massachusetts was unknown as the majority of diagnoses occur through nucleic acid amplification testing (NAAT), a method that identifies *N gonorrhoeae* with high sensitivity, but does not provide antibiotic susceptibility testing (AST). As a result, MDPH released [a clinical alert on January 19, 2023](https://www.mass.gov/doc/clinical-alert-on-non-susceptible-gonorrhea-january-19-2023/download), in which clinicians were asked to perform gonococcal culture from genital and extragenital sites for symptomatic patients in addition to routine NAAT testing. The purpose of this document is to share the results of this enhanced surveillance.

**Testing performed:**

In total, there were 560 unique isolates with AST results with a specimen collection date from January 19, 2023 through January 18, 2024. Most microbiology laboratories in Massachusetts send *N gonorrhoeae* isolates to the State Public Health Laboratory where routine Antibiotic Susceptibility testing is performed via e-test for the following antibiotics: cefixime, cefoxitin, ceftriaxone, ciprofloxacin, azithromycin, and spectinomycin. Some isolates had additional antibiotic susceptibility testing performed at other microbiology labs including Mayo Clinic Laboratories and Quest Diagnostics. Cultures of *N gonorrhoeae* grew from numerous anatomic sites including urethral, cervical, rectal, pharyngeal, blood, and ocular. When an individual had cultures from multiple anatomic sites on the same day, only one culture is represented. When there were differences in AST results on cultures collected from different anatomic sites on the same individual on the same day, the isolate with greater antibiotic resistance is displayed.

Table 1: Geographic distribution\* of *N gonorrhoeae* isolates with AST collected from January 19, 2023 – January 18\*\*, 2024 by Health Service Region\*\*\* (N=560)

|  |  |  |
| --- | --- | --- |
| **Health Service Region** | **Count** | **Percent** |
| Western | 20 | 3.6 |
| Central | 25 | 4.5 |
| Northeast | 116 | 20.7 |
| Metro West | 123 | 22.0 |
| Boston | 232 | 41.4 |
| Southeast | 41 | 7.3 |
| Unknown | 3 | 0.5 |
| Total | 560 | 100 |

\* Based upon case residence at time of diagnosis

\*\* When an individual patient had cultures positive from multiple anatomic sites on the same day, only one culture is represented

\*\*\* Definitions of Health Service Regions can be found at: [Health Services Regions.](https://www.mass.gov/info-details/massgis-data-ma-executive-office-of-health-human-services-regions#:~:text=The%20regions%20%2D%20Western%2C%20Central%2C,and%20towns%20(see%20map))

***N gonorrhoeae* susceptibility results:**

Table 2: Antibiotic Susceptibility Results\* for *N gonorrhoeae* isolates collected from January 19, 2023 – January 18, 2024 in Massachusetts\*\*

|  |  |  |
| --- | --- | --- |
| **Antibiotic** | **Percent Susceptible** | **Number of Isolates Tested** |
| Cefoxitin | 100 | 540 |
| Cefixime | 100 | 552 |
| Ceftriaxone | 100 | 560 |
| Ciprofloxacin | 56.4 | 560 |
| Spectinomycin | 100 | 540 |
| Azithromycin | 95.7 | 540 |
| Tetracycline | 30.4 | 56 |
| Penicillin | 10 | 40 |

\* Antibiotic susceptibility testing was performed by e-test at the Massachusetts State Public Health Laboratory with additional testing performed at Mayo Clinic Laboratories, Massachusetts General Hospital, Lowell General Hospital, and Laboratory Corporation of America

\*\* When an individual patient had cultures positive from multiple anatomic sites on the same day, only one culture is represented

