

ABCs Isolate Characterization

| Pathogen | Test(s) |
|-------------------------------------|--|
| <i>Neisseria meningitidis</i> | <p>Identification and serogrouping by conventional microbiological methods. Confirmation of serogroup and species identification using real-time PCR</p> <p>Whole Genome sequencing (WGS)¹ and pulsed field gel electrophoresis as part of special projects</p> |
| <i>Haemophilus influenzae</i> | <p>Identification and serotyping (a-f) by conventional microbiological methods</p> <p>Confirmation of species identification using real-time PCR; confirmation of serotype using real-time PCR as needed</p> <p>WGS, pulsed field gel electrophoresis as part of special projects.</p> |
| group A <i>Streptococcus</i> | <p>WGS based for all isolates which includes:</p> <ol style="list-style-type: none"> 1. <i>emm</i> (including subtype level) and T typing 2. Resistance mechanisms and all MICs on panel (and others) 3. Multilocus sequence type (MLST², 7 locus genotype useful for identifying major lineages and species verification). 4. Presence/absence of key surface proteins, exotoxins, virulence markers 5. Strategic subset targeted for conventional MIC determination |
| group B <i>Streptococcus</i> | <p>From select surveillance areas: WGS based for all isolates, which includes:</p> <ol style="list-style-type: none"> 1. Capsular serotype 2. Resistance mechanisms and all MICs on panel (and others) 3. Multilocus sequence type (MLST) 4. Strategic subset targeted for conventional MIC determination 5. PBP type. Penicillin binding protein transpeptidase sequence (PBP type) database for detecting first step beta lactam resistance. 6. Presence or absence of various surface proteins, including certain vaccine candidates. |
| <i>Streptococcus pneumoniae</i> | <p>WGS based for all isolates, which includes:</p> <ol style="list-style-type: none"> 1. Capsular serotype 2. MIC determination, including beta lactam MICs determined through PBP typing (www.cdc.gov/streplab/mic-tables.html) 3. Multilocus sequence type (MLST) 4. Strategic subset targeted (based upon successful/newly emerging strains) for conventional MIC determination. 5. Presence or absence of key surface proteins (e.g. Pili 1 and 2). |

¹ WGS: Whole genome sequencing – a process that determines the complete DNA sequence of an organism’s genome at one time. Used as part of CDC’s AMD initiative: www.cdc.gov/amd/project-summaries/pneumococcal-vaccines.html

² Multilocus sequence type- 7 locus genotype useful for both identifying major lineages and for species verification