Antimicrobial Susceptibilities of Selected Pathogens, 2008

Sampling Methodology
- All isolates tested
- 10% sample of statewide isolates received at MDH
- Isolates from a normally sterile site

Number of Isolates Tested
- 79

<table>
<thead>
<tr>
<th>Pathogen</th>
<th>Tested Isolates</th>
<th>Susceptible</th>
<th>D-test Sensitivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>amoxicillin</td>
<td>77</td>
<td>100</td>
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</tr>
<tr>
<td>ampicillin</td>
<td>75</td>
<td>100</td>
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</tr>
<tr>
<td>penicillin</td>
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<td>100</td>
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<tr>
<td>cefotaxime</td>
<td>100</td>
<td>100</td>
<td>Yes</td>
</tr>
<tr>
<td>ceftriaxone</td>
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<td>97</td>
<td>No</td>
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<tr>
<td>cefotaxime sodium</td>
<td>96</td>
<td>97</td>
<td>No</td>
</tr>
<tr>
<td>cefixime</td>
<td>96</td>
<td>97</td>
<td>No</td>
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<tr>
<td>cefuroxime sodium</td>
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<td>cotrimoxazole</td>
<td>96</td>
<td>97</td>
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</tr>
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<td>erythromycin</td>
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<td>chloramphenicol</td>
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<td>97</td>
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<tr>
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<td>97</td>
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<td>trimethoprim/sulfamethoxazole</td>
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<td>Yes</td>
</tr>
<tr>
<td>vancomycin</td>
<td>100</td>
<td>100</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Trends, Comments, and Other Pathogens

1 Campylobacter spp.  
Ciprofloxacin susceptibility was determined for all isolates (n=488). Only 29% of isolates from patients returning from foreign travel were susceptible to quinolones. Most susceptibilities were determined using 2009 CLSI breakpoints for Campylobacter. Susceptibilities for gentamicin and streptomycin were based on an MIC ≥ 2 μg/ml.

2 Salmonella enterica  
Antimicrobial treatment for enteric salmonellosis is generally not recommended.

3 Neisseria gonorrhoeae  
In 2008, 229 Neisseria gonorrhoeae isolates were tested for antibiotic resistance. 162 (71%) of the isolates were susceptible to ceftriaxone and cefotaxime (intermediate = 2.0 μg/ml, resistant > 4.0 μg/ml), and penicillin (resistant > 12 μg/ml). By nonmeningitis breakpoints (intermediate = 2.0 μg/ml, resistant ≥ 4.0 μg/ml), 85% (622/735) isolates were susceptible to ceftriaxone and cefotaxime. By meningitis breakpoints (intermediate = 4.0 μg/ml, resistant ≥ 5.0 μg/ml), 94% (682/730) isolates were susceptible to ceftriaxone and cefotaxime. Isolates were screened for high-level resistance to rifampin at a single MIC; all were < 2.0 μg/ml. 12% (93/776) isolates were resistant to two or more antibiotics classes. CLSI also has breakpoints for extended-spectrum beta-lactams and aztreonam.

4 Neisseria meningitidis  
According to CLSI, MICs ≥ 8 μg/ml for nalidixic acid may correlate with diminished fluoroquinolone susceptibility. In January 2008, 2 isolates from cases occurring in northeastern MN had nalidixic acid MICs > 8 μg/ml and ciprofloxacin MICs of 0.25 μg/ml indicative of resistance. Azithromycin may be used as an alternative to ciprofloxacin for chlamydial pneumonia during pregnancy.

5 Group A Streptococcus  
Among 8 erythromycin-resistant, clindamycin-susceptible isolates, 4 (67%) had inducible resistance to clindamycin by D-test.

6 Group B Streptococcus  
99% (223/223) of early-onset infant, 94% (1617) of late-onset infant, 65% (1/2) of maternal, and 95% (320/337) of other invasive GBS cases were tested. Among 65 erythromycin-resistant, clindamycin-susceptible isolates, 33 (51%) had inducible resistance to clindamycin by D-test. Overall, 64% (213/339) were susceptible to clindamycin and were D-test negative (where applicable). 72% (28/39) of infant and maternal cases were susceptible to clindamycin and were D-test negative (where applicable).

7 Streptococcus pneumoniae  
The 699 isolates tested represented 93% of 712 total cases. Reported above are the proportions of case-isolates susceptible by meningitis breakpoints for ceftriaxone, cefotaxime (intermediate = 1.0 μg/ml, resistant > 2.0 μg/ml), and penicillin (resistant > 12 μg/ml). By nonmeningitis breakpoints (intermediate = 2.0 μg/ml, resistant ≥ 4.0 μg/ml), 95% (826/859) and 95% (826/859) of isolates were susceptible to cefotaxime and ceftriaxone. Respectively. By meningitis breakpoints (intermediate = 4.0 μg/ml, resistant ≥ 5.0 μg/ml), 94% (822/859) of isolates were susceptible to penicillin. Isolates were screened for high-level resistance to rifampin at a single MIC; all were < 2.0 μg/ml. 12% (109/905) of isolates were resistant to two or more antibiotic classes and 12% (79/659) were resistant to three or more antibiotic classes. CLSI also has breakpoints for extended-spectrum beta-lactams and aztreonam.

8 Mycobacterium tuberculosis (TB)  
National guidelines recommend initial four-drug therapy for TB disease, at least until first-line drug susceptibility results are known. Of the 23 drug-resistant TB cases reported in 2008, 22 (96%) were in foreign-born persons, including 2 of 3 multidrug-resistant (MDR-TB) cases for 2008 (i.e., resistant to at least isoniazid (INH) and rifampin). There were no cases of extensively drug-resistant TB (XDR-TB) (i.e., resistance to at least INH, rifampin, any fluoroquinolone, and at least one second-line injectable drug).

9 Invasive methicillin-resistant Staphylococcus aureus  
3,583 cases of MRSA infection were reported in 2008 through 12 sentinel sites, of which 303 (9%) were invasive (blood: 78%). Of these invasive cases, 73% (221/303) had an isolate submitted and antimicrobial susceptibility testing conducted. Of invasive cases with an isolate, 80% were epidemiologically classified as healthcare-associated. Susceptibilities were as follows: 100% to imipenem, linezolid, vancomycin, gentamicin, rifampin, tetracycline, spectinomycin, chloramphenicol, clindamycin (non-typhoidal), and azithromycin (where applicable). 29% were resistant to erythromycin. Most susceptibilities were determined using 2009 CLSI breakpoints for Staphylococcus. Susceptibilities for gentamicin and streptomycin were based on an MIC ≥ 2 μg/ml.
Report Immediately by Telephone

Anthrax (Bacillus anthracis) a
Botulism (Clostridium botulinum)
Brucellosis (Brucella spp.) a
Clostridium difficile
Diphtheria (Corynebacterium diphtheriae) a
Hemolytic streptococcal a
Measles (rubella) a
Meningococcal disease (Neisseria meningitidis) (all invasive disease) a, b
Orthopneumonia virus a
Plague (Yersinia pestis) a
Polymyelitis a
Q fever (Coxiella burnetii) a
Rabies (animal and human cases and suspected cases) a
Rubella and congenital rubella syndrome a
Severe Acute Respiratory Syndrome (SARS) a
Smallpox (variola) a
Tularemia (Francisella tularensis) a
Unusual or increased case incidence of any suspect infectious illness a

a Submission of clinical materials required. If a rapid, non-culture assay is used for diagnosis, we request that positive results be cultured, and isolates submitted. If this is not possible, send specimens, enzymatic panels, and/or other appropriate material. Call the MDH Public Health Laboratory at 651-201-4953 for instructions.
b Isolates are considered to be from invasive disease if they are isolated from a normally sterile site, e.g., blood, CSF, joint fluid, etc.
c Report on separate Sexually Transmitted Disease Report Card.
e For criteria for reporting laboratory confirmed cases of influenza, see www.health.state.mn.us/divs/idepc/dtopics/reportable/index.html.

Antimicrobial Susceptibilities of Selected Pathogens, 2008
Minnesota Department of Health
625 North Robert Street
PO Box 64975
St. Paul, MN 55164-0975
www.health.state.mn.us

Reportable Diseases, MN Rule 4605.7040

Amebiasis (Entamoeba histolytica/dispar)
Anaplasmosis (Anaplasma phagocytophilum)
Asthma (involving, but not limited to, LaCrosse or ehrlichia, eastern equine encephalitis, Western equine encephalitis, St. Louis encephalitis, and West Nile virus)
Babesiosis (Babesia spp.)
Blastomycosis (Blastomyces dermattridi)
Campylobacteriosis (Campylobacter spp.) a
Cat scratch disease (infection caused by Bartonella spp.)
Chancroid (infection caused by Bartonella spp.)
Chlamydia (Chlamydia trachomatis) a
Cryptosporidiosis (Cryptosporidium spp.) a
Cyclosporiasis (Cyclospora spp.) a
Dengue virus infection (including, but not limited to, dengue fever, dengue hemorrhagic fever, and dengue shock syndrome)
Diphtheria (Corynebacterium diphtheriae)
Encephalitis (caused by viral agents)
Enteric E. coli infection (E. coli O157:H7, other enterohemorrhagic [Shiga toxin]
Group A streptococcal illness a
Group B streptococcal infection (all invasive disease) a
Hantavirus infection (including, but not limited to, hantavirus pulmonary syndrome)
Hemolytic uremic syndrome a
Measles (rubeola) a
Meningococcal disease (Neisseria meningitidis) (all invasive disease) a, b
Meningitis (caused by viral agents)
Mumps (all primary viral types including A, B, C, and D) a
Histoplasmosis (Histoplasma capsulatum)
Human immunodeficiency virus (HIV) infection, including Acquired Immunodeficiency Syndrome (AIDS), a, b
Influenza (unusual case incidence, critical illness, or laboratory-confirmed cases) a, e
Kawasaki disease a
Legionellosis (Legionella spp.) a
Leptospirosis (Leptospira interrogans)
Listeriosis (Listeria monocytogenes)
Lyme disease (Borrelia burgdorferi) a
Malignant (Plasmodium spp.) a
Meningitis (caused by viral agents)
Mumps (all primary viral types including A, B, C, and D) a
Neonatal sepsis, less than 7 days after birth (bacteria isolated from a sterile site, excluding coagulase-negative Staphylococcus) a
Pertussis (Bordetella pertussis) a
Psittacosis (Chlamydia psittaci)
Rabies (animal and human cases and suspected cases) a
Rubella and congenital rubella syndrome a
Rheumatic fever (cases meeting the Jones Criteria only)
Rocky Mountain spotted fever (Rickettsia rickettsii, R. canada)
Orthopox virus a
Rubella (1. Suspect and probable cases of SARS. 2. Cases of health care workers hospitalized for pneumonia or acute respiratory distress syndrome.) a
Salmonella (all primary viral types including A, B, C, and D) a
Syphilis (Treponema pallidum) a
Tetanus (Clostridium tetani)
Toxic shock syndrome a
Typhoid fever (Salmonella typhosa) a
Transmissible spongiform encephalopathy (TSE) a
Trichinosis (Trichinella spiralis)
Tuberculosis (Mycobacterium tuberculosis complex) a
Ureaplasma (all primary viral types including A, B, C, and D) a
Vibrio (all primary viral types including A, B, C, and D) a
Yellow fever a
Yersiniosis, enteric a
Zika fever (Aedes aegypti) a

Antimicrobial Susceptibilities

Report Within One Working Day

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Yersiniosis, enteric a
Zika fever (Aedes aegypti) a

To Report a Case: Fill out a Minnesota Department of Health case report form and mail to the above address. For diseases that require immediate reporting, or for questions about reporting, call the Acute Disease Investigation and Control Section at: 651-201-5414 or 1-877-676-5414 or fax form to 651-201-2424.

To Send an Isolate to MDH: If you are sending an isolate by U.S. mail, use regulatory compliant transport media with a shipment history that includes MDH PO Box 64909, St. Paul, MN 55164. If you are using a courier, use transport packaging appropriate for the specific courier and send to 601 North Robert Street, St. Paul, MN 55155. To request pre-paid transport labels (both mail and courier) and packaging, or for other assistance, call the Public Health Laboratory Specimen Handling at 651-201-4953.

The MDH Antibiogram is available on the MDH web site (http://www.health.state.mn.us). Laminated copies can be ordered from: Antibiogram, Minnesota Department of Health, Acute Disease Investigation and Control Section, 625 North Robert Street, PO Box 64975, St. Paul, MN 55164-0975.