

### Report Immediately by Telephone

- Anthrax (*Bacillus anthracis*) a
- Botulism (*Clostridium botulinum*)
- Brucellosis (*Brucella* spp.) a
- Cholera (*Vibrio cholerae*) a
- Diphtheria (*Corynebacterium diphtheriae*) a
- Hemolytic uremic syndrome a
- Measles (rubeola) a
- Meningococcal disease (*Neisseria meningitidis*)
- (all invasive disease) a, b
- Orthopox virus a
- Plague (*Yersinia pestis*) a
- Polio myelitis a
- Q fever (*Coxiella burnetii*) a
- Rabies (animal and human cases and suspected cases)
- Rubella and congenital rubella syndrome a
- Severe Acute Respiratory Syndrome (SARS)
- (1. Suspect and probable cases of SARS. 2. Cases of health care workers hospitalized for pneumonia or acute respiratory distress syndrome.) 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 positives be cultured, and isolates submitted. If this is not possible, send specimens, enrichment broth, 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.

d Report on separate HIV Report Card.

e For criteria for reporting laboratory confirmed cases of influenza, see [www.health.state.mn.us/divs/idepd/topics/reportable/index.html](http://www.health.state.mn.us/divs/idepd/topics/reportable/index.html).

### Reportable Diseases, MN Rule 4605.7040

#### Report Within One Working Day

- Amebiasis (*Entamoeba histolytica/dispar*)
- Anaplasmosis (*Anaplasma phagocytophilum*)
- Arboviral disease (including, but not limited to, LaCrosse encephalitis, eastern equine encephalitis, western equine encephalitis, St. Louis encephalitis, and West Nile virus)
- Babesiosis (*Babesia* spp.)
- Blastomycosis (*Blastomyces dermatitidis*)
- Campylobacteriosis (*Campylobacter* spp.) a
- Cat scratch disease (infection caused by *Bartonella* spp.)
- Chancroid (*Haemophilus ducreyi*) c
- Chlamydia trachomatis infection c
- Coccidioidomycosis
- Cronobacter (Enterobacter) sakazakii* (infants under 1 year of age) a
- Cryptosporidiosis (*Cryptosporidium* spp.) a
- Cyclosporiasis (*Cyclospora* spp.) a
- Dengue virus infection
- Diphyllobothrium latum* infection
- Ehrlichiosis (*Ehrlichia* spp.)
- Encephalitis (caused by viral agents)
- Enteric *E. coli* infection
- (*E. coli* O157:H7, other enterohemorrhagic [Shiga toxin-producing] *E. coli*, enteropathogenic *E. coli*, enteroinvasive *E. coli*, enterotoxigenic *E. coli*) a
- Giardiasis (*Giardia lamblia*)
- Gonorrhea (*Neisseria gonorrhoeae*) c
- Haemophilus influenzae* disease
- (all invasive disease) a
- Hantavirus infection
- Hepatitis (all primary viral types including A, B, C, D, and E)
- Histoplasmosis (*Histoplasma capsulatum*)
- Human immunodeficiency virus (HIV) infection, including Acquired Immunodeficiency Syndrome (AIDS) a, d
- Influenza
- (unusual case incidence, critical illness, or laboratory confirmed cases) a, e
- Kawasaki disease
- Kingella* spp. (invasive only) a, b
- Legionellosis (*Legionella* spp.) a
- Leprosy (Hansen's disease) (*Mycobacterium leprae*)
- Leptospirosis (*Leptospira interrogans*)
- Listeria monocytogenes*) a
- Lyme disease (*Borrelia burgdorferi*)
- Malaria (*Plasmodium* spp.)
- Meningitis (caused by viral agents)
- Mumps
- Neonatal sepsis, less than 7 days after birth (bacteria isolated from a sterile site, excluding coagulase-negative *Staphylococcus*) a, b
- Pertussis (*Bordetella pertussis*) a
- Psittacosis (*Chlamydophila psittaci*)
- Retrovirus infection
- Reye syndrome
- Rheumatic fever (cases meeting the Jones Criteria only)
- Rocky Mountain spotted fever (*Rickettsia rickettsii*, *R. canadensis*)
- Salmonellosis, including typhoid (*Salmonella* spp.) a
- Shigellosis (*Shigella* spp.) a
- Staphylococcus aureus* (vancomycin-intermediate *S. aureus* [VISA], vancomycin-resistant *S. aureus* [VRSA], and death or critical illness due to community-associated *S. aureus* in a previously healthy individual) a
- Streptococcal disease (all invasive disease caused by Groups A and B streptococci and *S. pneumoniae*) a, b
- Syphilis (*Treponema pallidum*) c
- Tetanus (*Clostridium tetani*)
- Toxic shock syndrome a
- Toxoplasmosis (*Toxoplasma gondii*)
- Transmissible spongiform encephalopathy
- Trichinosis (*Trichinella spiralis*)
- Tuberculosis (*Mycobacterium tuberculosis* complex) (Pulmonary or extrapulmonary sites of disease, including laboratory confirmed or clinically diagnosed disease, are reportable. Latent tuberculosis infection is not reportable.) a
- Typhus (*Rickettsia* spp.)
- Unexplained deaths and unexplained critical illness
- (possibly due to infectious cause) a
- Varicella-zoster disease (1. Primary [chickenpox]: unusual case incidence, critical illness, or laboratory-confirmed cases. 2. Recurrent [shingles]: unusual case incidence or critical illness.) a
- Vibrio* spp. a
- Yellow fever
- Yersiniosis, enteric (*Yersinia* spp.) a

Sentinel Surveillance (at sites designated by the Commissioner)

- Methicillin-resistant *Staphylococcus aureus* (invasive only) a, b
- Clostridium difficile* a
- Carbapenem-resistant *Enterobacteriaceae* spp. (CRE) and carbapenem-resistant *Acinetobacter* spp. a

Antimicrobial Susceptibilities  
of Selected Pathogens,  
2012



Minnesota Department of Health  
625 North Robert Street  
PO Box 64975  
St. Paul, MN 55164-0975  
[www.health.state.mn.us](http://www.health.state.mn.us)

#### 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 651-201-5743.

#### To Send an Isolate to MDH:

If you are sending an isolate by U.S. mail, use regulatory compliant transport packaging and send to: PO Box 64899, 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 Unit 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.

Antimicrobial Susceptibilities  
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Sampling Methodology  
 † all isolates tested  
 ‡ ~10% sample of statewide isolates received at MDH  
 § isolates from a normally sterile site

	<i>Campylobacter</i> spp. <sup>1†</sup>	<i>Salmonella</i> Typhimurium <sup>2†</sup>	Other <i>Salmonella enterica</i> serotypes (non-typhoidal) <sup>2†</sup>	<i>Shigella</i> spp. <sup>3†</sup>	<i>Neisseria gonorrhoeae</i> <sup>4</sup>	<i>Neisseria meningitidis</i> <sup>5§</sup>	Group A <i>Streptococcus</i> <sup>6§</sup>	Group B <i>Streptococcus</i> <sup>7§</sup>	<i>Streptococcus pneumoniae</i> <sup>8§</sup>	<i>Mycobacterium tuberculosis</i> <sup>9†</sup>
Number of Isolates Tested	92	106	63	39	79	12	159	512	478	123

		% Susceptible									
β-lactam antibiotics	amoxicillin										92
	ampicillin		68	94	85		75	100	100		
	penicillin					0	75	100	100	80	
	cefixime					100					
	cefepodoxime					100					
	cefuroxime sodium									89	
	cefotaxime							100	100	90	
	ceftriaxone		100	97	100	100	100			90	
meropenem						100			89		
Other antibiotics	ciprofloxacin	75 <sup>1</sup>	99	100	100	88	100				
	levofloxacin						100	99	99	100	
	azithromycin	100				99	100				
	erythromycin	100						92	46	66	
	clindamycin							98/93 <sup>6</sup>	66/55 <sup>7</sup>	93	
	chloramphenicol		75	100	95					99	
	gentamicin	84									
	spectinomycin					100					
	tetracycline	42				17		94		91	
	trimethoprim/sulfamethoxazole (TMP/SMX)		97	100	33					84	
vancomycin							100	100	100		
TB antibiotics	ethambutol										98
	isoniazid										90
	pyrazinamide										91
	rifampin						100				98

Trends, Comments, and Other Pathogens

<sup>1</sup> <i>Campylobacter</i> spp.	Quinolone susceptibility was determined for all isolates (n=889); isolates that were screened as nalidixic acid-susceptible were assumed to be ciprofloxacin susceptible. Only 25% of isolates from patients returning from foreign travel (n=144) were susceptible to quinolones. <i>Campylobacter</i> susceptibilities were determined using CDC NARMS 2010 Report Standards ( <a href="http://www.cdc.gov/narms">www.cdc.gov/narms</a> ).
<sup>2</sup> <i>Salmonella enterica</i> (non-typhoidal)	Antimicrobial treatment for uncomplicated gastroenteritis due to <i>Salmonella</i> is not generally recommended.
<sup>3</sup> <i>Shigella</i> spp.	For cases in which treatment is required and susceptibility is unknown or an ampicillin and TMP/SMX-resistant strain is isolated, azithromycin for 3 days, parenteral ceftriaxone for 5 days, or a fluoroquinolone (such as ciprofloxacin) for 3 days should be administered. For susceptible strains, ampicillin or TMP/SMX is effective; amoxicillin is less effective because of rapid absorption from the gastrointestinal tract. (2012 Red Book)
<sup>4</sup> <i>Neisseria gonorrhoeae</i>	Routine resistance testing for <i>Neisseria gonorrhoeae</i> by MDH PHL was discontinued in 2008. Susceptibility results were obtained from the CDC Regional Laboratory in Cleveland, OH, and are for isolates obtained through the Gonococcal Isolate Surveillance Program. Isolates (n = 79) were received from the Red Door Clinic in Minneapolis. Resistance criteria for cefixime, ceftriaxone, cefepodoxime, and azithromycin have not been established; data reflect reduced susceptibility using provisional breakpoints (minimum inhibitory concentration ≥0.5 µg/ml, ≥0.5 µg/ml, ≥1.0 µg/ml, and ≥2.0 µg/ml, respectively). Also, the number of <i>Neisseria gonorrhoeae</i> isolates submitted for testing increased from 47 in 2011 to 79 in 2012.
<sup>5</sup> <i>Neisseria meningitidis</i>	In 2012, 3 case-isolates were intermediate to penicillin and ampicillin. There were no case-isolates with ciprofloxacin resistance. In 2008, 2 isolates from cases occurring in northwestern MN had nalidixic acid MICs >8 µg/ml and ciprofloxacin MICs of 0.25 µg/ml indicative of resistance. The MIC interpretive criteria for azithromycin, ciprofloxacin, levofloxacin, and rifampin apply to prophylactic therapy and do not apply to therapy of patients with invasive meningococcal disease.
<sup>6</sup> Group A <i>Streptococcus</i>	The 159 isolates tested represent 94% of 169 total cases. Among 10 erythromycin-resistant, clindamycin-susceptible or intermediate isolates 8 (80%) had inducible resistance to clindamycin for a total of 93% that were susceptible to clindamycin and did not exhibit inducible clindamycin resistance.
<sup>7</sup> Group B <i>Streptococcus</i>	90% (9/10) of early-onset infant, 100% (13/13) of late-onset infant, 89% (8/9) of maternal, and 91% (482/532) of other invasive GBS cases were tested. Among 101 erythromycin-resistant, clindamycin susceptible or intermediate isolates 57 (56%) had inducible resistance to clindamycin for a total of 55% (283/512) that were susceptible to clindamycin and did not exhibit inducible clindamycin resistance. 70% (21/30) of infant and maternal cases were susceptible to clindamycin and did not exhibit inducible clindamycin resistance.
<sup>8</sup> <i>Streptococcus pneumoniae</i>	The 478 isolates tested represent 95% of 503 total cases. Reported above are the proportions of case-isolates susceptible by meningitis breakpoints for cefotaxime, ceftriaxone (intermediate = 1.0 µg/ml, resistant > 2.0 µg/ml) and penicillin (resistant > 0.12 µg/ml). By nonmeningitis breakpoints (intermediate = 2.0 µg/ml, resistant > 4.0 µg/ml), 96% (458/478) of isolates were susceptible to cefotaxime and ceftriaxone. By nonmeningitis breakpoints (intermediate = 4.0 µg/ml, resistant > 8.0 µg/ml), 95% (455/478) of isolates were susceptible to penicillin. Isolates were screened for high-level resistance to rifampin at a single MIC; all were < 2 µg/ml. Using meningitis breakpoints, 17% (83/478) of isolates were resistant to two or more antibiotic classes and 9% (42/478) were resistant to three or more antibiotic classes. (CLSI also has breakpoints for oral penicillin V; refer to the most recent CLSI recommendations for information).
<sup>10</sup> <i>Mycobacterium tuberculosis</i> (TB)	National guidelines recommend initial four-drug therapy for TB disease, at least until first-line drug susceptibility results are known. Of the 23 TB cases reported in 2012 resistant to at least one first-line drug, 21 (91%) were in foreign-born, including the 1 multidrug-resistant (MDR-TB) case (i.e., resistant to at least isoniazid and rifampin) reported. There were no cases of extensively drug-resistant TB (XDR-TB) (i.e., resistance to at least isoniazid, rifampin, any fluoroquinolone, and at least one injectable second-line drug).
Invasive methicillin-resistant <i>Staphylococcus aureus</i> (MRSA)	233 cases of invasive MRSA infection were reported in 2012 in Ramsey and Hennepin Counties, of which 152 (65%) were from blood. 79% (184/233) had an isolate submitted and antimicrobial susceptibility testing conducted. Of cases with an isolate, 83% (153/184) were epidemiologically classified as healthcare-associated. Susceptibilities were as follows: 100% to linezolid, telavancin, and vancomycin; 99% to daptomycin, doxycycline, and rifampin; 98% gentamicin, tetracycline, and TMP/SMX; 22% to levofloxacin; 11% to erythromycin. Isolates were screened for mupirocin resistance with 3% exhibiting high-level resistance (MIC >256 µg/ml). 42% (64/153) were susceptible to clindamycin by broth microdilution; however, 23/47 isolates that were clindamycin susceptible or intermediate and erythromycin resistant were found to have inducible resistance to clindamycin (27% susceptible and negative for inducible clindamycin resistance). For community-associated (CA) cases (31/39 with isolates), susceptibilities were as follows: 100% to daptomycin, doxycycline, gentamicin, linezolid, rifampin, telavancin, TMP/SMX, vancomycin; 97% to tetracycline; 42% to levofloxacin; 13% to erythromycin. 3% (1/31) of isolates screened for mupirocin resistance exhibited high-level resistance. 77% (24/31) were susceptible to clindamycin by broth microdilution; however, 7/20 isolates that were clindamycin susceptible or intermediate and erythromycin resistant were found to have inducible clindamycin resistance (55% susceptible and negative for inducible clindamycin resistance). No VISA or VRSA cases were confirmed in 2012.
<i>Bordetella pertussis</i>	In 2012, no cases of pertussis were tested for susceptibility in Minnesota. Nationally, only 11 erythromycin-resistant <i>B. pertussis</i> cases have been identified to date.
Carbapenem-resistant <i>Enterobacteriaceae</i> (CRE)	Of 77 CRE isolates submitted from 76 cases, 29 (38%) were <i>bla</i> <sub>KPC</sub> positive by PCR including 15 (52%) <i>K. pneumoniae</i> , 12 (41%) <i>E. cloacae</i> , 1 (3.5%) <i>E. coli</i> , and 1 (3.5%) <i>K. oxytoca</i> . 17 (59%) were residents of the 7-county metro area. Additionally, 3 isolates from two non-MN residents were positive for <i>bla</i> <sub>KDM</sub> by PCR: 2 <i>K. pneumoniae</i> and 1 <i>E. coli</i> . The definition of CRE is based on current CLSI breakpoints and includes <i>Enterobacteriaceae</i> that are nonsusceptible to a carbapenem (excluding ertapenem) and resistant to all tested third generation cephalosporins. Due to their intrinsic resistance to imipenem, additional criteria apply for all species of <i>Proteus</i> , <i>Providencia</i> , and <i>Morganella</i> .
<i>Escherichia coli</i> O157:H7	Antimicrobial treatment for <i>E. coli</i> O157:H7 infection is not recommended.