

Antimicrobial Susceptibilities of Selected Pathogens, 2005



Sampling Methodology

† all isolates tested
 ‡ ~10% sample of statewide isolates received at MDH
 # ~20% sample of statewide isolates received at MDH
 § isolates from a normally sterile site

	<i>Campylobacter</i> spp. 1†	<i>Salmonella</i> Typhimurium 2†	Other <i>Salmonella</i> serotypes (non-typhoidal) 2‡	<i>Shigella</i> spp. #	<i>Neisseria gonorrhoeae</i> 3	<i>Neisseria meningitidis</i> 4†§	Group A <i>Streptococcus</i> 5†§	Group B <i>Streptococcus</i> 6†§	<i>Streptococcus pneumoniae</i> 7†§	<i>Haemophilus influenzae</i> 8†§	<i>Mycobacterium tuberculosis</i> 9†
Number of Isolates Tested	79	112	45	10	392	16	111	293	532	46	151

% Susceptible

β-lactam antibiotics	amoxicillin	/	/	/	/	/	/	/	94	/	/	
	ampicillin	/	68	93	60	/	/	100	100	/	63	/
	penicillin	/	/	/	/	3	88	100	100	77	/	/
	cefixime	/	/	/	/	100	/	/	/	/	/	/
	cefuroxime sodium	/	/	/	/	/	/	/	/	87	96	/
	cefotaxime	/	/	/	/	/	/	100	100	90	100	/
	ceftriaxone	/	94	98	100	100	100	/	/	92	/	/
	meropenem	/	/	/	/	/	100	/	/	90	100	/

Other antibiotics	ciprofloxacin	79 ¹	100	100	100	92	100	/	/	/	100	/
	levofloxacin	/	/	/	/	/	100	100	99	99	/	/
	azithromycin	/	/	/	/	32	/	/	/	/	98	/
	erythromycin	100	/	/	/	/	/	92	67	77	/	/
	clindamycin	/	/	/	/	/	/	99/92 ⁵	83/74 ⁶	91	/	/
	chloramphenicol	/	76	96	60	/	100	/	/	99	100	/
	gentamicin	97	/	/	/	/	/	/	/	/	/	/
	spectinomycin	/	/	/	/	100	/	/	/	/	/	/
	tetracycline	44	/	/	/	34	/	89	/	90	100	/
	trimethoprim/sulfamethoxazole	/	96	96	50	/	63	/	/	77	89	/
	vancomycin	/	/	/	/	/	/	100	100	100	/	/

TB antibiotics	ethambutol	/	/	/	/	/	/	/	/	/	97
	isoniazid	/	/	/	/	/	/	/	/	/	91
	pyrazinamide	/	/	/	/	/	/	/	/	/	97
	rifampin	/	/	/	/	/	100	/	/	/	100

Trends, Comments and Other Pathogens

1 <i>Campylobacter</i> spp.	Ciprofloxacin susceptibility was determined for all isolates (n=746). Only 34% of isolates from patients returning from foreign travel were susceptible to quinolones. Susceptibilities were determined using 2005 CLSI (formerly NCCLS) breakpoints for <i>Enterobacteriaceae</i> . Susceptibility for erythromycin was based on an MIC < 4.0 µg/ml.
2 <i>Salmonella enterica</i> (non-typhoidal)	Antimicrobial treatment for enteric salmonellosis generally is not recommended.
3 <i>Neisseria gonorrhoeae</i>	In 2005, we tested 392 <i>Neisseria gonorrhoeae</i> isolates for antibiotic resistance including 286 (73%) from a Minneapolis STD clinic and 106 (27%) from a St. Paul STD clinic.
4 <i>Neisseria meningitidis</i>	One isolate had intermediate susceptibility (MIC of 0.12 µg/ml) and one was resistant (MIC of 0.5 µg/ml) to penicillin per the newly established CLSI (formerly NCCLS) breakpoints for <i>N. meningitidis</i> . CLSI suggests that MICs ≥ 8 µg/ml for nalidixic acid may correlate with diminished fluoroquinolone susceptibility. None of our isolates had an MIC > 2 µg/ml.
5 Group A <i>Streptococcus</i>	Of 9 isolates that were resistant to erythromycin, 1 was also resistant to clindamycin. The other 8 were susceptible but each had inducible clindamycin resistance by D-test.
6 Group B <i>Streptococcus</i>	100% (15/15) of early-onset infant, 94% (16/17) of late-onset infant, 58% (7/12) of maternal, and 90% (257/287) of other invasive GBS cases were tested. Among 48 erythromycin-resistant, clindamycin-susceptible strains, 26 (54%) had inducible resistance to clindamycin by D-test. Overall, 74% (217/293) were susceptible to clindamycin and were D-test negative (where applicable). 56% (22/39) of infant and maternal cases were susceptible to clindamycin and were D-test negative (where applicable).
7 <i>Streptococcus pneumoniae</i>	The 532 isolates tested represented 89% of 596 total cases. Of these, 14% (75/532) had intermediate susceptibility and 9% (46/532) were resistant to penicillin. Reported above are the proportions of case-isolates susceptible by meningitis breakpoints for cefotaxime and ceftriaxone (intermediate = 1.0 µg/ml, resistant ≥ 2.0 µg/ml). By nonmeningitis breakpoints (intermediate = 2.0µg/ml, resistant ≥ 4.0 µg/ml) 96% (509/532) and 99% (526/532) of isolates were susceptible to cefotaxime and ceftriaxone, respectively. Isolates were screened for high-level resistance to rifampin at a single MIC; all were ≤ 2.0 µg/ml. 17% (92/532) of isolates were resistant to two or more antibiotic classes and 12% (65/532) were resistant to 3 or more antibiotic classes.
8 <i>Haemophilus influenzae</i>	All ampicillin-resistant isolates produced β-lactamase and were susceptible to amoxicillin-clavulanate, which contains a β-lactamase inhibitor. Four percent of the isolates were ampicillin-intermediate and β-lactamase negative. Only one isolate was resistant to 2 or more antibiotics.
9 <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. In 2005, both resistance to isoniazid and multidrug-resistant TB (MDR-TB) were more common among U.S.-born TB cases than among foreign-born cases (10% versus 8%, and 5% versus 2%, respectively). One of the four MDR-TB cases was resistant to all four first-line TB drugs.
Community-associated Methicillin Resistant <i>Staphylococcus aureus</i> (CA-MRSA)	998 CA-MRSA cases were reported in 2005. 93% (925/998) had an isolate submitted and antimicrobial susceptibility testing was conducted on 80% (285/355) of the isolates with culture dates from January – June. 13% were susceptible to erythromycin, 60% were susceptible to ciprofloxacin, 93% were susceptible to tetracycline, 98% were susceptible to mupirocin, and 99% were susceptible to gentamicin and trimethoprim/sulfamethoxazole. All isolates were susceptible to linezolid, synercid, rifampin, and vancomycin. 14% (31/215) of erythromycin-resistant, clindamycin-susceptible isolates tested positive for inducible clindamycin resistance using the D-test. Overall 78% (221/285) were susceptible to clindamycin and D-test negative (where applicable).
<i>Bordetella pertussis</i>	160/161 isolates tested were susceptible to erythromycin using provisional CDC breakpoints. One isolate appeared to have reduced susceptibility to erythromycin. This isolate is undergoing further investigation.
<i>Escherichia coli</i> O157:H7	Antimicrobial treatment for <i>E. coli</i> O157:H7 infection is not recommended.

Reportable Diseases, MN Rule 4605.7040

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
Poliomyelitis 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/idepc/dtopics/reportable/index.html.

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

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

Enterobacter sakazakii (infants under 1 year of age) a
Giardiasis (*Giardia lamblia*)
Gonorrhea (*Neisseria gonorrhoeae*) c
Haemophilus influenzae disease
 (all invasive disease) b
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*)

Sentinel Surveillance (at sites designated by the Commissioner)

Methicillin-resistant *Staphylococcus aureus*

Antimicrobial Susceptibilities of Selected Pathogens

2005



Minnesota Department of Health
 625 N Robert Street
 PO Box 64975
 St. Paul, MN 55164-0975
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.

Listeriosis (*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 (*Chlamydia 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