

**Antimicrobial Susceptibilities
of Selected Pathogens, 2003**



Sampling Methodology

- † all isolates tested
- * ~1 isolate tested per week at MDH
- ‡ ~10% sample of statewide isolates received at MDH
- § isolates from a normally sterile site

Campylobacter spp. ^{1*}

Salmonella Typhimurium ^{2†}

Other *Salmonella* serotypes
(non-typhoidal) ^{2‡}

Shigella spp. [†]

Neisseria gonorrhoeae ³

Neisseria meningitidis ^{4§}

Group A *Streptococcus* ^{1§}

Group B *Streptococcus* ^{5§}

Streptococcus pneumoniae ^{6§}

Haemophilus influenzae ^{7§}

Mycobacterium tuberculosis ^{8†}

Number of Isolates Tested

60

119

39

10

145

29

169

289

567

52

172

		% Susceptible											
β-lactam antibiotics	amoxicillin										96		
	ampicillin		70	87	0				100	100		63	
	penicillin							93	100	100	86		
	cefuroxime sodium					100					88	98	
	cefotaxime								100	100	91	100	
	ceftriaxone		94	95	100	100	100						
	meropenem							100			90	100	
Other antibiotics	ciprofloxacin	84 ¹	99	100	100	100	100					100	
	levofloxacin										99		
	azithromycin											100	
	erythromycin	97						98	71	84			
	clindamycin							100	85	97			
	chloramphenicol		75	92	80		100				99	98	
	gentamicin	95											
	tetracycline	40									95	98	
	trimethoprim/sulfamethoxazole		94	97	20		72				80	85	
	vancomycin							100	100	100			
TB antibiotics	ethambutol												96
	isoniazid												83
	pyrazinamide												94
	rifampin						100					100	97
	streptomycin												86

Trends, Comments and Other Pathogens

1 <i>Campylobacter</i> spp.	Ciprofloxacin susceptibility was determined for all isolates (n=818). Only 37% of isolates from patients returning from foreign travel were susceptible to quinolones. Susceptibilities were determined using 2003 NCCLS breakpoints for <i>Enterobacteriaceae</i> . Susceptibility for erythromycin was based on an MIC ≤ 4 µg/ml.
2 <i>Salmonella enterica</i> (non-typhoidal)	Antimicrobial treatment for enteric salmonellosis generally is not recommended.
3 <i>Neisseria gonorrhoeae</i>	The 145 isolates tested comprised approximately 5% of total gonorrhea cases reported in 2003. All isolates were also susceptible to spectinomycin and 97% were susceptible to azithromycin. Five isolates (3%) had "decreased susceptibility" to azithromycin using provisional breakpoints (zone size ≤ 30 mm). Among 218 isolates tested through another surveillance system (GISP), 5 isolates were resistant to ciprofloxacin.
4 <i>Neisseria meningitidis</i>	Provisional CDC breakpoints: MIC ≤ 0.06 µg/ml considered susceptible, MIC of 0.12 - 0.5 µg/ml considered "less susceptible" for penicillin. In 2003, 1 isolate had a MIC of 0.12 and 1 had a MIC of 0.25 µg/ml for penicillin.
5 Group B <i>Streptococcus</i> (GBS)	All (20/20) early-onset infant, 94% (15/16) of late-onset infant, 75% (3/4) of maternal, and 87% (251/289) of invasive, non-infant, non-maternal GBS case isolates were tested. 84% (32/38) of infant and maternal case isolates were susceptible to clindamycin and 79% (30/38) were susceptible to erythromycin. All 289 isolates had an MIC of ≤ 0.5 µg/ml to ceftazidime.
6 <i>Streptococcus pneumoniae</i>	The 567 isolates tested represented 93% of 607 total cases. 6% (32/567) had intermediate susceptibility and 8% (47/567) were resistant to penicillin. Reported above is the proportion of case isolates susceptible by meningitis breakpoints for cefotaxime (intermediate=1.0 µg/ml, resistant ≥ 2.0 µg/ml); by nonmeningitis breakpoints (intermediate=2.0 µg/ml, resistant ≥ 4.0 µg/ml) 99% (562/567) of isolates were susceptible. Isolates were screened for high-level resistance to rifampin at a single MIC; all were ≤ 2 µg/ml. 12% (70/567) of isolates were resistant to two or more antibiotic classes and 8% (47/567) were resistant to 3 or more antibiotic classes.
7 <i>Haemophilus influenzae</i>	Although 36% of the isolates were ampicillin-resistant, 100% were susceptible to amoxicillin-clavulanate, which contains a β-lactamase inhibitor. All ampicillin-resistant isolates produced β-lactamase. Three isolates were non-susceptible (intermediate or resistant) to 2 more antibiotic classes.
8 <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. Thirty-seven (88%) of the 42 drug-resistant TB cases reported in 2003 were in foreign-born persons, including 4 (80%) of 5 multidrug-resistant (MDR-TB) cases (i.e., resistant to at least INH and rifampin). Four (80%) of five MDR-TB cases were resistant to all five first-line TB drugs.
Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA)	Of 200 community-associated MRSA isolates tested in 2002 (2003 results pending), 79% were susceptible to ciprofloxacin, 86% were susceptible to clindamycin, 40% were susceptible to erythromycin, 98% were susceptible to gentamicin, 99% were susceptible to trimethoprim/sulfamethoxazole, 100% were susceptible to rifampin, 90% were susceptible to tetracycline, 100% were susceptible to linezolid, and 100% were susceptible to vancomycin. 50% (44/88) of erythromycin-resistant/clindamycin-susceptible isolates had inducible clindamycin resistance.
<i>Bordetella pertussis</i>	All 57 isolates tested were susceptible to erythromycin using provisional CDC breakpoints.
<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

Foodborne, Vectorborne and Zoonotic Diseases

Amebiasis (*Entamoeba histolytica/dispar*)
Anaplasmosis (*Anaplasma phagocytophilum*) **h**
Anthrax (*Bacillus anthracis*) **a,d**
Arboviral Disease **h**
Babesiosis (*Babesia* spp.)
Botulism (*Clostridium botulinum*) **a**
Brucellosis (*Brucella* spp.) **d,g**
Campylobacteriosis (*Campylobacter* spp.) **b**
Cat scratch disease (infection caused by *Bartonella* spp.)
Cholera (*Vibrio cholerae*) **a,b**
Cryptosporidiosis (*Cryptosporidium parvum*) **d**
Cyclosporiasis (*Cyclospora cayetanensis*) **d,h**
Dengue virus infection
Diphyllbothrium 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*) **b**
Enterobacter sakazakii **d,h,i**
Giardiasis (*Giardia lamblia*)
Hantavirus infection
Hemolytic uremic syndrome **d,g**
Leptospirosis (*Leptospira interrogans*)
Listeriosis (*Listeria monocytogenes*) **b**
Lyme disease (*Borrelia burgdorferi*)
Malaria (*Plasmodium* spp.)
Plague (*Yersinia pestis*) **d,g**
Psittacosis (*Chlamydophila psittaci*)
Q fever (*Coxiella burnetii*) **d,g**
Rabies (animal and human cases and suspects) **a**
Rocky Mountain spotted fever (*Rickettsia* spp., *R. canada*)
Salmonellosis, including typhoid (*Salmonella* spp.) **b**
Shigellosis (*Shigella* spp.) **b**
Toxoplasmosis
Trichinosis (*Trichinella spiralis*)
Tularemia (*Francisella tularensis*) **d,g**
Typhus (*Rickettsia* spp.)
Vibrio spp. **d,h**
Yellow fever
Yersiniosis, enteric (*Yersinia* spp.) **b**

Invasive Bacterial Diseases

Haemophilus influenzae disease (all invasive disease) **b,c**
Meningococcal disease (*Neisseria meningitidis*) **b,c,g**
Neonatal sepsis (infants <7 days of age; excluding coagulase-negative *Staphylococcus*) **c,d,h**
Streptococcal disease (all invasive disease caused by Groups A and B streptococci and *S. pneumoniae*) **b,c**
Toxic shock syndrome **b**

Vaccine Preventable Diseases

Diphtheria (*Corynebacterium diphtheriae*) **b,g**
Hepatitis (all primary viral types including A, B, C, D, and E)
Influenza (unusual case incidence or culture-confirmed cases) **d**
Measles (Rubeola) **a,d**
Mumps
Pertussis (*Bordetella pertussis*) **b**
Poliomyelitis **a,d**
Rubella and congenital rubella syndrome **g**
Smallpox **d,g,h**
Tetanus (*Clostridium tetani*)
Varicella-zoster (unusual case incidence or critical case) **d,h**

Sexually Transmitted Diseases and Retroviral Infections

Chancroid (*Haemophilus ducreyi*) **e**
Chlamydia trachomatis infection **e**
Gonorrhea (*Neisseria gonorrhoeae*) **e**
Human immunodeficiency virus (HIV) infection, including Acquired Immunodeficiency Syndrome (AIDS) **f**
Retrovirus infection (other than HIV)
Syphilis (*Treponema pallidum*) **e**

Other Conditions

Blastomycosis (*Blastomyces dermatitidis*)
Coccidioidomycosis **h**
Histoplasmosis (*Histoplasma capsulatum*)
Kawasaki disease
Legionellosis (*Legionella* spp.) **d**
Leprosy (*Mycobacterium leprae*)
Meningitis (viral agents)
Orthopox virus **d,g,h**
Reye syndrome
Rheumatic fever (cases meeting the Jones Criteria only)
Severe Acute Respiratory Syndrome (1. Suspect and probable cases of SARS and 2. Cases of health care workers hospitalized for pneumonia or acute respiratory distress syndrome) **a,b**
Staphylococcus aureus (only death or critical illness due to community-associated *S. aureus* in previously well person) **d,h**
Staphylococcus aureus (Vancomycin intermediate/resistant) **d,h**
Transmissible spongiform encephalopathy **h**
Tuberculosis (*Mycobacterium tuberculosis* and *M. bovis*) **b**
Unexplained deaths **b** and unexplained critical illness (possibly due to infectious cause) **d,h**
Unusual or increased case incidence of any illness **a,d**

a Report immediately by telephone: 612-676-5414 or 1-877-676-5414.
b Submission of isolates 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 612-676-5396 for instructions.
c Isolates are considered to be from invasive disease if they are isolated from a normally sterile site, e.g. blood, CSF, joint fluid, etc.
d Submission of isolates or clinical materials requested; reporting rule change expected in 2004.
e Report on separate Sexually Transmitted Disease Report Card.
f Report on separate HIV Report Card.
g Requested to report immediately by telephone; reporting rule change expected in 2004.
h Addition to reporting rule change expected in 2004.
i Infants only; reporting rule change expected in 2004.

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Minnesota Department of Health
717 Delaware Street SE
Minneapolis, MN 55414
or
PO Box 9441
Minneapolis, MN 55440-9441
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: 612-676-5414 or 877-676-5414 or fax form to 612-676-5743.

To Send an Isolate to MDH:

If you are sending an isolate by U.S. mail, use regulatory compliant transport packaging and send to the above address. If you are using a courier, use transport packaging appropriate for the specific courier and send to: 717 Delaware Street SE, Minneapolis, MN 55414. 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: 612-676-5396.

The MDH Antibiogram is available on the MDH web site (<http://www.health.state.mn.us>). Laminated copies can be ordered from: Antibiogram, Minnesota Dept. of Health, Acute Disease Investigation and Control Section, 717 Delaware St. SE, Minneapolis, MN 55414.