

**THE MEDICAL FOUNDATION
SUSCEPTIBILITY PATTERNS OF COMMON ISOLATES
January to December 2015**

(%) Represents the percent susceptible

(-) Test not performed or antibiotic not indicated for organism

MOST COMMON NONURINE ISOLATES

| ORGANISMS COUNTED First isolate per patient per year | MRSA ^{1,2} | <i>Staph aureus</i> , ² not MRSA | <i>Staphylococcus</i> coagulase neg | <i>Enterococcus</i> ^{3,4} | <i>Streptococcus</i> <i>pneumoniae</i> ^{5,6} | <i>Escherichia coli</i> | <i>Pseudomonas</i> <i>aeruginosa</i> | <i>Proteus mirabilis</i> | <i>Klebsiella</i> <i>pneumoniae</i> | <i>Enterobacter</i> <i>cloacae</i> |
|---|---------------------|--|--|------------------------------------|--|-------------------------|---|--------------------------|--|---------------------------------------|
| No. isolates tested=6,426 | (1,634) | (1,774) | (372) | (673) | (61) | (576) | (516) | (217) | (205) | (171) |
| ANTIMICROBIALS | % | % | % | % | % | % | % | % | % | % |
| AMIKACIN | - | - | - | - | - | 100 | 96 | 100 | 99 | 100 |
| AMPICILLIN | - | - | - | 88 | - | 50 | - | 92 | - | - |
| AMP/SULBACTAM | - | - | - | - | - | 71 | - | 97 | 90 | - |
| CEFAZOLIN | - | 100 | 51 | - | - | 88 | - | 97 | 96 | - |
| CEFOXITIN | - | - | - | - | - | - | - | - | - | - |
| CEFTAZIDIME | - | - | - | - | - | 92 | 97 | 98 | 97 | 94 |
| CEFTRIAZONE | - | - | - | - | 100 | 92 | - | 97 | 96 | 93 |
| CLINDAMYCIN | 80 | 83 | 67 | - | 98 | - | - | - | - | - |
| ERYTHROMYCIN | - | 69 | 44 | - | 77 | - | - | - | - | - |
| GENTAMICIN | - | - | - | - | - | 89 | 96 | 94 | 97 | 98 |
| LEVOFLOXACIN | 68 | 94 | 75 | - | 98 | 73 | 85 | 78 | 98 | 99 |
| METRONIDAZOLE | - | - | - | - | - | - | - | - | - | - |
| OXACILLIN | - | 100 | 51 | - | - | - | - | - | - | - |
| PENICILLIN | - | 19 | 15 | 88 | 98 | - | - | - | - | - |
| PIP/TAZOBACTAM | - | - | - | - | - | 98 | 94 | 100 | 98 | 91 |
| TETRACYCLINE | 95 | 95 | 88 | - | 95 | - | - | - | - | - |
| TOBRAMYCIN | - | - | - | - | - | 93 | 98 | 99 | 97 | 99 |
| TRIMETH/SULFA | 96 | 99 | 72 | - | 82 | 75 | - | 83 | 94 | 94 |
| VANCOMYCIN | 100 | 100 | 100 | 89 | 100 | - | - | - | - | - |

**SURVEILLANCE
MONITORS**

| <i>Salmonella</i> sp. ⁷ | <i>Shigella</i> sp. ⁷ | <i>B. fragilis</i> Grp ⁸ |
|------------------------------------|----------------------------------|-------------------------------------|
| - | - | (50) |
| - | - | - |
| 89 | 88 | - |
| - | - | 96 |
| - | - | - |
| - | - | 72 |
| - | - | - |
| - | - | 48 |
| - | - | - |
| 100 | 93 | - |
| - | - | 100 |
| - | - | - |
| - | - | 18 |
| - | - | - |
| 100 | 38 | - |
| - | - | - |

- 48% of all *Staphylococcus aureus* are MRSA.
- 12% of MRSA and 14% of *Staphylococcus aureus* other than MRSA have inducible clindamycin resistance.
- 11% of *Enterococcus* are VRE; 27% of VRE are ampicillin susceptible.
- Synergy with penicillin and high levels of streptomycin is likely for 82% of *Enterococcus*.
- Streptococcus pneumoniae* susceptibility data are based on blood and sterile body fluid isolates only
- ^a Oral penicillin and *Streptococcus pneumoniae*: 35% of all from non-sterile sites are intermediate (23%) or resistant (12%)
- ^b IV penicillin and *Streptococcus pneumoniae*: 6% of all from non-sterile sites are intermediate (5%) or resistant (1%)
- Salmonella* and *Shigella* susceptibility data based on cumulative isolates primarily of fecal origin
- Bacteroides fragilis* group susceptibility data based on 50 random patient isolates
- 61% of Group B Streptococcus from vaginal/rectal sources are susceptible to clindamycin.
- 28% of all patient isolates of *H. influenzae* are beta-lactamase positive

Data primarily from the following counties:
St. Joseph and Elkhart

Form 9720270 (4/16)



Your Laboratory Experts

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Microbiology Department

Susceptibility Patterns
Of Common Organisms

January-December 2015

**THE MEDICAL FOUNDATION
SUSCEPTIBILITY PATTERNS OF MOST COMMON URINE ISOLATES
January to December 2015**

(%) Represents the percent susceptible

(-) Test not performed or antibiotic not indicated for organism

| PATIENT LOCATION | ORGANISMS COUNTED First isolate per patient per year | <i>Escherichia coli</i> | <i>Klebsiella pneumoniae</i> | <i>Enterococcus</i> | <i>Proteus mirabilis</i> | <i>Pseudomonas aeruginosa</i> | <i>Enterobacter cloacae</i> | <i>Citrobacter freundii</i> | <i>Klebsiella oxytoca</i> | <i>Enterobacter aerogenes</i> | <i>Staph aureus</i> not MRSA |
|------------------|---|-------------------------|------------------------------|---------------------|--------------------------|-------------------------------|-----------------------------|-----------------------------|---------------------------|-------------------------------|---------------------------------|
| OP | No. of isolates (7,839) | (5,161) | (896) | (691) | (295) | (275) | (139) | (128) | (128) | (88) | (82) |
| OP | ANTIMICROBIALS | % | % | % | % | % | % | % | % | % | % |
| OP | AMPICILLIN | 60 | - | 92 | 87 | - | - | - | - | - | - |
| OP | AMP/SULBACTAM | 78 | 93 | - | 96 | - | - | - | 89 | - | - |
| OP | CEFAZOLIN | 93 | 97 | - | 96 | - | - | - | 74 | - | 99 |
| OP | LEVOFLOXACIN | 85 | 99 | 76 | 78 | 87 | 99 | 100 | 100 | 99 | 85 |
| OP | NITROFURANTOIN | 99 | 73 | 97 | - | - | 92 | 98 | 97 | 44 | 100 |
| OP | PENICILLIN | - | - | 91 | - | - | - | - | - | - | 19 |
| OP | TETRACYCLINE | - | - | 26 | - | - | - | - | - | - | 96 |
| OP | TRIMETH/SULFA | 82 | 95 | - | 78 | - | 94 | 94 | 96 | 98 | 99 |
| NH | No. of isolates (603) | (308) | (68) | (83) | (102) | (42) | - | - | - | - | - |
| NH | AMPICILLIN | 40 | - | 80 | 78 | - | - | - | - | - | - |
| NH | AMP/SULBACTAM | 50 | 91 | - | 87 | - | - | - | - | - | - |
| NH | CEFAZOLIN | 85 | 97 | - | 96 | - | - | - | - | - | - |
| NH | LEVOFLOXACIN | 52 | 100 | 35 | 41 | 64 | - | - | - | - | - |
| NH | NITROFURANTOIN | 89 | 51 | 80 | - | - | - | - | - | - | - |
| NH | PENICILLIN | - | - | 80 | - | - | - | - | - | - | - |
| NH | TETRACYCLINE | - | - | - | - | - | - | - | - | - | - |
| NH | TRIMETH/SULFA | 65 | 93 | - | 63 | - | - | - | - | - | - |
| IP | No. of isolates (5,338) | (3,348) | (592) | (514) | (270) | (231) | (107) | (69) | (79) | - | (75) |
| IP | AMPICILLIN | 53 | - | 81 | 86 | - | - | - | - | - | - |
| IP | AMP/SULBACTAM | 62 | 91 | - | 94 | - | - | - | 69 | - | - |
| IP | CEFAZOLIN | 92 | 98 | - | 97 | - | - | - | 68 | - | 100 |
| IP | LEVOFLOXACIN | 82 | 99 | 65 | 68 | 74 | 98 | 96 | 99 | - | 74 |
| IP | NITROFURANTOIN | 95 | 39 | 85 | - | - | 46 | 97 | 78 | - | 100 |
| IP | PENICILLIN | - | - | 81 | - | - | - | - | - | - | 19 |
| IP | TETRACYCLINE | - | - | 23 | - | - | - | - | - | - | 92 |
| IP | TRIMETH/SULFA | 78 | 96 | - | 80 | - | 91 | 94 | 96 | - | 100 |

OP = Outpatients

NH= Nursing Homes

IP = Inpatients

20% of Nursing Home urine *Enterococcus* are VRE; 13% of VRE are ampicillin susceptible

12% of Nursing Home urine *E. coli* and 3% of *K. pneumoniae* are extended beta-lactamase producers (ESBL)

SUSCEPTIBILITY TESTING BY SOURCE GROUP

- Abscess (4,423)**
 - MRSA (43%)
 - Staphylococcus aureus* (31%)
 - Escherichia coli* (9%)
- Blood (18,332)**
 - Escherichia coli* (21%)
 - Staphylococcus aureus* (13%)
 - MRSA (10%)
 - Staphylococcus coag neg* (6%)
 - Streptococcus viridans* group (6%)
 - Klebsiella pneumoniae* (6%)
- Body Fluids, Sterile (5,895)**
 - Staphylococcus coag neg* (27%)
 - Staphylococcus aureus* (20%)
 - MRSA (9%)
 - Escherichia coli* (7%)
 - Enterococcus sp.* (5%)
- Lower Respiratory (16,416)**
 - Staphylococcus aureus* (22%)
 - Pseudomonas aeruginosa* (21%)
 - MRSA (15%)
 - Streptococcus pneumoniae* (9%)
 - Escherichia coli* (6%)
- Tissue (10,556)**
 - Staphylococcus coag neg* (25%)
 - Staphylococcus aureus* (22%)
 - MRSA (16%)
 - Enterococcus sp.* (7%)
- Wound/skin (3,609)**
 - Staphylococcus coag neg* (30%)
 - MRSA (25%)
 - Enteric Gram-neg rods (11%)
 - Staphylococcus aureus* (6%)
 - Escherichia coli* (5%)
- Urine (14,929)**
 - Escherichia coli* (60%)
 - Klebsiella pneumoniae* (10%)
 - Enterococcus sp.* (9%)
 - Proteus mirabilis* (5%)
 - Pseudomonas aeruginosa* (4%)

**Routine Antimicrobial Reporting
Aerobic Organisms**

| GRAM-NEGATIVE | PRIMARY | SECONDARY (when resistant to primary) | GRAM-POSITIVE | PRIMARY | SECONDARY (when resistant to primary) |
|--|---|--|--|---|---|
| <i>Enterobacteriaceae</i> (non-urine) | ampicillin amp/sulbactam cefazolin levofloxacin gentamicin pip/tazobactam tobramycin trimeth/sulfa | cefotetan/cefoxitin or ceftazidime | <i>Enterococcus sp.</i> | ampicillin penicillin | Report vancomycin on isolates from normally sterile sites and from other sites when ampicillin and penicillin are both resistant. Report vancomycin whenever vancomycin is resistant. |
| | Report amikacin, if tobramycin is resistant. Report meropenem, if non-susceptible, and if 3 rd generation cephalosporins are resistant. | | <i>Staphylococcus sp.</i> | cefazolin clindamycin^ oxacillin penicillin vancomycin | tetracycline trimeth/sulfa ^Isolates routinely screened for inducible clindamycin resistance. <i>S. aureus</i> predictably susceptible to trimeth/sulfa. Report tetracycline and trimeth/sulfa if MRSA Report rifampin if MRSA on request only. Report levofloxacin on request only. Test and report daptomycin on request only. |
| <i>Enterobacteriaceae</i> (Urine) | ampicillin amp/sulbactam cefazolin levofloxacin gentamicin nitrofurantoin tobramycin trimeth/sulfa | ceftazidime | <i>Streptococcus pneumoniae</i> | Sterile body sites ceftriaxone penicillin | Non-sterile sites ceftriaxone erythromycin penicillin tetracycline trimeth/sulfa |
| <i>Pseudomonas aeruginosa</i> (All sites) | ceftazidime levofloxacin gentamicin tobramycin pip/tazobactam | amikacin | | | Report vancomycin, whenever isolate is resistant to both penicillin and ceftriaxone. Report levofloxacin if non-susceptible or on request only. |
| <i>Salmonella sp./ Shigella sp.</i> | ampicillin levofloxacin trimeth/sulfa | | <i>Streptococcus sp.</i> | Sterile body sites ceftriaxone erythromycin penicillin vancomycin | Non-sterile sites* All Beta-hemolytic streptococci predictably susceptible to penicillin. *Susceptibility testing performed on request only. |
| | Report chloramphenicol on request only. MIC information for stool isolates on request only. | | | | MIC information for isolates from normally sterile body sites on request only. MIC information for Beta-lactamase positive isolates from other sites on request only. |
| <i>Haemophilus influenzae</i> | Predictably susceptible to: cefotaxime ceftriaxone cefuroxime tetracycline | | | | Isolates saved for additional susceptibility testing if indicated for the following sources: Blood cultures One week from date of final report CSF One week from date of final report Non-urine One week from date of final report Urine One week from date of final report |
| | | | Group B <i>Streptococcus</i> (Vagina/rectum) | clindamycin erythromycin penicillin | MIC information on request only if patient is both pregnant and allergic to penicillin. Cefazolin information predictable based on penicillin. Vancomycin reported on request only. |