



Northern Light  
Health<sup>SM</sup>

# 2019 Antibiograms Table of Contents

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# 2019 GRAM-NEGATIVE ANTIBIOGRAM, NORTHERN LIGHT HEALTH\*

## Microbiology Department, Northern Light Laboratory, 207-973-6980

### Percent Susceptible

GRAM-NEGATIVE ORGANISMS 2019 DATA % SUSCEPTIBLE (ISOLATES)	Ampicillin	Ampicillin/ Sulbactam	Cefazolin	Cefuroxime <sup>A</sup>	Ceftriaxone	Cefepime	Meropenem	Pip / Tazobactam	Ciprofloxacin <sup>B</sup>	Levofloxacin <sup>C</sup>	Gentamicin	Tobramycin	Trimeth / Sulfa	Aztreonam	Nitrofurantoin
Antibiotic cost <sup>D</sup>	IV: \$\$	IV: \$\$	IV: \$	IV: \$ PO: \$	IV: \$	IV: \$\$	IV: \$\$	IV: \$\$	IV: \$ PO: \$	IV: \$ PO: \$	IV: \$ + MONITORING	IV: \$ + MONITORING	IV: \$\$\$\$ PO: \$	IV: \$\$\$\$\$	PO: \$
<i>Escherichia coli</i> (All) (8890)	66%	73%	92%	80%	95%	98%	99.9%	99%	84%		94%	96%	83%	‡	
<i>E. coli</i> (Urine) (8605)	67%	73%	93%	80%	95%	97%	99.9%	99%	85%		94%	96%	83%	‡	98%
<i>E. coli</i> (Non-urine) <sup>E</sup> (285)	54%	67%	56%	82%	86%	96%	100%	96%	71%		90%	92%	73%	‡	
<i>Klebsiella pneumonia</i> (1341)	R <sup>F</sup>	81%	91%	80%	93%	96%	99.9%	96%	87%		95%	94%	87%	‡	83%
<i>Enterobacter</i> spp. <sup>G</sup> (439)	R	R	R	R	77%	95%	99.8%	86%	97%		99%	98%	93%	‡	72%
<i>Serratia marcescens</i> (114)	R	R	R	R	92%	99%	100%	93%	94%		99%	97%	99%	‡	R
<i>Proteus mirabilis</i> (512)	86%	97%	87%	96%	99%	ND	99.8%	ND	77%		94%	97%	87%	‡	R
<i>Citrobacter freundii</i> (237)	R	R	R	R	85%	100%	100%	85%	86%		96%	95%	85%	‡	95%
<i>Acinetobacter</i> spp. <sup>H</sup> (43)	R	93%	R	R	R	88%	98%	88%	84%	91%	91%	98%	81%	‡	
<i>Pseudomonas aeruginosa</i> (non-CF) (674)	R	R	R	R	R	94%	91%	91%	75%	74%	94%	94%	R	85%	R
<i>P. aeruginosa</i> (CF) <sup>I</sup> (30)	R	R	R	R	R	72%	86%	83%	72%	ND	57%	83%	R	79%	R
<i>Haemophilus influenzae</i> (140)	64% <sup>J</sup>														

A: Cefuroxime susceptibility for PO administration reported for 2019. IV susceptibility is higher.  
 B: Ciprofloxacin breakpoints were updated (lowered) in 2019, resulting in slightly decreased susceptibility.  
 C: Levofloxacin breakpoints were updated in 2019 and for most organisms we lack data with new breakpoints. Infer susceptibility from Ciprofloxacin when necessary.  
 D: Cost/day of typical IV/PO dose of drug at EMMC: \$ = <\$10; \$\$ = <\$30; \$\$\$ = <\$60; \$\$\$\$ = <\$100; \$\$\$\$\$ = >\$100  
 E: Non-urine: blood, aerobic/anaerobic/orthopedic, and respiratory specimens  
 F: R = Intrinsic resistance expected  
 G: Combined data for *Enterobacter aerogenes* and *Enterobacter cloacae*  
 H: Combined data for all *Acinetobacter* species, including *A. baumannii* complex received in 2018 and 2019.  
 I: CF = cystic fibrosis patients. Includes flat and mucoid phenotypes  
 J: Cefinase disk testing; predicts ampicillin and amoxicillin sensitivity

\*All inpatient and outpatient locations associated with NLH, EMMC and surrounding area.  
 Blank cell: Insufficient data or no isolates tested against agent

# 2019 GRAM-POSITIVE AND YEAST ANTIBIOGRAM, NORTHERN LIGHT HEALTH\*

## Microbiology Department, Northern Light Laboratory, 207-973-6980

### Percent Susceptible

GRAM-POSITIVE ORGANISMS 2019 Data % Susceptible (Isolates)	Penicillin	Ampicillin	Oxacillin	Ceftriaxone	Clindamycin	Tetracycline	Levofloxacin	Gentamicin	Vancomycin	Trimeth/ Sulfa	Linezolid	Daptomycin
Antibiotic cost <sup>A</sup>	IV: \$\$ PO: \$	IV: \$\$	IV: \$\$\$\$	IV: \$	IV: \$\$ PO: \$	IV: \$\$ <sup>B</sup> PO: \$	IV: \$ PO: \$	IV: \$ + MONITORING	IV: \$ + MONITORING	IV: \$\$\$\$ PO: \$	IV: \$\$\$\$ PO: \$\$	IV: \$\$\$\$
<i>Staphylococcus aureus</i> (all isolates) (2660)	R <sup>C</sup>	R	67% <sup>D</sup>		78%	93%	‡	‡	100%	98%	99.7%	100%
<i>Staphylococcus aureus</i> (MSSA) (1796)	R <sup>C</sup>	R	100%		80%	92%	‡	‡	100%	99%	100%	100%
<i>Staphylococcus aureus</i> (MRSA) (864)	R <sup>C</sup>	R	0%		74%	95%	‡	‡	100%	97%	99%	100%
<i>Staphylococcus</i> sp.(coagulase neg.) (435) <sup>E</sup>	R	R	56%		59%	72%	‡	‡	100%	72%	100%	100%
<i>Staphylococcus lugdunensis</i> (153)			99%		86%	97%	‡	‡	100%	100%	100%	100%
<i>Enterococcus faecalis</i> (86)		100%	R	R	R		‡	84% <sup>F</sup>	100%	R	100%	99%
<i>Enterococcus faecium</i> (37) <sup>G</sup>		27%	R	R	R		R	100% <sup>F</sup>	35%	R	97%	100%
Viridans group streptococci (76) <sup>H</sup>	86%			97%	91%		98%		100%		100%	100%
<i>Streptococcus pneumoniae</i> (135)	----- <sup>I</sup>			----- <sup>I</sup>	92%	84%	98%	R	100%	87%	100%	
<i>S. pneumoniae</i> , Meningitis (135)	83%			92%								
<i>S. pneumoniae</i> , Non-meningitis (135)	98%			98%								

Yeast ( <i>Candida</i> spp.) 2010-2019 Cumulative Data % Susceptible	Fluconazole	Voriconazole	Micafungin
Antibiotic cost:	PO: \$ IV: \$	PO: \$\$\$ IV: \$\$\$\$\$	IV: \$\$\$\$
<i>Candida albicans</i> (207)	95%	96%	98%
<i>C. glabrata</i> (41)	86% <sup>J</sup>	K	99%
<i>C. parapsilosis</i> (63)	97%	100%	96%

\*All inpatient and outpatient locations associated with NLH, EMMC and surrounding area.

Blank cell: Insufficient data or no isolates tested against agent

‡: Not recommended for empiric use; consult Infectious Disease pharmacist before use

A: Cost/day of typical IV/PO dose of drug at EMMC: \$ = <\$10; \$\$ = <\$30; \$\$\$ = <\$60; \$\$\$\$ = <\$100; \$\$\$\$\$ = >\$100

B: Cost data based on doxycycline cost

C: R = Intrinsic resistance expected

D: Methicillin-resistant *Staphylococcus aureus* (MRSA) prevalence at NLH = 33%

E: Includes all coagulase negative staphylococci except *Staphylococcus lugdunensis*

F: High-level gentamicin (synergy)

G: 2018, 2019 Cumulative data

H: Includes alpha streptococci: *S. mitis/oralis*, viridans group, *S. salivarius*, *S. mutans*, *S. anginosus* group, etc.

I: Breakpoints differ for penicillin and ceftriaxone based on diagnosis. Penicillin and ceftriaxone meningitis applies to susceptibility of *S. pneumoniae* for patients with meningitis; penicillin and ceftriaxone non-meningitis applies to susceptibility of *S. pneumoniae* for patients who do not have meningitis.

J: Susceptibility is dose dependent (SDD) for all non-resistant *C. glabrata* isolates tested with fluconazole; dependent on achieving maximal possible drug levels in the blood.

K: Current data are insufficient to demonstrate a correlation between susceptibility testing and clinical outcome for *C. glabrata* and voriconazole.

# 2019 GRAM-NEGATIVE ANTIBIOGRAM, NORTHERN LIGHT EASTERN MAINE MEDICAL CENTER

## Microbiology Department, Northern Light Laboratory, 207-973-6980

### Percent Susceptible

GRAM-NEGATIVE ORGANISMS 2019 DATA % SUSCEPTIBLE (ISOLATES)	Ampicillin	Ampicillin/ Sulbactam	Cefazolin	Cefuroxime <sup>A</sup>	Ceftriaxone	Cefepime	Meropenem	Pip / Tazobactam	Ciprofloxacin <sup>B</sup>	Levofloxacin <sup>C</sup>	Gentamicin	Tobramycin	Trimeth / Sulfa	Aztreonam	Nitrofurantoin
Antibiotic cost <sup>D</sup>	IV: \$\$	IV: \$\$	IV: \$	IV: \$ PO: \$	IV: \$	IV: \$\$	IV: \$\$	IV: \$	IV: \$ PO: \$	IV: \$ PO: \$	IV: \$ + MONITORING	IV: \$ + MONITORING	IV: \$\$\$\$ PO: \$	IV: \$\$\$\$\$	PO: \$
<i>Escherichia coli</i> (All) (1306)	66%	73%	90%	80%	94%	98%	100%	99%	78%		92%	94%	80%	‡	
<i>E. coli</i> (Urine) (1197)	68%	74%	93%	80%	94%	97%	100%	99%	78%		93%	94%	81%	‡	97%
<i>E. coli</i> (Non-urine) <sup>E</sup> (109)	51%	62%	53%	82%	91%	98%	100%	95%	75%		86%	94%	68%	‡	
<i>Klebsiella pneumoniae</i> (258)	R <sup>F</sup>	78%	85%	80%	86%	87%	100%	93%	82%		91%	88%	84%	‡	80%
<i>Enterobacter</i> spp. <sup>G</sup> (98)	R	R	R	R	74%	96%	100%	84%	98%		98%	98%	91%	‡	72%
<i>Serratia marcescens</i> (42)	R	R	R	R	95%	100%	100%	95%	97%		98%	95%	100%	‡	R
<i>Proteus mirabilis</i> (107)	81%	96%	75%	95%	98%	ND	100%	ND	74%		92%	93%	86%	‡	R
<i>Citrobacter freundii</i> (60)	R	R	R	R	78%	100%	100%	80%	87%		98%	97%	88%	‡	94%
<i>Pseudomonas aeruginosa</i> (non-CF) (169)	R	R	R	R	R	96%	91%	93%	76%	76%	89%	90%	R	85%	R
<i>P. aeruginosa</i> (CF) <sup>H</sup> (30)	R	R	R	R	R	71%	86%	82%	71%	ND	57%	82%	R	78%	R

A: Cefuroxime susceptibility for PO administration reported for 2019. IV susceptibility is higher.  
 B: Ciprofloxacin breakpoints were updated (lowered) in 2019, resulting in slightly decreased susceptibility.  
 C: Levofloxacin breakpoints were updated in 2019 and for most organisms we lack data with new breakpoints. Infer susceptibility from Ciprofloxacin when necessary.  
 D: Cost/day of typical IV/PO dose of drug at EMMC: \$ = <\$10; \$\$ = <\$30; \$\$\$ = <\$60; \$\$\$\$ = <\$100; \$\$\$\$\$ = >\$100  
 E: Non-urine: blood, aerobic/anaerobic/orthopedic, and respiratory specimens  
 F: R = Intrinsic resistance expected  
 G: Combined data for *Enterobacter aerogenes* and *Enterobacter cloacae*  
 H: CF = cystic fibrosis patients. Includes flat and mucoid phenotypes

Blank cell: Insufficient data or no isolates tested against agent

# 2019 GRAM-POSITIVE ANTIBIOGRAM, NORTHERN LIGHT EASTERN MAINE MEDICAL CENTER

## Microbiology Department, Northern Light Laboratory, 207-973-6980

### Percent Susceptible

GRAM-POSITIVE ORGANISMS 2019 Data % Susceptible (Isolates)	Penicillin	Ampicillin	Oxacillin	Ceftriaxone	Clindamycin	Tetracycline	Levofloxacin	Gentamicin	Vancomycin	Trimeth/ Sulfa	Linezolid	Daptomycin
Antibiotic cost <sup>A</sup>	IV: \$\$ PO: \$	IV: \$\$	IV: \$\$\$\$	IV: \$	IV: \$\$ PO: \$	IV: \$\$ <sup>B</sup> PO: \$	IV: \$ PO: \$	IV: \$ + MONITORING	IV: \$ + MONITORING	IV: \$\$\$\$ PO: \$	IV: \$\$\$\$ PO: \$\$	IV: \$\$\$\$
<i>Staphylococcus aureus</i> (all isolates) (677)	R <sup>C</sup>	R	61% <sup>D</sup>		71%	95%	‡	‡	100%	99%	99%	100%
<i>Staphylococcus aureus</i> (MSSA) (413)	R <sup>C</sup>	R	100%		74%	94%	‡	‡	100%	99%	100%	100%
<i>Staphylococcus aureus</i> (MRSA) (264)	R <sup>C</sup>	R	0%		66%	97%	‡	‡	100%	97%	98%	100%
<i>Staphylococcus</i> sp.(coagulase neg.) (149) <sup>E</sup>	R	R	46%		53%	89%	‡	‡	100%	64%	100%	100%
<i>Staphylococcus lugdunensis</i> (43) <sup>F</sup>			100%		97%	98%	‡	‡	100%	100%	100%	100%
<i>Enterococcus faecalis</i> (39)		100%	R	R	R		‡	86% <sup>G</sup>	100%	R	100%	95%
<i>Enterococcus faecium</i> (66) <sup>H</sup>		18%	R	R	R		R	100% <sup>G</sup>	24%	R	97%	94%
Viridans group streptococci (41) <sup>I</sup>	88%			95%	78%		98%		100%		100%	100%
<i>Streptococcus pneumoniae</i> (39)	----- <sup>J</sup>			----- <sup>J</sup>	95%	90%	100%	R	100%	90%	100%	
<i>S. pneumoniae</i> , Meningitis (145)	82%			92%								
<i>S. pneumoniae</i> , Non-meningitis (145)	100%			100%								

Blank cell: Insufficient data or no isolates tested against agent

‡: Not recommended for empiric use; consult Infectious Disease pharmacist before use

A: Cost/day of typical IV/PO dose of drug at EMMC: \$ = <\$10; \$\$ = <\$30; \$\$\$ = <\$60; \$\$\$\$ = <\$100; \$\$\$\$\$ = >\$100

B: Cost data based on doxycycline cost

C: R = Intrinsic resistance expected

D: Methicillin-resistant *Staphylococcus aureus* (MRSA) prevalence at EMMC = 39%

E: Includes all coagulase negative staphylococci except *Staphylococcus lugdunensis*

F: 2018, 2019 Cumulative data

G: High-level gentamicin (synergy)

H: 2018, 2019 Cumulative data

I: Includes alpha streptococci: *S. mitis/oralis*, viridans group, *S. salivarius*, *S. mutans*, *S. anginosus* group, etc.

J: Breakpoints differ for penicillin and ceftriaxone based on diagnosis. Penicillin and ceftriaxone meningitis applies to susceptibility of *S. pneumoniae* for patients with meningitis; penicillin and ceftriaxone non-meningitis applies to susceptibility of *S. pneumoniae* for patients who do not have meningitis.

# 2019 GRAM-NEGATIVE ANTIBIOGRAM, NORTHERN LIGHT MERCY HOSPITAL

## Microbiology Department, Northern Light Laboratory, 207-973-6980

### Percent Susceptible

GRAM-NEGATIVE ORGANISMS 2019 DATA % SUSCEPTIBLE (ISOLATES)	Ampicillin	Ampicillin/ Sulbactam	Cefazolin	Cefuroxime <sup>A</sup>	Ceftriaxone	Cefepime	Meropenem	Pip / Tazobactam	Ciprofloxacin <sup>B</sup>	Levofloxacin <sup>C</sup>	Gentamicin	Tobramycin	Trimeth / Sulfa	Aztreonam	Nitrofurantoin
Antibiotic cost <sup>D</sup>	IV: \$\$	IV: \$\$	IV: \$	IV: \$ PO: \$	IV: \$	IV: \$\$	IV: \$\$	IV: \$\$	IV: \$ PO: \$	IV: \$ PO: \$	IV: \$ + MONITORING	IV: \$ + MONITORING	IV: \$\$\$\$ PO: \$	IV: \$\$\$\$\$	PO: \$
<i>Escherichia coli</i> (All) (702)	60%	68%	88%	79%	91%	97%	100%	99.7%	87%		94%	94%	78%	‡	
<i>E. coli</i> (Urine) (660)	60%	68%	89%	79%	91%	98%	100%	100%	81%		93%	94%	78%	‡	98%
<i>E. coli</i> (Non-urine) <sup>E</sup> (42)	60%	67%	64%	80%	90%	100%	100%	98%	83%		98%	93%	79%	‡	
<i>Klebsiella pneumoniae</i> (162)	R <sup>F</sup>	81%	89%	79%	94%	97%	100%	95%	88%		96%	96%	86%	‡	78%
<i>Enterobacter</i> spp. <sup>G</sup> (48)	R	R	R	R	75%	97%	100%	85%	98%		98%	98%	92%	‡	62%
<i>Serratia marcescens</i> (36) <sup>E</sup>	R	R	R	R	89%	100%	94%	89%	100%		100%	94%	100%	‡	R
<i>Proteus mirabilis</i> (117)	85%	97%	82%	98%	99%		100%		89%		95%	99%	85%	‡	R
<i>Citrobacter freundii</i> (60)	R	R	R	R	75%	100%	100%	83%	79%		97%	98%	85%	‡	92%
<i>Pseudomonas aeruginosa</i> (116)	R	R	R	R	R	91%	89%	89%	66%	64%	97%	94%	R	84%	R

A: Cefuroxime susceptibility for PO administration reported for 2019. IV susceptibility is higher.  
 B: Ciprofloxacin breakpoints were updated (lowered) in 2019, resulting in slightly decreased susceptibility.  
 C: Levofloxacin breakpoints were also updated in 2019 and for most organisms we lack data with new breakpoints.  
Infer susceptibility from Ciprofloxacin when necessary.  
 D: Cost/day of typical IV/PO dose of drug at EMMC: \$ = <\$10; \$\$ = <\$30; \$\$\$ = <\$60; \$\$\$\$ = <\$100; \$\$\$\$\$ = >\$100  
 E: Non-urine: blood, aerobic/anaerobic/orthopedic, and respiratory specimens  
 F: R = Intrinsic resistance expected  
 G: Combined data for *Enterobacter aerogenes* and *Enterobacter cloacae*

Blank cell: Insufficient data or no isolates tested against agent  
 Unless otherwise specified, the number of isolates tested is in parenthesis after the organism name. A number in parenthesis after a percentage indicates the number of strains tested for the particular bug-drug combination.

# 2019 GRAM-POSITIVE ANTIBIOGRAM, NORTHERN LIGHT MERCY HOSPITAL

## Microbiology Department, Northern Light Laboratory, 207-973-6980

### Percent Susceptible

GRAM-POSITIVE ORGANISMS 2019 Data % Susceptible (Isolates)	Penicillin	Ampicillin	Oxacillin	Ceftriaxone	Clindamycin	Tetracycline	Levofloxacin	Gentamicin	Vancomycin	Trimeth/Sulfa	Linezolid	Daptomycin
Antibiotic cost <sup>A</sup>	IV: \$\$ PO: \$	IV: \$\$	IV: \$\$\$\$	IV: \$	IV: \$\$ PO: \$	IV: \$\$ <sup>B</sup> PO: \$	IV: \$ PO: \$	IV: \$ + MONITORING	IV: \$ + MONITORING	IV: \$\$\$\$ PO: \$	IV: \$\$\$\$ PO: \$\$	IV: \$\$\$\$\$
<i>Staphylococcus aureus</i> (all isolates) (244)	R <sup>C</sup>	R	69% <sup>D</sup>		78%	85%	‡	‡	100%	98%	100%	100%
<i>Staphylococcus aureus</i> (MSSA) (169)	R	R	100%		81%	84%	‡	‡	100%	99%	99%	100%
<i>Staphylococcus aureus</i> (MRSA) (75)	R	R	0%		72%	88%	‡	‡	100%	93%	100%	100%
<i>Staphylococcus</i> sp.(coagulase neg.) (75) <sup>E</sup>	R	R	64%		50%(20)	93%	‡	‡	100%	76%	100%	100%(20)
<i>Staphylococcus lugdunensis</i> (37)			100%		81%	97%	‡	‡	100%	100%	100%	100%
<i>Streptococcus pneumoniae</i> (49) <sup>F</sup>	----- <sup>G</sup>			----- <sup>G</sup>	86%	83%	98%	R	100%	83%	100%	
<i>S. pneumoniae</i> , Meningitis (49)	78%			90%								
<i>S.pneumoniae</i> , Non-Meningitis (49)	92%			94%								

Blank cell: Insufficient data or no isolates tested against agent  
‡: Not recommended for empiric use; consult Infectious Disease pharmacist before use  
A: Cost/day of typical IV/PO dose of drug at EMMC: \$ = <\$10; \$\$ = <\$30; \$\$\$ = <\$60; \$\$\$\$ = <\$100; \$\$\$\$\$ = >\$100  
B: Cost data based on doxycycline cost  
C: R = Intrinsic resistance expected  
D: Methicillin-resistant *Staphylococcus aureus* (MRSA) prevalence at = 27%  
E: Includes all coagulase negative staphylococci except *Staphylococcus lugdunensis*  
F: 2017 thru 2019 Cumulative data  
G: Breakpoints differ for penicillin and ceftriaxone based on diagnosis. Penicillin and ceftriaxone meningitis applies to susceptibility of *S. pneumoniae* for patients with meningitis; penicillin and ceftriaxone non-meningitis applies to susceptibility of *S. pneumoniae* for patients who do not have meningitis.