

**Toronto General Hospital ANTIBIOGRAM**  
**Intensive Care Units**  
**January 1, 2023 - December 31, 2023**

**Blood Isolates – % Susceptible**

	#	%	Antibiotics																								
			Ampicillin	Amoxicillin-Clavulanic acid	Penicillin	Penicillin IV (meningitis)	Penicillin IV (non-meningitis)	Piperacillin-Tazobactam	Meropenem	Ertapenem	Cloxacillin	Cefazolin	Ceftriaxone	Ceftriaxone (meningitis)	Ceftriaxone (non-meningitis)	Ceftazidime	Clindamycin	Erythromycin	Doxycycline	Ciprofloxacin	Moxifloxacin	Trimethoprim-Sulfamethoxazole	Gentamicin	Tobramycin	Amikacin	Vancomycin	Linezolid
<b>ALL BACTERIA</b>	<b>369</b>	<b>—</b>	<b>9</b>	<b>13</b>			<b>43</b>	<b>44</b>	<b>41</b>			<b>33</b>	<b>36</b>								<b>57</b>						
<b>ALL GRAM-NEGATIVE BACTERIA</b>	<b>64</b>	<b>100</b>	<b>14</b>	<b>36</b>			<b>58</b>	<b>95</b>	<b>80</b>			<b>31</b>	<b>38</b>		<b>57</b>					<b>67</b>	<b>60</b>	<b>95</b>	<b>95</b>	<b>97</b>			
<i>Escherichia coli</i>	23	36	35	61			65	100	100			52	65		65					52	74	100	96	96			
<i>Pseudomonas aeruginosa</i>	13	20					92	77							92					77		100	100	100			
<i>Klebsiella pneumoniae</i>	10	16	0	67			70	100	100			67	67		67					56	67	89	89	89			
<i>Enterobacter cloacae</i>	7	11	0	0			14	100	100			0	14		14					86	57	71	86	100			
<i>Serratia marcescens</i>	4	6	0	0			0	100	100			0	0		0					50	100	100	100	100			
<i>Pantoea agglomerans</i>	2	3	0	0			0	100	100			0	0		0					100	100	100	100	100			
<i>Klebsiella oxytoca</i>	1	2	0	100			100	100	100			0	100		100					100	100	100	100	100			
<i>Proteus mirabilis</i>	1	2	100	100			100	100	100			100	100		100					100	100	100	100	100			
<i>Morganella morganii</i>	1	2	0	0			0	100	100			0	0		0					100	100	100	100	100			
<i>Citrobacter freundii</i>	1	2	0	0			0	100	100			0	0		0					100	100	100	100	100			
<i>Citrobacter braakii</i>	1	2	0	0			0	100	100			0	0		0					100	100	100	100	100			
<b>ALL GRAM-POSITIVE BACTERIA</b>	<b>305</b>	<b>100</b>	<b>8</b>	<b>8</b>	<b>2</b>		<b>40</b>	<b>33</b>	<b>33</b>	<b>31</b>	<b>33</b>	<b>33</b>	<b>36</b>		<b>48</b>	<b>32</b>					<b>56</b>					<b>96</b>	
Coagulase-negative staphylococci	212	70					33	33	33	33	33				56	33	93				63					100	100
<i>Staphylococcus aureus</i> , all isolates	29	10					90	90	90	90	90				71	67	88				100					97	100
- methicillin-susceptible	26	9					100	100	100	100	100				73	69	92				100					100	100
- methicillin-resistant (MRSA)	3	1					0	0	0	0	0				50	50	50				100					67	100
<i>Enterococcus faecium</i> , all isolates	29	10	3	3			3																			69	
- vancomycin-susceptible	20	7	5	5			5																			100	
- vancomycin-resistant (VRE)	9	3	0	0			0																			0	100
<i>Enterococcus faecalis</i> , all isolates	18	6	100	100			100																			100	
Viridans group streptococci*	9	3										89														100	
Group A streptococci**	3	1			100										67	50										100	
<i>Streptococcus pneumoniae</i>	2	1												50	100					50						100	
Group B streptococci**	2	1			100										50	50										100	
<i>Enterococcus gallinarum</i>	1	0	100	100			100																			0	

**General Notes:**

- Statistical validity of estimates of percent susceptibility for organisms for which there are fewer than 30 isolates reported is limited. Please take this into consideration when interpreting the reported results.
- Some organisms for which there were only very small numbers have been excluded from this report; however the total number of "ALL BACTERIA", "ALL GRAM-NEGATIVE BACTERIA", and "ALL GRAM-POSITIVE BACTERIA" listed includes these organisms.
- Reported susceptibilities for "ALL BACTERIA", "ALL GRAM-NEGATIVE BACTERIA", and "ALL GRAM-POSITIVE BACTERIA" reflect estimates only based on the weighted average of susceptibilities for all organisms included on this report as well as those that have been excluded, with assumptions made for those drugs for which susceptibilities were not tested.
- Susceptibility to doxycycline was predicted based on tetracycline susceptibility testing results.
- ICUs include MSICU, CCU, CVICU.

**Year-Specific Notes:**

- Only a limited number of coagulase negative staphylococci isolates were tested for susceptibilities. The vast majority of coagulase-negative staphylococci are susceptible to vancomycin. If you have any questions, please contact the UHN/MSH Department of Microbiology.

**Organism-Specific Notes:**

\*\* Beta-hemolytic streptococci: Susceptibility testing to penicillin is not routinely performed since resistant strains have not been recognized. All isolates are considered susceptible to penicillin.

\* Viridans group streptococci: Please note that only a small proportion of these isolates were tested for susceptibilities. Please take this into consideration when interpreting the reported results.

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**Respiratory Isolates – % Susceptible**

		<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> <p>≥80% Susceptible <span style="color: green;">■</span></p> <p>70-79% Susceptible <span style="color: yellow;">■</span></p> <p>≤69% Susceptible <span style="color: red;">■</span></p> </div> </div>																								
#	%	Ampicillin	Amoxicillin-Clavulanic acid	Penicillin	Penicillin IV (meningitis)	Penicillin IV (non-meningitis)	Piperacillin-Tazobactam	Meropenem	Ertapenem	Cloxacillin	Cefazolin	Ceftriaxone	Ceftriaxone (meningitis)	Ceftriaxone (non-meningitis)	Ceftazidime	Clindamycin	Erythromycin	Doxycycline	Ciprofloxacin	Moxifloxacin	Trimethoprim-Sulfamethoxazole	Gentamicin	Tobramycin	Amikacin	Vancomycin	Linezolid
<b>ALL BACTERIA</b>	314	—	1	12			65	85	48		25	46									66					
<b>ALL GRAM-NEGATIVE BACTERIA</b>	214	100		16			58	88	34			25				51			68		52	89	77	86		
<i>Pseudomonas aeruginosa</i>	80	37					77	76							80				78			86	97	94		
<i>Stenotrophomonas maltophilia</i> <sup>†</sup>	33	15																	78	84						
<i>Klebsiella pneumoniae</i>	19	9	0	79			79	95	75		0	79			79				79		74	89	25	75		
<i>Serratia marcescens</i>	19	9	0	0			0	100	100		0	0			0				89		100	100	100	100		
<i>Enterobacter cloacae</i>	18	8	0	0			0	100	100		0	0			0				100		94	100	100	100		
<i>Escherichia coli</i>	13	6	0	38			46	92	67		0	69			69				54		46	77	33	100		
<i>Klebsiella oxytoca</i>	13	6	0	77			77	100			0	85			85				100		100	100				
<i>Proteus mirabilis</i>	6	3	0	83			100	100	100		0	100			100				83		67	83	100	100		
<i>Moraxella catarrhalis</i> <sup>^</sup>	4	2																								
<i>Citrobacter koseri</i>	4	2	0	0			0	100	100		0	0			0				100		100	100	100	100		
<i>Burkholderia cepacia</i>	3	1						67							33						67					
<i>Citrobacter freundii</i>	2	1	0	0			0	100	100		0	0			0				100		100	100	100	100		
<b>ALL GRAM-POSITIVE BACTERIA</b>	100	100	2	2	2		79	79	79	77	79	82				82	71				98				100	
<i>Staphylococcus aureus</i> , all isolates	94	94					82	82	82	82	82					82	72	92			98				100	100
- methicillin-susceptible	78	78					99	99	99	99	99					82	76	95			100				100	100
- methicillin-resistant (MRSA)	16	16					0	0	0	0	0					80	53	80			88				100	100
<i>Streptococcus pneumoniae</i>	6	6				33	33						75	100		83	50			100					100	

**General Notes:**

- Statistical validity of estimates of percent susceptibility for organisms for which there are fewer than 30 isolates reported is limited. Please take this into consideration when interpreting the reported results.
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- Susceptibility to doxycycline was predicted based on tetracycline susceptibility testing results.
- ICUs include MSICU, CCU, CVICU.

**Organism-Specific Notes:**

- <sup>^</sup> *M. catarrhalis*: Susceptibility testing is not routinely performed. Most isolates are resistant to ampicillin and amoxicillin but are generally susceptible to other antibiotics commonly used for respiratory infections.
- <sup>†</sup> *S. maltophilia*: Susceptibility to moxifloxacin was predicted based on levofloxacin susceptibility testing results.

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**All Urine Isolates – % Susceptible**

		<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> <p>≥80% Susceptible <span style="color: green;">■</span></p> <p>70-79% Susceptible <span style="color: yellow;">■</span></p> <p>≤69% Susceptible <span style="color: red;">■</span></p> </div> </div>																			
#	%	Ampicillin	Amoxicillin-Clavulanic acid	Penicillin	Piperacillin-Tazobactam	Meropenem	Ertapenem	Cloxacillin	Cefazolin	Cephalexin	Ceftriaxone	Ceftazidime	Doxycycline	Ciprofloxacin	Trimethoprim-Sulfamethoxazole	Nitrofurantoin	Gentamicin	Tobramycin	Amikacin	Vancomycin	Linezolid
<b>ALL BACTERIA</b>	<b>86</b>	<b>—</b>	<b>22</b>	<b>55</b>	<b>64</b>	<b>70</b>	<b>38</b>		<b>2</b>		<b>44</b>		<b>9</b>	<b>73</b>	<b>52</b>	<b>59</b>					
<b>ALL GRAM-NEGATIVE BACTERIA</b>	<b>61</b>	<b>100</b>	<b>8</b>	<b>54</b>	<b>67</b>	<b>98</b>	<b>54</b>		<b>3</b>		<b>63</b>	<b>72</b>		<b>85</b>	<b>74</b>	<b>59</b>	<b>97</b>	<b>66</b>	<b>66</b>		
<i>Escherichia coli</i>	23	38	0	70	83	100	100		0		83	83		78	83	100	96	100	100		
<i>Klebsiella pneumoniae</i>	14	23	0	71	64	100			0		86	86		93	79	29	100				
<i>Pseudomonas aeruginosa</i>	7	11			86	86							86	86			100	100	100		
<i>Enterobacter cloacae</i>	6	10	0	0	0	100	100		0	0	0	0		83	83	50	100	100	100		
<i>Proteus mirabilis</i>	5	8	100	100	100	100					100	100		80	80	0	80				
<i>Klebsiella oxytoca</i>	2	3	0	100	100	100			100		100	100		100	100	100	100				
<i>Citrobacter koseri</i>	2	3	0	0	0	100	100		0	0	0	0		100	100	100	100	100	100		
<i>Citrobacter freundii</i>	1	2	0	0	0	100	100		0	0	0	0		100	100	100	100	100	100		
<i>Citrobacter braakii</i>	1	2	0	0	0	100	100		0	0	0	0		100	100	100	100	100	100		
<b>ALL GRAM-POSITIVE BACTERIA</b>	<b>25</b>	<b>100</b>	<b>56</b>	<b>56</b>	<b>56</b>									<b>32</b>	<b>44</b>		<b>60</b>			<b>88</b>	<b>100</b>
<i>Enterococcus faecalis</i> , all isolates	14	56	100	100	100									43	79		100			100	100
- vancomycin-susceptible	14	56	100	100	100									43	79		100			100	100
- vancomycin-resistant (VRE)	0	0																			
<i>Enterococcus faecium</i> , all isolates	11	44	0	0	0									18	0		9			73	100
- vancomycin-susceptible	8	32	0	0	0									25	0		12			100	100
- vancomycin-resistant (VRE)	3	12	0	0	0									0	0		0			0	100

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**All Specimens – % Susceptible**

		≥80% Susceptible			70-79% Susceptible			≤69% Susceptible																			
#	%	Ampicillin	Amoxicillin-Clavulanic acid	Penicillin	Penicillin IV (meningitis)	Penicillin IV (non-meningitis)	Piperacillin-Tazobactam	Meropenem	Ertapenem	Cloxacillin	Cefazolin	Ceftriaxone	Ceftriaxone (meningitis)	Ceftriaxone (non-meningitis)	Ceftazidime	Clindamycin	Erythromycin	Doxycycline	Ciprofloxacin	Moxifloxacin	Trimethoprim-Sulfamethoxazole	Gentamicin	Tobramycin	Amikacin	Vancomycin	Linezolid	
<b>ALL BACTERIA</b>	3363	—	18	38			66	71	60		31	50										57					
<b>ALL GRAM-NEGATIVE BACTERIA</b>	1864	100	10	45			68	97	76		24	54			69					71		62	92	86	97		
<i>Escherichia coli</i>	696	37	25	65			74	100	99		36	78			78					57		67	89	77	97		
<i>Pseudomonas aeruginosa</i>	343	18					86	87							88					86			91	97	94		
<i>Klebsiella pneumoniae</i>	316	17	0	79			81	99	96		55	84			84					75		77	94	85	96		
<i>Enterobacter cloacae</i>	137	7	0	0			2	100	97		0	1			1					92		87	97	97	100		
<i>Proteus mirabilis</i>	86	5	10	86			94	100	96		7	95			95					80		79	89	89	100		
<i>Klebsiella oxytoca</i>	81	4	0	83			85	100	100		31	87			87					92		91	96	91	97		
<i>Stenotrophomonas maltophilia</i>	56	3																		81		89					
<i>Serratia marcescens</i>	55	3	0	0			0	100	100		0	0			0					93		100	100	100	98		
<i>Citrobacter koseri</i>	28	2	0	0			0	100	100		0	0			0					100		96	100	100	100		
<i>Citrobacter freundii</i>	24	1	0	0			0	100	100		0	0			0					88		78	96	91	96		
<i>Morganella morganii</i>	20	1	0	0			0	100	100		0	0			0					75		75	95	85	95		
<i>Moraxella catarrhalis</i> <sup>^</sup>	12	1																									
<i>Citrobacter braakii</i>	10	1	0	0			0	100	100		0	0			0					80		90	100	90	100		
<b>ALL GRAM-POSITIVE BACTERIA</b>	1499	100	28	28	4		63	39	39	35	39	45				43	34					50				95	
<i>Staphylococcus aureus</i> , all isolates	482	32					87	87	87	87	86					78	69	94				99				100	100
- methicillin-susceptible	424	28					99	99	99	99	98					80	73	96				100				100	100
- methicillin-resistant (MRSA)	58	4					2	2	2	2	2					64	41	77				91				98	100
<i>Enterococcus faecalis</i> , all isolates	347	23	99	99			99																			100	
- vancomycin-susceptible	347	23	99	99			99																			100	
- vancomycin-resistant (VRE)	0	0																									
Coagulase-negative staphylococci	283	19					37	37	37	37	37					59	35	90				70				100	100
<i>Enterococcus faecium</i> , all isolates	232	15	9	9			9																			69	
- vancomycin-susceptible	162	11	13	13			13																			99	
- vancomycin-resistant (VRE)	70	5	0	0			0																			0	99
Viridans group streptococci <sup>*</sup>	76	5			0							97														100	
<i>Streptococcus pneumoniae</i>	32	2			45	45							88	100							100					100	
Group A streptococci <sup>**</sup>	24	2			100																					100	
Group B streptococci <sup>**</sup>	12	1			100																					100	
Group C streptococci <sup>**</sup>	11	1			100																					100	

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- Susceptibility to doxycycline was predicted based on tetracycline susceptibility testing results.
- ICUs include MSICU, CCU, CVICU.

**Year-Specific Notes:**

- All specimens exclude surveillance samples.

**Organism-Specific Notes:**

- <sup>^</sup> *M. catarrhalis*: Susceptibility testing is not routinely performed. Most isolates are resistant to ampicillin and amoxicillin but are generally susceptible to other antibiotics commonly used for respiratory infections.
- <sup>\*\*</sup> Beta-hemolytic streptococci: Susceptibility testing to penicillin is not routinely performed since resistant strains have not been recognized. All isolates are considered susceptible to penicillin.
- <sup>\*</sup> Viridans group streptococci: Please note that only a small proportion of these isolates were tested for susceptibilities. Please take this into consideration when interpreting the reported results.

<sup>^</sup> *S. maltophilia*: Susceptibility to moxifloxacin was predicted based on levofloxacin susceptibility testing results.