

Toronto General Hospital ANTIBIOGRAM
All Inpatients
January 1, 2019 - December 31, 2019

Blood Isolates – % Susceptible

		≥80% Susceptible																						
		70-79% Susceptible																						
		≤69% Susceptible																						
#	%	Ampicillin	Amoxicillin-Clavulanic acid	Penicillin	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

ALL BACTERIA	888	—	10	20	42	47	42	28	40										54					
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ALL GRAM-NEGATIVE BACTERIA	269	100	12	47	63	98	81	34	58				66				76	60	93	89	97			
<i>Escherichia coli</i>	111	41	19	56	67	98	97	46	76				76				63	55	90	83	95			
<i>Klebsiella pneumoniae</i>	50	19	0	80	82	100	100	73	88				88				86	74	98	88	100			
<i>Pseudomonas aeruginosa</i>	28	10			86	96							86				96		93	100	93			
<i>Enterobacter cloacae</i>	26	10	0	0	0	96	81	0	0				0				88	77	96	92	100			
<i>Klebsiella oxytoca</i>	11	4	0	64	73	100	100	0	73				73				91	82	100	91	100			
<i>Proteus mirabilis</i>	11	4	75	88	88	100	100	17	88				88				75	75	100	100	100			
<i>Serratia marcescens</i>	10	4	0	0	0	100	100	0	0				0				100	100	100	100	100			
<i>Stenotrophomonas maltophilia</i> [†]	7	3															100	100						
<i>Haemophilus influenzae</i> ^{^^}	6	2	50																					

ALL GRAM-POSITIVE BACTERIA	619	100	9	9	1	33	26	26	24	26	32			44	30			51					98	
Coagulase-negative staphylococci	370	60				18	18	18	18	18				50	29	76		53				100	100	
<i>Staphylococcus aureus</i> , all isolates	95	15				87	87	87	87	87				73	63	97		99				100	100	
- methicillin-susceptible	83	13				100	100	100	100	100				71	67	98		99				100	100	
- methicillin-resistant (MRSA)	12	2				0	0	0	0	0				83	33	92		100				100	100	
<i>Enterococcus faecium</i> , all isolates	61	10	3	3	3																	75		
- vancomycin-susceptible	46	7	4	4	4																	100		
- vancomycin-resistant (VRE)	15	2	0	0	0																	0	100	
- vancomycin-susceptible (vanA+)	0	0																						
<i>Enterococcus faecalis</i> , all isolates	42	7	100	100	100																	100		
- vancomycin-susceptible	42	7	100	100	100																	100		
- vancomycin-resistant (VRE)	0	0																						
Viridans group streptococci*	35	6								94													100	
Group B streptococci**	9	1		100										56	56								100	
<i>Streptococcus pneumoniae</i>	7	1									100	100		71			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.
- 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.

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:

^{^^} *H. influenzae* and *H. parainfluenzae*: Susceptibility to ampicillin was determined using beta-lactamase testing. Beta-lactamase-positive isolates are resistant to ampicillin but are generally susceptible to amoxicillin-clavulanic acid and cefuroxime.

** 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.

[†] *S. maltophilia*: Susceptibility to moxifloxacin was predicted based on levofloxacin susceptibility testing results.

Toronto General Hospital ANTIBIOGRAM
All Inpatients
January 1, 2019 - December 31, 2019

Respiratory Isolates – % 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

ALL BACTERIA	579	—	13	24				73	88	45		24	52										57					
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ALL GRAM-NEGATIVE BACTERIA	429	100	15	30				70	91	33		5	41			69					70		43	87	88	92		
<i>Pseudomonas aeruginosa</i>	155	36						79	81							79					74			83	89	88		
<i>Haemophilus influenzae</i> ^{^^}	69	16	74																									
<i>Klebsiella pneumoniae</i>	38	9	0	79				79	100	100		40	89			89					89		87	92	90	100		
<i>Escherichia coli</i>	37	9	27	46				49	97	96		7	62			62					57		49	86	79	100		
<i>Stenotrophomonas maltophilia</i> [†]	33	8																				76	94					
<i>Enterobacter cloacae</i>	22	5	0	0				0	100	82		0	0			0					95		91	95	95	95		
<i>Moraxella catarrhalis</i> [^]	22	5																										
<i>Serratia marcescens</i>	20	5	0	0				0	100	100		0	0			0					100		100	100	95	100		
<i>Klebsiella oxytoca</i>	11	3	0	55				55	100	100		17	64			64					91		91	100	83	100		
<i>Proteus mirabilis</i>	5	1	80	100				100	100	100			100			100					80		80	100	100	100		

ALL GRAM-POSITIVE BACTERIA	150	100	8	8	8			79	79	79	71	79	80				72	59					91					97	
<i>Staphylococcus aureus</i> , all isolates	127	85						84	84	84	84	84					73	61	91				95					99	100
- methicillin-susceptible	107	71						100	100	100	100	100					77	68	94				98					99	100
- methicillin-resistant (MRSA)	20	13						0	0	0	0	0					50	25	74				80					100	100
<i>Streptococcus pneumoniae</i>	15	10					79	79						75	100		93	67			100							100	
<i>Enterococcus faecium</i> , all isolates	3	2	0	0				0																				67	
- vancomycin-susceptible	2	1	0	0				0																				100	
- vancomycin-resistant (VRE)	1	1	0	0				0																				0	100
- vancomycin-susceptible (vanA+)	0	0																											
<i>Mycobacterium tuberculosis</i> complex	3	2																											
Viridans group streptococci [*]	2	1											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.
- 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.

Organism-Specific Notes:

- [^] *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.
- ^{^^} *H. influenzae* and *H. parainfluenzae*: Susceptibility to ampicillin was determined using beta-lactamase testing. Beta-lactamase-positive isolates are resistant to ampicillin but are generally susceptible to amoxicillin-clavulanic acid and cefuroxime.
- ^{*} 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.
- [†] *S. maltophilia*: Susceptibility to moxifloxacin was predicted based on levofloxacin susceptibility testing results.

Toronto General Hospital ANTIBIOGRAM

All Inpatients

January 1, 2019 - December 31, 2019

Urine Isolates – % Susceptible

	#	%	Ampicillin	Amoxicillin-Clavulanic acid	Penicillin	Piperacillin-Tazobactam	Meropenem	Ertapenem	Cloxacillin	Cefazolin	Cephalexin	Ceftriaxone	Ceftazidime	Doxycycline	Ciprofloxacin	Trimethoprim-Sulfamethoxazole	Nitrofurantoin	Gentamicin	Tobramycin	Amikacin	Vancomycin	Linezolid

ALL BACTERIA	1025	—	30	57		68	68	62		4	40	44		11	68	42	66						
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ALL GRAM-NEGATIVE BACTERIA	686	100	13	53		66	98	89		3	56	63	70		75	59	63	90	87	99			
<i>Escherichia coli</i>	379	55	18	62		70	100	99		5	68	77	77	0	66	58	94	89	86	99			
<i>Klebsiella pneumoniae</i>	107	16	0	76		78	98	95		0	78	79			81	64	28	88	80	100			
<i>Pseudomonas aeruginosa</i>	57	8				86	89						89		82			98	98	98			
<i>Enterobacter cloacae</i>	39	6	0	0		0	97	79		0	0	0	0		92	85	36	97	95	100			
<i>Proteus mirabilis</i>	35	5	60	91		97	100	100		0	89	97	97		77	69	0	80	81	100			
<i>Klebsiella oxytoca</i>	21	3	0	86		95	100	100		0	71	95	95		100	81	76	100	100	100			
<i>Morganella morganii</i>	13	2	0	0		0	100	100		0	0	0	0		85	77	0	92	85	100			
<i>Serratia marcescens</i>	10	1	0	0		0	100	90		0	0	0	0		100	90	0	100	100	100			
<i>Citrobacter koseri</i>	9	1	0	0		0	100	100		0	0	0	0		100	100	89	100	100	100			
<i>Citrobacter freundii</i>	7	1	0	0		0	100	100		0	0	0	0		86	71	86	86	86	100			

ALL GRAM-POSITIVE BACTERIA	339	100	65	65		72	7	7	7	7	7	7		34	56	7	73				95	99
<i>Enterococcus faecalis</i> , all isolates	214	63	100	100		100								27	86		99				100	100
- vancomycin-susceptible	214	63	100	100		100								27	86		99				100	100
- vancomycin-resistant (VRE)	0	0																				
<i>Enterococcus faecium</i> , all isolates	95	28	3	3		3								32	3		5				83	100
- vancomycin-susceptible	79	23	4	4		4								32	4		6				100	100
- vancomycin-resistant (VRE)	16	5	0	0		0								31	0		0				0	100
- vancomycin-susceptible (vanA+)	0	0																				
<i>Staphylococcus aureus</i> , all isolates	24	7				96	96	96	96	96	96			96	100	100					100	100
- methicillin-susceptible	23	7				100	100	100	100	100	100			96	100	100					100	100
- methicillin-resistant (MRSA)	1	0				0	0	0	0	0	0			100	100	100					100	100
Coagulase-negative staphylococci	3	1				0	0	0	0	0	0			100		0	100				100	100
<i>Enterococcus gallinarum</i>	3	1	100	100		100								67	67		100				100	

General Notes:

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- Susceptibility to doxycycline was predicted based on tetracycline susceptibility testing results.

Toronto General Hospital ANTIBIOGRAM
All Inpatients
January 1, 2019 - December 31, 2019

All Non-Urine 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
ALL BACTERIA	2163	—	14	25			61	67	50		34	48									57						
ALL GRAM-NEGATIVE BACTERIA	957	100	13	37			67	95	55		19	46		67					75		52	92	91	96			
<i>Pseudomonas aeruginosa</i>	264	28					81	86						83					79			89	94	92			
<i>Escherichia coli</i>	222	23	20	55			66	98	97		41	73		73					64		57	90	85	96			
<i>Klebsiella pneumoniae</i>	124	13	0	80			81	100	98		67	86		86					84		78	93	89	100			
<i>Enterobacter cloacae</i>	85	9	0	0			0	99	85		0	0		0					95		86	98	96	99			
<i>Haemophilus influenzae</i> ^{^^}	75	8	73																								
<i>Stenotrophomonas maltophilia</i>	45	5																	80		96						
<i>Serratia marcescens</i>	34	4	0	0			0	100	100		0	0		0					100		100	100	97	100			
<i>Klebsiella oxytoca</i>	33	3	0	76			77	100	100		9	82		82					94		94	100	96	100			
<i>Proteus mirabilis</i>	28	3	83	92			92	100	100		14	92		92					84		84	100	100	100			
<i>Moraxella catarrhalis</i> [^]	23	2																									
<i>Citrobacter koseri</i>	11	1	0	0			0	100	100		0	0		0					100		100	100	100	100			
<i>Citrobacter freundii</i>	10	1	0	0			0	100	100		0	0		0					100		80	90	90	100			
ALL GRAM-POSITIVE BACTERIA	1206	100	16	16	6		56	46	46	40	46	49			54	42					61				98		
Coagulase-negative staphylococci	496	41					33	33	33	33	33				63	43	89				62				100	100	
<i>Staphylococcus aureus</i> , all isolates	378	31					85	85	85	85	85				71	63	95				96				100	100	
- methicillin-susceptible	320	27					100	100	100	100	100				73	70	97				97				100	100	
- methicillin-resistant (MRSA)	58	5					0	0	0	0	0				60	22	84				93				100	100	
<i>Enterococcus faecium</i> , all isolates	113	9	8	8			8																		76		
- vancomycin-susceptible	86	7	10	10			10																		100		
- vancomycin-resistant (VRE)	27	2	0	0			0																		0	100	
- vancomycin-susceptible (vanA+)	0	0																									
<i>Enterococcus faecalis</i> , all isolates	111	9	99	99			99																		100		
- vancomycin-susceptible	111	9	99	99			99																		100		
- vancomycin-resistant (VRE)	0	0																									
Viridans group streptococci*	62	5		50									95												100		
<i>Streptococcus pneumoniae</i>	22	2			64	100							91	100	93	68			100						100		
Group B streptococci**	17	1		100											50	50									100		
Group A streptococci**	7	1		100											86	86									100		

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Organism-Specific Notes:

- [^] *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.
- ^{^^} *H. influenzae* and *H. parainfluenzae*: Susceptibility to ampicillin was determined using beta-lactamase testing. Beta-lactamase-positive isolates are resistant to ampicillin but are generally susceptible to amoxicillin-clavulanic acid and cefuroxime.
- ^{**} 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.
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- [†] *S. maltophilia*: Susceptibility to moxifloxacin was predicted based on levofloxacin susceptibility testing results.