

# Provincial Laboratory Services



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**Health PEI**  
One Island Health System

## Provincial Drugs & Therapeutics Antimicrobial Stewardship Subcommittee

**This information applies to:** PEI Physicians, Nurse Practitioners, Nurse Managers/Educators and Pharmacists

**From:** Dr. Greg German and Fiona Mitchell, Co-chairs of PD&T Antimicrobial Stewardship Subcommittee

**Date:** October 31<sup>st</sup>, 2019

**Re:** Updated Health PEI Antibigram 2019 with Practice Changing Points

Health PEI's empiric treatment guidelines ([www.healthpei.ca/micro](http://www.healthpei.ca/micro)) are based on local susceptibility patterns from our hospitals and the community. The last antibiogram was based on 2016 data. The 2019 update is based on data from January 2018 to December 2018.

### Top points to change your practice:

#### 1. Urinary Tract Infections:

- a. ***E. coli* resistance has gone down in PEI since our 2016 antibiogram data.** *E. coli* is the number one uropathogen and is the best marker of antibiotic resistance. In urine isolates, *E. coli* susceptibility has improved from 82% to 84% for Co-trimoxazole and 85% to 88% for ciprofloxacin. The total number of *E.coli* isolates has decreased by 15% during the two time periods suggesting our campaign to reduce unnecessary urine cultures is gaining traction (#symptomfreeletitbe).

PD&T Antimicrobial Stewardship Subcommittee  
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- b. **Ciprofloxacin is no longer recommended for outpatient monotherapy for pyelonephritis in QEH ER patients.** Even with improvements in all specimens, ciprofloxacin susceptibility in ER urine isolates at the QEH has worsened from 94% to 86%. If ciprofloxacin is used for this indication, one dose of ceftriaxone should also be given, especially if previously exposed to ciprofloxacin in the last 3-6 months (as per Health PEI's UTI Empiric Treatment Guidelines).
- c. **Nitrofurantoin (Macrocrystals), Co-trimoxazole, and fosfomycin are the preferred outpatient antibiotics to treat uncomplicated cystitis.** Due to the several black box warnings and increased risk of *C. difficile*, fluoroquinolone use should be avoided for minor ailments including uncomplicated cystitis.

## 2. Respiratory Infections: (See Health PEI Guidelines for details)

- a. **Avoid using clarithromycin or azithromycin monotherapy as first line therapy for Community Acquired Pneumonia (CAP).** *Streptococcus pneumoniae* susceptibility in PEI is poor for macrolides at 59%, while doxycycline is better at 71%. New IDSA and AST guidelines for CAP suggest that macrolide monotherapy for outpatients should only be used if local pneumococcal resistance is <25%. Amoxicillin 1 g TID the 1<sup>st</sup> choice for all patients with unilateral CAP or any patients over the age of 50.

## 3. Sepsis/Serious Infections:

- a. **Double therapy is still recommended empirically for *Staphylococcus aureus* bacteremia** despite a significant reduction (10% to 4%) in the rate of MRSA blood cultures versus the total MRSA+MSSA cultures.
- b. **Ertapenem is always resistant for *Pseudomonas aeruginosa* infections** and should not be used for the initial treatment of any life threatening infection without an infectious diseases opinion.
- c. **Initial vancomycin therapy is not necessary for community acquired meningitis** (unless recent travel) due to the <1% rate of high-level ceftriaxone resistance to *Streptococcus pneumoniae*. This practice is in line with that of the Saint John Regional Hospital.

## 4. Miscellaneous

- a. **Double coverage of anaerobic organisms is considered redundant in most cases.** For example, piperacillin/tazobactam, ertapenem, meropenem, and amoxicillin/clavulanate do not require additional anaerobic coverage with metronidazole or clindamycin unless the metronidazole is being used to co-treat *C. difficile* or the clindamycin is being used to co-treat Toxic Shock Syndrome or Necrotizing Fasciitis.

- b. **AmpC or ESBL producing organisms are at an increased chance of clinical failure to certain cephalosporins or beta-lactamase inhibitor combinations** even though they may test susceptible. For complicated infections, consider the use of a carbapenem or alternative antibiotic. The Merino trial does not support piperacillin-tazobactam as a carbapenem-sparing therapy in patients with bloodstream infections caused by ceftriaxone-resistant *E. coli* or *Klebsiella pneumoniae*.<sup>1</sup>

For any questions please contact Dr. Greg German (Infectious Disease Consultant and Health PEI Medical Microbiologist; 894-2515; [GJGerman@ihis.org](mailto:GJGerman@ihis.org)) or Fiona Mitchell (Provincial Antimicrobial Stewardship Pharmacist; 894-2587; [fcmitchell@ihis.org](mailto:fcmitchell@ihis.org)). If you would like to have a more specific antibiogram to your practice, please contact the medical microbiologist. A special thank you goes out to Chris Norgaard, laboratory technologist at QEH, for compiling the 2019 Health PEI antibiogram.

1. Harris PNA, Tambyah PA, Lye DC, et al. Effect of Piperacillin-Tazobactam vs Meropenem on 30-Day Mortality for Patients With *E coli* or *Klebsiella pneumoniae* Bloodstream Infection and Ceftriaxone Resistance: A Randomized Clinical Trial. *JAMA*. 2018;320(10):984–994. doi:10.1001/jama.2018.12163

## Health PEI ANTIBIOGRAM 2019

(Antibiotic Susceptibility Results of Non-Duplicative Isolates From All Community And Health Care Settings)

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### Anaerobic susceptibilities\*

#### Predictably Susceptible:

Amoxicillin+Clavulanic Acid, Piperacillin+Tazobactam, Ertapenem, and Meropenem;

#### Also Predictably Susceptible:

Metronidazole (Except *Actinomyces* or *Propionibacterium* are intrinsically resistant)

Double anaerobic coverage when already on one of above antibiotics is discouraged.

NOT-Predictably Susceptible: Moxifloxacin, Doxycycline, Cefoxitin or Clindamycin

Note: Most beta-lactamase negative oral anaerobes are susceptible to Amoxicillin.

\*Bugs and Drugs (Canada) Susceptibilities available on a case by case basis.

2018 data prepared by Chris Norgaard MSc, MLT

<https://src.healthpei.ca/microbiology>

*Hard copies available upon request (as per previous). Please call 902-894-2439*

URINE Isolates	Total Number	Nitrofurantoin*	Co-trimoxazole	AmpIV/AmoxPO	Amox+Clav.Acid	Cephalexin	Cefixime	Ciprofloxacin^	Ceftriaxone	Ceftazidime	Ertapenem	Piperacillin+Tazo	Meropenem	Tobramycin	
<i>E. coli</i> ~	3610	97	84	64	88	69	93	88	95	97	100	98	100	94	
<i>Klebsiella pneumoniae</i>	454	42	96		96	96	98	99	98	98	99	98	99	98	
<i>Klebsiella oxytoca</i>	99	84	98		95	92	98	99	94	100	100	94	100	98	
<i>Enterobacter spp.</i> (AmpC producer)	151	33	94				56	97	78	81	96	80	100	99	
<i>Proteus mirabilis</i> (Not <i>P. vulgaris</i> )	299		81	86	99	95	98	98	98	99	100	99	100	91	
<i>Pseudomonas aeruginosa</i>	135							92		98		98	99	100	
<i>Staphylococcus saprophyticus</i>	190	100	94					100							100
<i>Enterococcus spp.</i>	518	94		92	92			41				92	92"		100
^ <i>E. coli</i> and Cipro: ER (358) QEH 86%, (356) PCH 90%; " Not suitable for bacteremia. *Nitrofurantoin activity limited to cystitis. Suitable for use with adequate renal function (CrCl ≥30 mL/min); ~ <i>E.coli</i> and Fosfomycin (215) 98% activity mostly limited to the bladder (cystitis) Shaded boxes = Not routinely reported or recommended															

Vancomycin IV or Linezolid PO/IV

Gram negative Isolates (Excluding urines)	Total Number	AmpIV/AmoxPO	Amox+Clav.Acid	Cephalexin	Cefixime	Co-trimoxazole	Ciprofloxacin	Cefazolin*	Ceftriaxone	Ceftazidime	Ertapenem	Piperacillin+Tazo	Meropenem	Tobramycin
<i>E. coli</i>	249	<b>63</b>	<b>88</b>	<b>69</b>	<b>74</b>	<b>82</b>	<b>84</b>	<b>93</b>	<b>93</b>	<b>96</b>	<b>100</b>	<b>97</b>	<b>100</b>	<b>94</b>
<i>Klebsiella</i> spp.	93		<b>87</b>	<b>86</b>	<b>67</b>	<b>90</b>	<b>95</b>	<b>95</b>	<b>91</b>	<b>89</b>	<b>100</b>	<b>88</b>	<b>71</b>	<b>94</b>
<i>Proteus mirabilis</i> (Not <i>P. vulgaris</i> )	54	<b>96</b>	<b>98</b>	<b>98</b>	<b>100</b>	<b>83</b>	<b>98</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>96</b>	<b>98</b>	<b>100</b>	<b>98</b>
<i>Enterobacter</i> spp. (AmpC producer)	62				<b>62</b>	<b>93</b>	<b>95</b>		<b>87</b>	<b>90</b>	<b>98</b>	<b>90</b>	<b>100</b>	<b>97</b>
<i>Serratia</i> spp. (AmpC producer)	31					<b>100</b>	<b>100</b>		<b>97</b>	<b>94</b>	<b>100</b>	<b>95</b>	<b>100</b>	<b>91'</b>
<i>Pseudomonas aeruginosa</i>	254						<b>93</b>			<b>93</b>		<b>99</b>	<b>97</b>	<b>97</b>

Shaded boxes = Not routinely reported or recommended; \* Cefazolin not optimal for blood stream infections  
' For *Serratia* spp., Gentamicin (98% susceptible) is more effective than Tobramycin.  
*Haemophilus influenzae* beta-lactamase positive: (141 isolates) 28%

Gram Positive Cocci	Total Number (12 months)	AmpIV/AmoxPO	Amox+Clav.Acid	1 <sup>st</sup> Generation Cephalosporins	Cefuroxime or Ceftriaxone	Doxycycline (Tetracycline)	Co-trimoxazole	Erythromycin	Clindamycin	Vancomycin IV
<i>Staph. aureus</i> (MSSA and MRSA)	1234	<b>23</b>	<b>92</b>	<b>92</b>	<b>92</b>	<b>94</b>	<b>99</b>	<b>71</b>	<b>74</b>	<b>100</b>
MSSA	1131	<b>28</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>95</b>	<b>99</b>	<b>74</b>	<b>76</b>	<b>100</b>
MRSA	100					<b>91</b>	<b>99</b>	<b>26</b>	<b>48</b>	<b>100</b>
<i>Staphylococcus lugdenensis</i>	99	<b>89</b>	<b>89</b>	<b>89</b>	<b>89</b>	<b>100</b>	<b>100</b>	<b>82</b>	<b>82</b>	<b>100</b>
<i>Staphylococcus epidermidis</i>	222		<b>42</b>	<b>42</b>	<b>42</b>	<b>81</b>	<b>61</b>	<b>38</b>	<b>56</b>	<b>100</b>
<i>Enterococcus</i> spp.	145	<b>74</b>	<b>74</b>			<b>42</b>				<b>99</b>
Group A Strep	100	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>			<b>71</b>	<b>71</b>	<b>100</b>
Group B Strep	121	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>			<b>60</b>	<b>60</b>	<b>100</b>
<i>Streptococcus pneumoniae</i>	66	<b>89LD 100HD</b>	<b>89LD 100HD</b>	<b>89</b>	<b>100</b>	<b>71</b>	<b>~95</b>	<b>59</b>	<b>~95</b>	<b>100</b>

MRSA rate 4% of *Staph. aureus* Blood Cultures 16% of *Staph. aureus* ER wounds

Low dose (LD) High Dose (HD) in non-central nervous system infections;

~2018 Moncton Hospital data as local data unavailable

^2014 National data as local data unavailable

Shaded boxes = Not routinely reported or recommended