

HNELHD Cumulative Antibigrams 2019: Mehi Commentary

Urinary Isolates

The Therapeutic Guidelines: *Antibiotics* recommends: trimethoprim or nitrofurantoin as first-line empiric therapy for the treatment of acute uncomplicated cystitis in non-pregnant women; amoxicillin/clavulanate or trimethoprim or cefalexin or trimethoprim/sulfamethoxazole for the treatment of non-severe pyelonephritis in adults (non-pregnant); and intravenous therapy with ampicillin and gentamicin for severe pyelonephritis in adults (non-pregnant).

The predominant pathogen isolated from urine samples collected in the Mehi Sector was *Escherichia coli* which demonstrated high rates of susceptibility to first line oral agents for cystitis and non-severe pyelonephritis (80% trimethoprim susceptibility, 99% nitrofurantoin susceptibility and 96% cefalexin susceptibility). The isolates had mixed susceptibility to first line intravenous therapy options for severe pyelonephritis (98% gentamicin susceptibility and 59% ampicillin susceptibility) however when used as combination therapy (as is intended by the guidelines), the agents provide good cover for likely causative organisms and are still recommended for use.

Other Gram-negative organisms frequently isolated included: *Klebsiella* species, AMP-C Producing *Enterobacteriales* and *Pseudomonas aeruginosa*. *Klebsiella* species isolates showed complete susceptibility to the first line intravenous option gentamicin (100% susceptibility) and high susceptibility to cefalexin and nitrofurantoin (84% and 85% susceptibility respectively) as a suitable oral options. The AMP-C producing *Enterobacteriales* isolates showed very high susceptibility to the first line intravenous option (94% gentamicin susceptibility) as well as suitable oral options of norfloxacin or ciprofloxacin (96% and 96% susceptibility respectively). Notably, only 21% of isolates were susceptible to ceftriaxone which is not a recommended therapy option for this bacteria despite showing in vitro sensitivities in some cases. Isolates of *Pseudomonas aeruginosa* isolates demonstrated complete susceptibility to the first line intravenous therapy option (100% gentamicin susceptibility) as well as ciprofloxacin as a suitable oral option (97% susceptibility).

Enterococcus species were the predominant Gram-positive organism isolated from urinary samples and demonstrated high rates of susceptibility to first line oral agents (94% amoxicillin susceptibility and 94% nitrofurantoin susceptibility) as well as empiric and directed intravenous therapy (94% ampicillin susceptibility and 93% vancomycin susceptibility). Notably, 7% of the isolates were vancomycin-resistant Enterococci (VRE).

For details of the methods used in this analysis see Cumulative Antibigrams 2019: Overview.

Other Isolates Commentary

The Cumulative Antibigram for “Other Isolates” provides summary data of antibiotic resistance patterns for organisms obtained from sites other than blood and urine. Chiefly these bacteria are collected from skin, soft tissue, respiratory track and surgical sites.

The predominant pathogen isolated from the samples collected in the Mehi Sector was *Staphylococcus aureus*. The Therapeutic Guidelines: *Antibiotics* recommends flucloxacillin as first-line empiric therapy for the treatment of most skin and soft tissue infections for patients who are not at increased risk of community-associated methicillin-resistant *S. aureus* (MRSA). The samples demonstrated high rates of susceptibility to flucloxacillin (86% susceptibility) as the recommended first line oral agent and cefalexin as the second line agent recommended for use in penicillin hypersensitivity. First line oral agents for the treatment of MRSA demonstrated high rates of susceptibility (86% clindamycin susceptibility, 100% sulfamethoxazole/trimethoprim susceptibility and 97% doxycycline susceptibility).

HNELHD Cumulative Antibiograms 2019: Mehi Commentary

Another Gram-positive organism of note that was isolated included *Streptococcus pneumoniae*. The breakpoint for penicillin susceptibility for treating *Streptococcus pneumoniae* meningitis is an MIC \leq 0.06 mg/L; 100% of the isolates tested were susceptible to benzylpenicillin. Pneumococcal infections outside the central nervous system with MICs \leq 2 mg/L will respond to high dose penicillin or other narrow spectrum β -lactam antibiotics.

The most frequently isolated Gram-negative organisms were *Haemophilus influenzae*, *Escherichia coli* and *Pseudomonas*. The *Haemophilus influenzae* isolates (likely respiratory sources) had high rates of susceptibility to ceftriaxone (85%) and doxycycline (94%). Isolates of *Pseudomonas aeruginosa* isolates demonstrated very high rates of susceptibility to the first line intravenous therapy option (93% gentamicin susceptibility) as well as ciprofloxacin as a suitable oral option (93% susceptibility).

No meropenem-resistant carbapenemase-producing *Enterobacterales* (CPEs) organisms were isolated from the other clinical isolates in the Peel Sector.

For details of the methods used in this analysis see Cumulative Antibiograms 2019: Overview.