HNELHD Cumulative Antibiograms 2019: Tablelands 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 Tablelands Sector was *Escherichia coli* which demonstrated high rates of susceptibility to first line oral agents for cystitis and non-severe pyelonephritis (78% trimethoprim susceptibility, almost 100% nitrofurantoin susceptibility and 90% cefalexin susceptibility). The isolates had mixed susceptibility to first line intravenous therapy options for severe pyelonephritis (94% gentamicin susceptibility and 57% ampicillin susceptibility). However, when provided as combination therapy (in accordance with guideline recommendations), ampicillin and gentamicin provided effective coverage for likely causative organisms and remain recommended for use.

Other Gram-negative organisms frequently isolated included: *Klebsiella* species, AMP-C producing *Enterobacterales* and *Pseudomonas aeruginosa*. AMP-C producing *Enterobacterales* isolates showed very high susceptibility rates to the first line intravenous option gentamicin (94% susceptibility) and high susceptibility to norfloxacin (88% susceptibility) as a suitable oral option. Other non-AMP-C producing *Enterobacterales* isolates showed 100% susceptibility to meropenem. Whilst isolates of *Pseudomonas aeruginosa* isolates demonstrated very high rates of susceptibility to the first line intravenous therapy option (93% gentamicin susceptibility), there was insufficient data to publish for suitable oral options.

Enterococci were the predominant Gram-positive organism isolated from urinary samples and demonstrated high rates of susceptibility to first line oral agents (89% amoxicillin susceptibility and 100% nitrofurantoin susceptibility) and empiric and directed intravenous therapies (89% ampicillin susceptibility and 86% vancomycin susceptibility). Notably, 13% of Enterococcal isolates were vancomycin-resistant *Enterococcus* (VRE).

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

Other Isolates Commentary

The Cumulative Antibiogram 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 Tablelands 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 (85% susceptibility) as the recommended first line oral agent and cefalexin as the second line agent recommended for use in penicillin hypersensitivity (85% susceptibility). First line oral agents for the treatment of MRSA demonstrated very high rates of susceptibility (92% clindamycin susceptibility, 98% sulfamethoxazole/trimethoprim susceptibility and 96% doxycycline susceptibility).

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 ≤ 0.06

mg/L; 93% of the isolates tested were susceptible to benzylpenicillin. Pneumococcal infections outside the central nervous system with MICs ≤ 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 other *Enterobacterales*. The *Haemophilus influenzae* isolates (likely respiratory sources) had high rates of susceptibility to ceftriaxone (94%) and amoxicillin/clavulanate (81%). As a group, the other *Enterobacterales* isolates showed very high rates of susceptibility to many first line agents including: gentamicin, piperacillin/tazobactam and meropenem (100%, 84% and 100% respectively).

No meropenem-resistant carbapenemase-producing *Enterobacterales* (CPEs; previously known as carbapenemase producing *Enterobacteriaceae*) organisms were isolated from the other clinical isolates in the Tablelands Sector.

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