

Antimicrobial Resistance

Data Set:

Invasive isolates from blood cultures, tissue and aspirates. This analysis does not include isolates from urine. Repeat isolates from the same patient within 30 days excluded.

Twelve months to June 2016. Waikato Hospital and rural laboratories. Data here is phenotypic susceptibility of the first isolate. Several species, such as *Enterobacter* and *Serratia* spp., can develop high level cephalosporin resistance after a few days' treatment so, although these agents may have useful activity in empiric treatment, they are not shown on routine laboratory reports.

Vitek 2 testing and CLSI interpretation methods were used during this period.

The Enterobacteriaceae are a group of closely related gram negative bacilli, predominantly found as normal flora in the human bowel.

Amoxicillin and amoxicillin clavulanate leave something to be desired for treating invasive infections at Waikato Hospital, with only 64% of isolates being susceptible.

Among the cephalosporins, cefazolin is routinely used for surgical prophylaxis, mostly directed against *S. aureus* but 40% of coliforms are resistant. Ceftriaxone and cefepime are more satisfactory (91% and 95% susceptibility), limited mainly by the frequency of ESBL and AmpC producing organisms. The broader spectrum beta lactams, piperacillin-tazobactam and meropenem, are restricted to use in more critical settings and these have good activity against *Pseudomonas* as well.

Aminoglycosides are reliably active and are recommended as empiric therapy in urosepsis and the immunocompromised but courses are generally < 2 days, to prevent toxicity.

Cotrimoxazole is useful for uncomplicated urinary tract infection but only 83% of these invasive isolates were susceptible.

Ciprofloxacin (95% susceptible overall) is a good second line agent, specially in case of beta lactam allergy and when oral treatment is required.

Extended spectrum beta lactamase producing strains (3.9%) are difficult to manage, mostly due to also being resistant to alternative classes of antibiotics: gentamicin 23%R, cotrimoxazole 59% R, ciprofloxacin 55% R. By standard (CLSI) criteria, amoxicillin clavulanate had measureable activity: 64% S, 18% intermediate and 18% R. However, the MIC distribution is unimodal and susceptible strains are not far from the breakpoint, so we do not recommend using this agent in critical illness or poorly perfused body sites.

Enterobacteriaceae (“coliforms”)

