

OBJECTIVE

To provide information about the status of the AURA Surveillance System.

METHODS

The Commission used a partnership approach with existing surveillance programs, along with establishing new systems where gaps were identified, to achieve the rapid establishment of a nationally coordinated antimicrobial use and resistance surveillance system.

The Commission continues to work with these partner programs to improve system functionality, and enhance data comparability, and representativeness. This has been achieved by:

- Promoting increased participation in antimicrobial use (AU) and antimicrobial resistance (AMR) surveillance across the public and private sectors in Australia and providing increased data and information for the community, aged care and acute care sectors
- Utilising the existing infrastructure provided by Queensland Health to establish national passive AMR surveillance
- Working with SA Health to develop a web portal to enhance functionality of the National Antimicrobial Utilisation and Surveillance Program (NAUSP) allowing streamlined data and local reporting
- Partnering with the National Centre for Antimicrobial Stewardship to enhance capacity for the National Antimicrobial Prescribing Surveys (NAPS) in hospitals and aged care homes, and undertake a range of other audits, e.g. surgical prophylaxis
- Enhancing the capacity of the Australian Society for Antimicrobials to expand the Australian Group on Antimicrobial Resistance (AGAR) bacteraemia resistance surveillance
- Establishing a national alert system for critical antimicrobial resistances (CARAlert) to enhance access to data and timely reporting of CARs.

RESULTS

The Commission released its first national report in June 2016, focusing on the 2014 calendar year.

Antimicrobial use and appropriateness of prescribing in hospitals

Participation in NAPS increased by 13.3%, and in NAUSP by 23%, between 2014 and 2015.

Highlights of 2015 AMR and AU data (to be included in the second report) include:

Hospital NAPS 2015¹

- 40.5% of hospital patients were prescribed antimicrobials; consistent with the results from the 2013 and 2014 Hospital NAPS
- About one in five prescriptions were deemed to be inappropriate; a greater proportion in private hospitals (27.4%) than in public hospitals (20.5%).

RESULTS

Antimicrobial resistance

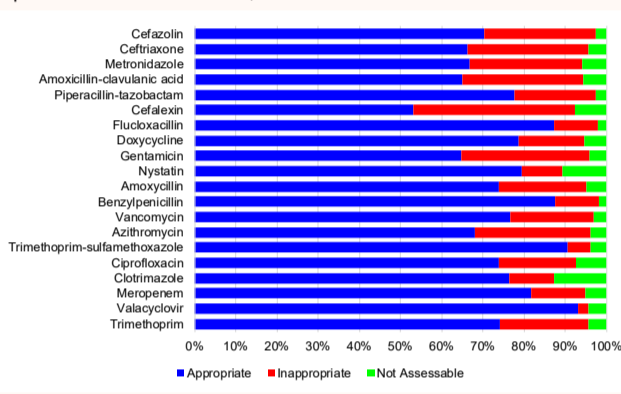
AGAR³

In 2015, AGAR collected data on 10,739 episodes of bacteraemia Australia-wide. Key findings from analyses of the 2015 AGAR data include:

- Overall ciprofloxacin resistance rate was 12.6%; for community-onset *Escherichia coli* bacteraemia it was 11.6%. Of all *E. coli* bacteraemia, 83% are community-onset
- Over the decade to 2015, fluoroquinolone resistance in *E. coli* has increased from <1% to rates that are now consistent with some northern European countries
- Extended-spectrum β -lactamase (ESBL) phenotypes were found in 11.5% of *E. coli* and 7.7% *Klebsiella pneumoniae*
- Carbapenemase-producing *Enterobacteriaceae* remains an uncommon form of resistance
- Rates of vancomycin resistance in *Enterococcus faecium* are high in most parts of Australia. In 2015, 54.2% of *E. faecium* harboured *vanA* or *vanB* genes
- Overall rates of methicillin-resistant *Staphylococcus aureus* (MRSA) do not appear to be increasing (18.2% in 2015). However, there is an increasing rate of community-onset *S. aureus* bacteraemias that are methicillin-resistant, and community-associated clones of MRSA are an increasing cause of hospital-onset bacteraemia. Some healthcare-associated clones of MRSA are in decline.

- Between 2014 and 2015, there was a reduction in the proportion of surgical prophylaxis prescriptions continuing beyond 24 hours (27.4% in 2015, compared with 35.9% in 2014); despite this reduction, the rate of inappropriateness for surgical prophylaxis prescriptions has remained fairly steady over three years (41.6% in 2013, 40.0% in 2014 and 40.5% in 2015)
- As in 2014, the most common antimicrobials prescribed were cefazolin, ceftriaxone, metronidazole, amoxicillin-clavulanate and piperacillin-tazobactam (Figure 1).

Figure 1. Appropriateness for the top 20 most commonly prescribed antimicrobials, 2015

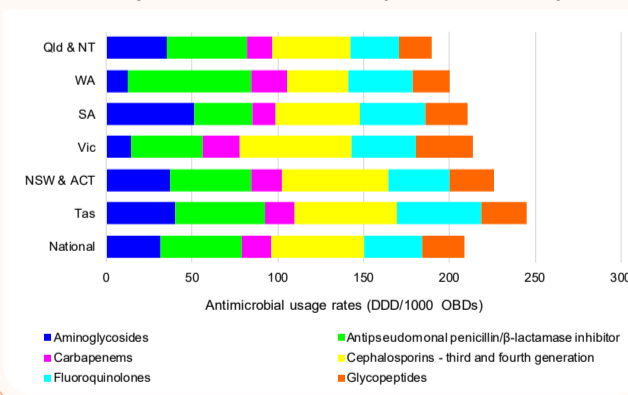


Source: NAPS 2015

NAUSP 2015²

- The mean aggregate annual rate for total-hospital AU in 2015 was 916.4 defined daily doses (DDD) per 1000 occupied-bed days (OBDs), a decrease of 2% compared with the 2014 rate, and a decrease of 7.6% compared with the 2011 rate
- Use of highly reserved antibacterials such as colistin, daptomycin, linezolid and tigecycline is very low – less than 5 DDDs per 1000 OBDs but with marked variance between hospitals
- There is significant variation between states and territories for aminoglycosides and antipseudomonal penicillin combinations (see Figure 2).

Figure 2. Antibacterial usage rates in NAUSP contributor hospitals for the six major antibacterial classes, by state and territory, 2015²



Source: NAUSP 2015

References

1. Antimicrobial prescribing practice in Australian hospitals: results of the 2015 National Antimicrobial Prescribing Survey. 2016 [accessed 9 January 2017]; Available from <https://www.safetyandquality.gov.au/antimicrobial-use-and-resistance-in-australia/>
2. Antimicrobial Use in Australian Hospitals: 2015 annual report of the National Antimicrobial Utilisation Surveillance Program. Sydney. ASCQHC. 2017.
3. AGAR Sepsis Outcomes Report 2015. Sydney. ASCQHC. 2017 (unpublished).

CONCLUSIONS

Incremental improvements toward best-practice antimicrobial prescribing are encouraging. Nevertheless, there is particular need for improvement in some areas, including prescribing for surgical prophylaxis, documentation of review and stop dates and prescribing of cefalexin.

Despite continued restriction of access to fluoroquinolones in the community, resistance continues to rise, probably due to co-selection of resistance with other antimicrobial classes.

Vancomycin-resistant *E. faecium* is now a major problem in many Australia hospitals.

Healthcare-associated MRSA are in decline, but community-associated MRSA account for an increasing proportion of staphylococcal sepsis.

Analyses of AURA data will continue to be published to support the National AMR Strategy and other national and local strategies for the prevention and containment of AMR, promote appropriate AU and enhance safety and quality in health care in Australia.