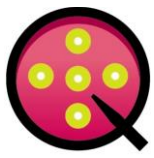
MONITORING AND REPORTING ANTIMICROBIAL USAGE

Fact Sheet



Why do we have to monitor our antimicrobial usage and what does this involve?

Monitoring antimicrobial usage in a health facility is an important element of all antimicrobial stewardship (AMS) programs and a specific requirement under the National Safety and Quality Health Service Standards[1]. Antimicrobial usage reports allow facilities to identify which antimicrobials are widely used in the facility and where, and may also be used to compare usage among facilities. This can form part of a risk assessment for AMS and provides direction for AMS activities within a facility[2].

Both the quantity and quality of antimicrobial use should be reviewed when monitoring usage. This fact sheet will focus on common methods for monitoring the quantity of use by examining antimicrobial consumption, and will provide advice on how the results of this monitoring can be of most value.

Getting information on Antimicrobial Consumption

GOOD
Review purchase data associated with antimicrobial products received from your wholesaler or supply service

BETTER
Review the quantity of antimicrobial products provided to wards for inpatient use

BEST
Review the quantity of antimicrobial agents actually administered to inpatients

EVALUATING ANTIMICROBIAL USAGE: Getting the most benefit out of your results

The key to eliciting real benefits from monitoring antimicrobial usage lies in actively using the information that has been collated. Suggestions for how to use usage reports in an AMS program are outlined below.

Identifying trends

Usage monitoring may reveal patterns of increasing or decreasing use of particular antimicrobial agents or classes. These results should contribute to ongoing AMS risk assessment and may direct activities such as targeted AMS interventions and audits of therapeutic appropriateness[2].

Communication with stakeholders

Informative and regular reports of antimicrobial usage are excellent tools for providing information to key groups of people affected by the AMS program. Regular feedback of usage reports to prescribers has been shown to be useful when targeting particular problems, such as elevated rates of *Clostridium difficile* infection or overprescribing of broad-spectrum antimicrobial agents[3]. Usage reports may also be helpful in justifying new or ongoing resources for an AMS program.

Impact Assessment

Results presented in antimicrobial usage reports may be linked to the timing of particular AMS initiatives in a facility or ward. Longitudinal data may indicate the extent to which effects of AMS interventions are sustained over time. In some facilities, AMS teams may also wish to consider any relationships that emerge between antimicrobial usage and patterns of susceptibilities in selected organisms.

Benchmarking (and other comparisons)

Healthcare facilities may wish to examine their own antimicrobial usage against others over a corresponding time period. It may be appropriate to compare local usage rates to those of hospitals in similar peer groups. Care must be taken to ensure data has been collected by the same or similar methods and is analysed in the same way.

Defined daily dose (DDD) is a standardised unit of measure that is particularly useful for monitoring and reporting antimicrobial usage[4].

All antimicrobials have an assigned DDD value determined by the WHO Collaborating Centre for Drug Statistics Methodology[5]. The DDD represents the average daily dose for adult therapy when used for its main purpose[4]. Reporting ward or facility usage based on defined daily doses (DDDs) allows for clearer comparison of usage rates between different antimicrobial agents.

Reporting usage figures in terms of DDDs involves totalling the usage of an antimicrobial agent in grams, then dividing by the DDD value. For example:

The DDD for parenteral vancomycin is 2g.

Pharmacy reports show that Hospital X used 200 vials of vancomycin 1g and 60 vials of vancomycin 500mg over a 1 month period.

Total use in grams = (200 x 1g) + (60 x 0.5g)
= 230g
Total use in DDDs = 230g / 2g per DDD
= 115 DDDs

Therefore Hospital X is using 115 DDDs of vancomycin per month.

Facilities that lack the expertise or resources required to prepare reports of antimicrobial use in DDDs may consider the total usage quantity in grams (or even in vials or capsules/tablets if only one strength of the antimicrobial was available) over regular intervals.

Please note that DDDs are not an appropriate measure of antimicrobial use in paediatric patients[3]. Looking at total usage of antimicrobials of interest (in grams) at intervals (e.g. monthly) over time can still give valuable information on usage trends.

Acknowledging Data Limitations

Practical and achievable methods of data collection are often not as detailed or direct as is ideal. Recognising and addressing the limitations of your methods will go some way to preventing the misinterpretation of results and also helps to establish a credible reputation for your AMS program.

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The National Antimicrobial Utilisation Surveillance Program **(NAUSP)**

What is NAUSP?

NAUSP is a Commonwealth-funded antimicrobial monitoring program developed and administered by the Infection Control Service, Communicable Disease Control Branch, SA Health[6]. The program monitors trends in hospital antimicrobial use nationally and provides participating facilities with regular reports on their inpatient antimicrobial usage[6].

Participating facilities upload data on the quantity of antimicrobials dispensed or distributed for inpatient therapy (typically from pharmacy dispensing systems) and patient admissions into the NAUSP Portal[7]. The NAUSP Portal converts this data to DDDs per 1000 overnight occupied bed days (OBDs) for the major antimicrobial classes[4]. Data can be extracted immediately after upload and standard reports can be generated at any time.

Which facilities should participate?

All facilities with at least 50 beds are encouraged to participate in NAUSP[4]. NAUSP reports benchmark each facility's usage of particular agents to average usage in hospitals from the same peer group, allowing participating facilities to monitor and compare trends in usage[6]. Peer grouping is guided by the Australian Institute of Health and Welfare (AIHW) Classifications[8] (see right). Where this is not possible for a particular hospital (e.g. private hospitals), NAUSP will negotiate an appropriate peer grouping with the contributor hospital based on hospital size, location and types of services offered[4].

The presence of an active NAUSP lead for each site has been identified as a key element of successful NAUSP participation[9].

Please note that NAUSP is not suited to paediatric facilities as DDDs are not a valid measure of use in the paediatric setting[3].

How can my facility become involved?

1. Seek approval (in principle) from your facility/LHD executive to participate in NAUSP.
2. Speak to your pharmacy department about the generation of antimicrobial usage reports*.
3. Liaise with your performance management and case-mix unit, or quality unit, to access patient admission data in the form of OBDs.
4. Nominate a lead contact person for NAUSP responsibilities at your facility.
5. Contact NAUSP to negotiate participation in the program.
   (Visit the SA Health AMS website or email antibio@health.sa.gov.au)

*Generating appropriate reporting templates from pharmacy dispensing software may be an initial challenge, however a number of facilities are willing to share their existing report templates used for NAUSP data submissions. Please contact the CEC if you wish to be put in touch with these facilities.

Major AIHW Peer Groupings for NSW Health Facilities
(Used for NAUSP)

Principal Referral Hospital		
Concord	Prince of Wales	St Vincent's
John Hunter	Royal North Shore	Westmead
Liverpool	Royal Prince Alfred	
Nepean	St George	
Public Acute Group A Hospital		
Bankstown/ Lidcombe	Gosford	Port Macquarie
Bathurst	Griffith	Shoalhaven
Blacktown	Hornsby & Ku-Ring-Gai	Memorial
Calvary Mater Newcastle	Lismore	Sutherland
Campbelltown	Manly	Tamworth
Coffs Harbour	Manning	The Tweed Hospital
Dubbo	Mona Vale	Wagga Wagga
	Orange Health Service	Wyong
Public Acute Group B Hospital		
Armidale	Fairfield	Maitland
Auburn	Goulburn	Mount Druitt
Bega	Grafton	Ryde
Belmont	Hawkesbury	Shellharbour
Bowral	Broken Hill Macleay Valley, Kempsey	Sydney/Sydney Eye
Canterbury		
Public Acute Group C Hospital		
Ballina	Cooma Health Service	Glen Innes
Batemans Bay	Cootamundra	Gloucester
Bellinger River	Corowa	Gunnedah
Blue Mountains	Cowra	Inverell
Bulli	Deniliquin	Kurri Kurri
Casino	Forbes	Leeton
Cessnock		Lithgow
Public Acute Group D Hospital		
List of hospitals available from: http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=60129553443		
Women's Hospitals		
Royal for Women		

Sharing your reports with the CEC

The Clinical Excellence Commission relies on input and feedback from staff working within the NSW healthcare system to make our programs useful. If you are contributing to NAUSP, or are collating reports on your antimicrobial usage, we would be grateful if you could share these with the CEC.

Our review of your reports will enable us to better understand the use of antimicrobials in NSW hospitals and monitor trends at a state level.

How can we best monitor and report usage in smaller facilities?

Monitoring antimicrobial usage can be challenging for small facilities, particularly in those lacking on-site clinical pharmacy services. In small sample populations, variation in antimicrobial use may be attributed to the prescribed therapy of only a few patients, and may not be a true indicator of broad trends. Whilst monitoring antimicrobial use is necessary for small hospitals, a less comprehensive approach may suffice and leaves more time available for other AMS activities including targeted interventions.

A good starting point for small facilities is to collate data on antimicrobial use (preferably in DDDs, however total usage in grams may be a suitable alternative) for commonly targeted antimicrobials (such as quinolone antibiotics and third-generation cephalosporins) at monthly or quarterly intervals. These antibiotics are most at risk of being used inappropriately in common infections such as urinary tract infections and community-acquired pneumonia.

Another approach may be to look at all antimicrobial orders over a period of weeks or months and review compliance with local guidelines or *Therapeutic Guidelines: Antibiotic*[2]. Alternatively, measuring quality use of medicines indicators (e.g. for community acquired pneumonia, or for antibiotic prophylaxis prior to surgery) may also be suitable[2]. As with other usage reports, it is essential that these results are fed back to prescribers and actively used to drive and monitor change in antimicrobial prescribing.

Acknowledgements: Information contained in this fact sheet is largely based on *Antimicrobial Stewardship in Australian Hospitals* (Duguid & Cruickshank, 2010) and information from *South Australian Infection Control Service: Antimicrobial Surveillance* (website).

References: Please see the QUAH page on the CEC website for full fact sheet references. (www.cec.health.nsw.gov.au/programs/quah)