

AUSTRALIAN COMMISSION ON  
SAFETY AND QUALITY IN HEALTH CARE

# A National Approach to Antimicrobial Stewardship

*Margaret Duguid*

Pharmaceutical Advisor

Australian Commission on Safety and Quality in Health Care

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# National approach to AMS

- ACSQHC
- ACSQHC HAI Program
- AMS Advisory Committee
- AMS publication
- Requirements for AMS programs
- National Safety and Quality Standards
- Work plan

# National safety and quality

## Australian Commission on Safety and Quality in Health Care

- Established in 2006
- Reports to Health Ministers
- Remit across public, private, acute and primary
- Nine priority programs including Healthcare Associated Infection (HAI)
- Committee structure:
  - Inter Jurisdictional Committee
  - Private Hospital Sector Committee
  - Primary Care Committee

# ACSQHC Role

- Lead and coordinate improvements in safety and quality in health care
  - Identify issues and policy directions
  - Recommend priorities for action
  - Disseminate knowledge and advocate for safety and quality
- Recommend nationally agreed standards for safety and quality improvement
- Report publicly on the state of safety and quality including performance against national standards
- Recommend national data sets for safety and quality,
- Provide strategic advice to Health Ministers

# ACSQHC Priority Programs

1. Open Disclosure
- 2. Health Care Associated Infection**
3. Patient Identification Issues
4. Clinical Handover
5. Medication Safety
6. Accreditation
7. Information Strategies
8. The Deteriorating Patient
9. Patient Charter of Rights



**Marilyn Cruickshank**  
**HAI Program**  
**Manager**

## Staphylococcus aureus bacteraemia: a major cause of mortality in Australia and New Zealand

John D Turnidge, Despina Kotsanas, Wendy Munchhof, Sally Roberts, Catherine M Bennett, Graeme R Nimmo, Geoffrey W Coombs, Ronan J Murray, Benjamin Howden, Paul D R Johnson and Kate Dowling on behalf of the Australia New Zealand Cooperative on Outcomes in Staphylococcal Sepsis

### ABSTRACT

**Objective:** To document the types of, and mortality from, *Staphylococcus aureus* bacteraemia in Australia and New Zealand, and determine factors associated with

ational study in 27 independent or hospital and New Zealand (3), employing a web-based graphic features, selected risk factors, principal all patients with positive blood cultures for

se mortality.

raemia were identified, and complete 30-day lost episodes had their onset in the community -resistant *S. aureus* (MRSA) caused 450 and 123 of these (27.3%) had a susceptibility ated MRSA. All-cause mortality at 30 days (ivariate analysis, increased mortality was uropean ethnicity, MRSA infection, infections psis syndrome, pneumonia/empyema, and on-β-lactam antibiotic. On multivariable ality were age, sepsis syndrome, pneumonia/ th a secondary focus, left-sided endocarditis, as vancomycin, but not MRSA infection.

common infection in both the community and ind is associated with appreciable mortality. -threatening, partly because of the inferior mycin. National web-based surveillance of s not only important but also easily achievable.

MJA 2009; 191: 368-373

ditorial comment, see page 362. See also page 389.

s. committee associated with each particip- ing laboratory. A web-based data entry sys- tem was constructed to enable real-time data s- collection. ensure p- le low-up o- s, particip- ing the parti- c- collected of admission m- relation- se device and its type, the principal clinical manifestation of the infection, the principal agent used for definitive initial treatment (usually intravenous), and mortality at 7 and 30 days from date of entry. To avoid inter- preive bias, no attempt was made to assign attributable mortality. Participating sites

2009

# Deadly stomach bug has arrived

By KATE HAGAN  
HEALTH REPORTER

HOSPITALS are warned to be on alert for a highly infectious and potentially deadly strain of a stomach bug, confirmed in three Melbourne patients.

Experts say the presence in Australia of a new strain of *Clostridium difficile* infection — which has caused thousands of deaths overseas — is concerning but not unexpected.

They warn that health workers need to quickly detect the strain in order to effectively treat patients and stop it spreading.

The standard form of the bug is common in hospital patients and causes diarrhoea.

But the Austin Hospital's director of infectious diseases, Lindsay Grayson, said the deaths overseas were "usually related to some delay in recognising it's this super strain".

"That's why rapid testing capability — and raising awareness among doctors now that we've had cases here — are very important," he said.

Victorian Health Department director of quality and safety, Alison McMillan, said kits in public hospitals could test for the new strain and provide results within 45 minutes. She said doctors should test for the new strain if a *Clostridium difficile* infection seemed more severe

than normal.

Professor Grayson said deaths had resulted overseas because without strong antibiotics to treat the infection, it had "progressed so rapidly they've ruptured their bowel."

"The faeces have got into their abdomen and they've got sick with the germs. In some

The Age  
27 May 2010

requested testing of an elderly patient with unusually severe symptoms in February.

It later discovered the new strain in two other patients, but the hospital's executive medical director Megan Robertson said there was no evidence the cases were linked. She said the patients were in separate parts of the hospital at different times.

Dr Robertson said two of the patients had recovered and been discharged, and the third was still being treated for an unrelated illness.

Professor Grayson said *Clostridium difficile* was not a concern for the general community but "very much a hospital bug".

# NSW patients at greater risk of lethal infection

Mark Metherell

SYDNEY hospital patients are more likely to contract lethal infections than elsewhere in Australia, but the State Government says publishing hospital-by-hospital results would be counterproductive.

An analysis of golden staph specimens isolated in patients in NSW and the ACT has found the patients are 25 per cent more likely to have a life-threatening drug-resistant version of the bug.

The study was published late last year in the federal Health Department's *Communicable Disease Intelligence* journal based on the most recent available evidence, collected in 2005, on the prevalence of the bug, methicillin-resistant *Staphylococcus aureus*, or MRSA.

It show that 43.4 per cent of golden staph specimens collected in NSW-ACT hospitals were MRSA bugs, compared with a national average of 31.9 per cent.

The NSW Health Department said the state had a mandatory system of monitoring health care-acquired infections and publication of such figures led to "unfair assumptions ... conclusions that are not always valid".

A spokesman for the NSW Minister for Health, Reba Meagher, also repeated the minister's opposition to publishing individual hospitals' performance on safety and quality, saying this could discourage clinicians reporting on such details as infections.

An infectious disease expert at the Australian National University, Peter Collignon, said the figures indicated NSW hospitals had an inferior performance on infection control and

insufficient resources, such as staff, to treat infectious patients in the blood to trigger an alert in Australia which would be a serious ... infections occurring in hospitals should be a state secret," Professor Collignon said.

The disclosure of infection figures, once a robust and accurate system of counting and comparing hospital results had been developed, would be an incentive for hospitals to improve. He said he had heard of cases where colleagues were told they could not release information about infection rates in hospitals because of fears of bad publicity.

Professor Collignon said. MRSA and other golden staph infections generate thousands of lengthy hospital stays by infected patients at a cost of hundreds of millions of dollars every year.

The evidence from England, Western Australia and South Australia showed that where hospital infection figures were routinely collected and published, infection rates were significantly lower, driven partly by public pressure to improve performance.

"I do not think the number of

serious ... infections occurring in hospitals should be a state secret," Professor Collignon said.

The disclosure of infection figures, once a robust and accurate system of counting and comparing hospital results had been developed, would be an incentive for hospitals to improve. He said he had heard of cases where colleagues were told they could not release information about infection rates in hospitals because of fears of bad publicity.

spokesman told the Government urged clinicians to report events and performance. "Aggregate more than guide this process," the spokesman said.

In a statement to the *Herald*, the NSW Health Department said the state could claim to be the only one with a long-standing mandatory system of monitoring health care-acquired infections.

"In 2005, NSW reported all public hospital infections where other states did not. NSW should not be penalised as having what is perceived to be 'poorer' results, when in fact, ours are complete — all other states may not be," the department said.

SMH  
11 Feb 2008

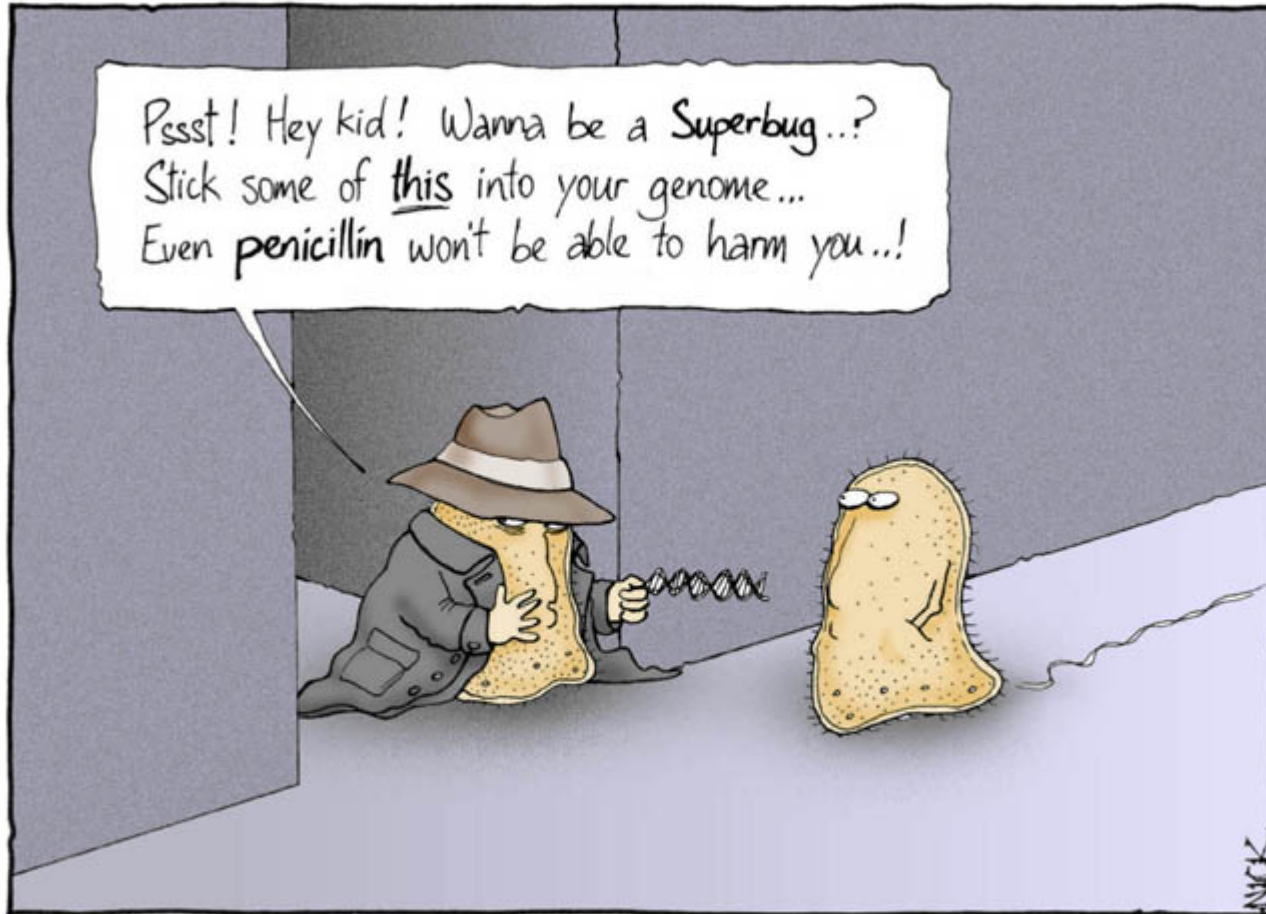
MJA  
5 Oct 2009



# HAI Strategy – 5 Key Initiatives

- National surveillance for the prevention of HAIs
- Building Clinician Capacity Project
- National Infection Control Guidelines
- National Hand Hygiene Project
- Antimicrobial Stewardship Project





It was on a short-cut through the hospital kitchens that Albert was first approached by a member of the Antibiotic Resistance.

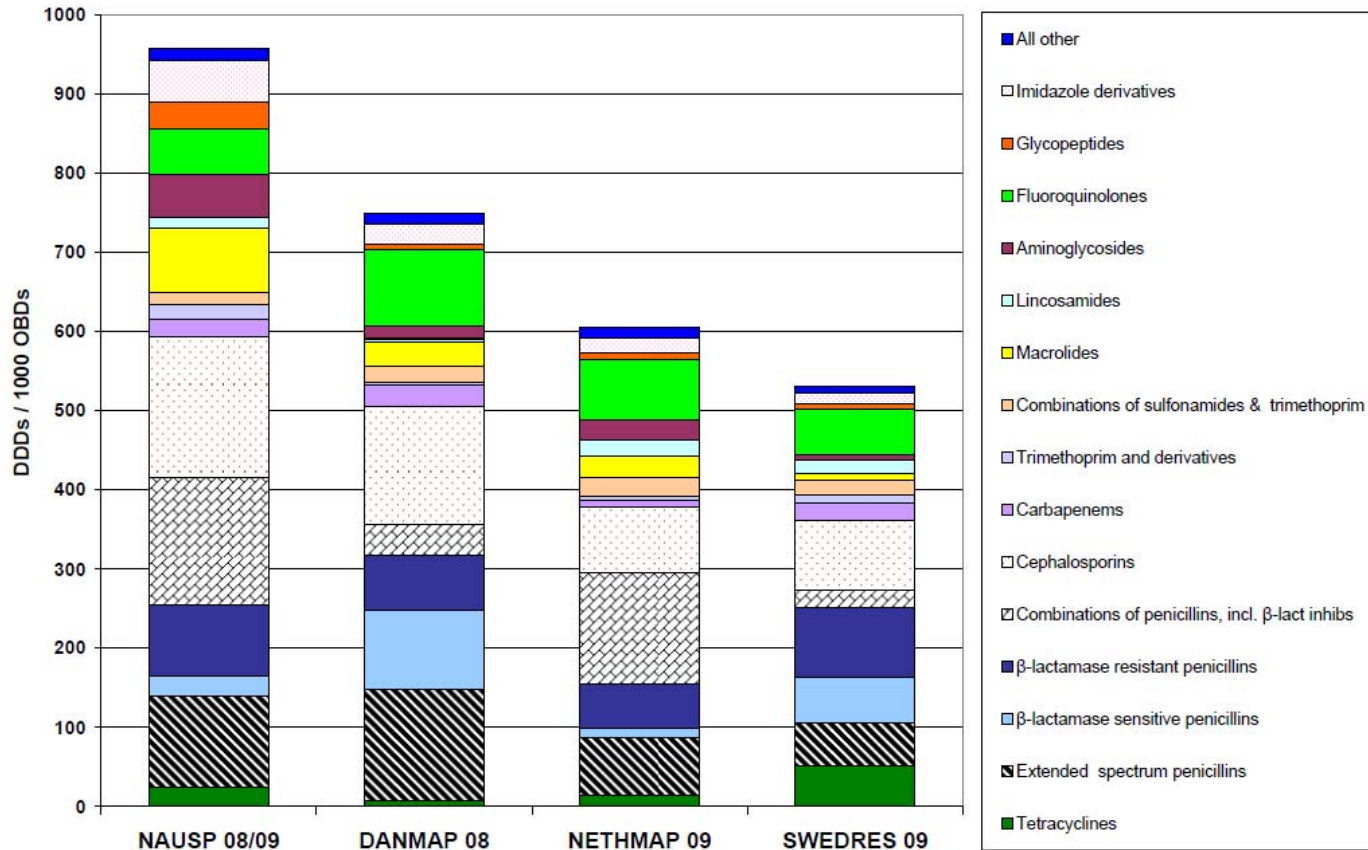


# Antimicrobial Resistance

Development related to:

- Quantity of AM use
- Inappropriate use:
  - Overuse, duration of therapy
  - Selection of ineffective agent
  - Inadequate therapy, underuse
  - Unnecessary use of broad spectrum agents
- Prior exposure

# Quantity of use



1. NAUSP 08/09 includes Australian data from July 2008 to June 2009
2. DANMAP 2008 rates represent 2008 usage
3. NETHMAP 2009 rates represent 2007 usage
4. SWEDRES 2009 rates use numerator data from 2009 and denominator data from 2008

# Quality of use

## Up to 50% regimens prescribed in Australian hospitals inappropriate

Radford JM et al DUE of Antimicrobial Therapy in CAP Aust J Hosp Pharm 1999

Radford JM et al Vancomycin use review in era of VRE Aust J Hosp Pharm 1997

Robertson MB et al Ceftriaxone and cefotaxime use in Victorian Hospitals MJA 2002

# Antibiotic Stewardship

- Systematic approach to optimisation of antibiotic utilisation
- The appropriate use of antibiotics and the limitation of unnecessary antibiotic administration/exposure
  - Optimising diagnosis
  - Selecting appropriate antibiotics
  - Optimal dosing

# Antibiotic Stewardship

↓ & optimising antimicrobial use minimises potential for selecting resistant organisms

## Comprehensive AMS programs

- ↓ antimicrobial use 22 – 36% <sup>1</sup>
- Save US\$200K – 900K p.a<sup>1</sup>

## Improving antimicrobial prescribing

- ↓ treatment failures, mortality, LOS <sup>2</sup>
- ↓ incidence of nosocomial CDI<sup>2</sup>

1. Dellit Owens et al Clin Inf Diseases 2007

2. Davey, Brown et al Cochrane Database Systematic Review 2009

# Publication on surveillance

- *Reducing harm to patients: the role of surveillance*



**Published July 2008**

**Chapter 15.** Antimicrobial usage:  
Monitoring and analysis

**Recommendation 2:**  
National antimicrobial stewardship  
guidelines are required for all  
health settings.....



# AMS Advisory Committee

## Members:

Celia Cooper (Chair)

Kirsty Buising

David Kong

David Maxwell

John Turnidge

Helen van Gessel

John Ferguson

David Looke

Graeme Nimmo

Karen Thursky

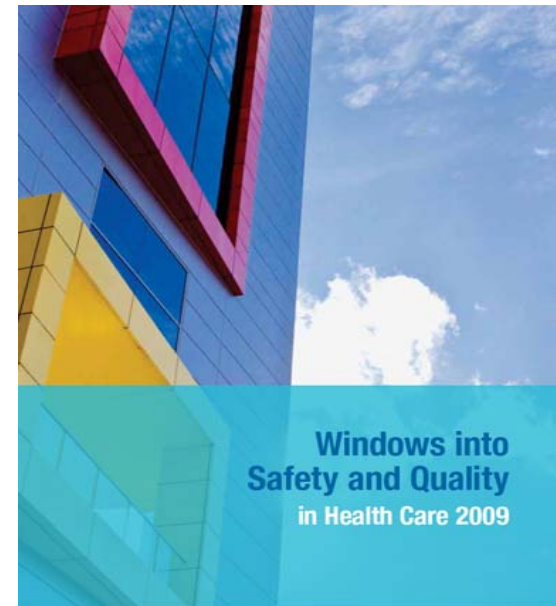
# AMS Advisory Committee

10 August 2008 - First meeting

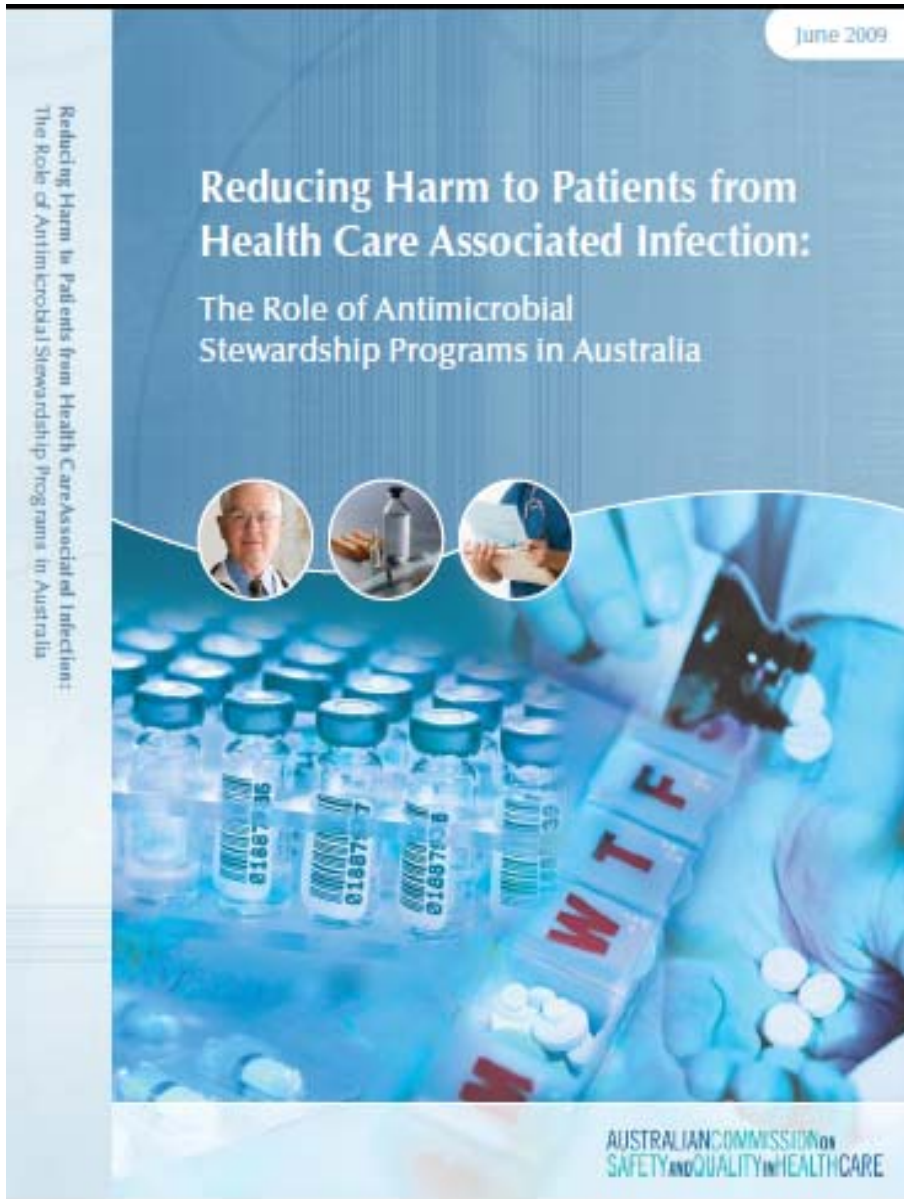
11 September 2008– ACSQHC AMS Forum

19 November 2008 – topic areas identified and allocated to members

- Basis of publication on AMS in hospitals
- Key requirements for hospital AMS programs
  - Published in Windows into Safety and Quality 2009



# AMS Publication



## **Objective:**

Synthesise evidence  
Provide guidance on AMS  
in context of Australian setting

## **Content**

- Ch 1- implementing AMS
- Ch 2-6 strategies
- Ch 7 -10 resources and tools
- Key requirements

## **Each chapter**

- Key points
- Recommendations

## **Appendices**

- Ch 15 form Surveillance book
- Examples of resources
  - Policies, guidelines
  - Websites

# Antibiotic resistance – the three keys to control

- Infection Control
- Antibiotic stewardship
- Surveillance
  - Antibiotic-resistant bacteria
  - Antibiotic usage



Control of antibiotic resistance is like a three-legged stool – if you take away one of the legs – the whole thing falls over!

# AMS is challenging

***‘Changing hospital antibiotic use is a challenge of formidable complexity’***

- Many determinants play a part in influencing hospital antibiotic usage
  - Cultural, contextual and behavioural
- Diverse strategies are required

Hulscher M et al Antibiotic prescribing in hospitals: a social and behavior scientific approach. The Lancet March 2010

# AMS is challenging

- Establishing effective antibiotic stewardship programs requires challenging powerful motivators for the medical profession:
  - Autonomy of individual prescribers
  - The primacy of the individual doctor-patient relationship
  - The relationship between individual prescribers and the medical profession as a whole and the pharmaceutical industry





# Strategies for AMS

## Restrictive

- Pre-prescription
  - Formulary restriction, antimicrobial cycling and
  - antimicrobial approval systems

## Persuasive

- Review and prescriber feedback
  - Post prescription
    - Review of antimicrobial use with direct interaction and feedback to the prescriber
- Point of care interventions
  - Directed antimicrobial therapy on the basis of culture results
  - Dose optimisation
  - Parenteral to oral conversion /Educational

# Strategies for AMS

## Persuasive

- Education
  - Education of prescribers, including the
  - impact of the pharmaceutical industry

## Measuring performance

- Monitoring use
- Process and outcome indicators

# Resources for AMS

## Personnel

- Clinical microbiology services
  - Antibiograms
  - Selective reporting
- Infectious diseases services
  - Leadership, approval systems
  - Policies, guidelines, education
- Pharmacy services
  - Roles and responsibilities of ID/AMS pharmacists
  - Formulary management, restrictions, DUE

# Resources for AMS

## Tools and resources

- Integration of stewardship programs into electronic decision support systems and IT platforms
- Appendices
  - Examples of policies, guidelines education material from Australian hospitals
  - List of useful websites
  - Guidelines, policies on managing conflicts of interest, liaison with pharmaceutical industry

# Strategies for Implementing AMS

## Implementing a program

- Change management
- Governance, executive support
- AMS team, Engaging clinicians
- Program plan
- Goals and measuring improvement
- Selecting strategies

## Requirements for AMS programs

# Requirements for AMS programs in Australian hospitals

## Structure and governance of the program

Hospital management support, including:

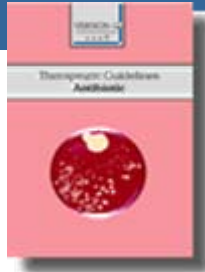
- providing dedicated resources for stewardship activities, education, and measuring and monitoring antimicrobial use
- establishing a multidisciplinary antimicrobial stewardship (AMS) team with core membership (wherever possible) of an infectious diseases physician, clinical microbiologist or nominated clinician (lead doctor), and a clinical pharmacist
- ensuring that AMS resides within the hospital's quality improvement and patient safety governance structure, and clear lines of accountability exist between the chief executive; clinical governance; drug and therapeutics, and infection prevention and control committees; and the AMS team.



# Requirements for AMS programs in Australian hospitals

## Essential strategies for all hospitals

- implementing clinical guidelines that are consistent with the latest version of *Therapeutic Guidelines: Antibiotic* and take into account local microbiology and antimicrobial susceptibility patterns
- establishing formulary restriction and approval systems that include restricting broad-spectrum and later generation antimicrobials to patients in whom their use is clinically justified
- reviewing antimicrobial prescribing with intervention and direct feedback to the prescriber — this should, at a minimum, include intensive care patients
- monitoring performance of antimicrobial prescribing by collecting and reporting unit or ward-specific use data; auditing antimicrobial use; and using quality use-of-medicines indicators



# Requirements for AMS programs in Australian hospitals

## Activities according to local priorities and resources

- educating prescribers, pharmacists and nurses about good antimicrobial prescribing practice and antimicrobial resistance
- using point-of-care interventions:
  - streamlining or de-escalation of therapy
  - dose optimisation
  - parenteral-to-oral conversion
- using information technology such as electronic prescribing with clinical decision support or online approval systems
- annually publishing facility-specific antimicrobial susceptibility data.

# National Safety and Quality Standards

AUSTRALIAN COMMISSION ON  
SAFETY AND QUALITY IN HEALTHCARE



# Draft HAI Standard

Clinical leaders and senior managers of a health service organisation put in place systems for the prevention and management of healthcare associated infection and communicate these to all staff to achieve appropriate outcomes. Clinicians and other staff implement healthcare associated systems.

## **The intention of this Standard is to:**

- Prevent patients acquiring a healthcare associated infection and to effectively manage infections whenever they occur.

# HAI: D Antimicrobial Stewardship

## HAI:D will be achieved by:

- Developing, implementing and regularly reviewing the effectiveness of the antimicrobial management system.

## HAI: D Measure

### Evidence of:

- an antimicrobial management system
- access to *Therapeutic Guidelines:Antibiotic*
- monitoring of antibiotic usage, infections with resistant organisms

# 2010 Work Program for Committee

- ***AMS e-learning programs***
- ***Regional hospital antibiotic stewardship approaches***
- ***Pilot of European Society of Clinical Microbiology and Infectious Diseases. point prevalence survey***



# Acknowledgements

AMS Advisory Committee Members

Celia Cooper (Chair) for her slides

Vicki McNeill for graph of NAUSP data

Marilyn Cruickshank for her support

[www.safetyandquality.gov.au](http://www.safetyandquality.gov.au)