Asia-Pacific
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2016/LSIF/FOR/014

# Using Healthcare Associated Infection Data for Action

Submitted by: Australasian College for Infection Prevention and Control

APEC PERU
2016

**Policy Forum on Strengthening Surveillance and Laboratory Capacity to Fight Healthcare Associated Infections and Antimicrobial Resistance**
**Ha Noi, Viet Nam**
**14-15 December 2016**

# APEC Policy Forum: Strengthening Surveillance & Laboratory Capacity to Fight HAIs and AMR
# Hanoi December 2016

## *Using Healthcare Associated Infection data for action*

Professor Marilyn Cruickshank

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# Objectives

- Why collect HAI data
- Approaches to prioritising data collection
- Identify sources of data for use in IP&C
- Examine different ways to present data
- Role of regulation (hospital accreditation) in practice improvement
- Examples from local and domestic perspectives

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# APEC Health Working Group & APEC Life Sciences Innovation Forum
# APEC Policy Toolkit for Building Capacity to Prevent and Control Healthcare-Associated Infections

4 July 2013 | Medan, Indonesia

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# APEC Policy Toolkit advises

- establishing governance and management systems
- establishing multi-stakeholder advisory councils
- implementation of domestic infection control guidelines
- promoting hand hygiene
- building clinician capacity
- enhancing antimicrobial stewardship
- monitoring and public reporting
- developing regulatory oversight

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# HAI data for patient safety

It has been suggested that HAI is special in terms of patient safety measurement:

*Perhaps the only valid outcome measures of harm are the rates of health care-acquired infections.*

Pronovost et al (2006).*Journal of the American Medical Association* 296:696–699.

# Strategies to mitigate HAI

- HAI Surveillance – measuring the problem
- Hand hygiene – single most effective strategy infection
- Infection control guidelines – evidence based practice
- Antimicrobial stewardship - single most effective strategy AMR
- Regulation and accreditation
- Clinical capacity – education and information

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# Why collect HAI data?

- Reliable data underpin all quality improvement and patient safety processes.
- Collection, analysis and reporting of surveillance data on HAI is associated with a reduction in infection rates, morbidity and mortality.


*All health facilities require HAI surveillance systems because these are proven to reduce infection rates when local data collection results in timely feedback.* (p29 Cruickshank & Ferguson, 2008)

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# Why collect domestic-level data

Only from large data sets can decisions be made on some HAI measures.

- local surveillance data bases do not contain sufficient data to reliably plot trends eg antimicrobial usage
- to inform and update infection control guidelines, domestic programs
- guide domestic policy and priorities
- monitor domestic trends

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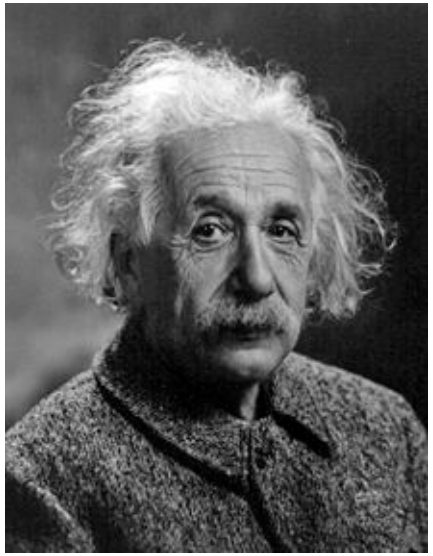
# Prioritisation

"Not everything that can be counted counts,
and not everything that counts can be counted"



Albert Einstein

# Data for action
# A quality and safety approach to data collection :

What are we actually trying to achieve?

- Is it to show effective our program is?
- Is it to benchmark?
- Is it to show where variations exist?
- Is it to demonstrate improvement?
- Is it to assess the current situation
- Is it all of the above ?

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# Collecting data – what

- Why are you collecting data?
- What will you collect?
- How will you collect and record data?
- Who will be involved?
- What will be the sample size?
- How often will the data be collected?
- How will results be communicated?
- How will the information be used?

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AAA Infections Audit Annually,
Additional Isolation Precautions,
Additional Precautions Audit
Aged care infection control practice audits,
air sampling in theatre
all clinical areas.
Antibiotic prophylaxis
BBSE cause & effect,
Blood and Body Fluid Exposures
Blood fridge,
Care of patient equipment
central devices
central IV access compliance;
central line
CJD questionnaire annually
Clinical Audits
Clinical waste & sharps disposal.
Clinical waste management,
Cold chain,
Correct waste disposal
customer focus survey
Decubitus Ulcers
Drinking water
Education Attendance
Engineering and Building services,
engineering,
Environment,
Environmental &
environmental all Units,
Environmental Audit
Environmental Hygiene,
Environmental swabs;
environmental/house keeping audit
equipment e.g. IV pumps.
Equipment Reprocessing Annually
Eye Infections and
flash steriliser use in theatres;
flash steriliser,
food handling,
Food safe
food safe program
food services,
Food storage,
Food temperature,
Fridge temp record immunisatios
Fridge temperatures monitored
Gastroscopes (GESA guidelines),
general infection control audit
glutaraldehyde management
GOR/CSD/
hand hygiene
hand hygiene compliance competency
Hand hygiene solution audit by company rep
hand hygiene station audit,
hand washing audit

Hand washing knowledge audit;
Hazard inspections
I.V. Cannulation Audits annually
IC practice compliance audits, clinical and organisational.
IC/HH learning package completion audits.
ice machine audits,
Ice Machine compliance with policy
Indwelling Catheter audit
Indwelling Urinary Catheter (annually)
infection control environmental hazards audit
Infection Control Program audit,
Infection Control Risk Assessment
Infection prevention & control target surveillance -adhoc,
Infectious waste
Infestation control in the health care setting 2004
influenza immunisation audit
Isolation precautions
isolation requirements (every isolation room, every ward)
Isolation signage audits.
isolation,
IV Audits
IV cannula audit
IV Cannulation site monthly,
IV site 6 monthly audits
IV Site Infection Prevalence;
IV sites
Kitchen Audits (Storage and Handling EMB, & Ice)
kitchen audits,
Legionella Testing Compliance
Legionella tower testing,
Legionella water testing of patient/staff use areas legionnaire H20 testing 3 monthly
linen,
maintenance
mask fit testing annually
Medical imaging port insertion related infections micro samples scopes
,
mortuary audit;
motor vehicle audit,
MRO compliance audits
MRO documentation audits
MRO,
MRSA audits
MRSA documentation
N95/P2 fir checking competency
needle stick body fluid,
Needle stick injuries
Neonatal infections < 48 hours (ACHS indicator 4.1)
nosocomial infections
Nosocomial UTI-Annually,
Notifiable disease.
Occupational exposure
occupational exposure management
Occupational exposure monitored
Occupational exposure process audit
Occupational exposure regional reporting occupational exposures monitored OPA audit
Operating theatre environmental audit,
opportunistic immunisation audit report,
OR,
OT, environmental services, cooling towers
outbreak management audit
peripheral cannula audit
Peripheral Cannula Survey
peripheral cannula,
peripheral IV access compliance;
Peripheral IV Audits 3 monthly,
Peripheral IV Cannula: compliance with policy
peripheral IVC
personal hygiene audit
PIVD
Placement of HH products
pneumococcal audit
point prevalence survey of aged care facility
Point prevalence survey twice year, policy compliance
Post Body Fluids Audit annually
PPE audit
PPE Availability Audits 3 monthly,
PPE compliance audits
PPE Compliance.
PPE information & accessibility
in clinical areas annually
PPE knowledge/donning & doffing assessment;
processsing of equipment.
proper disposal of waste
RADIOLOGY,
Rain water (Dialysis),
Rain water (drinking),
Recycling
respiratory preparedness audit
review of policy and procedures
RICPRAC auditing,
RICPRAC Audits
RICPRAC audits suite covers multiple areas of IC
RICPRAC audits which look at practices.
RICPRAC Clinical & organisational audits
RICPRAC Clinical risk audits group;
RICPRAC point prevalence for infections in aged care;
RICPRAC compliance audits
RICPRAC Point Prevalence
Rural Infection Control Practitioners Audits
Safe handling of contaminated waste
Safe Handling of sharps
Safe use / disposal of sharps
SAMP (choice, timing, duration)
Sanitiser bowel washer temperature
Satisfaction surveys
scope cleaning
Sharp disposal
sharps
Sharps and clinical waste management
sharps and sharps containers.
Sharps Audit
sharps bins audits.
sharps compliance,
Sharps container audit
Sharps containers: audit disposal practices and safety
sharps control
Sharps disposal
Sharps information audit
sharps management,
sharps safety & biohazard injuries
sharps safety,
Signage throughout the organisation laminated.
site audit annually
specimen collection
SSI audit,
SSI prophylaxis
staff compliance to uniform i.e. jewellery, hair, nails
staff immunisation audit,
staff knowledge of infection control standard & additional precautions ,
Standard precautions compliance;
Standard precautions,
Staph infections
Sterile Articles
Sterile stock audit
sterile stock in all departments including theatres.
sterile stock storage audit
sterilisation,
surgical antibiotic prophylaxis
SYSTEMS AUDIT. eg Practices
Risk Assessment & Management Scan
Temp audit on vaccine fridges and food fridges
Theatre Environment Annually,
toy cleaning,
Transmission Based Precautions
Treatment rooms, pan rooms, work practices, hand washing, IC questionnaire.
Vaccinations
VACCINE FRIDGE
Vaccine fridge monitoring
vehicle first aid kits
VICNISS plan.
VICNISS reporting
VRE monitoring,
ward cleanliness
Ward/Department based IC audits (all principles audited),
warm water
Warm water / Legionella
waste
Waste Compliance;
Waste disposal,
Waste management
WASTE,
water testing
Wound Drains

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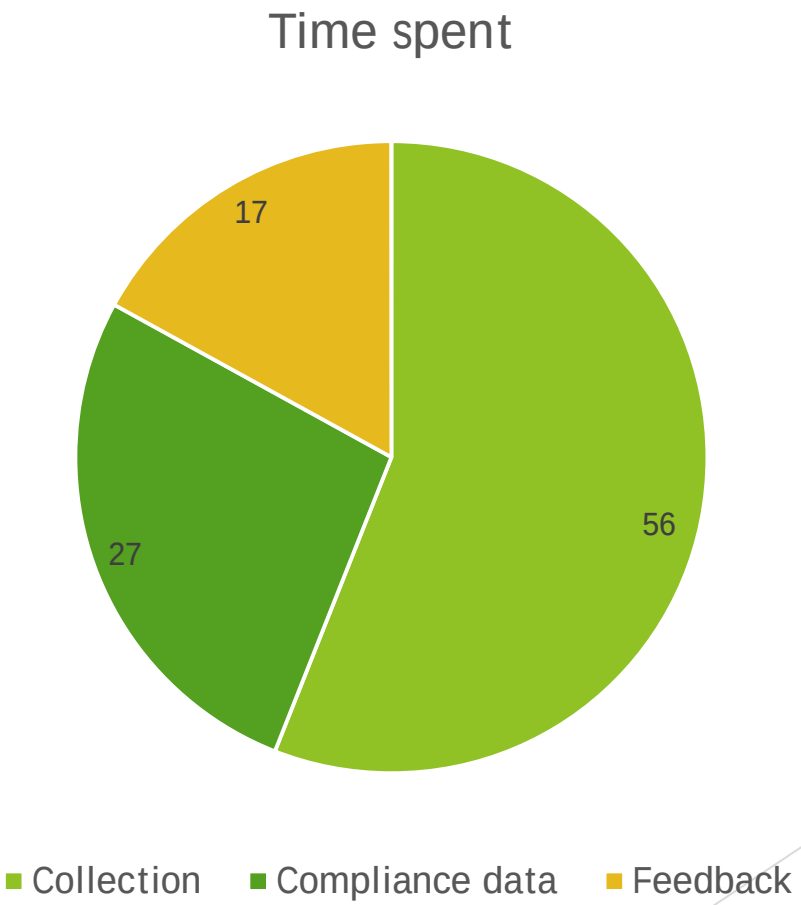
# Australian ICPs survey 2016

- 36% (range 17%-61%) of all contracted infection control professionals time is spent on surveillance activities




Mitchell, Hall et al. *Infection, Disease and Health, 21*(1), 36-40. 2016

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- It is not feasible to conduct hospital-wide surveillance for all events
- Recommend targeted (priority-directed) surveillance that focuses on:
  - specific events
  - processes
  - organisms
  - medical devices or
  - high-risk patient populations

(p29 Cruickshank & Ferguson, 2008)

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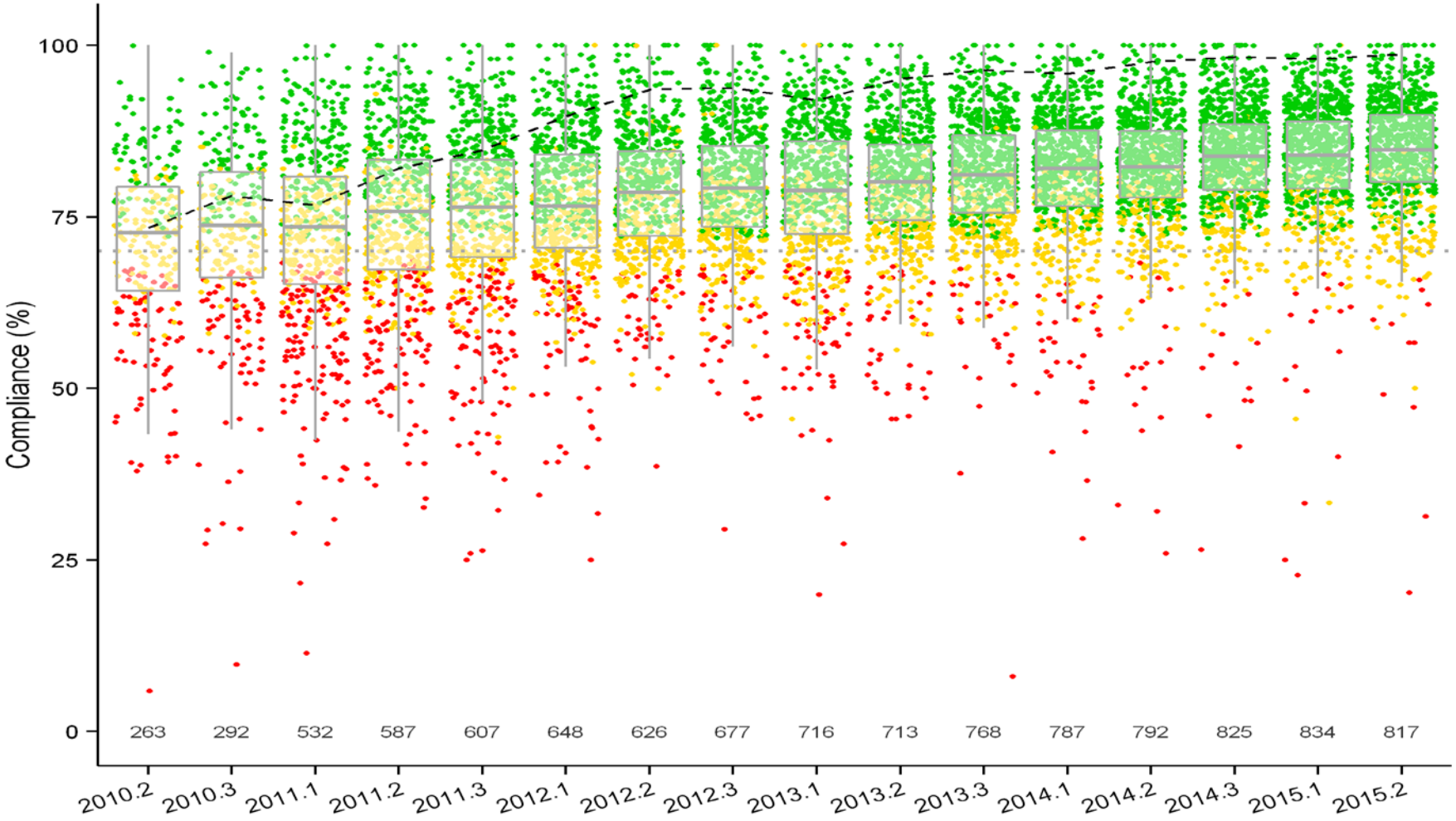
# Data for improvement

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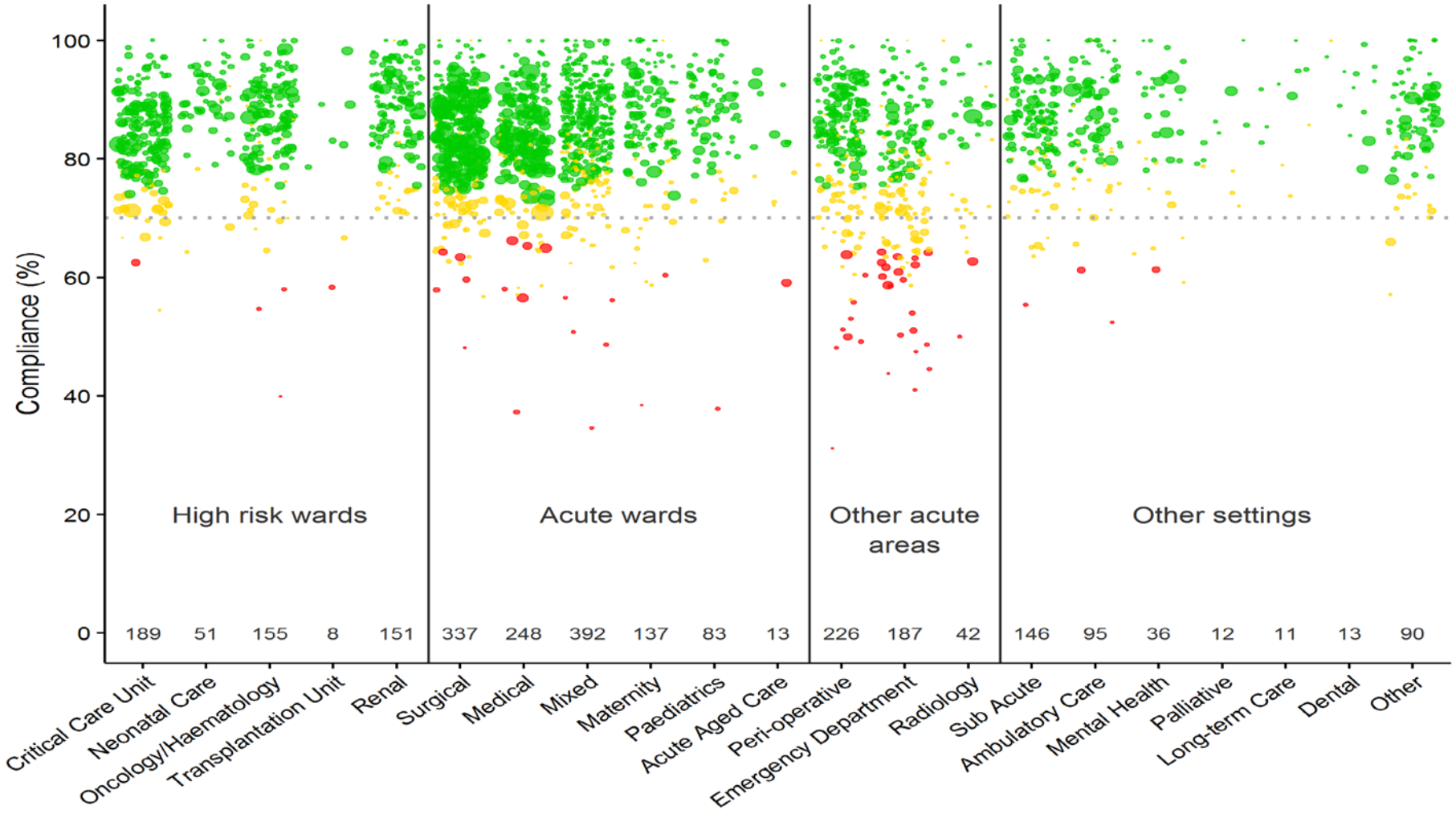
# Hand hygiene: department type

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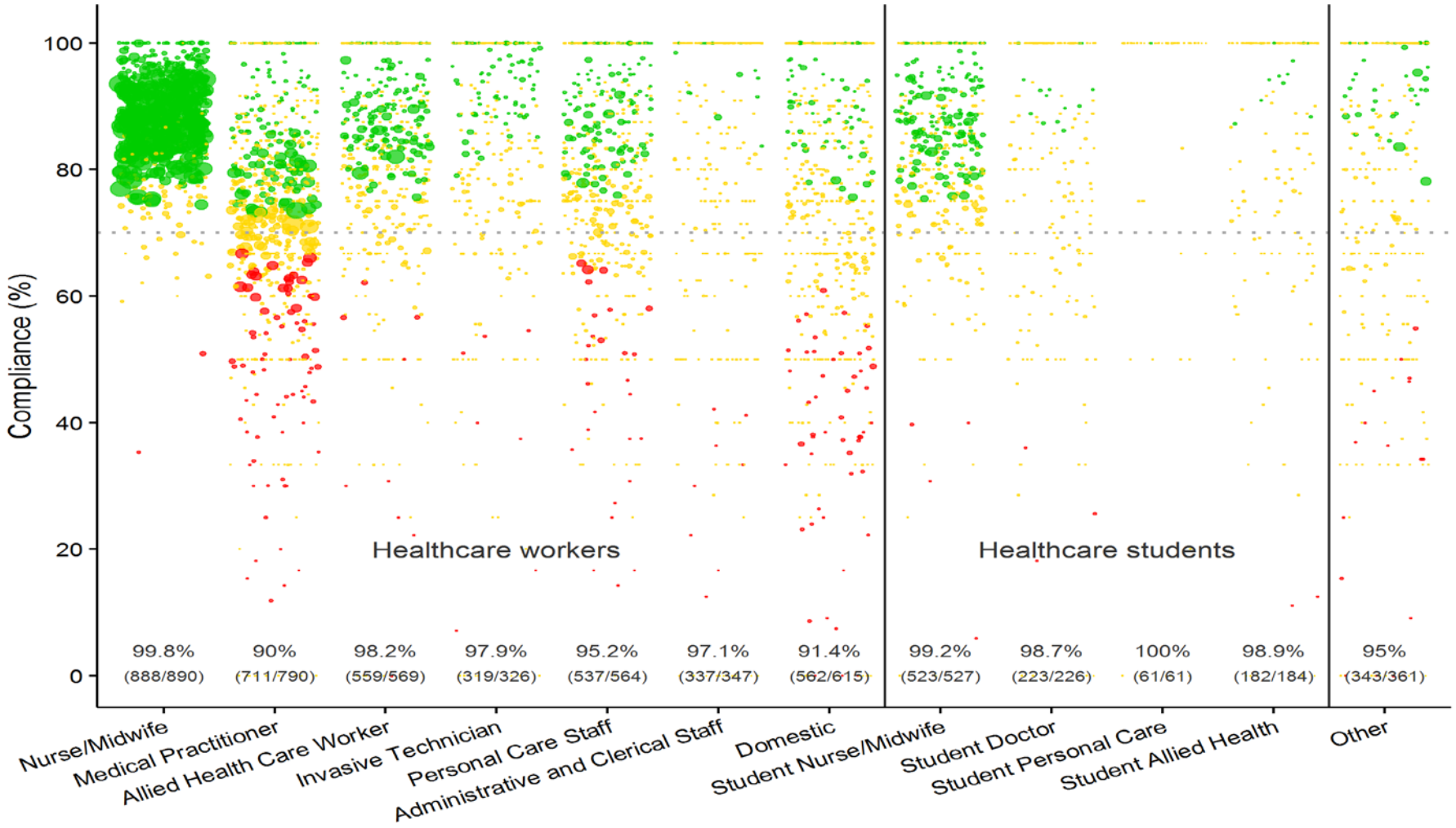
# Hand Hygiene: Profession

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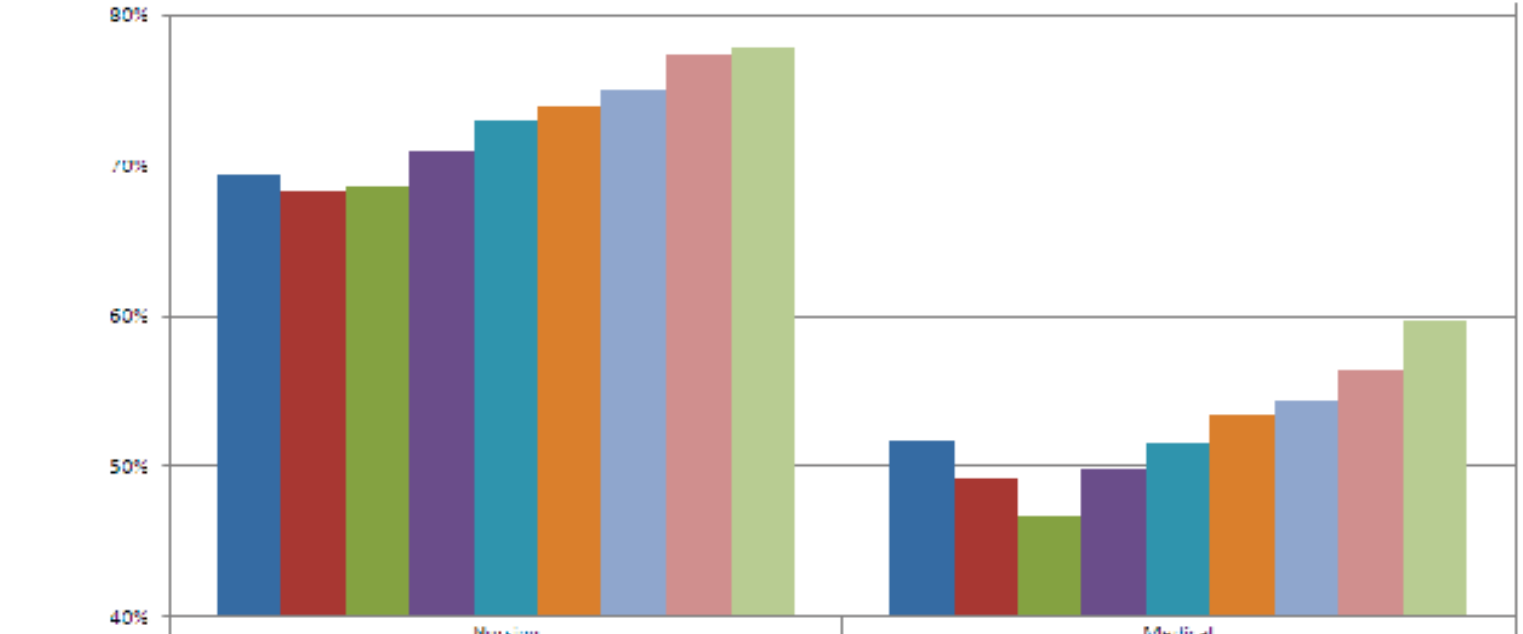
# Public facilities
## Nursing and Medical compliance rates by Period




| | Nursing | Medical |
|---|---|---|
| Period 1 2009 | 69.2% | 21.7% |
| Period 2 2009 | 58.8% | 19.2% |
| Period 3 2009 | 68.7% | 46.7% |
| Period 1 2010 | 70.6% | 40.8% |
| Period 2 2010 | 73.1% | 51.5% |
| Period 3 2010 | 73.6% | 53.4% |
| Period 1 2011 | 75.0% | 54.1% |
| Period 2 2011 | 77.2% | 56.4% |
| Period 3 2011 | 77.6% | 59.7% |

# Making change easy - Collection by HHApp

- Central HH database
- New direct-entry HH compliance App
  - i-Phones
  - Benefits:
  - Reduces data management time by 50%
  - No duplicate data entry and errors
  - Potential – WHO, NZ, Singapore
- Platform and database - potentially huge uses

I'm here to help!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# AMS in different settings



Table of options
pp36-7, SQIG

Table 2 provides suggestions for ways in which strategies to support antimicrobial stewardship (AMS) might be implemented in different settings.

Table 2: Options for implementation of antimicrobial stewardship in different facilities

| Program elements | Health service organisation (e.g. Local Hospital Network/district or private hospital organisation) | Large urban hospital or tertiary facility (includes large private hospitals) | Other or rural/district hospital | Small hospital/m service (MPS) (less than 50 beds) | Day surgery/procedure unit or services |
|---|---|---|---|---|---|
| Executive leadership | Network/district/management group executive sponsorship and support for AMS program | Local executive sponsorship and support for AMS program | Local executive sponsorship and support for AMS program | Local executive sponsorship and support for AMS program | Owner/management support for AMS program |
| Governance arrangements, structure and lines of communication | Director of AMS program and multidisciplinary AMS committee comprising core representation of:<br>• a member of executive<br>• a pharmacist<br>• an infectious diseases physician | Director of AMS program – pharmacist, infectious diseases physician or medical microbiologist<br>with<br>Multidisciplinary AMS team (see below) | Pharmacist (where possible)<br>When no pharmacist available a clinician/nurse with dedicated time for AMS coordinates with input from local or network/district infectious diseases physician and medical microbiologist | Facility manager coordinates with input from local or network pharmacist, infectious diseases physician and medical microbiologist<br>Links to committees responsible for drugs and therapeutics | Facility manager coordinates, with support from specialist visiting clinicians and/or pharmacist where available<br>Links to committees responsible for drugs and therapeutics |
| AMS team | | control practitioner; prescribing clinicians from key departments including intensive care | Infectious diseases physician and medical microbiologist<br>*(These services may be available onsite or as an agreed external consultancy)* | nsite or local district<br>anager, prescribing nd pharmacist where (onsite or as an agreed consultancy) or nurse<br>• External support from an infectious diseases physician and medical microbiologist<br>*(As an agreed external consultancy)* | Yes<br>• Facility manager, nurse and visiting medical officer (surgeon or anaesthetic representative or pharmacist where available) |
| Antimicrobial policy with defined components | Yes<br>• Outlines scope of program, is endorsed by network/ district/management group executive and roles and responsibilities defined | Yes<br>• Outlines scope of program; endorsed by senior executive and management group; roles and responsibilities defined<br>• May be developed and implemented locally or as part of higher level process | Yes<br>• Preferably determined by a district-wide approach to outline scope of program | Yes<br>• Preferably determined by a network/district-wide approach to outline scope of program | Yes<br>• Preferably determined/ developed/initiated and overseen by broader organisational management<br>• Policy specifies agreed local approach to surgical prophylaxis |

*(Table continued next page)*

One size does not fit all

# The Clinical Care Standard for AMS


Implementation happens at the bedside…..so data needed here

- Supp
- **Fact**
- **Indic**

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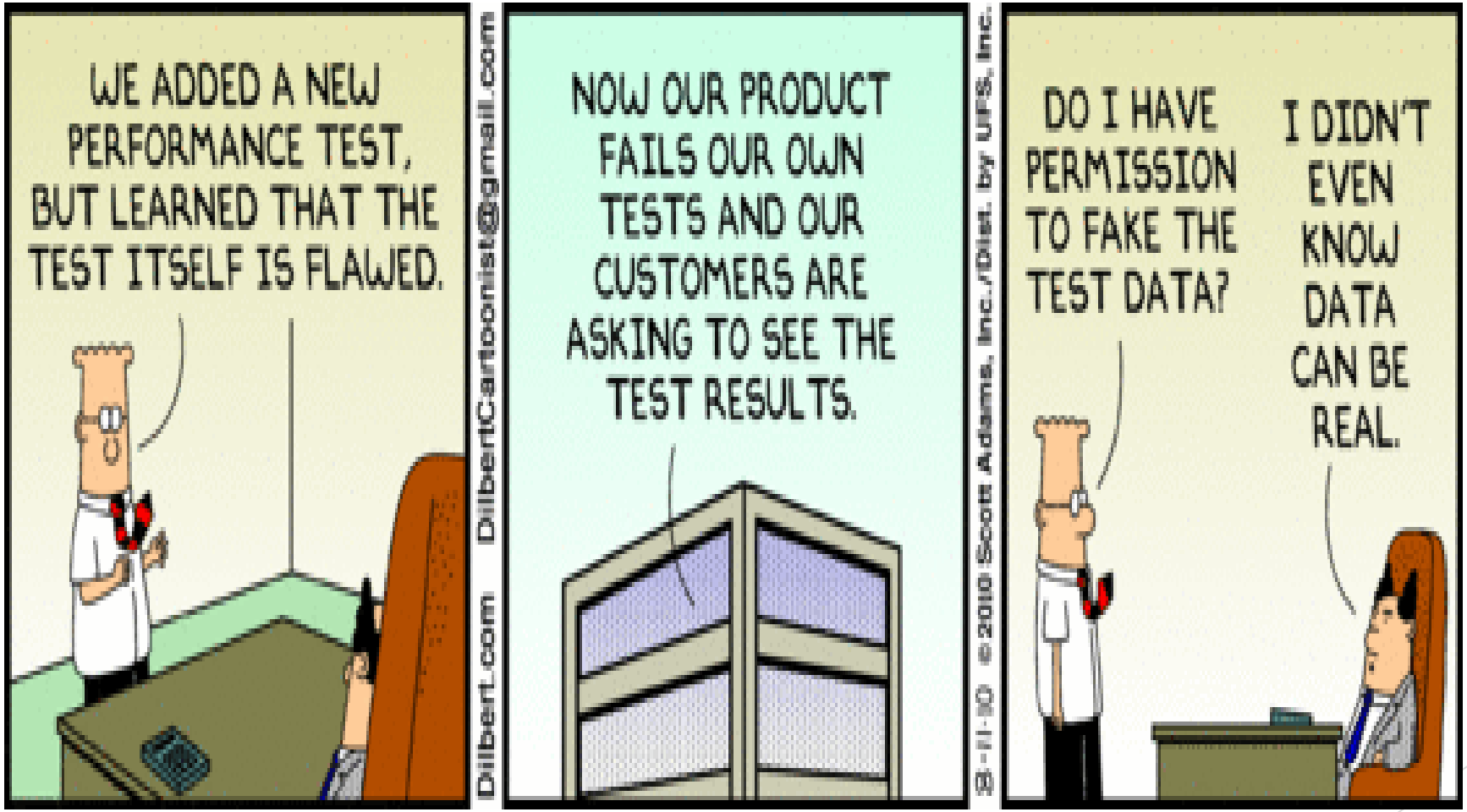
# Data for improvement?




http://www.ask.com/web?qsrc=1&o=0&l=dir&q=low+hanging+fruit+cartoon

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# Public reporting of SAB by hospital

http://www.myhospitals.gov.au/ — Learn about your local hospital | MyHospitals

my hospitals

Australian Government
Australian Institute of Health and Welfare

**MyHospitals**

In a medical emergency call 000 immediately

Home | About this site | About the data | Contact Us | Glossary

print | share

## Learn about your local hospital

Enter hospital, place or postcode

Search

## Better information on Australian hospitals

*MyHospitals* presents information on hospitals throughout Australia and how they compare against national and state and territory data, including:

- Hospital profile
- Services offered
- Number of admissions
- Waiting times for emergency departments and elective surgery
- Safety and quality (*Staphylococcus aureus* bacteraemia; hand hygiene)

*MyHospitals* is based on the latest available information provided to the Australian Institute of Health and Welfare by state and territory health departments for public hospitals, and by private hospitals that have elected to be included in *MyHospitals*.

*MyHospitals* is part of the performance and accountability framework of Australia's National Health Reform Agreement.

## Browse hospitals

View as interactive map

Select a state or territory

# Public reporting of SAB by state

**Table 2.2: Cases of *Staphylococcus aureus* (including MRSA) bacteraemia (SAB) in public hospitals, MRSA and MSSA, by state/ territory, 2010–11[(a)(b)]**

| | NSW | Vic | Qld[(c)] | WA | SA | Tas | ACT | NT | Australia |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Rate per 10,000 patient days | | | | | |
| Methicillin-resistant *Staphylococcus aureus* | 0.4 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 | 0.2 | 0.5 | 0.3 |
| Methicillin-sensitive *Staphylococcus aureus* | 0.9 | 0.7 | 0.9 | 0.8 | 0.7 | 1.1 | 0.7 | 0.9 | 0.8 |
| **Total[(d)]** | **1.3** | **0.9** | **1.2** | **1.0** | **0.9** | **1.2** | **0.9** | **1.5** | **1.1** |
| | | | | Number of cases | | | | | |
| Methicillin-resistant *Staphylococcus aureus* | 223 | 118 | 72 | 23 | 31 | 6 | 6 | 16 | 505 |
| Methicillin-sensitive *Staphylococcus aureus* | 536 | 322 | 218 | 117 | 91 | 36 | 23 | 27 | 1,370 |
| **Total** | **769** | **440** | **290** | **140** | **122** | **42** | **29** | **43** | **1,875** |
| Patient days under SAB surveillance ('000) | 5,961 | 4,791 | 2,453 | 1,377 | 1,331 | 342 | 310 | 296 | 16,862 |
| Coverage (per cent) | 94 | 99 | 77 | 84 | 81 | 91 | 98 | 100 | 90 |

(a) The SAB cases were associated with both admitted patient care and with non-admitted patient care (including emergency departments and outpatient clinics). The comparability of the SAB rates among jurisdictions is limited because of coverage differences and because the count of patient days reflects the amount of admitted patient activity, but does not necessarily reflect the amount of non-admitted patient activity.

(b) Note that these data have been updated since the publication of *Australian hospital statistics 2010–2011: Staphylococcus aureus bacteraemia in Australian public hospitals* (AIHW 2011).

(c) Only includes patients aged 14 and over.

(d) Total may not equal sum of components due to rounding.



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# Rate of domestic SAB rates 2009-14

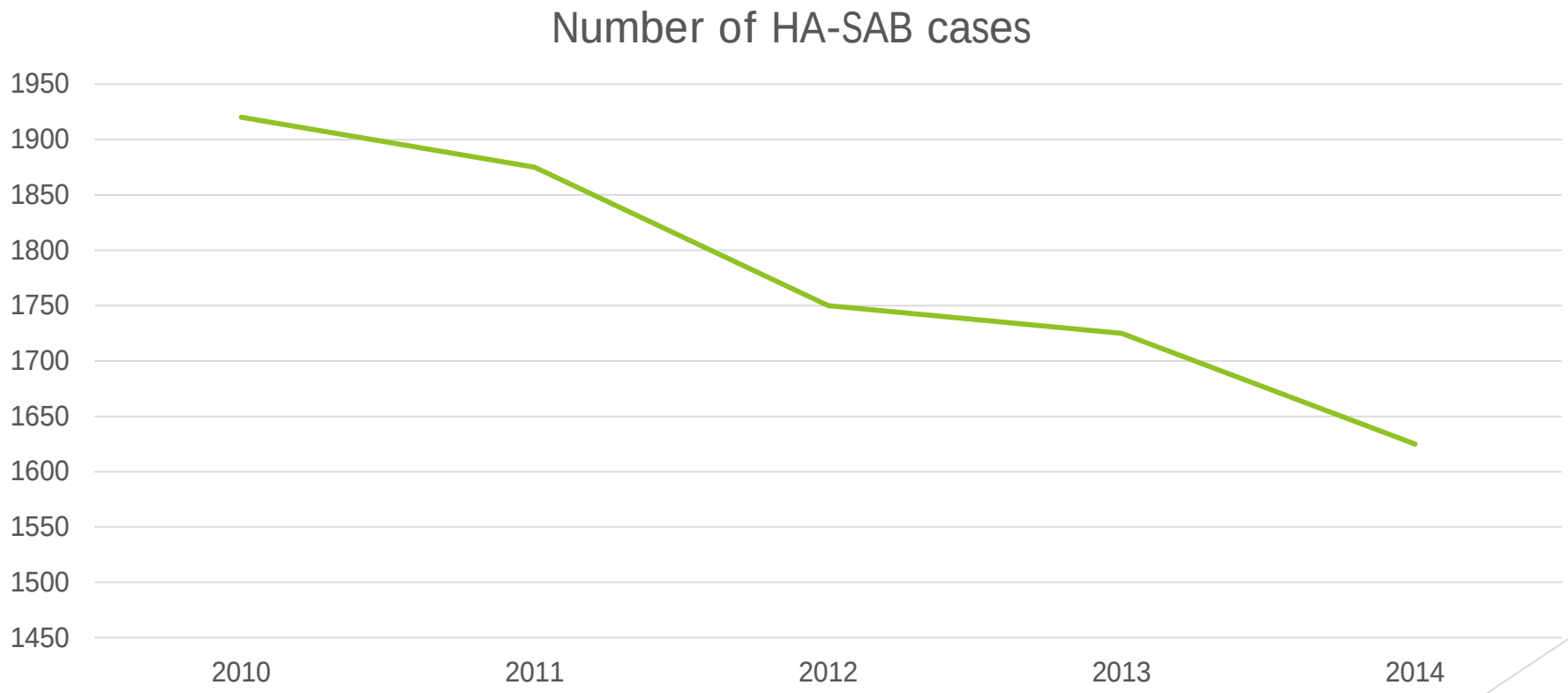


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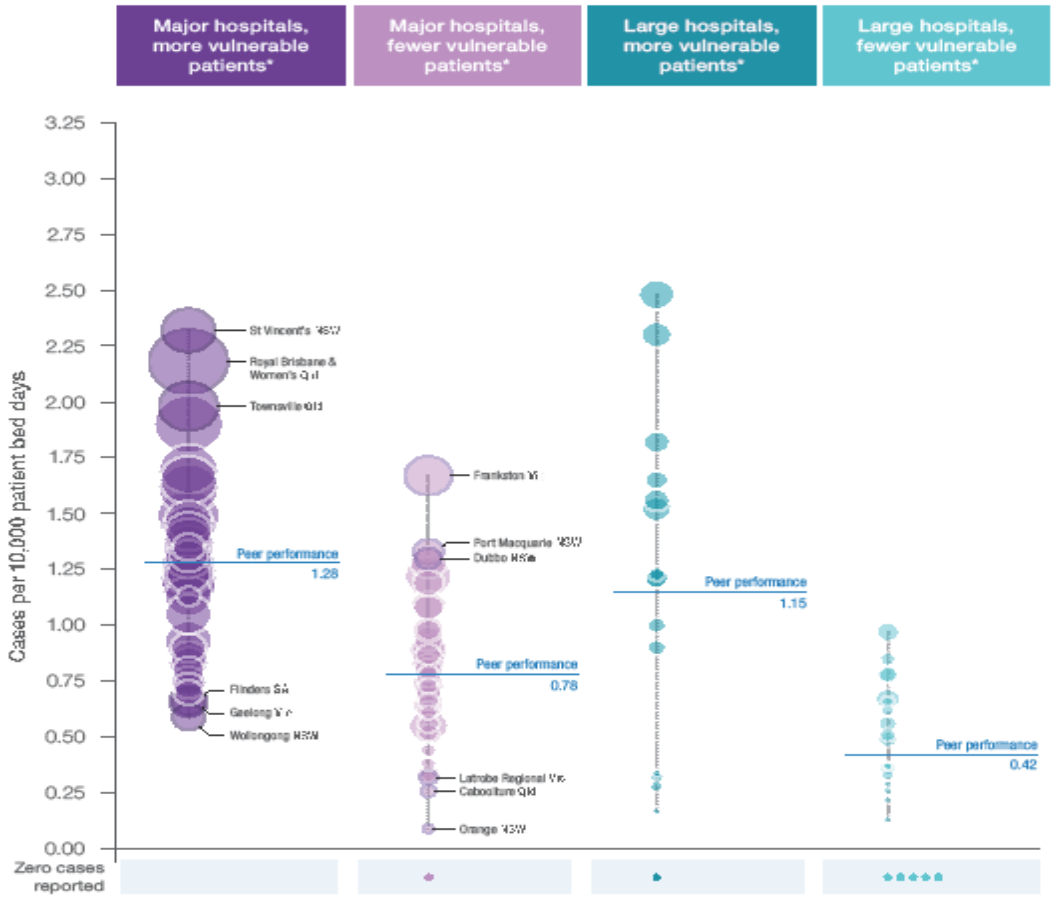
**Figure 1: Healthcare-associated *S. aureus* bloodstream infections in public hospitals, by *major* and *large* hospitals, 2013–14**




**The government-agreed target calls for a rate of no more than 2.0 healthcare-associated *S. aureus* bloodstream infections per 10,000 patient bed days for each state and territory.**

* More and fewer vulnerable patients refers to hospitals deemed to have, for their peer group, a high or low percentage of patient bed days under surveillance [illegible] factor contributes to risk of *S. aureus* infection. For more information on measures and peer groups, see the Technical Note **www.myhospitals.gov.au**

**Sources:** National Health Performance Authority analysis of Australian Institute of Health and Welfare, National *Staphylococcus aureus* Bacteraemia Data Collection 2013–14, data extracted 24 December 2014 and Australian Institute of Health and Welfare, Admitted Patient Care National Minimum Dataset 2011–12, data extracted 26 March 2012.

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# The NSQHS Standards


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# Mandatory accreditation Jan 2013


Image 3: National Safety and Quality Health Service Standards suite of implementation resources for health service organisations.

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# Six criterion – mandatory for hospitals, day procedure units and dentists

- Governance and systems for infection prevention, control and surveillance
- Infection prevention and control strategies
- Managing patients with infections or colonisation
- Antimicrobial stewardship
- Cleaning, disinfection and sterilisation
- Communicating with patients and carers

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# AMS Criterion – four core actions

- An AMS program is in place
- The clinical workforce prescribing antimicrobials have access to endorsed Therapeutic Guidelines on antibiotic usage
- Monitoring of antimicrobial usage and resistance is undertaken
- Action is taken to improve the effectiveness of antimicrobial stewardship

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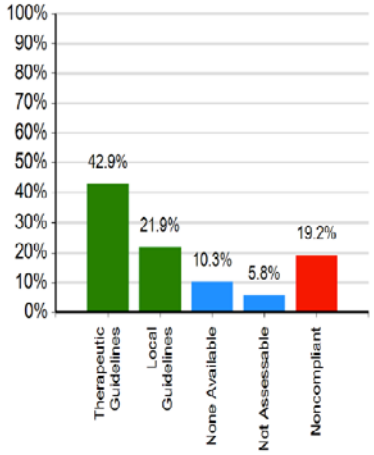
# Domestic Antimicrobial Prescribing Survey

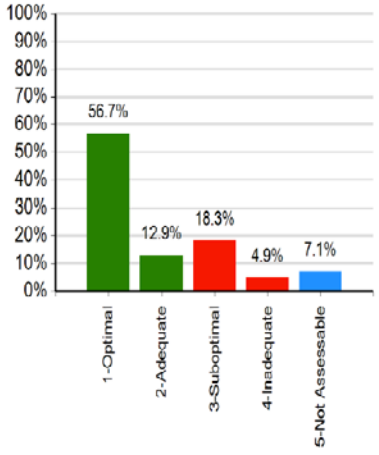
**Percentage of Patients on Antimicrobials:** 42.2 % (144 of 341 Patients)

Number of patients on antimicrobials divided by the total number of beds surveyed

**Compliance with Guidelines**



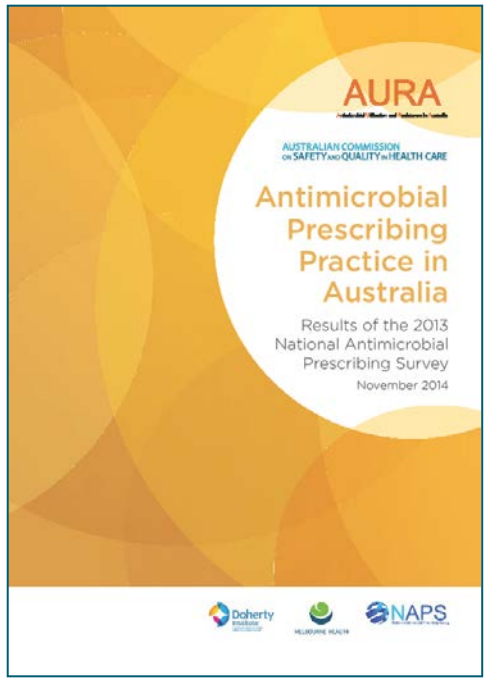

**Appropriateness of Antimicrobial**




| | | | |
|---|---|---|---|
| Therapeutic and Local Guidelines | 64.7% | Appropriate | 69.6% |
| None available or Not Assessable | 16.1% | Inappropriate | 23.2% |
| Non-compliant | 19.2% | Not Assessable | 7.1% |

*Therapeutic Guidelines' and 'Local Guidelines' are deemed as being **compliant** with guidelines (displayed in green)*

*'Optimal' and 'Adequate' are deemed as being **appropriate** (displayed in green).*
*'Suboptimal' and 'Inadequate' are deemed as being **inappropriate** (displayed in red)*




**Documentation of Indication**


The percentage of total prescriptions where an indication was documented.
*For best practice this should ideally be greater than 95% (green section)*

**Surgical Prophylaxis given for greater than 24 hours**


The percentage of surgical prophylaxis prescriptions where the duration of prophylaxis was for greater than 24 hours post surgery.
*For best practice this should ideally be less than 5% (green section)*

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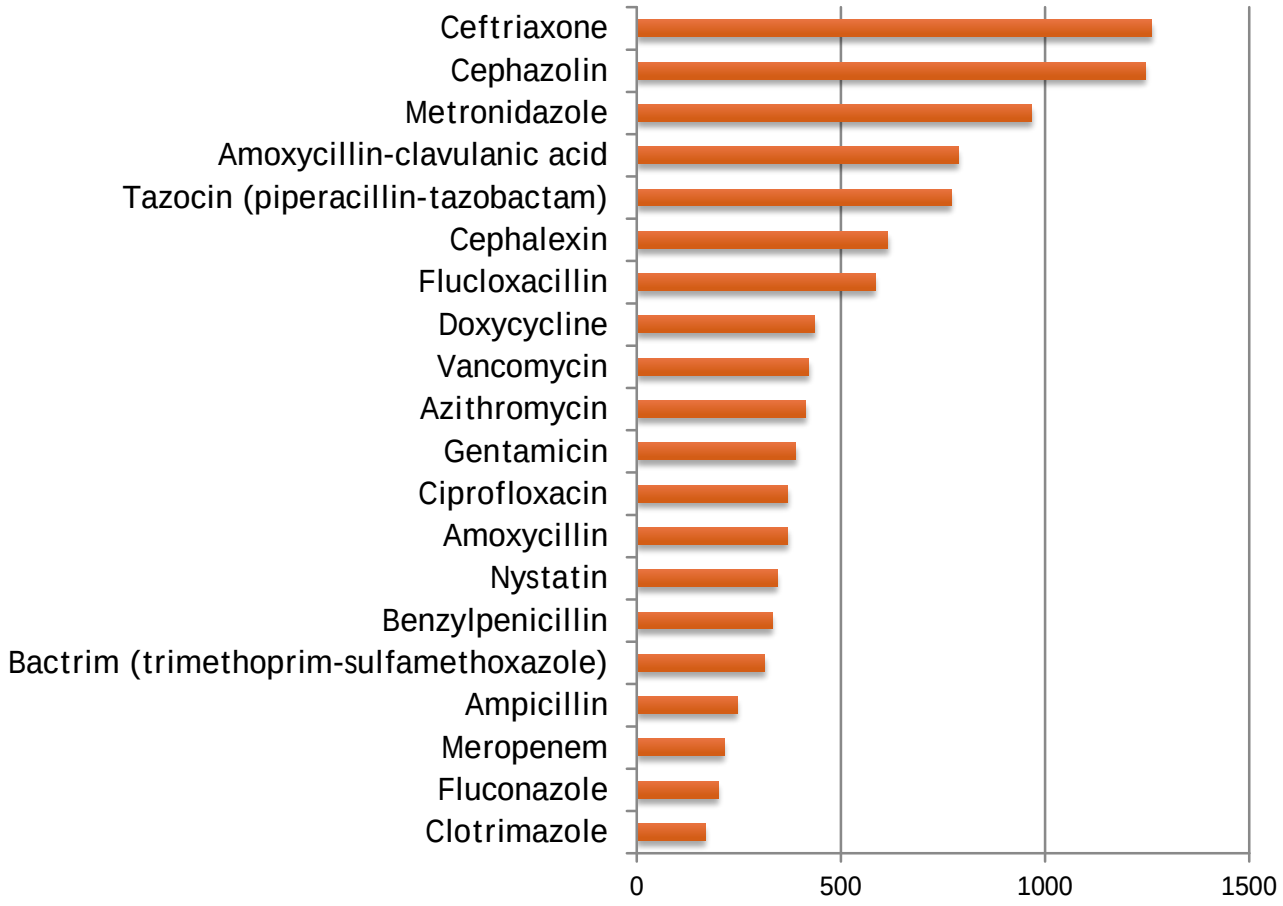
# Domestic antimicrobial prescribing survey




Top 20 antimicrobials in 2013

quality-based: observing the appropriateness of antimicrobial prescribing

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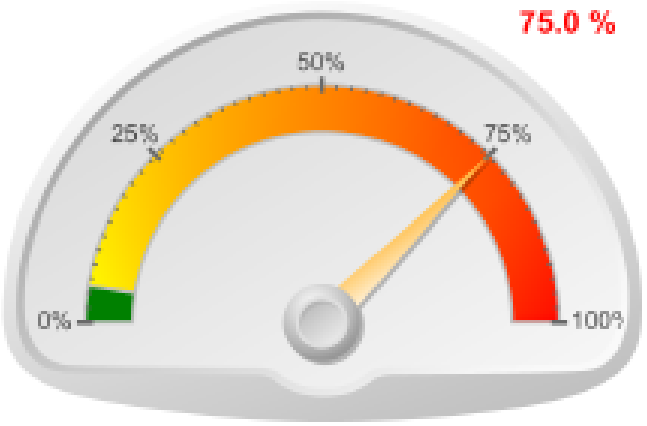
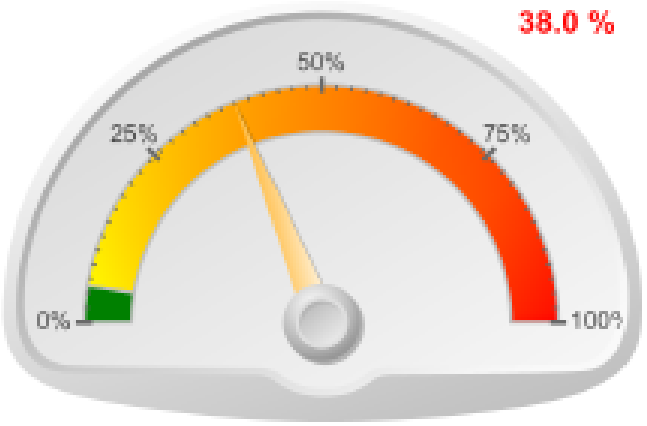
# Hospital orthopaedic unit results compared to domestic data

**My Data** **National Data** *(H=52)*

**Surgical Prophylaxis given for greater than 24 hours**




The percentage of surgical prophylaxis prescriptions where the duration of prophylaxis was for greater than 24 hours post surgery.

*For best practice this should ideally be less than 5% (green section)*

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# Engaging stakeholders with data

# Pearls of wisdom

- *Complexity is your enemy. Any fool can make something complicated. It is hard to make something simple.*

Richard Branson

# Top tips for presenting data

- Be clear about the audience and the key message
- Present data in ways that are meaningful to the intended audience
- Provide opportunities for the audience to reflect and discuss what results mean, to engage them in identifying solutions
- Consider who is best placed to present data
- Peer to peer
- Engage with team members

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# ANTIMICROBIAL STEWARDSHIP

Antimicrobial Stewardship reduces inappropriate use of antibiotics, improves patient outcomes and can help to reduce antimicrobial resistance.

**30%**

of antibiotics prescribed in hospitals are used inappropriately.*

## Antimicrobial-resistant infections are becoming more common


Australia is one of the highest users of antibiotics in the developed world, with around 22 million prescriptions written every year in primary care. Some of this use undoubtedly drives resistance.

Since the introduction of hand hygiene initiatives, there has been a decline in MRSA rates in hospitals, however, the incidence of community-strains of MRSA has increased from 5% to 12% since 2000.

## Right antibiotic, right dose, right time

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# Sustainability

- Standardisation via policy, procedures, pathways, guidelines
- Ongoing measurement – maintains the impetus for continuous review and improvement
- Training and Education – will vary according to type of change
- Ongoing feedback to the teams and individuals that can USE the data and EFFECT the change.

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