



Practical antimicrobial stewardship: Next steps and targets

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Antimicrobial stewardship

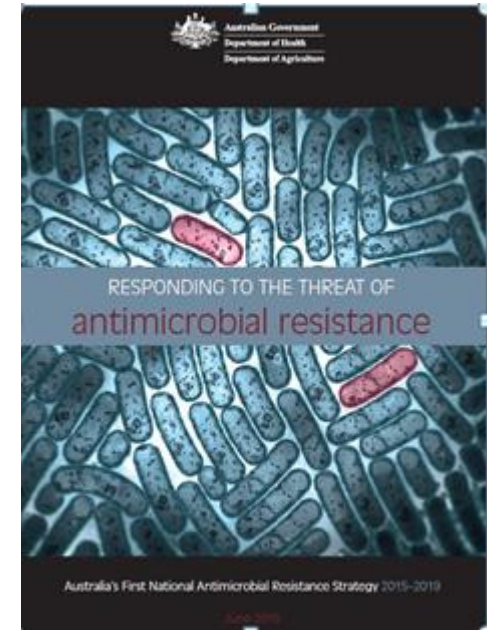
Aim is to optimise use in situations where antimicrobials are required and reduce unnecessary or inappropriate use

We need to:

- Know what 'good' looks like (evidence based guidelines)
- Know what is currently happening (meaningful data)
- Implement strategies to drive improvement (resources/tools)
- Use policy to drive action as necessary (accountability)

National AMR strategy: Objective 2

Implement effective **antimicrobial stewardship practices** across human health and animal care settings to ensure the appropriate and judicious prescribing, dispensing and administering of antimicrobials



Objective 2: priority areas

- Ensuring that tailored, evidence-based antibiotic prescribing **guidelines** are available for all sectors.
- Ensuring the availability of evidence-based, best-practice and **nationally consistent approaches** to AMS across human health and animal care settings.
- Developing tailored, **evidence-based resources** to support the implementation of AMS programmes.
- Reviewing existing **accreditation and quality assurance programmes** to ensure they appropriately support and encourage compliance with best practice AMS approaches.
- **Strengthening existing measures** to better support appropriate and judicious use.

What is required?



- Volume and quality-based data on antibiotic use
 - SURVEILLANCE
- Defining appropriate treatment in all settings
 - GUIDELINES
- Capacity to implement AMS
 - TOOLS/RESOURCES
- Making sure AMS is implemented
 - ACCREDITATION/GOVERNANCE
- Encouraging innovation
 - QUALITY ASSURANCE AND IMPROVEMENT

Current report card

Current status:

- Good picture of the problems in hospitals, and some systems to address these.
- Much less information in primary care, and very little data in animals.

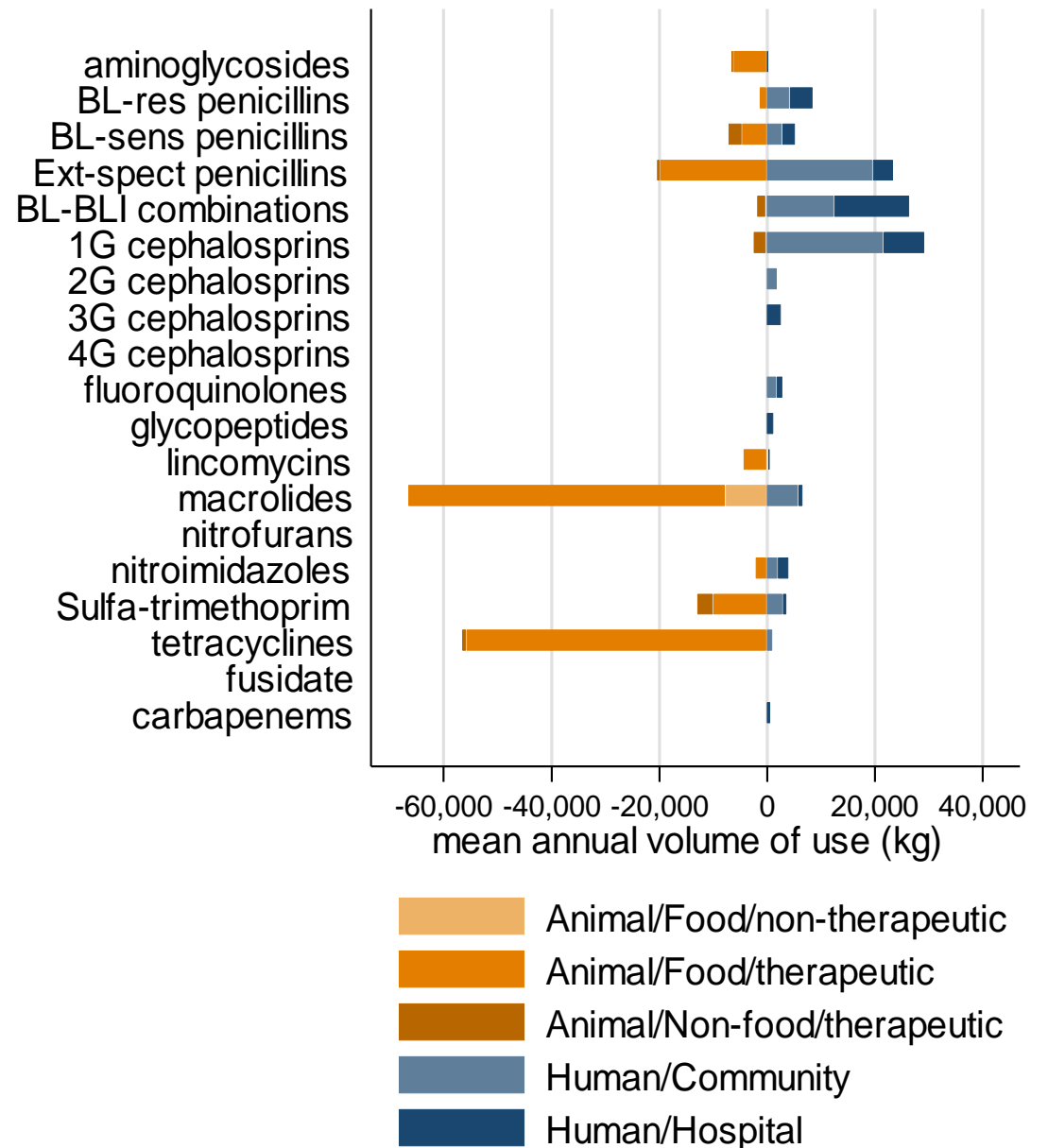
	Hospitals	GPs	Vets
Education	Yes	Some	Some
Guideline development	Yes	Yes	No (started)
Workflow decision support, tools, resources	Yes	No	No
Data, Audit	Yes	Some	No
Targets established	Yes (not enforced)	Some	No

What has been achieved?

- Animal
 - Volume data 2005-2010 (based on sales only)
- Community
 - TG,
 - PBS/DUSC report
 - MedINSIGHT (but low coverage)
- Hospitals
 - TG,
 - NAUSP, NAPS, National Standards

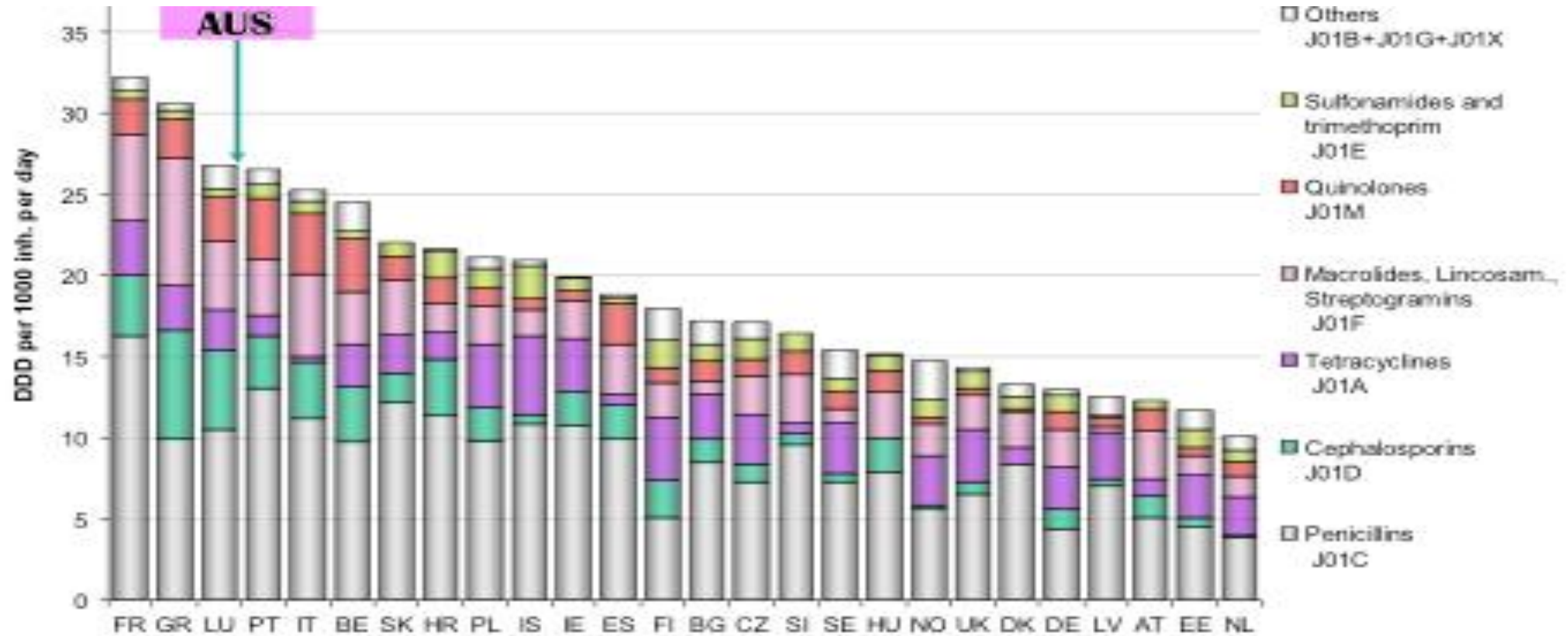
Roughly 60% of antibiotics are used in animals

- Data from APVMA, DUSC, NAUSP
- Converted to total volume
- 182 tonnes used in animals
- 121 tonnes used in humans
- Macrolides, tetracyclines and amoxicillin main agents in animals



Estimated antibiotic use 2005-10

Australia uses a lot of antibiotics in humans per capita



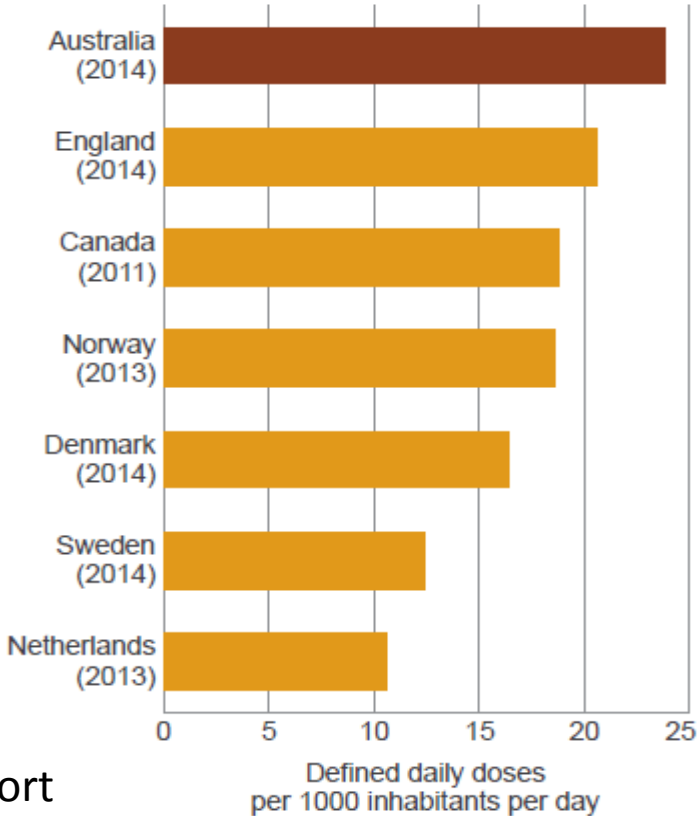
AUS = Australia; DDD = defined daily dose (per 1000 inhabitants per day)

Source: European Surveillance of Antimicrobial Consumption. Australian data from Australian Statistics on Medicines. www.obs.gov.au/statistics/asm/2010/australian-statistics-on-medicine-2010.pdf.

Human use – doses per capita

Australia uses approx. twice as many antibiotics in the community and in hospitals than some other countries

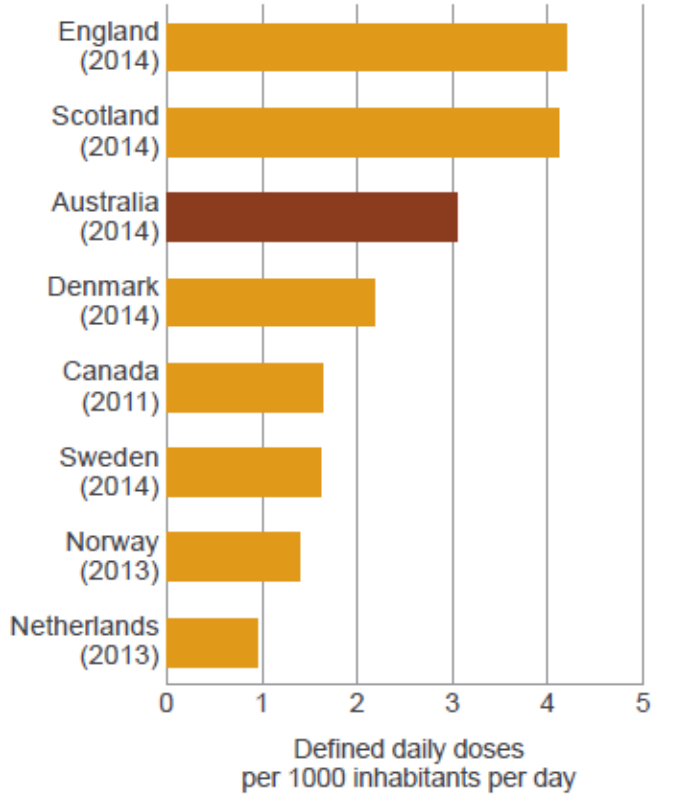
Figure D Community antimicrobial use in Australia and other similar countries



Source: AURA report

Sources: Pharmaceutical Benefits Scheme (Australia); CIPARS (Canada); DANMAP (Denmark); ESPAUR (England); NethMAP (Netherlands); SWEDRES (Sweden)

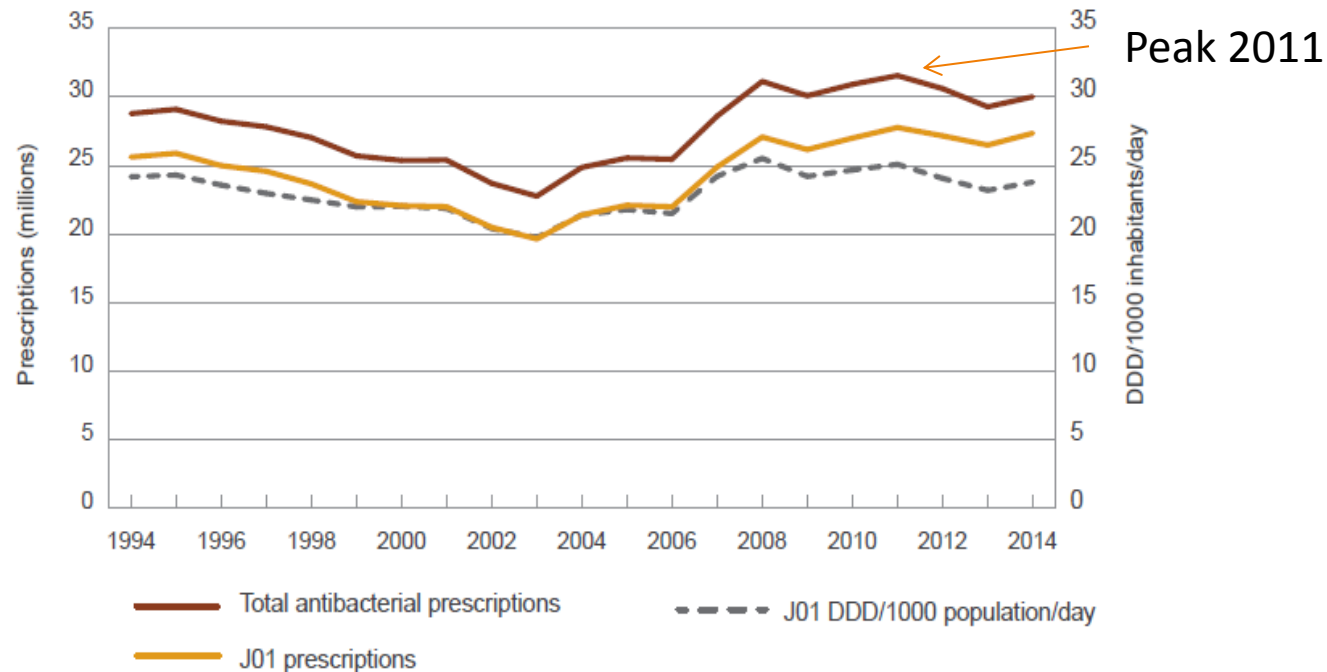
Figure C Antimicrobial use in Australian hospitals and other countries



Sources: National Antimicrobial Utilisation Surveillance Program (Australia); CIPARS (Canada); DANMAP (Denmark); ESPAUR (England); NethMAP (Netherlands); SAPG (Scotland); NORM (Norway); SWEDRES (Sweden)

Antibiotic use in the community has increased since the early 2000s, peak 2011

Figure B Volume of antimicrobials dispensed under the PBS/RPBS per year, 1994–2014



DDD = defined daily dose; PBS = Pharmaceutical Benefits Scheme; RPBS = Repatriation Pharmaceutical Benefits Scheme

Notes:

1. J01 is the ATC code for antibacterials for systemic use.

2. Before April 2012, includes estimates of under co-payment and private dispensing; after April 2012, includes actual under co-payment data, but no estimate from private dispensing. The DDD/1000 inhabitants/day excludes some items for which there is no DDD.

Source: Drug Utilisation Sub Committee database, October 2015

Table 3.8 Major specialty type of prescriber for prescriptions supplied, 2014

Major specialty of prescriber	Prescriptions supplied	Percentage of total prescriptions
General practitioner	25 744 462	88
Other medical	2 626 783	9
Dentist	861 117	3
Nurse practitioner	25 735	<1
Optometrist	16 318	<1
Midwife	260	<1
Total	29 274 675	100

Note: Includes actual under co-payment data, but no estimate from private dispensing

Source: Department of Human Services pharmacy claim database, October 2015

Clinical Care Standards: Human health



Antimicrobial Stewardship Clinical Care Standard

Expectation that prescribing is consistent with evidence based guidelines where possible



1 A patient with a life-threatening condition due to a suspected bacterial infection receives prompt antibiotic treatment without waiting for the results of investigations.



2 A patient with a suspected bacterial infection has samples taken for microbiology testing as clinically indicated, preferably before starting antibiotic treatment.



3 A patient with a suspected infection, and/or their carer, receives information on their health condition and treatment options in a format and language that they can understand.



4 When a patient is prescribed antibiotics, whether empirical or directed, this is done in accordance with the current version of the *Therapeutic Guidelines*¹ (or local antibiotic formulary). This is also guided by the patient's clinical condition and/or the results of microbiology testing.



5 When a patient is prescribed antibiotics, information about when, how and for how long to take them, as well as potential side effects and a review plan, is discussed with the patient and/or their carer.



6 When a patient is prescribed antibiotics, the reason, drug name, dose, route of administration, intended duration and review plan is documented in the patient's health record.



7 A patient who is treated with broad-spectrum antibiotics has the treatment reviewed and, if indicated, switched to treatment with a narrow-spectrum antibiotic. This is guided by the patient's clinical condition and the results of microbiology tests.



8 If investigations are conducted for a suspected bacterial infection, the responsible clinician reviews these results in a timely manner (within 24 hours of results being available) and antibiotic therapy is adjusted taking into account the patient's clinical condition and investigation results.



9 If a patient having surgery requires prophylactic antibiotics, the prescription is made in accordance with the current *Therapeutic Guidelines*¹ (or local antibiotic formulary), and takes into consideration the patient's clinical condition.

Community - a long way off quality targets

We are prescribing at high rates for conditions that often don't need antibiotics (URTI)

When antibiotics are used, they often don't comply with recommendations

Note: lack of "indication" limits interpretation of data

Table 3.10 Patients prescribed systemic antimicrobials for select conditions, 2014

Condition	Patient	Number	Percentage	95% CI	Acceptable range (%)
Acute URTI	Older than 1 year prescribed antibacterials ^a	45 743	47	44-56	0-20
Acute bronchitis or bronchiolitis	Aged 18-75 years prescribed antibacterials ^a	23 619	90	89-91	0-30
Acute tonsillitis	Older than 1 year prescribed antibacterials	13 135	91	90-92	0-20
	And prescribed TG-recommended penicillin V	6 243	48	42-54	80-100
Sinusitis (chronic or acute)	Older than 18 years prescribed antibacterials	17 300	86	84-87	0-20
	And prescribed TG-recommended amoxicillin	5 607	32	29-36	80-100
Acute otitis media/myringitis	Older than 2 years prescribed antibacterials	11 387	91	90-92	0-20
	And prescribed TG-recommended amoxicillin	7 154	63	59-67	80-100
Pneumonia	Aged 18-65 years prescribed antibacterials	607	68	64-71	90-100
	And prescribed TG-recommended antibiotic (for mild CAP - amoxicillin or doxycycline)	146	24	19-29	80-100
Cystitis or other UTI	Females older than 18 years prescribed antibacterials	18 898	94	93-95	80-100
	And prescribed TG-recommended trimethoprim	8 858	47	44-49	80-100

CAP = community-acquired pneumonia; CI = confidence interval; TG = *Therapeutic guidelines: antibiotic*; URTI = upper respiratory tract infection; UTI = urinary tract infection

^a No antibacterials recommended by *Therapeutic guidelines: antibiotic*

Source: MedicinesInsight²⁷

Residential Aged Care is a focus of intense use

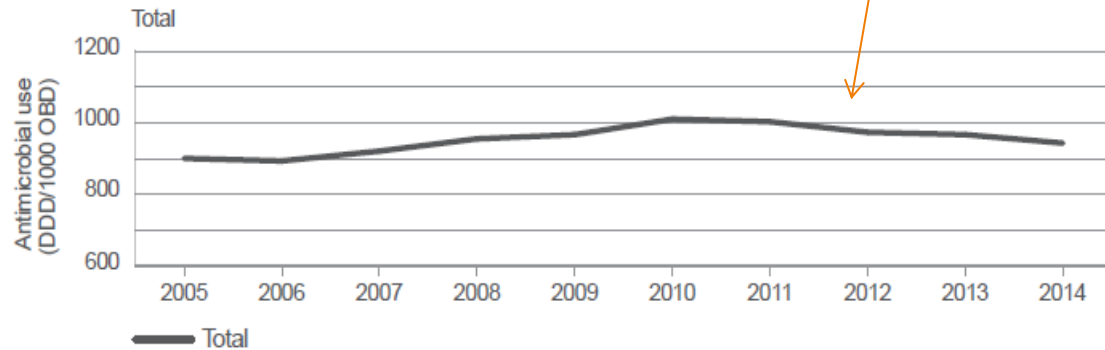
- acNAPS: 251 RACFs across all states, types (public, private, NFP)
- 1867 antimicrobial prescriptions audited in 2016
 - **9% of residents were receiving an antimicrobial drug**
 - *23% of antibiotics had been prescribed for > 6 months*
 - 22% was for **prophylaxis**
 - Commonest reason for prophylaxis and treatment was **urine infection**
 - 32% of residents prescribed an antimicrobial for treatment **did not have any signs or symptoms of infection** in the 1 week prior to starting (McGeer criteria)



Antibiotic use in hospitals

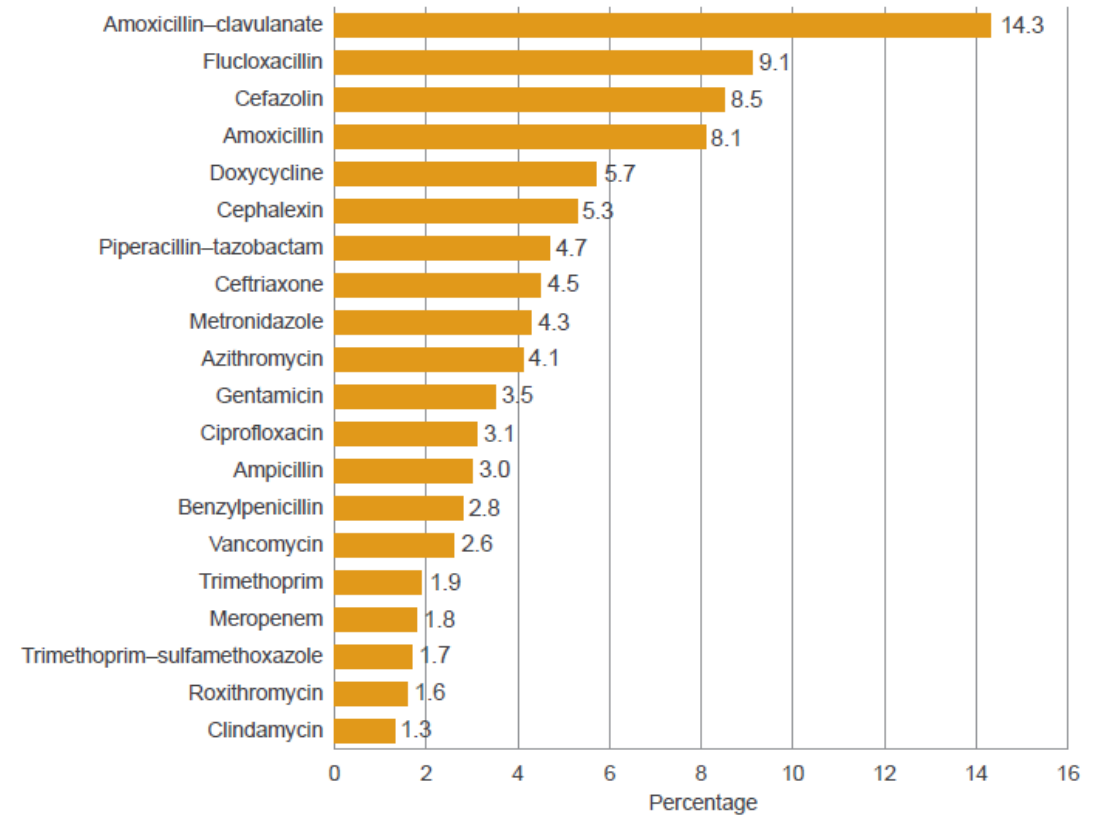
Slight decline post 2011

Figure 3.1 Total-hospital annual antimicrobial use in hospitals participating in the National Antimicrobial Utilisation Surveillance Program, 2005-14

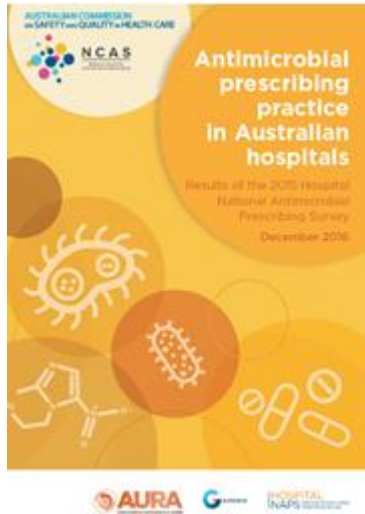


Source: AURA report

Figure 3.2 Top 20 antimicrobials used in Australian hospitals, 2014



Hospitals - NAPS provides detail about targets



Key Indicator		% of total prescriptions		
		2013	2014	2015
Indication documented (Best practice >95%)		70.9	74.0	72.5
Review or stop date documented (Best practice >95%)		N/A	N/A	35.5
Surgical prophylaxis given for >24hrs (Best practice <5%)		41.8	35.9	27.4
Compliance with guidelines	Compliant with guidelines (TG or local)	59.7	56.2	55.9
	Directed therapy	N/A	10.4	12.4
	Non-compliant	23.0	24.3	23.3
	No guideline available	11.0	4.6	3.8
	Not assessable	6.3	4.5	4.7
Appropriateness	Appropriate	70.8	72.3	73.2
	Inappropriate	22.9	23.0	21.9
	Not assessable	6.3	4.7	5.0

Stable rates of 'inappropriate' use

Hospitals - Key areas of inappropriate use are known

Table 11 The 20 indications for which antimicrobials were most commonly prescribed inappropriately in hospitals, 2015*

Indication	Number of prescriptions	Appropriate (%)	Inappropriate (%)	Not assessable (%)
Bronchitis	68	57	41	2
Surgical prophylaxis	3404	56.0	40.5	3.5
Infective exacerbation of asthma	75	60	37	3
Infective exacerbation of COPD	661	64.1	34.3	1.5
Fever/pyrexia of unknown origin	152	59	31	10
Pancreatitis	42	67	29	5
Abscess (includes quinsy)	35	71	29	0
Tonsillitis	39	67	28	5
Cholecystitis	309	71	28	1
Trauma (includes wound)	187	70	28	3
Colitis	36	64	28	8
Bronchiectasis	123	72	26	2
Aspiration pneumonia	408	74	25	2
Catheter-associated infection	69	70	25	6
Community-acquired pneumonia	2315	74.6	24.4	1.0
Premature rupture of membranes	30	77	23	0
Empyema	66	74	23	3
Abscess/boils/folliculitis	118	78	22	0
Wound infection: surgical	404	74	22	5
Cystitis	205	77	22	2

Problem areas have been identified

- Respiratory infection
- Surgical prophylaxis

Hospital – Standards require that action is taken



Antimicrobial stewardship

Safe and appropriate antimicrobial prescribing is a strategic goal of the clinical governance system.

This criterion will be achieved by:	Actions required:
3.14 Developing, implementing and regularly reviewing the effectiveness of the antimicrobial stewardship system	3.14.1 An antimicrobial stewardship program is in place
	3.14.2 The clinical workforce prescribing antimicrobials have access to current endorsed therapeutic guidelines on antibiotic usage ⁴⁵
	3.14.3 Monitoring of antimicrobial usage and resistance is undertaken
	3.14.4 Action is taken to improve the effectiveness of antimicrobial stewardship

Where to next?

- Laura Hardefeldt (Vet)
- Danielle Mazza (GP)
- Krispin Hajkowicz, Celia Cooper (Hospital)

Questions for panel

- What are the AMS gaps in your sector?
 - Surveillance data and feedback
 - Standards, guidelines, regulation
 - Education and other resources
 - Governance and co-ordination
- What would you prioritize next?

AMS in animals

- National prescribing guidelines for vets (livestock and pets)
 - How to develop and implement? Who is responsible? When?
- Robust data on antimicrobial use in all animal sectors (livestock, aquaculture, pet, equine)
 - How can we get these data? Who will do it? When?
- Control of use legislation needs to be strengthened to control off-label use and use of compounding pharmacies.
 - How can this be achieved?

AMS in community settings

- National prescribing guidelines need to be implemented.
 - How? Who is responsible? When?
- National tools/resources to promote uptake needed.
 - Who can do this? When?
- Surveillance for antimicrobial use should include indication and appropriateness, and facilitate benchmarking.
 - How? Who? When?
- Encouraging participation in auditing/education eg: Aged care, GP accreditation.
 - How? Who? When?

AMS in hospitals

- What would you want from an ideal surveillance system to inform AMS in your settings?
- Do we need nationally consistent resources and tools to implement AMS.
 - Who would develop these? When?
- Do we need to set targets and report; to make hospitals accountable to take action to improve.
 - How? Who? When?

Time frame	Target	Indicator
Within 1 year	National prescribing guidelines should be available in all GP clinics	
	Audit tools for meaningful assessment of general practice prescribing developed	
Within 3 years	Tools to measure the quality of antimicrobial use should be widely used in general practice	Proportion of GP practices performing audit at least once every 3 years
	The quality of antimicrobial use should be improved in hospitals	In point prevalence surveys, >90% of all antibiotic prescriptions should be appropriate >90% of surgical prophylaxis should be <24 hours
Within 5 years	Fall in Ab usage in community to OECD average, based on PBS data	Rate of use at OECD average, based on PBS data
	Systems should be established to assess antibiotic use and resistance in industry	Indicators of volume, type, timing and indication available