The National Centre for Antimicrobial Stewardship – A One Health Approach

An NHMRC Centre of Excellence (2015-2020)

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NCAS

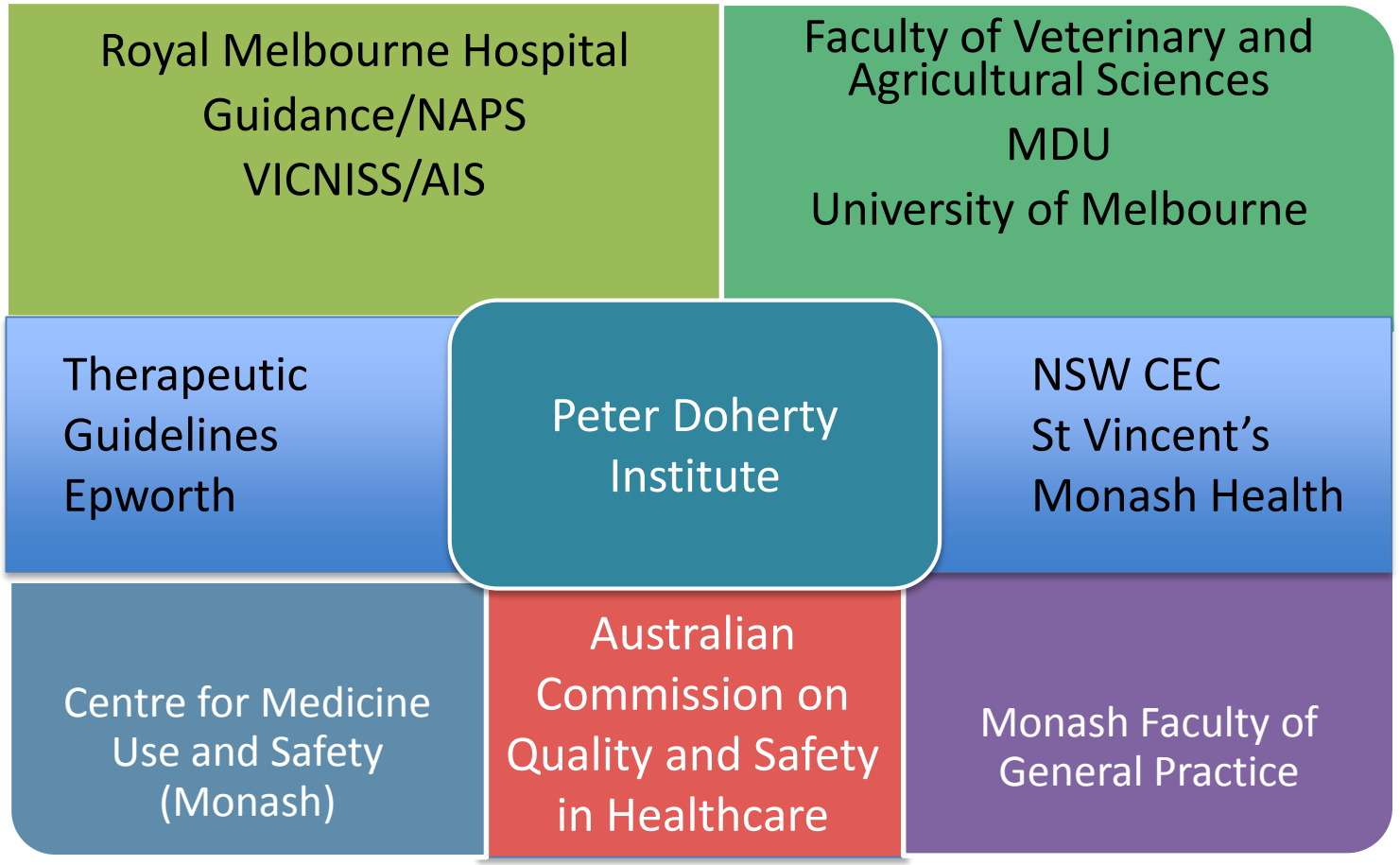
Antimicrobial Stewardship

- Coordinated actions/systems designed to promote and increase the appropriate use of antimicrobials
- AMS programs not well developed outside of hospital sector
  - But core principles can be applied across human and animal
- ***AMS is NOT just about AMR***
- ***Quality and safety for patients/animals (to prevent /treat infection)***
  - ***optimize outcomes, minimize unintended harm***
- ***Requires meaningful data that leads to <u>action</u>***
  - ***Critical analysis of findings, followed by intervention***
- Implementation is the key!!
- Needs leadership

An NHMRC health services research program

Knowledge translation/policy and practice change

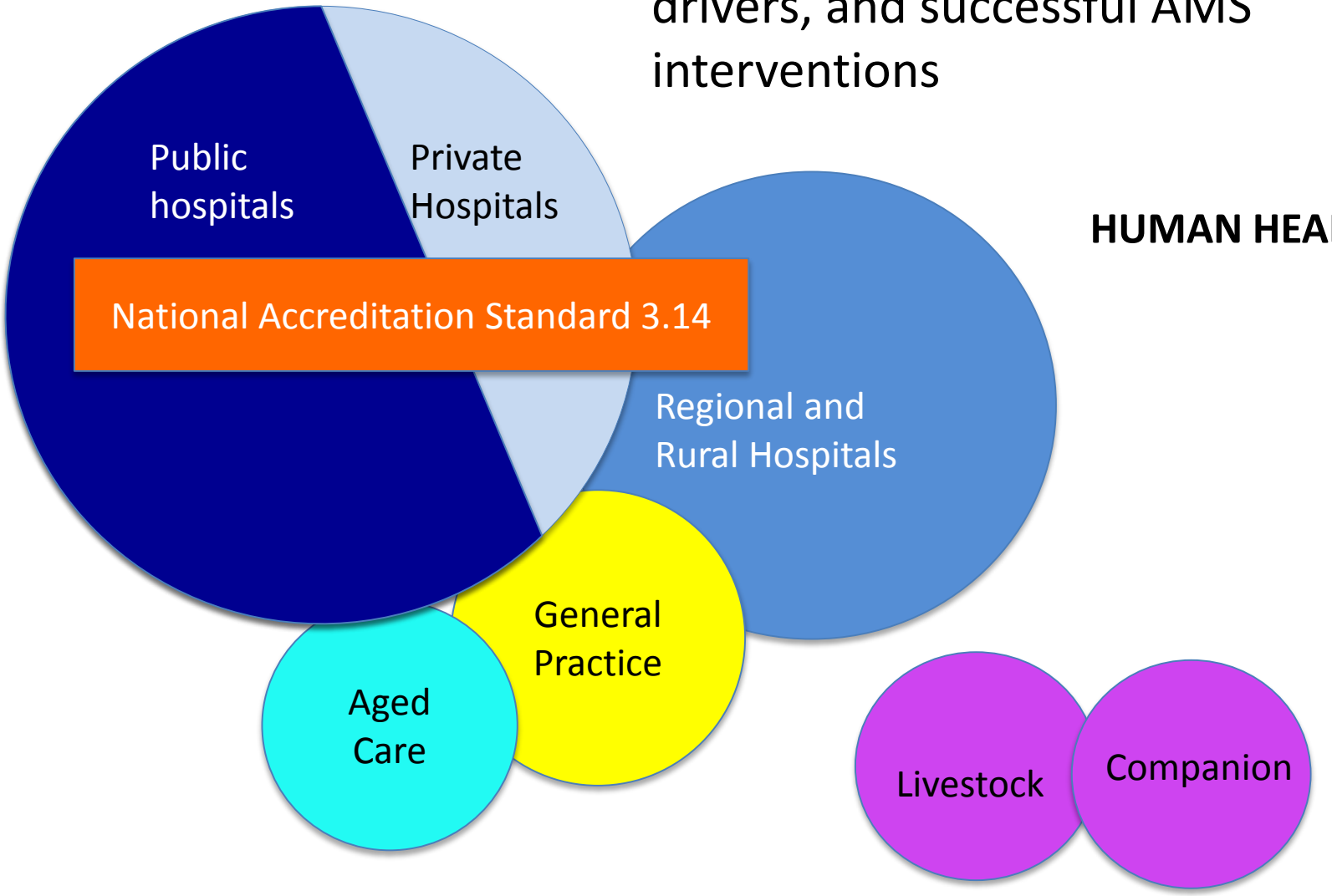
Development of sustainable models for AMS



KEY QUESTIONS

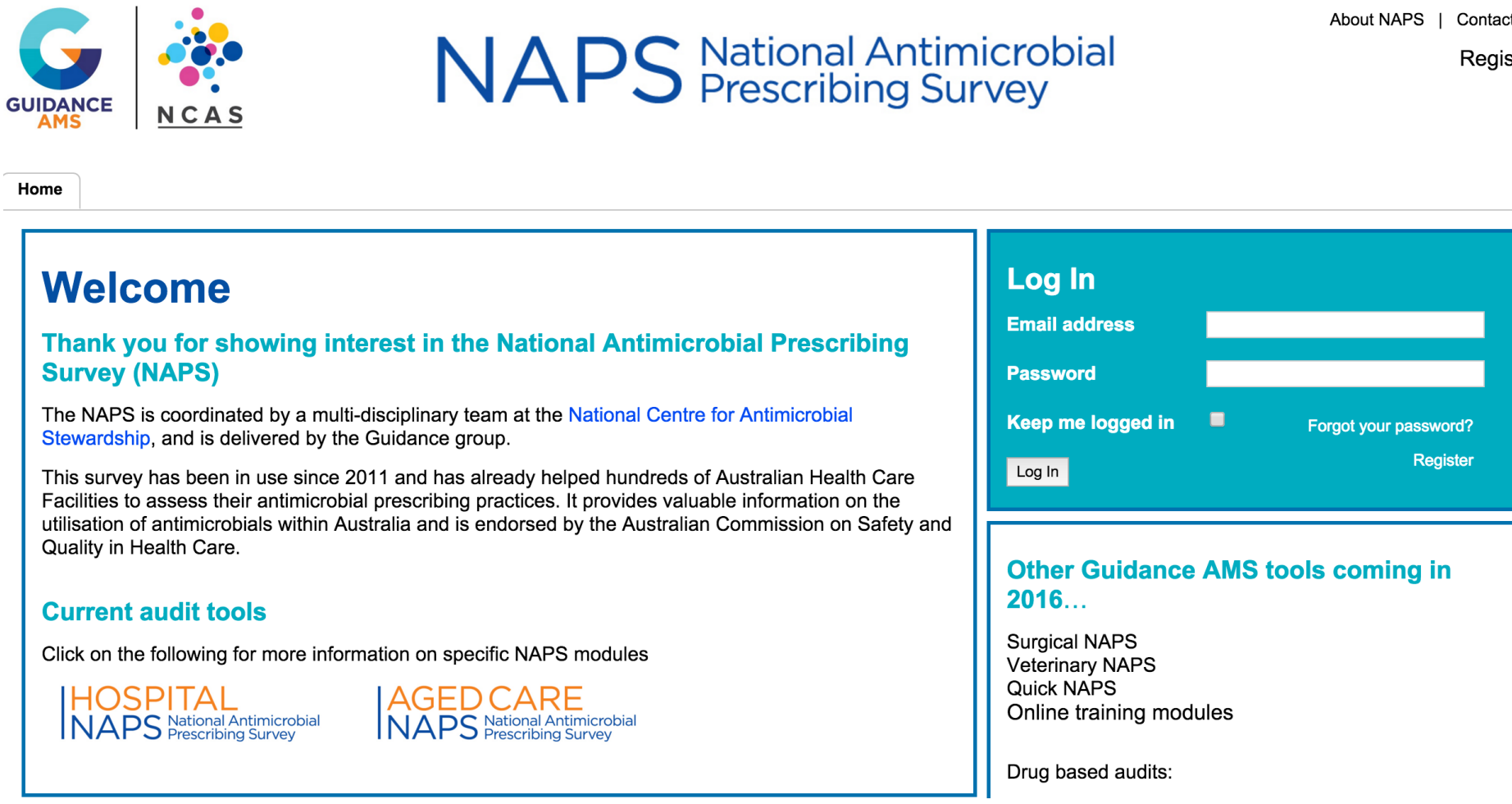
1. How much antibiotic is being used in each sector? What types of antibiotics?
2. What are the main indications for use for these antibiotics?
3. Is the use appropriate?
4. Where are the areas of inappropriate use that need attention?
5. What are the drivers ? Explore prescriber knowledge and attitudes
6. What interventions would fit workflow and be acceptable to improve prescribing practice?
7. What interventions actually work and are sustainable to change prescribing behavior?

Current state of knowledge about antimicrobial use appropriateness, drivers, and successful AMS interventions



Hospital AMS

- Establish effective **models of care** in new areas
  - Rural/regional hospitals, Private hospital
- Develop **workforce capacity** in AMS
  - Education workshops, mentorship
- Collect, analyze data meaningfully and **respond**
  - Develop resources and tools to address problems
    - Use multidisciplinary expertise
- Develop & implement assistive **decision support**
  - Guidance in >60 hospitals across Australia (since 2001)
- Actively **engage in policy** & **drive practice change**
  - Accreditation standards, national guidelines



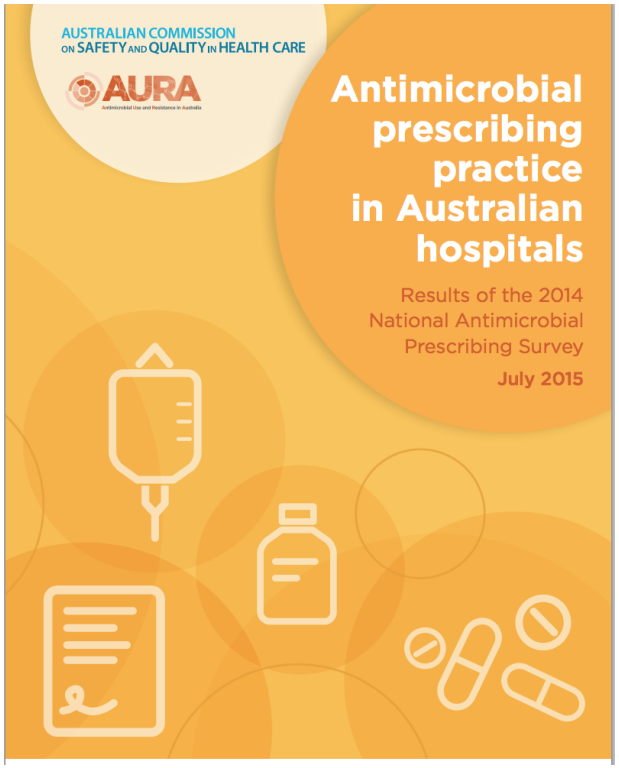
https://naps.org.au

An evolving tool for the measurement of appropriateness

Hospital NAPS 2014

- ¼ of all Australian hospitals
- 44.5% public beds
- ~20,000 prescriptions

- 23% inappropriate use
- Surgical prophylaxis *most common indication* AND 40% inappropriate



Surgical NAPS (SNAPS)

Perioperative and post surgical antimicrobial use

Patient outomes

Surgical NAPS (SNAPS)

- Broader scope – includes all surgical procedures
- Outcomes: SSI, *C.difficile,* readmission
- Piloted 11 sites (5 states), private and public
- 668 procedures: 78% elective, 22% emergency

Perioperative Use

- N=592
- Overall inappropriate perioperative Mx 27%
- *Time of administration documented 17%*

Postoperative Use

- N=310
- Prophylaxis 76%
- Treatment 18%
- Inappropriate prescription 55% (extended use 46%)

AMS in Residential Aged Care Facilities

RACFs

- An important community healthcare resource (n=2700)
  - Over 65 yrs old ~3.2 million (2012) to ~5.8 million (2031)
  - Over 85 yrs old ~420,000 (2012) to ~840,000 (2031)
- Gaps in knowledge - ? antimicrobial use,? infection burden
- First ever national survey to monitor healthcare associated infections and antimicrobial prescribing in RACF (AC-NAPS)
  - 186 RACFs conducted a point prevalence survey between June 22nd 2015 and August 31st 2015.
  - Designed for workforce with little knowledge of AMS/lack of onsite expertise
  - Successful implementation (96% willing to participate again)
- Established priorities for implementation of AMS

Unnecessary prescribing of antimicrobials leads to antimicrobial resistance

Infographic for AAW 2015

A recent study in 186 Australian **residential aged care facilities** highlighted:

32% | no documented reason

In 32% of cases, the reason for the antimicrobial prescription was not written in the notes.

65% | no documented review or stop date

65% of the antimicrobial prescriptions did not have a review or stop date written in the notes.

18% | unspecified skin infections

The most common reason (18%) for antimicrobial prescriptions was unspecified skin infections.

20% | no infection signs or symptoms

Approximately 1 in 5 antimicrobial prescriptions were prescribed for residents who did not have any signs and symptoms of infection

31% | prescribed over 6 months

31% of the antimicrobial prescriptions were prescribed for greater than six months. Of these, 98% did not have a review or stop date documented.

AMS in General Practice

AMS in General Practice

- UK is leading the charge (UK NICE guidelines 2015)
- Mandating AMS in all primary care practices
  - AMS pharmacists, individualised feedback,
  - Monitor unintended harm
    - empyema/mastoiditis, bacteraemia
- Key questions not answered
  - Do we understand appropriateness?
  - Drivers of prescribing/education needs
  - Effective implementation of interventions
- Lack of systems to support AMS/Data poor

Animal Streams

Companion animals

- **VET-NAPS:** Survey of antimicrobial use
  - which drug, which indication, which species
  - mobile compatible
- Augment with data from practice prescribing system *(Linkage Infrastructure grant)*
- Aim to provide data for practices and practitioners to compare usage patterns (self evaluation)
- Use data to support clinical guideline development & education

Livestock Stream

- *What antibiotics are currently being used and at what stages in the life cycle of food production animals?*
- Aim to survey use over time and over production cycle on 10 or more representative poultry, pig and dairy farms (possibly feedlots)
- Concurrently examine **changes in resistance in resident bacterial population in response to usage**
- Use these data to assess the extent of variation across farms, sectors, production cycles and identify points of highest risk

What will success look like:

- Content experts working with implementation experts
- Cross-stream collaboration
  - Mixed methods
- Linkages with key bodies (Commission, NPS, AVA)
- Collaboration
- Innovation through IT
- Workforce capacity building

- ***Combine appropriateness assessments and clinical data with usage and resistance data***
- Focus on pt/animal safety
- Systems development for AMS in other sectors
  - Accreditation
  - Policies/procedures
  - Guidelines
  - Toolkits
  - Credentialing
- *A regional role in AMR*

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