Meeting the Challenge of Antimicrobial Stewardship in Australian Aged Care Homes

Professor Karin Thursky
Director National Centre for Antimicrobial Stewardship
On behalf of the Aged Care Stream

Teleclass broadcast sponsored by

www.schulke.com.au

Mrs Betty Smith

• Born 1931 (85 years old)
• 1 child (daughter)/ 5 grandchildren
• Published award-winning novels.
• Admitted to a RACF Jan 2016
• Alert, Limited mobility with frame
• Urinary continent
• Medication: Atenolol

April 2016
• Fever (Single oral temperature >37.8°C)
• Urinary frequency and urgency
• Urinary dipstick: Leucocytes: +2 Nitrites: Positive
• Her GP was informed (via phone)
  – Provisional diagnosis: UTI
  – MSU specimen ordered
  – Cephalexin 500mg oral BD prescribed

Sponsored by Schulke Australia Pty Ltd. www.schulke.com
A Webber Training Teleclass
www.webbertraining.com
Meeting the Challenge of Antimicrobial Stewardship in Australian Aged Care Homes
Professor Karin Thursky, National Centre for Antimicrobial Stewardship
Broadcast live from the 2016 conference of the Australasian College of Infection Prevention and Control

Day 1-13
- Urinary incontinence noted multiple times.
- No medical follow up examination.
- No review of antimicrobial prescription.
- No microbiological urine specimen taken.

Day 14
- Reduced conscious state
- Hypotensive
- Transferred to local hospital
  - Provisional diagnosis – septicaemia
  - Treated empirically with ceftriaxone
  - Remained obtunded on ward, acute kidney injury

Day 16
- An ESBL producing E.coli identified from blood cultures

Day 17
- Died in hospital
- Daughter
  - ‘Was this urinary tract infection preventable?’
  - Could her clinical care have been better managed?

Sponsored by Schulke Australia Pty Ltd.  www.schulke.com
A Webber Training Teleclass
www.webbertraining.com
Overview of the problem

Inappropriate antibiotic use in ACHs is harmful to public health and to residents:

- Increases selection pressure for MDROs
- ACHs are potential reservoirs and gateways for MDROs
- Antibiotic use is associated with MDRO carriage in residents
- *C. difficile*, allergic reactions, other adverse medication events
- Direct harm to ALL residents in high use antibiotic ACHs

---

1. van den Dool et al. The Role of Nursing Homes in the Spread of Antimicrobial Resistance Over the Healthcare Network. ICHE. 2016 Jul (A modelling study showing sustained transmission once MDRO transferred into the ACH)
2. Daneman et al. JAMA 2015

---

Table 3. Antibiotic-Related Adverse Outcomes Among Residents Living in Nursing Homes With Low, Medium, and High Antibiotic Use

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Antibiotic Use, No. (%)</th>
<th>Low (n = 33,822)</th>
<th>Medium (n = 31,425)</th>
<th>High (n = 24,943)</th>
</tr>
</thead>
<tbody>
<tr>
<td>C. difficile</td>
<td></td>
<td>274 (0.8)</td>
<td>288 (0.9)</td>
<td>221 (0.9)</td>
</tr>
<tr>
<td>Diarrhea or gastroenteritis</td>
<td></td>
<td>3347 (9.9)</td>
<td>3388 (10.8)</td>
<td>2889 (11.6)</td>
</tr>
<tr>
<td>Infection with antibiotic-resistant organism</td>
<td></td>
<td>412 (1.2)</td>
<td>431 (1.4)</td>
<td>319 (1.3)</td>
</tr>
<tr>
<td>Antibiotic allergy</td>
<td></td>
<td>13 (0.0)</td>
<td>25 (0.1)</td>
<td>22 (0.1)</td>
</tr>
<tr>
<td>General adverse event from medication</td>
<td></td>
<td>96 (0.3)</td>
<td>124 (0.4)</td>
<td>88 (0.4)</td>
</tr>
<tr>
<td>Any antibiotic complication with or without potential for indirect harms to nonrecipients (primary composite outcome)</td>
<td></td>
<td>3869 (11.4)</td>
<td>3890 (12.4)</td>
<td>3511 (13.3)</td>
</tr>
<tr>
<td>Only antibiotic complications with potential for indirect harms to nonrecipients (secondary composite outcome)</td>
<td></td>
<td>3797 (11.2)</td>
<td>3801 (12.3)</td>
<td>3237 (13.0)</td>
</tr>
</tbody>
</table>

*Residents with a do-not-hospitalize order were excluded from these analyses of adverse outcomes because they were not at risk of a hospitalization event.

*Includes any of *C. difficile*, diarrhea or gastroenteritis, antibiotic-resistant organisms, allergy, and general medication adverse events.

*Includes only *C. difficile*, diarrhea or gastroenteritis, and antibiotic-resistant organisms.
Antimicrobial Use in Australian ACH

Antibiotics are inappropriately prescribed in Australian aged care homes (ACHs).

In a study of five Australian ACHs over a 26 month period:
- 39.7% of antibiotics were for indications not meeting 'McGeer criteria'¹

The 2015 acNAPS pilot revealed:
- 67.2% of total antimicrobial prescriptions judged inappropriate
- 1 in 5 prescriptions (21.7%) were for residents who did not have any signs or symptoms of infection in the week prior to start date

¹ Stuart et al. 2012
### Microbiology Fact Sheet

**Urine Microbials – interpretation of results**
- Interpretation of results should take into account the patient’s current condition and clinical history.
- Microbiological examination of urine is performed to identify microorganisms.
  - If there is a high white cell count, or if the test result is positive, further investigation is required.
  - If no microorganisms are present, a normal urine should be expected.
- Criticism: Variability of interpretation may result in different interpretations depending on the laboratory’s criteria.

**Sputum Microbials – interpretation of results**
- Interpretation of sputum results should be performed by a professional laboratory.
  - If there is a high white cell count, or if the test result is positive, further investigation is required.
  - If no microorganisms are present, a normal sputum should be expected.
- Criticism: Variability of interpretation may result in different interpretations depending on the laboratory’s criteria.

---

### Table: Prevalence of Antimicrobial Use and Infection

<table>
<thead>
<tr>
<th>State</th>
<th>No. of beds audited</th>
<th>Prevalence of antimicrobial use</th>
<th>Prevalence of infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
<td>35</td>
<td>1619</td>
<td>209 (12.9%)</td>
</tr>
<tr>
<td>QLD</td>
<td>23</td>
<td>2007</td>
<td>248 (12.4%)</td>
</tr>
<tr>
<td>SA</td>
<td>7</td>
<td>587</td>
<td>81 (13.8%)</td>
</tr>
<tr>
<td>TAS</td>
<td>10</td>
<td>570</td>
<td>47 (8.2%)</td>
</tr>
<tr>
<td>VIC</td>
<td>166</td>
<td>7454</td>
<td>569 (7.6%)</td>
</tr>
<tr>
<td>WA</td>
<td>15</td>
<td>1210</td>
<td>146 (12.1%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Remoteness</th>
<th>No. of beds audited</th>
<th>Prevalence of antimicrobial use</th>
<th>Prevalence of infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Cities</td>
<td>74</td>
<td>5934</td>
<td>623 (10.5%)</td>
</tr>
<tr>
<td>Inner regional</td>
<td>104</td>
<td>5085</td>
<td>432 (8.5%)</td>
</tr>
<tr>
<td>Outer regional</td>
<td>61</td>
<td>2206</td>
<td>213 (9.7%)</td>
</tr>
<tr>
<td>Remote</td>
<td>9</td>
<td>154</td>
<td>26 (19.0%)</td>
</tr>
<tr>
<td>Very remote</td>
<td>3</td>
<td>68</td>
<td>6 (8.8%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Organisation type</th>
<th>No. of beds audited</th>
<th>Prevalence of antimicrobial use</th>
<th>Prevalence of infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not for profit</td>
<td>76</td>
<td>6070</td>
<td>660 (10.9%)</td>
</tr>
<tr>
<td>Government</td>
<td>157</td>
<td>5712</td>
<td>531 (9.3%)</td>
</tr>
<tr>
<td>Private</td>
<td>18</td>
<td>1665</td>
<td>109 (6.5%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>National aggregate</th>
<th>No. of beds audited</th>
<th>Prevalence of antimicrobial use</th>
<th>Prevalence of infection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>251</td>
<td>13447</td>
<td>1300 (9.7%)</td>
</tr>
</tbody>
</table>
Meeting the Challenge of Antimicrobial Stewardship in Australian Aged Care Homes
Professor Karin Thursky, National Centre for Antimicrobial Stewardship
Broadcast live from the 2016 conference of the Australasian College of Infection Prevention and Control

<table>
<thead>
<tr>
<th>State</th>
<th>No. facil.</th>
<th>No. of beds audited</th>
<th>Prevalence of antimicrobial use</th>
<th>Prevalence of infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSW</td>
<td>35</td>
<td>1619</td>
<td>209 (12.9%)</td>
<td>62 (3.8%)</td>
</tr>
<tr>
<td>QLD</td>
<td>23</td>
<td>2007</td>
<td>248 (12.4%)</td>
<td>48 (2.4%)</td>
</tr>
<tr>
<td>SA</td>
<td>7</td>
<td>587</td>
<td>81 (13.8%)</td>
<td>21 (3.6%)</td>
</tr>
<tr>
<td>TAS</td>
<td>10</td>
<td>570</td>
<td>47 (8.2%)</td>
<td>8 (1.4%)</td>
</tr>
<tr>
<td>VIC</td>
<td>166</td>
<td>7454</td>
<td>569 (7.6%)</td>
<td>223 (3.0%)</td>
</tr>
<tr>
<td>WA</td>
<td>15</td>
<td>1210</td>
<td>146 (12.1%)</td>
<td>55 (4.5%)</td>
</tr>
<tr>
<td>Major Cities</td>
<td>74</td>
<td>5934</td>
<td>623 (10.5%)</td>
<td>184 (3.1%)</td>
</tr>
</tbody>
</table>

Antimicrobial prevalence 6.5-19%
Infection prevalence 1.4-12.4%

<table>
<thead>
<tr>
<th>Organisation type</th>
<th>No. facil.</th>
<th>No. of beds audited</th>
<th>Prevalence of antimicrobial use</th>
<th>Prevalence of infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote</td>
<td>9</td>
<td>154</td>
<td>26 (19.0%)</td>
<td>17 (12.4%)</td>
</tr>
<tr>
<td>Very remote</td>
<td>3</td>
<td>68</td>
<td>6 (8.8%)</td>
<td>3 (4.4%)</td>
</tr>
<tr>
<td>Not for profit</td>
<td>76</td>
<td>6070</td>
<td>660 (10.9%)</td>
<td>166 (2.7%)</td>
</tr>
<tr>
<td>Government</td>
<td>157</td>
<td>5712</td>
<td>531 (9.3%)</td>
<td>204 (3.6%)</td>
</tr>
<tr>
<td>Private</td>
<td>18</td>
<td>1665</td>
<td>109 (6.5%)</td>
<td>47 (2.8%)</td>
</tr>
<tr>
<td>National aggregate</td>
<td>251</td>
<td>13447</td>
<td>1300 (9.7%)</td>
<td>417 (3.1%)</td>
</tr>
</tbody>
</table>

Preliminary data
2016 AC-NAPS
251 facilities
13,447 beds
1465 prescriptions

Similar results as 2015 pilot

Sponsored by Schulke Australia Pty Ltd.  www.schulke.com
A Webber Training Teleclass
www.webbertraining.com
A total of 245 of 251 participating facilities (97.6%) completed this section.

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Residential Medication Chart used</td>
<td>Yes</td>
<td>44.9% (110)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>52.2% (128)</td>
</tr>
<tr>
<td></td>
<td>Unsure</td>
<td>3.3% (8)</td>
</tr>
<tr>
<td>Availability of Therapeutic Guidelines: Antibiotic (either elec or hard copy)</td>
<td>Access</td>
<td>84.9% (209)</td>
</tr>
<tr>
<td></td>
<td>No access</td>
<td>15.1% (37)</td>
</tr>
<tr>
<td>Endorsed guidelines routinely used for management of suspected urinary tract infections</td>
<td>Yes</td>
<td>54.3% (133)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>28.6% (70)</td>
</tr>
<tr>
<td></td>
<td>Unsure</td>
<td>17.1% (42)</td>
</tr>
<tr>
<td>Alcohol based hand-rubs available</td>
<td>Yes</td>
<td>85.3% (209)</td>
</tr>
<tr>
<td>Hand hygiene training sessions held for staff</td>
<td>Yes</td>
<td>94.7% (232)</td>
</tr>
</tbody>
</table>

Sponsored by Schulke Australia Pty Ltd.  www.schulke.com
A Webber Training Teleclass  www.webbertraining.com
Results from AC-NAPS

Key areas for improvement:

- Inadequate documentation and review
- Use of antimicrobials for unspecified infections
- Prolonged duration of prescriptions
- Low proportion of patients with microbiology specimen prior to commencement of antimicrobials
- Treatment despite not meeting infection criteria (drivers)
Factors impacting prescribing quality

- Health system factors
  - Staff (GPs, locums and nursing), diagnostic access, access to ID physicians
- There ARE guidelines, but no implementation….WHO?
- Identifying signs and symptoms of infection in residents
  - Patterns of prescribing, ‘just in case’
- Asymptomatic bacterial colonisation common
- Care provider factors and care relationships
- Advance Care Plans (ACPs) and next-of-kin

AMS targets for Australia

- UTIs, RTIs and skin/soft tissue infections
  - Clinical pathways, guidelines
  - Skin care practices (~30% with skin/soft tissue, cellulitis, wounds)
  - Prophylaxis (especially urine)
- Diagnostic testing to support prescribing (sputum, swabs and urine)
  - Support with interpretation for nursing staff
- Social factors influencing prescribing
- Advanced Care Planning/End-of-life prescribing
- Vaccination rates (influenza, pneumococcal)
- Quality Use of Medicines support in ACH

Sponsored by Schulke Australia Pty Ltd.  www.schulke.com
A Webber Training Teleclass
www.webbertraining.com
Meeting the Challenge of Antimicrobial Stewardship in Australian Aged Care Homes
Professor Karin Thursky, National Centre for Antimicrobial Stewardship
Broadcast live from the 2016 conference of the Australasian College of Infection Prevention and Control

**CDC AMS Core Elements**

Leadership commitment
Accountability
Drug expertise
Action
Tracking
Monitor at least one process measure of antibiotic use and at least one outcome from antibiotic use
Reporting
Provide regular feedback on antibiotic use and resistance to prescribing clinicians, nursing staff and other relevant staff.
Education

Sponsored by Schulke Australia Pty Ltd.  www.schulke.com
A Webber Training Teleclass
www.webbertraining.com
Australia

No specific guidelines for AMS in RACFs

Chapter: AMS in Aged Care Services

ETA Early 2017

Medical care of older persons in residential aged care facilities (Silver Book)

Urinary tract infections Published 2006

Sponsored by Schulke Australia Pty Ltd. www.schulke.com
A Webber Training Teleclass www.webbertraining.com
Meeting the Challenge of Antimicrobial Stewardship in Australian Aged Care Homes
Professor Karin Thursky, National Centre for Antimicrobial Stewardship
Broadcast live from the 2016 conference of the Australasian College of Infection Prevention and Control

NCAS Phd Projects

Optimising Antimicrobial Use for RTIs
- Only 39.7% of patients with RTI met McGeer Criteria
- Only 10% had specimens taken within 48 hours
- TG recommends rapid diagnostic tests for patients with pneumonia/ILI
- Examine impact of routine diagnostic resp multiplex PCR on appropriateness of AB use

Antibiotic use at end of life in Aged Care Homes
- >55,000 deaths in ACH 13/14
- Define optimal prescribing at end of life
- Antibiotics are extensively prescribed in the last month of life in ACHs, especially in the two weeks before death
  - Perceived symptom relief and/or life-prolongation
  - Potential harms on quality-of-life

Accreditation standards in aged care
- No specific item: Medication safety and infection control
- AMS will included as part of the Clinical Care and Care Services Standard
- Consultation on the Standards is likely to occur in early 2017
- Recommend comments and feedback from AMS community
- Australian Commission involved in process

Sponsored by Schulke Australia Pty Ltd.  www.schulke.com
A Webber Training Teleclass
www.webbertraining.com
What might the accreditation standards look like?

• AMS policies and procedures
• Antimicrobial prescribing restrictions
• ACH specific antimicrobial guidelines
• Access to QUM/on-site infection infection prevention staff
• Access to education for nurses targeted for ACH
• Antimicrobial prescribing surveillance and effective feedback to prescribers

Do these standards apply to the ACH or to the prescribers (GPs)?
How do we effectively influence the decision maker?
How to we equip to workforce in ACH to implement AMS?

Aged Care Stream

• Email: support@naps.org.au
• AC-NAPS: www.naps.org.au
• NCAS: https://www.ncas-australia.org
• Twitter: NCAS_Aus
• Aged Care/AC-NAPS team
  A Prof Rhonda Stuart
  Dr David Kong
  A Prof Kirsty Buising
  Dr Noleen Bennett: Infection Control Consultant (ACNAPS lead)
  Caroline Chen: Pharmacist
  Dr Rod James: Microbiologist
  Sonia Koning: Pharmacist
  VICNISS: A Prof Leon Worth, Dr Ann Bull
  PhD fellow: Lesley Dowson

Sponsored by Schulke Australia Pty Ltd.  www.schulke.com
A Webber Training Teleclass
www.webbertraining.com
Meeting the Challenge of Antimicrobial Stewardship in Australian Aged Care Homes
Professor Karin Thursky, National Centre for Antimicrobial Stewardship
Broadcast live from the 2016 conference of the Australasian College of Infection Prevention and Control

A Webber Training Teleclass

December 1 2017 TELECLASS SCHEDULE RELEASED

December 8  VIABILITY OF BACTERIA ON FABRICS
Prof. Jerry H. Kavouras, University of Illinois at Chicago

December 15  (FREE Teleclass)
INFECTION CONTROL IN ELDERLY CARE INSTITUTIONS – WHERE SHOULD WE GO?
Prof. Andreas Voss, Radboud University Medical Centre, The Netherlands

Sponsored by Schulke Australia Pty Ltd.  www.schulke.com
A Webber Training Teleclass
www.webbertraining.com
Meeting the Challenge of Antimicrobial Stewardship in Australian Aged Care Homes
Professor Karin Thursky, National Centre for Antimicrobial Stewardship
Broadcast live from the 2016 conference of the Australasian College of Infection Prevention and Control

THANKS FOR YOUR SUPPORT

Thanks to Teleclass Education
PATRON SPONSORS

Sponsored by Schulke Australia Pty Ltd. www.schulke.com
A Webber Training Teleclass
www.webbertraining.com