## Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>acNAPS</td>
<td>Aged Care National Antimicrobial Prescribing Survey</td>
</tr>
<tr>
<td>AMR</td>
<td>antimicrobial resistance</td>
</tr>
<tr>
<td>AMS</td>
<td>antimicrobial stewardship</td>
</tr>
<tr>
<td>MPS</td>
<td>multipurpose service</td>
</tr>
<tr>
<td>NCAS</td>
<td>National Centre for Antimicrobial Stewardship</td>
</tr>
<tr>
<td>RACF</td>
<td>residential aged care facility</td>
</tr>
<tr>
<td>RICPRAC</td>
<td>Rural Infection Control Practice Group</td>
</tr>
<tr>
<td>VICNISS</td>
<td>Victorian Healthcare Associated Infection Surveillance</td>
</tr>
</tbody>
</table>
Summary

The 2016 Aged Care National Antimicrobial Prescribing Survey (acNAPS) confirmed the results of the 2015 pilot survey, which identified documentation, duration of prescriptions and widespread use of topical antimicrobials as areas for improvement regarding infections and antimicrobial use in Australian aged care homes.

The acNAPS is a standardised survey instrument to monitor the prevalence of infections and appropriateness of antimicrobial use in Australian aged care homes. The objective of acNAPS is to support the implementation of antimicrobial stewardship programs in aged care homes. As part of the Antimicrobial Use and Resistance in Australia (AURA) Surveillance System, the Australian Commission on Safety and Quality in Health Care (the Commission) funded the National Centre for Antimicrobial Stewardship to develop and pilot the acNAPS in 2015, and to repeat the survey to which this report relates in 2016.

There was a notable increase in participation by aged care homes in the 2016 acNAPS, from 186 facilities in 2015 to 251 in 2016. Audits of records related to antimicrobial use and infections were completed for 13,447 permanent, respite or transitional care residents in 2016. Almost 10% of residents surveyed were prescribed at least one antimicrobial (including topical antimicrobials). The 2016 acNAPS survey identified a number of issues of particular concern:

- A high rate of use of antimicrobials for unconfirmed infections: almost one-third (32.4%) of antimicrobials were prescribed for residents with no signs or symptoms of infection in the week prior to the antimicrobial start date
- Prescriptions did not meet the criteria for an infection: just over two-thirds (67.2%) of prescriptions were for residents who did not have signs or symptoms of infection
- Duration of prescriptions: almost one-quarter (23%) of antimicrobials had been administered for longer than six months
- Widespread use of topical antimicrobials: just over one-quarter (26.9%) of prescriptions; most minor skin infections are self-limiting and resolve without the use of an antibiotic with standard skin hygiene care, and if an antibiotic is required, topical antibiotics are only appropriate for patients with minor, localised areas of impetigo
- Incomplete documentation: the antimicrobial start date was unknown for 3.2% of antimicrobials administered, while the indication for the antimicrobial was not documented for 22.1% of antimicrobials administered, and the review or stop date was not documented for 49.9% of antimicrobials administered.

In view of these findings, the Commission will work with the Department of Health on strategies to promote implementation of antimicrobial stewardship programs in aged care homes through application of the Commission’s Antimicrobial Stewardship Clinical Care Standard.

On the survey day in 2016, 3.1% of aged care home residents had signs or symptoms of infections, while 1,590 residents were prescribed a total of 1,867 antimicrobials.

Respiratory tract (34.5% of the total), skin or soft tissue (29.3%) and urinary tract (14.8%) infections were the three most common indications for prescribing antimicrobials. Cefalexin (21.7%) was the most commonly prescribed antimicrobial. The second most commonly prescribed antimicrobial was topical clotrimazole (13.3%).

In addition to the potential for the prescribing practices identified to promote antimicrobial resistance, they may also contribute to higher risks of medication adverse effects.

All Australian aged care homes and multi-purpose services were able to participate in acNAPS in 2016. All states, remoteness areas and provider types were represented; there were no contributors from the Australian Capital Territory or the Northern Territory. The majority of aged care homes that participated were located in Victoria (64.1%), and 62.5% of participating aged care homes were operated by a state government. Forty-one per cent were classified as inner regional.

The Commission and the National Centre for Antimicrobial Stewardship will continue to collaborate to support acNAPS and to identify priorities for local, state and territory, and national quality improvement interventions to increase appropriate antimicrobial use in Australian aged care homes.
Introduction

The Aged Care National Antimicrobial Prescribing Survey (acNAPS) is a collaborative project between the National Centre for Antimicrobial Stewardship (NCAS), the Guidance group based at Melbourne Health and Victorian Healthcare-Associated Infection Surveillance System (VICNISS) Co-ordinating Centre.

The acNAPS was piloted in 2015 with funding provided by the Australian Commission on Safety and Quality in Health Care (the Commission). The survey was repeated in 2016 to contribute to the Antimicrobial Use and Resistance in Australia (AURA) Surveillance System. The Commission established AURA with funding from the Australian Government Department of Health.

The acNAPS is a standardised survey instrument to monitor the prevalence of infections and appropriateness of antimicrobial use in Australian aged care homes. The acNAPS was based on a similar survey developed by the VICNISS Coordinating Centre and Rural Infection Control Practice Group that was undertaken annually by most Victorian public aged care homes between 2011 and 2014.

Aged care homes are recognised nationally and internationally as an important community setting for monitoring antimicrobial resistance and antimicrobial use, because of the significant burden of infection and colonisation with resistant organisms. International and Australian data have demonstrated high levels of unnecessary antimicrobial prescribing and inappropriate antimicrobial use in this setting.

Surveillance of antimicrobial use and establishing approaches to antimicrobial stewardship that are evidence based and nationally consistent across settings, including aged care homes, are a priority for national action in Australia.

The Australian Government requires residential aged care homes that receive government subsidies to meet accreditation quality standards to ensure they provide the best care possible. Within the current Aged Care Accreditation Standards, Standard 2 (Health and personal care) services are required to ensure medication management is safe and accurate.

To comply with this requirement, residential aged care homes must have an effective antimicrobial stewardship program.

The aim of acNAPS is to promote improved safety and quality of care for residents in Australian aged care homes by monitoring the prevalence of infections and identifying inappropriate antimicrobial use. The long-term objectives of acNAPS are to:

- Describe and compare infection prevalence and antimicrobial prescribing patterns at a local, regional, state and national level
- Help identify priorities for interventions and enable monitoring of their implementation
- Assist aged care providers and clinicians to address the identified priorities
- Assist aged care homes to demonstrate concordance with the Australian Aged Care Accreditation Standards.

Aged care homes contribute voluntarily to acNAPS. After the successful 2015 pilot, feedback from acNAPS participants was reviewed and the methodology and resources were modified accordingly.

This report presents acNAPS data collected between 27 June and 9 September 2016. It builds on the report of the 2015 acNAPS pilot.

The acNAPS data collection tool and all resources are available for aged care homes to use at any time to audit their antimicrobial practices. This allows aged care homes to monitor changes in antimicrobial prescribing and assess implementation of antimicrobial stewardship interventions.
Methods

Survey Method

In 2016 aged care homes could choose to use one of the following two survey methods to collect data for acNAPS. Method 2 was recommended for smaller aged care homes that wished to obtain results from a more appropriate sample size to assess their performance.

In 2015 only the single-day point-prevalence survey (Method 1) was used for data collection.

Method 1: A single-day point prevalence survey only

On the survey day, all residents are screened to determine if they:
• Are prescribed antimicrobial therapy and/or
• Have signs and symptoms of a suspected or confirmed infection

Method 2: A single-day point prevalence survey plus an additional one month retrospective survey

On the survey day, all residents are screened to determine if they:
• Are prescribed antimicrobial therapy and/or
• Have signs and symptoms of a suspected or confirmed infection

In addition, all residents present on the survey day are screened to determine if they were prescribed antimicrobial therapy on any day during the previous month (that was ceased prior to the survey day).

Resources to support data collection

The data collection forms and the information technology support provided to contributors to acNAPS in 2016 are described below.

Residential Aged Care Facility form (Appendix 1)

Each participating aged care home was required to complete the Residential Aged Care Facility form.

New data fields for 2016 compared with 2015 included:
• Use of endorsed guidelines for the management of urinary tract infections (Yes, No)
• Availability of alcohol-based hand rubs (Yes, No)
• Delivery of hand hygiene training sessions (Yes, No).

Data fields that were included in 2015 but discontinued in 2016 were:
• Online planning system used (none, Autumn Care, Lee Total Care, I-Care, Management Advantage and Other)
• Access to microbiology reports (hard copy only, electronic only, both, no access)
• Residents with Hospital in the Aged Care Home or in-reach services (number)
• Residents with an intravenous catheter present on audit date (number).
Antimicrobial and Infection forms (Appendices 2 and 3)

An ‘Antimicrobials’ form was required to be completed for residents who were receiving an antimicrobial on the survey day (Methods 1 and 2), and within the previous month (Method 2 only).

In 2015, if the antimicrobial was prescribed for prophylaxis and the antimicrobial start date was unknown or greater than six months prior to the survey day, data were not collected about microbiology results, urinary investigations and devices and presence of infection signs and/or symptoms. Information was collected in 2016 on antimicrobials prescribed for prophylaxis.

Microbiology data were required to be collected from final microbiology reports about specimens that were taken during the applicable timeframe. If more than one specimen was collected within the timeframe in 2015, only the earliest result was to be reported. In 2016, only the latest result was to be reported.

For the ‘Antimicrobials’ form, the list of infection signs and symptoms were divided into seven body systems: urinary tract, respiratory tract, skin or soft tissue, gastrointestinal tract, oral, eye and other.

For the ‘Infections’ form, gastrointestinal tract was excluded for the 2016 survey for the following reasons:

- Limited resources in aged care to collect and submit data
- Gastrointestinal infections have been infrequently reported as part of point-prevalence studies over six years (VICNISS/Rural Infection Control Practice Group and acNAPS data combined)
- Gastrointestinal outbreaks are reported through communicable diseases channels
- The focus should be on the accurate data collection and follow action for the more common infections – UTIs, respiratory infections and skin/mucosal infections
- Data about gastrointestinal infections are collected for a different timeframe – the antimicrobial start date and six days prior.

For all infection types, explicit constitutional signs and symptoms (fever, leucocytosis, acute change in mental status from baseline and acute functional decline in activities of daily living) were to be considered.

In 2016 the data sources that could be used to report infection signs and symptoms for the ‘Antimicrobials’ and ‘Infections’ forms differed. For the ‘Antimicrobials’ form, the signs and symptoms had to be documented in official documents such as resident histories and hospital discharge summaries. For the ‘Infections’ form, it was acceptable too to use sources such as interviewing a senior aged care home clinician (for example, a nurse in charge), or documents such as handover notes, incident reports and wound folders.

Classification of infections

Infections were classified as aged care home-associated or non-aged care home-associated. The criteria for an infection were based on the internationally recognised 1991 McGeer et al. definitions developed for use in long-term care facilities, and revised by Stone et al. in 2012, taking into account the most recent evidence and the availability of improved diagnostics for surveillance. In the revised version, the majority of definitions were retained with only minor revisions, except for urinary tract infection and respiratory tract infection.

Timeframe

The data submission period for acNAPS was between 27 June 2016 and 9 September 2016.

Recruitment

All Australian aged care homes and multi-purpose services were able to participate in acNAPS.

Numerous strategies were used to notify Australian aged care homes about the 2016 acNAPS and to encourage participation. The objectives were to recapture the aged care homes operated by the Victorian Government that previously participated, and to recruit additional aged care homes in all states and territories.
Participation was promoted from June 2016 onwards through:

- An email to all previous aged care home and multi-purpose service participants
- Newsletters issued by NCAS, the Commission, the then Department of Health and Aged Care, the Australian Aged Care Quality Agency, NPS MedicineWise, the Australasian College for Infection Prevention and Control, AusPharm and the Pharmaceutical Society of Australia
- A letter from the Commission and NCAS, with an enclosed copy of the report of the 2015 acNAPS pilot, to major aged care provider organisations
- A letter to the Australian College of Rural and Remote Medicine
- An email from the Commission to all Australian Multi-Purpose Service Program contacts
- A flyer in most state Aged Care Better Practice Conference satchels
- NCAS and Commission tweets.

Support

NCAS ran 12 optional online training sessions for surveyors – 10 one-hour beginner sessions for new surveyors to provide detailed information on the acNAPS methodology, and two brief refresher sessions for experienced surveyors, mostly focused on changes compared with the 2015 acNAPS. The NAPS coordinating team provided email and telephone assistance on request during the official data submission period.

Limitations

The results of the 2016 acNAPS included in this report should be interpreted in the context of the following limitations.

Sampling and selection bias

The aged care homes included were not a random sample, because participation was voluntary. The majority of participating aged care homes were from Victoria, had participated in similar previous surveys, and were associated with acute healthcare facilities. It is possible that the sample group had relatively high awareness about infections and antimicrobial use. As a result, the results cannot be generalised to all Australian aged care homes.

Infection definitions

The criteria for an infection were based on the internationally recognised surveillance definitions from McGeer et al. as modified by Stone et al. in 2012. The criteria were designed to increase the likelihood that events captured are true infections. Signs and symptoms of infection in older residents may be atypical, so failure to meet the definitions may not fully exclude the presence of a true infection. In addition, the McGeer et al. definitions require microbiological confirmation for some infections (for example, urinary tract infection). This means that these infections will not be confirmed unless specimens are taken.

Seasonal variation

The survey was conducted during winter. The results may have been different in another season.

Validation

The analysis relied on the validity of local assessments.

Comparison with previous surveys

The results of the 2016 acNAPS may not be comparable with the 2015 acNAPS pilot or previous VICNISS surveys because of changes in methodology.
Survey Results

The results of the 2016 acNAPS survey are summarised below.

Surveyors

Surveyors were mostly infection control professionals, nurses and pharmacists.

Participation

In 2016 251 aged care homes submitted data to acNAPS. As shown in Table 1, all states, remoteness areas and organisation types were represented; there were no participants from either the Australian Capital Territory or the Northern Territory.

Table 1  Participating aged care homes by state, remoteness area classification and provider type, acNAPS 2016

<table>
<thead>
<tr>
<th>Participating aged care homes</th>
<th>2015</th>
<th>2016</th>
<th>2016 residents audited</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>State</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NSW</td>
<td>17</td>
<td>9.1</td>
<td>35</td>
</tr>
<tr>
<td>Qld</td>
<td>7</td>
<td>3.8</td>
<td>23</td>
</tr>
<tr>
<td>SA</td>
<td>8</td>
<td>4.3</td>
<td>7</td>
</tr>
<tr>
<td>Tas</td>
<td>6</td>
<td>3.2</td>
<td>10</td>
</tr>
<tr>
<td>Vic</td>
<td>130</td>
<td>69.9</td>
<td>161</td>
</tr>
<tr>
<td>WA</td>
<td>18</td>
<td>9.7</td>
<td>15</td>
</tr>
<tr>
<td>Remoteness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major Cities</td>
<td>51</td>
<td>27.4</td>
<td>74</td>
</tr>
<tr>
<td>Inner regional</td>
<td>81</td>
<td>43.5</td>
<td>104</td>
</tr>
<tr>
<td>Outer regional</td>
<td>45</td>
<td>24.2</td>
<td>61</td>
</tr>
<tr>
<td>Remote</td>
<td>8</td>
<td>4.3</td>
<td>9</td>
</tr>
<tr>
<td>Very remote</td>
<td>1</td>
<td>0.5</td>
<td>3</td>
</tr>
<tr>
<td>Provider type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not-for-profit</td>
<td>37</td>
<td>19.9</td>
<td>76</td>
</tr>
<tr>
<td>Charitable</td>
<td>9</td>
<td>-</td>
<td>25</td>
</tr>
<tr>
<td>Religious</td>
<td>20</td>
<td>-</td>
<td>29</td>
</tr>
<tr>
<td>Community based</td>
<td>8</td>
<td>-</td>
<td>22</td>
</tr>
<tr>
<td>Government</td>
<td>141</td>
<td>75.8</td>
<td>157</td>
</tr>
<tr>
<td>State government</td>
<td>140</td>
<td>-</td>
<td>156</td>
</tr>
<tr>
<td>Local</td>
<td>1</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Private</td>
<td>8</td>
<td>4.3</td>
<td>18</td>
</tr>
<tr>
<td>Total (251)</td>
<td>186</td>
<td>-</td>
<td>251</td>
</tr>
</tbody>
</table>

Audits were completed for 13,447 permanent, respite or transitional care residents in 2016, compared with 7,589 audits in 2015. Most participants were located in Victoria (64.1%), classified as inner regional (41.4%) and operated by a state government (62.5%). A marginally greater number of residents were audited in not-for-profit aged care homes (6,070) compared with government facilities (5,712).

About one third (30.7%) of participating aged care homes chose to use the single-day point-prevalence survey plus an additional one-month retrospective survey method (Method 2).
Aged care home and resident characteristics

In 2016 most aged care homes (97.6%) completed the resources section on the ‘Residential Aged Care Facility’ form. Of those who completed that section, most reported that hand hygiene training sessions were held for staff (94.7%), and that alcohol-based hand-rubs were available (85.3%). In 2016, 84.9% of participants reported that they had access to the Therapeutic Guidelines: Antibiotic, which was similar to 2015 (85.3%).

The National Residential Medication Chart and endorsed guidelines for management of suspected urinary tract infections were used in 44% and 54.3% of participating aged care homes respectively in 2016 (Table 2).

Table 2  Summary of aged care resources, acNAPS contributors, 2016

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Residential Medication Chart used</td>
<td>Yes</td>
<td>110</td>
<td>44.0</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>128</td>
<td>52.2</td>
</tr>
<tr>
<td></td>
<td>Unsure</td>
<td>8</td>
<td>3.3</td>
</tr>
<tr>
<td>Availability of Therapeutic Guidelines: Antibiotic</td>
<td>Electronic</td>
<td>93</td>
<td>38.0</td>
</tr>
<tr>
<td></td>
<td>Hard copy</td>
<td>41</td>
<td>16.7</td>
</tr>
<tr>
<td></td>
<td>Electronic and hard copy</td>
<td>75</td>
<td>30.6</td>
</tr>
<tr>
<td></td>
<td>No access</td>
<td>37</td>
<td>15.1</td>
</tr>
<tr>
<td>Endorsed guidelines routinely used for management of suspected urinary tract infections #</td>
<td>Yes</td>
<td>133</td>
<td>54.3</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>70</td>
<td>28.6</td>
</tr>
<tr>
<td></td>
<td>Unsure</td>
<td>42</td>
<td>17.1</td>
</tr>
<tr>
<td>Alcohol-based hand rubs available</td>
<td>Yes</td>
<td>209</td>
<td>85.3</td>
</tr>
<tr>
<td>Hand hygiene training sessions held for staff</td>
<td>Yes</td>
<td>232</td>
<td>94.7</td>
</tr>
</tbody>
</table>

# Surveyors were not asked to specify which endorsed guidelines were used

Additional data were collected on all residents present in the aged care home on the survey day (Table 3). For both 2015 and 2016, more than half of the residents were older than 85 years, and about one-third were male (34.4% and 32.9% respectively).

Table 3  Number and characteristics of all residents on the survey day, acNAPS contributors, 2016

<table>
<thead>
<tr>
<th>Indicator</th>
<th>2015</th>
<th></th>
<th>2016</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Present on survey day</td>
<td>7,589</td>
<td>-</td>
<td>13,447</td>
<td>-</td>
</tr>
<tr>
<td>&gt;85 years</td>
<td>3,968</td>
<td>52.3</td>
<td>7,307</td>
<td>54.3</td>
</tr>
<tr>
<td>Admitted to hospital in previous 30 days</td>
<td>277</td>
<td>3.7</td>
<td>632</td>
<td>4.7</td>
</tr>
<tr>
<td>Indwelling urinary catheter present</td>
<td>329</td>
<td>4.3</td>
<td>514</td>
<td>3.8</td>
</tr>
</tbody>
</table>

In 2016, 4.7% of residents had been admitted to a hospital in the previous 30 days, and 3.8% had an in-dwelling urinary catheter on the survey day.
Prevalence of antimicrobial use and infections

On the 2016 survey day, the prevalence of residents prescribed at least one antimicrobial was 9.7%, compared with 11.3% in 2015. If all topical antimicrobials were excluded, the prevalence of antimicrobial use was 7.1%, compared with 7.9% in 2015.

In 2016 the prevalence of residents with infection signs or symptoms was 3.1% ($n=417/13,447$), compared with 4.5% in 2015.

Prevalence results on the survey day, classified by state, remoteness and provider type are shown in Table 4.

### Table 4 Prevalence of antimicrobial use and infection, by state, remoteness and provider type on the survey day, acNAPS 2016

<table>
<thead>
<tr>
<th>Category</th>
<th>Homes</th>
<th>Residents prescribed at least one antimicrobial</th>
<th>Residents with infection signs and/or symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>State</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NSW</td>
<td>35</td>
<td>209</td>
<td>12.9%</td>
</tr>
<tr>
<td>Qld</td>
<td>23</td>
<td>248</td>
<td>12.4%</td>
</tr>
<tr>
<td>SA</td>
<td>7</td>
<td>81</td>
<td>13.8%</td>
</tr>
<tr>
<td>Tas</td>
<td>10</td>
<td>47</td>
<td>8.2%</td>
</tr>
<tr>
<td>Vic</td>
<td>166</td>
<td>569</td>
<td>7.6%</td>
</tr>
<tr>
<td>WA</td>
<td>15</td>
<td>146</td>
<td>12.1%</td>
</tr>
<tr>
<td>Remoteness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major Cities</td>
<td>74</td>
<td>623</td>
<td>10.5%</td>
</tr>
<tr>
<td>Inner regional</td>
<td>104</td>
<td>432</td>
<td>8.5%</td>
</tr>
<tr>
<td>Outer regional</td>
<td>61</td>
<td>213</td>
<td>9.7%</td>
</tr>
<tr>
<td>Remote</td>
<td>9</td>
<td>26</td>
<td>19.0% a</td>
</tr>
<tr>
<td>Very remote</td>
<td>3</td>
<td>6</td>
<td>8.8%</td>
</tr>
<tr>
<td>Organisation type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for profit</td>
<td>76</td>
<td>660</td>
<td>10.9%</td>
</tr>
<tr>
<td>Government</td>
<td>157</td>
<td>531</td>
<td>9.3%</td>
</tr>
<tr>
<td>Private</td>
<td>18</td>
<td>109</td>
<td>6.5%</td>
</tr>
<tr>
<td>National total</td>
<td>251</td>
<td>1,300</td>
<td>9.7%</td>
</tr>
</tbody>
</table>

a The rates of antimicrobial use and infections reported in remote aged care homes should be interpreted with caution as only a small number participated in the 2016 acNAPS (see Table 1)

### Antimicrobial use

Antimicrobial data collected using the ‘Antimicrobials’ form for both Method 1 and Method 2 are combined for the analyses presented in this report. In 2016, 1,590 residents were prescribed a total of 1,867 antimicrobials. Just over one-quarter (26.6%) of residents had a documented allergy or adverse drug reaction to an antimicrobial.

### Quality indicators

The two key quality indicators against which aged care homes were assessed for acNAPS were ‘indication documented in the resident’s history and ‘review or stop date documented’. In 2016 the results for both indicators were higher than the 2015 results (Table 5).

### Table 5 Results of quality indicators for all contributing aged care homes, acNAPS 2016

<table>
<thead>
<tr>
<th>Quality Indicator</th>
<th>% of total antimicrobial prescriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2015 ($n=975$)</td>
</tr>
<tr>
<td>Indication documented</td>
<td>68.4</td>
</tr>
<tr>
<td>Review or stop date documented</td>
<td>35.0</td>
</tr>
</tbody>
</table>
There were substantial variations in the two key quality indicators across states, remoteness classifications and organisation types (Table 6). The start date was unknown for 60 (3.2%) prescriptions. For 435 (23.3%) of those prescriptions, the start date was more than six months prior to the survey day.

The 2015 and 2016 acNAPS data is currently being analysed to determine realistic target benchmarks for these measurements.

### Table 6  
**Key results, by state, remoteness and provider type, acNAPS participants, 2016**

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of prescriptions</th>
<th>Indication documented (%)</th>
<th>Review or stop date documented (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>State</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NSW</td>
<td>63</td>
<td>329</td>
<td>63.5</td>
</tr>
<tr>
<td>Gld</td>
<td>30</td>
<td>375</td>
<td>73.3</td>
</tr>
<tr>
<td>SA</td>
<td>109</td>
<td>94</td>
<td>89.0</td>
</tr>
<tr>
<td>Tas</td>
<td>18</td>
<td>58</td>
<td>44.4</td>
</tr>
<tr>
<td>Vic</td>
<td>358</td>
<td>803</td>
<td>76.0</td>
</tr>
<tr>
<td>WA</td>
<td>397</td>
<td>208</td>
<td>57.4</td>
</tr>
<tr>
<td><strong>Remoteness</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major Cities</td>
<td>480</td>
<td>619</td>
<td>70.6</td>
</tr>
<tr>
<td>Inner regional</td>
<td>350</td>
<td>827</td>
<td>66.6</td>
</tr>
<tr>
<td>Outer regional</td>
<td>131</td>
<td>365</td>
<td>64.1</td>
</tr>
<tr>
<td>Remote</td>
<td>14</td>
<td>33</td>
<td>78.6</td>
</tr>
<tr>
<td>Very remote</td>
<td>0</td>
<td>23</td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Organisation type</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for profit</td>
<td>524</td>
<td>832</td>
<td>62.0</td>
</tr>
<tr>
<td>Government</td>
<td>408</td>
<td>844</td>
<td>75.2</td>
</tr>
<tr>
<td>Private</td>
<td>43</td>
<td>191</td>
<td>81.4</td>
</tr>
<tr>
<td><strong>National total</strong></td>
<td>975</td>
<td>1,867</td>
<td>68.4</td>
</tr>
</tbody>
</table>

Table 7 shows the survey results for mode of prescription with a known start date less than six months prior to the survey day. As for 2015 the majority of these 1,372 antimicrobial prescriptions were written by a prescriber rather than being issued in another form.

For 101 (7.4%) of these, the prescription was given via a telephone or fax order. Of those prescriptions, 45.5% were for residents who were examined by a prescriber within three days of the antimicrobial start date, and 49.5% were for residents who were not examined by a prescriber during that time period.

### Table 7  
**Mode of prescription for prescriptions with a known start date less than six months prior to the survey day, acNAPS contributors, 2016**

<table>
<thead>
<tr>
<th>Mode of prescription</th>
<th>2015</th>
<th>%</th>
<th>2016</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written by prescriber</td>
<td>531</td>
<td>85%</td>
<td>1244</td>
<td>90.7%</td>
</tr>
<tr>
<td>Phone or fax order</td>
<td>51</td>
<td>8.2%</td>
<td>101</td>
<td>7.4%</td>
</tr>
<tr>
<td>Unknown</td>
<td>43</td>
<td>6.9%</td>
<td>27</td>
<td>2.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>625</td>
<td>-</td>
<td>1372</td>
<td>-</td>
</tr>
</tbody>
</table>
Most commonly prescribed antimicrobials

The 20 most commonly prescribed antimicrobials for residents in aged care homes that contributed to acNAPS are shown in Figure 1.

In 2016, similar to 2015, the top five antimicrobials prescribed were cefalexin (21.7%), clotrimazole (13.3%), amoxicillin-clavulanate (7.2%), trimethoprim (6.7%) and chloramphenicol (5.8%).

Most antimicrobials were orally (71.0%) or topically (26.9%) administered. The topical antimicrobials most frequently prescribed included:

- Clotrimazole (13.3%)
- Chloramphenicol (5.8%)
- Miconazole (2.1%)
- Gramicidin-neomycin-nystatin (Kenacomb*) (1.9%)
- Nystatin (1.2%).

**Figure 1** Most commonly prescribed antimicrobials, as a percentage of all antimicrobials prescribed in acNAPS contributors, 2016 *

<table>
<thead>
<tr>
<th>Antimicrobial</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cefalexin</td>
<td>21.7%</td>
</tr>
<tr>
<td>Clotrimazole</td>
<td>13.3%</td>
</tr>
<tr>
<td>Amoxicillin-clavulanate*</td>
<td>7.2%</td>
</tr>
<tr>
<td>Trimethoprim</td>
<td>6.7%</td>
</tr>
<tr>
<td>Chloramphenicol</td>
<td>5.8%</td>
</tr>
<tr>
<td>Amoxicillin</td>
<td>5.5%</td>
</tr>
<tr>
<td>Doxycycline</td>
<td>5.5%</td>
</tr>
<tr>
<td>Roxithromycin</td>
<td>3.1%</td>
</tr>
<tr>
<td>Hexamine hippurate</td>
<td>2.8%</td>
</tr>
<tr>
<td>Nitrofurantoin</td>
<td>2.7%</td>
</tr>
<tr>
<td>Flucloxacillin</td>
<td>2.4%</td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>2.1%</td>
</tr>
<tr>
<td>Miconazole</td>
<td>2.1%</td>
</tr>
<tr>
<td>Trimethoprim-sulfamethoxazole*</td>
<td>1.9%</td>
</tr>
<tr>
<td>Kenacomb*</td>
<td>1.9%</td>
</tr>
<tr>
<td>Metronidazole</td>
<td>1.6%</td>
</tr>
<tr>
<td>Clindamycin</td>
<td>1.3%</td>
</tr>
<tr>
<td>Nystatin</td>
<td>1.2%</td>
</tr>
<tr>
<td>Ceftriaxone</td>
<td>1.2%</td>
</tr>
<tr>
<td>Norfloxacin</td>
<td>1.1%</td>
</tr>
</tbody>
</table>

*n=1867 antimicrobial prescriptions
* Kenacomb*
Common indications for prescribing antimicrobials

The 20 most common indications for prescribing antimicrobials in the aged care homes that contributed to acNAPS in 2016 are shown in Figure 2.

In 2016 the top five nominated indications were urinary tract infection: cystitis (17.9%), non-specified skin, soft tissue or mucosal infection (13.4%), pneumonia (chest infection, lower respiratory tract infection), wound infection: non-surgical (5.6%), and cellulitis (5.0%).

The indication was unknown for 5.2% of prescriptions. In 2015 the top five nominated indications were non-specified skin, soft tissue or mucosal infection (17.5%), urinary tract infection: cystitis (16.7%), lower respiratory tract infection (11.8%), tinea (8.4%) and conjunctivitis (5.2%).

Figure 2 Most common indications for antimicrobial prescriptions, as a percentage of all indications, acNAPS contributors, 2016

1 Urinary tract infection (UTI): Cystitis 17.9%
2 Other - Skin, soft tissue or mucosal 13.4%
3 Pneumonia (chest infection, LRTI) 13.3%
4 Wound infection: non-surgical 5.6%
5 Cellulitis 5.0%
6 Conjunctivitis 3.9%
7 Asymptomatic bacteriuria 3.7%
8 Other - Urinary tract 2.4%
9 Catheter associated UTI 2.2%
10 Bronchitis 1.9%
11 Infective exacerbation of COPD 1.5%
12 Tinea 1.5%
13 Other - Eye 1.5%
14 Common cold 1.4%
15 Other - Respiratory tract 1.4%
16 Other - Medical prophylaxis 1.4%
17 Ulcers (including pressure, venous and... 1.2%
18 Genital candidiasis (thrush) 1.0%
19 Wound infection: surgical 0.9%
20 Prosthetic joint infection 0.9%
21 Paronychia (fungal nail infection) 0.9%

NOTES:
COPD = chronic obstructive pulmonary disease
Ulcers = pressure, venous and arterial
In both 2015 and 2016 antimicrobials were mostly prescribed for therapeutic indications – 77.1% and 78.3% respectively.

A breakdown of the most common indications for prescription of antimicrobials for treatment and prophylaxis is shown in Figures 3 and 4. For both 2015 and 2016, urinary tract infections were the most common reason for use of prophylactic antimicrobials (36.3% and 30.4% respectively).

In 2015 unspecified skin, soft tissue or mucosal infections was the most common indication for therapeutic prescriptions (19.4%). In 2016 pneumonia (chest infection, lower respiratory tract infection) was the most common indication (16.6%). The percentage of unspecified skin, soft tissue or mucosal indications decreased to 14.4% compared with 2015.

---

**Figure 3** Most common treatment indications, as a percentage of all treatment indications, acNAPS contributors, 2016

1. Pneumonia (chest infection, LRTI) - 16.6%
2. Urinary tract infection (UTI): Cystitis - 14.5%
3. Other - Skin, Soft Tissue or Mucosal - 14.4%
4. Wound infection: non-surgical - 6.8%
5. Cellulitis - 6.1%
6. Conjunctivitis - 4.3%
7. Bronchitis - 2.4%
8. Catheter associated UTI - 2.3%
9. Asymptomatic bacteriuria - 2.1%

Note: LRTI=lower respiratory tract infection

---

**Figure 4** Most common prophylaxis indications, as a percentage of all prophylaxis indications, acNAPS contributors, 2016

1. Urinary tract infection (UTI): Cystitis - 30.4%
2. Asymptomatic bacteriuria - 9.9%
3. Other - Skin, Soft Tissue or Mucosal - 9.9%
4. Other - Urinary Tract - 6.7%
5. Other - Medical Prophylaxis - 6.7%
6. Conjunctivitis - 2.5%
7. Medical prophylaxis - 2.5%
8. Influenza - 2.2%
9. Catheter associated UTI - 0.5%
Microbiology, urinary investigations and infections

Additional information regarding microbiology, urinary investigations and signs and symptoms of infection present in the week prior to the antimicrobial start date was collected, using the ‘Antimicrobials’ form, for a subset of prescriptions for which the known start date was less than six months prior to the survey day.

Of the total 1,867 antimicrobial prescriptions, additional information was collected for the 1,372 (73.5%) prescriptions for which start date was known and was less than six months prior to the survey day. A microbiological sample was collected for 20.2% (n=277/1,372) of those prescriptions within the week prior to the antimicrobial start date. Specimens were mostly collected for urinary tract infections (43.1%) as shown in Figure 5.

Figure 5 Percentage of antimicrobial prescriptions that had microbiological samples taken, by body system, acNAPS contributors, 2016 * #

- Skin, Soft Tissue or Mucosal (396): 13.9% collected, 86.1% not collected
- Respiratory Tract (379): 12.1% collected, 87.9% not collected
- Urinary Tract (364): 43.1% collected, 56.9% not collected
- Eye (77): 9.1% collected, 90.9% not collected
- Indication Unknown (43): 7.0% collected, 93.0% not collected
- Oral/Dental (25): 4.0% collected, 96.0% not collected
- Ear, Nose and Throat (25): 4.0% collected, 96.0% not collected
- Genital (23): 13.0% collected, 87.0% not collected
- Bone and Joint (20): 100.0% collected
- Medical Prophylaxis (9): 100.0% collected
- Gastrointestinal/Abdominal (9): 22.2% collected, 77.8% not collected
- Systemic (2): 100.0% collected

* The number of prescriptions is displayed next to the name of each body system
# Body system as per the indication specified for commencing the antimicrobial
Infection signs and/or symptoms in the week leading up to the survey

Just over two-thirds of prescriptions (67.6%) were for residents with infection signs or symptoms that were present in the week prior to the antimicrobial start date. Almost 80% of these infections were classified as aged care home-associated and 39.2% (n=364/928) met the McGeer et al. confirmed infection criteria. Compliance with the McGeer et al confirmed infection criteria was highest for eye (100%) and skin/soft tissue infections (48.2%) as shown in Table 8.

Table 8 Number and percentage of antimicrobial prescriptions where infection signs and/or symptoms were recorded and McGeer et al. criteria were met, by body system, acNAPS participants, 2016

<table>
<thead>
<tr>
<th>Body system</th>
<th>Number of prescriptions</th>
<th>ACH-associated suspected infections</th>
<th>Infections that met McGeer et al criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>% (n=928)</td>
<td>Number</td>
</tr>
<tr>
<td>Respiratory tract</td>
<td>320</td>
<td>34.5</td>
<td>286</td>
</tr>
<tr>
<td>Skin, soft tissue</td>
<td>272</td>
<td>29.3</td>
<td>245</td>
</tr>
<tr>
<td>Urinary tract</td>
<td>137</td>
<td>14.8</td>
<td>111</td>
</tr>
<tr>
<td>Eye</td>
<td>58</td>
<td>6.3</td>
<td>56</td>
</tr>
<tr>
<td>Other body system</td>
<td>28</td>
<td>3.0</td>
<td>21</td>
</tr>
<tr>
<td>Oral</td>
<td>16</td>
<td>1.7</td>
<td>13</td>
</tr>
<tr>
<td>Gastrointestinal tract</td>
<td>3</td>
<td>0.3</td>
<td>2</td>
</tr>
<tr>
<td>TOTAL</td>
<td>928</td>
<td>-</td>
<td>734</td>
</tr>
</tbody>
</table>

Note: some prescriptions may have had infection signs or symptoms from more than one body system.

Infections on the survey day itself

On the survey day there were 417 residents who were reported to have signs or symptoms of an infection. For 10.6% of the 443 suspected infections, a microbiological specimen was taken in the 48 hours prior to the survey date. The majority of those (63.8%) were urine specimens. Overall 36.2% of suspected infections met the McGeer et al. confirmed infection definitions (Table 9).

The zero percentage for urinary tract infections may, in part, be explained by the requirements of the McGeer et al. confirmed infection criteria. In order to meet the definition for a McGeer et al.-confirmed urinary tract infection, a microbiological urine specimen must be taken and an organism must be isolated by culture.

Table 9 Number and percentage of residents with infection signs and/or symptoms by body system*, acNAPS contributors, 2016

<table>
<thead>
<tr>
<th>Body system</th>
<th>Number of suspected infections</th>
<th>ACH associated suspected infections</th>
<th>Infections that met McGeer et al criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Number</td>
<td>%</td>
</tr>
<tr>
<td>Respiratory tract</td>
<td>155</td>
<td>132</td>
<td>85.2</td>
</tr>
<tr>
<td>Skin, soft tissue</td>
<td>145</td>
<td>123</td>
<td>84.8</td>
</tr>
<tr>
<td>Urinary tract</td>
<td>79</td>
<td>63</td>
<td>79.8</td>
</tr>
<tr>
<td>Other body system</td>
<td>34</td>
<td>27</td>
<td>79.4</td>
</tr>
<tr>
<td>Eye</td>
<td>20</td>
<td>17</td>
<td>85.0</td>
</tr>
<tr>
<td>Oral</td>
<td>10</td>
<td>8</td>
<td>80.0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>443</td>
<td>370</td>
<td>88.7</td>
</tr>
</tbody>
</table>

* On the survey day data were not collected on gastrointestinal tract infections
Conclusion and future plans

The 2016 acNAPS has confirmed the 2015 pilot acNAPS results, which identified the need for improvement in practice regarding infections and antimicrobial use in Australian aged care homes. These issues include antimicrobial prescriptions for unconfirmed infections, prolonged duration of antimicrobial prescriptions and the widespread use of topical antimicrobials.

Results of particular concern in 2016 were:

• About one-third (32.4%) of the antimicrobials were prescribed for residents with no infection signs or symptoms in the week prior to the antimicrobial start date
• Antimicrobials had been commenced more than six months before the survey day for 23.3% prescriptions.

Coupled with poor compliance with documentation of prescribing elements – such as clinical indication, dose and intended duration of prescriptions – these issues may contribute to higher risks of medication adverse effects and may promote antimicrobial resistance. The results reinforce the urgent need for antimicrobial stewardship programs to be implemented in Australian aged care homes.

The Commission will work with the Department of Health on strategies to promote implementation of antimicrobial stewardship programs in aged care homes through application of the Commission’s Antimicrobial Stewardship Clinical Care Standard.

The Commission and NCAS will continue to collaborate to support acNAPS, and identify priorities for local, state and territory, and national quality improvement interventions to increase appropriate antimicrobial use in Australian aged care homes. The frequency and scope of future acNAPS surveys will be also be reviewed regularly.
## Appendix 1  Residential Aged Care Facility Form

<table>
<thead>
<tr>
<th>Residential Aged Care Facility name</th>
<th>Survey date</th>
</tr>
</thead>
</table>

### 1. Facility Data

- **National Residential Medication Chart used?**
  - yes
  - no
  - unsure

- **Access to Therapeutic Guidelines: Antibiotic**
  - hard copy only
  - electronic only
  - both
  - no access

- **Endorsed guidelines routinely used for the management of suspected urinary tract infections**
  - yes
  - no

- **Pharmacy services provided**
  - supply
  - education
  - auditing
  - medicine review (chart review or medication management)

- **Alcohol based hand-rubs available (in all rooms and/or staff use portable personal dispensers)**
  - yes
  - no

- **Hand hygiene training sessions are held for staff**
  - yes
  - no

### 2. Resident Data

Enter the total number of residents with the following characteristics on the survey day.

You may wish to use the Worksheet on the following page to help identify these residents.

<table>
<thead>
<tr>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

- **Number of residents present**

- **Residents aged > 85 years**

- **Male residents**

- **Residents admitted to hospital in previous 30 days**

- **Residents currently in hospital with a suspected or confirmed infection**

- **Residents with a urinary catheter present on the survey day**

- **Residents prescribed an antimicrobial on the survey day**
  - Complete an Antimicrobials Form

- **Residents with signs and/or symptoms of infection on the survey day**
  - Complete an Infections Form

### 3. Additional Resident Data

(If conducting method 2, see pg. 4 of the User Guide)

- **Residents prescribed an antimicrobial during the last month (that were ceased prior to the survey day)**
  - Complete an Antimicrobials Form
# Antimicrobials Form

Has the resident been prescribed an antimicrobial?  □ no  □ yes; complete an Antimicrobials Form (separate forms required for antimicrobials that have different start dates)

Does the resident have signs and/or symptoms of infection on the survey day?  □ no  □ yes; complete an Infections Form

## 1. Demographics

<table>
<thead>
<tr>
<th>Identification number</th>
<th>Date of birth/age</th>
<th>Gender</th>
<th>Admitted to hospital within 30 days</th>
<th>Urinary catheter present</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Yes / No</td>
<td>Yes / No</td>
</tr>
</tbody>
</table>

## 2. Antimicrobials

<table>
<thead>
<tr>
<th>Start date</th>
<th>Antimicrobial</th>
<th>Dose</th>
<th>Route</th>
<th>Freq</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Initial mode of prescription*
- Written by prescriber
- Phone or fax order
- Yes
- No
- Not applicable

*Indication documented*
- Yes
- No

*Specificity documented or presumed indication*
- Yes
- No

*Was this for prophylaxis?*
- Yes
- No

*Revival date documented*
- Yes
- No

*If the start date is unable to be determined or if > 6 months, document; “unknown” or > 6 months and do not complete Sections 3, 4 and 5

## 3. Microbiology

- Complete for specimens collected on the start date or in the 6 days prior

<table>
<thead>
<tr>
<th>Specimen</th>
<th>Date collected</th>
<th>Final report attached</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stool</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sputum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swab</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## 4. Urinary investigations and devices

- For urinary tract indications only

<table>
<thead>
<tr>
<th>Urinary catheter</th>
<th>Date collected</th>
<th>Final report attached</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Urinary dipstick: performed on the start date or in the 6 days prior
- Not performed
- Performed; date
- Positive
- Negative
- 1+
- 2+
- 3+
- Not recorded

* Do not include if the catheter was inserted after the antimicrobial was first administered

## Comments

acNAPS Antimicrobials Form v2 20160524
5. Signs and symptoms; complete for all signs and/or symptoms of suspected or confirmed infections documented on the start date or in the 6 days prior

5a. Constitutional criteria
- No constitutional criteria identified

Fever
- Single oral temperature >37.8°C
- Repeated oral temperature >37.2°C, or rectal temperature >37.5°C
- Single temperature > 1.1°C over baseline from any site
- Chills or rigors

Acute change in mental status from baseline
- Confusion, forgetfulness, etc.
- Acute onset
- Fluctuating course
- Inattention
- Disorganised thinking or altered level of consciousness

Acute functional decline from baseline
- Ticks all relevant:
  - Bed mobility
  - Transfer
  - Locomotion within facility
  - Dressing
  - Toilet use
  - Personal hygiene
  - Eating
- As according to full blood examination results
  - White blood cells elevated (WBC, leucocytes, etc.)
  - Left shift documented

5b. System criteria; multiple system criteria are possible

<table>
<thead>
<tr>
<th>Urinary tract</th>
<th>Respiratory tract</th>
<th>Skin or soft tissue</th>
<th>Gastrointestinal tract</th>
</tr>
</thead>
<tbody>
<tr>
<td>RACF associated</td>
<td>RACF associated</td>
<td>RACF associated</td>
<td>RACF associated</td>
</tr>
<tr>
<td>Non-RACF associated</td>
<td>Non-RACF associated</td>
<td>Non-RACF associated</td>
<td>Non-RACF associated</td>
</tr>
</tbody>
</table>

- All urinary tract criteria
  - Acute pain on urination
  - Acute pain, swelling or tenderness of the testes, epididymis or prostate
  - New onset low blood pressure, with no alternate site of infection
  - Either acute change in mental status or acute functional decline with no alternate diagnosis
  - New onset chest wall pain, back pain or tenderness
  - New onset suprapubic pain
  - Pyuria discharging from around a catheter
  - Blood in urine
  - Incontinence
  - Urgency
  - Frequency

- All respiratory tract criteria
  - Runny nose or sneezing
  - Stuffy nose
  - Sore throat
  - Hoarseness
  - Pain on swallowing
  - Swollen or tender neck glands
  - New headache or eye pain
  - Myalgia or muscle pain
  - Malaise
  - Loss of appetite
  - New or increased cough
  - New or increased sputum
  - O₂ saturation < 94% on room air or a reduction of > 3% from baseline
  - New or changed lung abnormalities
  - Chest wall pain
  - Respiratory rate ≥ 25 breaths per minute
  - Chest X-ray showing pneumonia or new infiltrate

- Cellulitis, soft tissue or wound infection
  - Pain present at wound, skin or soft tissue site
  - Heat
  - Redness
  - Swelling
  - Tenderness or pain
  - Serous discharge

- Herpes simplex or zoster
  - Vesicular rash
  - Doctor or laboratory confirmation

- Fungal skin infection
  - Characteristic rash or lesions
  - Doctor or laboratory confirmation

- Scabies
  - Maculopapular rash
  - Itch
  - Doctor or laboratory confirmation
  - Linkage to laboratory confirmed scabies

<table>
<thead>
<tr>
<th>Oral</th>
<th>Eye</th>
</tr>
</thead>
<tbody>
<tr>
<td>RACF associated</td>
<td>RACF associated</td>
</tr>
<tr>
<td>Non-RACF associated</td>
<td>Non-RACF associated</td>
</tr>
</tbody>
</table>

- Oral candidiasis
  - Presence of raised white patches or plaques in mouth
  - Doctor or dental provider confirmation

- Conjunctivitis
  - Pur from one or both eyes present > 24 hours
  - New or increased conjunctival redness
  - Itching or pain > 24 hours

Other infections not listed above
- RACF associated
- Non-RACF associated
Appendix 3: Infections Form

Has the resident been prescribed an antimicrobial? □ no □ yes; complete an Antimicrobials Form (separate forms required for antimicrobials that have different start dates).

Does the resident have signs and/or symptoms of infection on the survey day? □ no □ yes; complete an Infections Form

1. Demographics
   - Identification number
   - Date of birth/age
   - Gender: M / F / O
   - Admitted to hospital within 30 days: Yes / No
   - Urinary catheter present: Yes / No

2. Constitutional criteria: completed for all residents with any signs and/or symptoms of a suspected or confirmed infection on the survey day or in the 2 days prior
   - No constitutional criteria identified

   Fever
   - Single oral temperature > 37.8°C
   - Repeated oral temperature > 37.2°C, or rectal temperature > 37.5°C
   - Single temperature > 1.1°C over baseline from any site
   - Chills or rigors

   Acute change in mental status from baseline
   (confusion, forgetfulness, etc.)
   - Acute onset
   - Fluctuating course
   - Inattention
   - Disorganised thinking or altered level of consciousness

   Acute functional decline from baseline
   - Tick all relevant:
     - Bed mobility
     - Transfer

   As according to full blood examination results
   - White blood cells elevated (WBC, leucocytes, etc.)
   - Left shift documented

3. System criteria: completed for all residents with any signs and/or symptoms of a suspected or confirmed infection on the survey day or in the 2 days prior

   All urinary tract criteria
   - Acute pain on urination
   - Acute pain, swelling or tenderness of the testes, epididymis or prostate
   - New onset chest wall or back pain or tenderness
   - New onset suprapubic pain
   - Pus discharging from around a catheter
   - Blood in urine
   - New or marked increase in:
     - Incontinence
     - Urgency
     - Frequency

   Urine dipstick
   - not performed
   - performed, date / /
   - Nitrite
   - negative □ positive □ not recorded
   - Leucocyte esterase
   - negative 1+ □ 2+ □ 3+ □ not recorded

   Urine specimen
   - not collected
   - collected
   - Date collected / /
   - final report attached
<table>
<thead>
<tr>
<th>Category</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory tract</td>
<td>Runny nose or sneezing, Sore throat, Hoarseness, Pain on swallowing, Swollen or tender neck glands, New headache or eye pain, Myalgia or muscle pain, Malaise.</td>
</tr>
<tr>
<td>Sputum</td>
<td>Loss of appetite, New or increased cough, New or increased sputum, O₂ saturation &lt; 94% on room air or a reduction of &gt; 3% from baseline, New or changed lung abnormalities, Chest wall pain, Respiratory rate &gt; 25 breaths per minute, Chest X-ray showing pneumonia or new infiltrate.</td>
</tr>
<tr>
<td>Respiratory virus test</td>
<td>Not collected, collected, Date collected, final report attached.</td>
</tr>
<tr>
<td>Skin or soft tissue</td>
<td>Cellulitis, soft tissue or wound infection, Heat, Redness, Swelling, Tenderness or pain, Serous discharge.</td>
</tr>
<tr>
<td>Fungal skin infection</td>
<td>Characteristic rash or lesions, Doctor or laboratory confirmation.</td>
</tr>
<tr>
<td>Herpes simplex or zoster</td>
<td>Vesicular rash, Doctor or laboratory confirmation.</td>
</tr>
<tr>
<td>Swab</td>
<td>Not collected, collected, Date collected, final report attached.</td>
</tr>
<tr>
<td>Oral</td>
<td>Oral candidiasis, Presence of raised white patches or plaques in mouth, Doctor or dental provider confirmation.</td>
</tr>
<tr>
<td>Eye</td>
<td>Conjunctivitis, Pus from one or both eyes present &gt; 24 hours, New or increased conjunctival redness, Itching or pain &gt; 24 hours.</td>
</tr>
<tr>
<td>Other infections not listed above</td>
<td>RACF associated, Non-RACF associated.</td>
</tr>
</tbody>
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References


Further information about acNAPS can be obtained by phoning (03) 9342 9415 or emailing support@naps.org.au.