As the atlas indicates, variation in health care is a result of an intricate interplay of factors, including differences in the health and socioeconomic status of populations and their access to health care, as well as differences between systems, services and clinicians. Patient and clinician preferences also play an important role. Some of this variation is warranted and some is unwarranted. The challenge is identifying which variation is unwarranted. In some instances, regardless of variation, overall rates of use may be a concern.

The atlas has been developed with strong clinical input and offers suggestions on where to focus efforts to investigate variation and tackle any unwarranted variation. Strategies to address unwarranted variation are complex and require a multifaceted and trans-disciplinary approach.

When considering the key findings, it is important to note that not all dispensing is captured in remote Aboriginal Health Services due to the direct supply of some medicines. This should be recognised as more than a data limitation, because low levels of dispensing could be occurring in remote areas.

Primary health networks (PHNs) are currently developing their work plans and will be commissioning services based on their local health needs assessments and the key objectives of the PHN program. The data on variation presented here can inform these planning processes. PHNs with high or low outlier areas may consider the factors that are driving the observed rates and determine whether rates of intervention should be further analysed and monitored in order to improve appropriateness of care.

This section presents the key findings and the Commission’s recommendations for action.
Recommendations
A strategy to address unwarranted clinical variation

1. The Commission works with the Australian Government Department of Health, state and territory health departments, clinical and consumer groups to develop a strategy for reducing unwarranted clinical variation.

2. The Commission will continue to collect information and publish details of geographic clinical variation in an atlas series.

Review of outliers

3. State and territory health departments, local health networks, primary health networks, clinical networks, and relevant state bodies responsible for quality and safety of health care determine the need to review high and low outliers presented in the atlas and develop local priority action plans for addressing atlas findings.

4. Primary health networks investigate primary care strategies for reducing unwarranted variation that have been successful in other regions.

5. State and territory health departments, local health networks, primary health networks and relevant state bodies responsible for quality and safety of health care identify appropriate additional data analyses to complement a local priority action plan.

6. Boards of public and private hospitals monitor, as part of their responsibilities under National Safety and Quality Health Services Standard 1, the effectiveness of the implementation of the relevant Clinical Care Standards.
Key findings and recommendations

1. Antimicrobial dispensing

Australia has very high overall rates of community antimicrobial use compared with some countries. In 2013–14, more than 30 million prescriptions for antimicrobials were dispensed. Many of these were unnecessary because antimicrobials are frequently used to treat infections for which they provide little or no benefit. The rate of total antimicrobial dispensing was over 11 times more in the area with the highest rate compared to the area with the lowest rate. High community use of antimicrobials increases the risk that bacteria will become resistant to these medicines and they will cease to be effective against serious life-threatening conditions. Even when the areas with highest and lowest rates were excluded, the rate was nearly twice as high in some parts of Australia than others. Western Australia appears to be much more successful than other parts of the country in keeping rates of antimicrobial dispensing relatively low – the highest rate for any area in Western Australia was lower than the Australian average rate.

Use of a specific class of antimicrobials called quinolones was low compared with other countries because their use is restricted in Australia. Nevertheless, more than 350,000 prescriptions were dispensed for these antimicrobials in 2013–14, and considerable variation was seen across Australia. The rates of quinolone dispensing were over 8 times more in the area with the highest rate compared to the area with the lowest rate. Even when the areas with the highest and lowest rates were excluded, rates of dispensing of quinolones were over 2.5 times more in some areas of Australia than in others.

There was variation in dispensing across the country for amoxycillin, the most commonly dispensed antimicrobial in Australia, and for amoxycillin-clavulanate, a modified version of amoxycillin. Combined, these two antimicrobials accounted for more than 10 million prescriptions dispensed under the PBS in Australia in 2013–14. The rates of amoxycillin dispensing were 20.5 times more in the area with the highest rate compared with the area with the lowest rate, and 2.7 times when the highest and lowest rates were excluded. The rates of amoxycillin-clavulanate dispensing were 16 times more in the area with the highest rate compared with the area with the lowest rate, and 2.2 times when the highest and lowest rates were excluded.

<table>
<thead>
<tr>
<th>Data Item</th>
<th>Range across local areas per 100,000</th>
<th>Times difference (excluding outliers)</th>
<th>Number per annum</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Antimicrobial dispensing</td>
<td>14,895 to 171,841</td>
<td>1.9</td>
<td>30,355,539</td>
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<tr>
<td>1.2 Quinolone dispensing</td>
<td>281 to 2,339</td>
<td>2.6</td>
<td>354,403</td>
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<tr>
<td>1.3 Amoxycillin and amoxycillin-clavulanate dispensing</td>
<td>2,186 to 44,884</td>
<td>2.7</td>
<td>5,697,634</td>
</tr>
<tr>
<td></td>
<td>1,998 to 32,058</td>
<td>2.2</td>
<td>4,621,154</td>
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</tbody>
</table>
Recommendations

1a. The Australian Government Department of Health develops national benchmarks for best practice prescribing of antimicrobial agents. Findings from the atlas should be used to identify variations from these benchmarks and target interventions to reduce inappropriate use.

1b. The Pharmaceutical Benefits Advisory Committee examines the use of topical quinolones and access to amoxicillin-clavulanate on the PBS.

1c. Antimicrobial stewardship programs are implemented in general practice in line with recommendations in the National Antimicrobial Resistance Strategy to reduce the use of amoxicillin and amoxicillin-clavulanate.

1d. The relevant clinical colleges support incorporation of decision support software in prescribing software, and review the current default repeat prescriptions option.

1e. Primary health networks and local health networks track and compare antimicrobial prescribing rates where they do not do so already.

1f. National boards and the Australian Health Practitioner Regulation Agency consider what can be done to ensure relevant registered health practitioners have up-to-date knowledge of prescribing guidelines for antimicrobials.
Key findings and recommendations

2. Diagnostic interventions

Almost 600,000 MBS-funded fibre optic colonoscopies were performed in Australia in 2013–14, and the number of services is likely to rise as the National Bowel Cancer Screening Program increases its coverage. Very large variations were seen in colonoscopy rates across the country – the highest rate was 30 times that of the lowest. Even when highest and lowest rates were removed, the rate across local areas was more than four times higher in one local area compared with another. Rates were higher in high socioeconomic populations in metropolitan areas and decreased with distance from major cities. Participation in the National Bowel Cancer Screening Program follows similar trends, with higher participation in metropolitan areas.

Approaches to screening and initial treatment for prostate cancer are controversial. More than 25,000 MBS-funded prostate biopsies were performed in Australia in 2013–14, with considerable variation across the country.

Low back pain is a frequent reason for presentation to general practitioners, who may refer patients for diagnostic imaging. However, inappropriate use of diagnostic imaging exposes patients to unnecessary radiation. More than 314,000 MBS-funded computed tomography (CT) scans of the lumbar spine were performed in 2013–14, with marked variation around Australia, suggesting overuse of this investigation.

<table>
<thead>
<tr>
<th>Data item</th>
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<th>Times difference (excluding outliers)</th>
<th>Number per annum</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 Fibre optic colonoscopy</td>
<td>146 to 4,374</td>
<td>4.1</td>
<td>589,748</td>
</tr>
<tr>
<td>2.2 Prostate biopsies 40 years and over</td>
<td>150 to 1,357</td>
<td>2.7</td>
<td>25,869</td>
</tr>
<tr>
<td>2.3 Computed tomography of the lumbar spine</td>
<td>209 to 2,464</td>
<td>2.7</td>
<td>314,033</td>
</tr>
</tbody>
</table>
Fibre optic colonoscopy

2a. The MBS Review Taskforce reviews relevant MBS item(s) to align reimbursement with adherence to the existing National Health and Medical Research Council (NHMRC) clinical practice guidelines for surveillance colonoscopy.

2b. Primary health networks work with general practitioners to ensure colonoscopy referral practices align with applicable NHMRC guidelines and the Royal Australian College of General Practitioners’ guidelines for preventive activities in general practice (the red book). In addition, general practitioners recommend faecal occult blood test screening to age-appropriate patients.

2c. The Australian Government Department of Health continues to use educational materials related to the National Bowel Cancer Screening Program to promote key health messages, in particular among lower socioeconomic and rural and remote populations, about faecal occult blood testing and the substantial benefits of early diagnosis on patient outcomes.

2d. The Commission hosts a roundtable of clinical, consumer, and Australian, state and territory government representatives to support specialty-led strategies to improve adherence to the relevant NHMRC guidelines for surveillance colonoscopy in bowel cancer screening.

Prostate biopsies 40 years and over

2e. Clinicians follow the clinical practice guidelines for prostate-specific antigen testing and early management of test-detected prostate cancer from the Prostate Cancer Foundation of Australia and Cancer Council Australia, and the Royal Australian College of General Practitioners’ Guidelines for preventive activities in general practice (the red book).

2f. Clinicians use the prostate cancer screening decision support tool produced by the Royal Australian College of General Practitioners for patients who request screening.

2g. NPS MedicineWise, as part of its Choosing Wisely campaign, monitors effective implementation of the Royal College of Pathologists of Australasia recommendations on prostate-sensitive antigen testing.

Computed tomography of the lumbar spine

2h. The Commission reviews the need for updating the NHMRC guidelines on lumbar imaging in acute non-specific low back pain as part of the ongoing national guideline prioritisation processes.

2i. Relevant clinical colleges review the availability and quality of education and training materials, and continuing professional development courses, to improve clinicians’ knowledge and skills in referring patients or using CT imaging of the lumbar spine.

2j. NPS MedicineWise, as part of its Choosing Wisely campaign, monitors effective implementation of the Royal Australian and New Zealand College of Radiologists recommendation that imaging should not be performed in patients with non-specific acute low back pain.
Key findings and recommendations

3. Surgical interventions

The atlas examined seven surgical interventions and found highly variable use across Australia. In some areas, people 55 years and over had rates of knee arthroscopy that were more than seven times those of people living elsewhere. Even when the areas with the highest and lowest rates were excluded, knee arthroscopy hospital admission rates were more than four times higher in one local area compared to another. Despite the evidence that knee arthroscopy is of limited value for people with osteoarthritis and may cause harm, more than 33,000 operations were performed on this age group during 2012–13. Many of these people will have degenerative disease in their knees and will not benefit from this intervention.

The number of patients undergoing MBS-funded cataract surgery was over seven times higher in some parts of Australia than in others. Even when the highest and lowest rates were excluded, the cataract surgery rate was almost three times higher in one local area compared to another. Despite the evidence that cataract surgery is becoming less effective as people become older, more than 160,000 operations were performed on this age group during 2012–13.

From 2010–11 to 2012–13, there were 17,000 lumbar spine surgery admissions on average each year. This includes spinal fusion procedures. There is limited evidence to support lumbar spine fusion surgery for painful degenerative back conditions. The outcomes for patients who receive these interventions are unknown.

Women living in regional areas of Australia were over five times more likely to undergo a hysterectomy or endometrial ablation than those living in metropolitan areas. Even when the highest and lowest rates were excluded, the rate was almost three times higher in one local area compared to another.

The atlas includes two ear, nose and throat procedures, tonsillectomy and myringotomy. Even when the highest and lowest rates were excluded, tonsillectomy and myringotomy rates were around three times higher in one local area compared to another. Each procedure was performed more than 30,000 times during 2012–13, with people in some areas more than six times more likely to undergo the procedure. Australia does not have recent evidence-based guidelines for performing tonsillectomy and myringotomy.

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<thead>
<tr>
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<tr>
<td>3.1 Knee arthroscopy hospital admissions 55 years and over</td>
<td>185 to 1,319</td>
<td>4.2</td>
<td>33,682</td>
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<tr>
<td>3.2 Cataract surgery 40 years and over</td>
<td>357 to 2,555</td>
<td>2.8</td>
<td>160,489</td>
</tr>
<tr>
<td>3.3 Lumbar spine surgery hospital admissions 18 years and over</td>
<td>36 to 173</td>
<td>2.3</td>
<td>17,305</td>
</tr>
<tr>
<td>3.4 Radical prostatectomy hospital admissions 40 years and over</td>
<td>69 to 282</td>
<td>2.2</td>
<td>8,496</td>
</tr>
<tr>
<td>3.5 Hysterectomy and endometrial ablation hospital admissions</td>
<td>131 to 687</td>
<td>3.3</td>
<td>34,181</td>
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<tr>
<td>3.6 Tonsillectomy hospital admissions 17 years and under</td>
<td>254 to 1,640</td>
<td>3.0</td>
<td>38,575</td>
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<tr>
<td>3.7 Myringotomy hospital admissions 17 years and under</td>
<td>205 to 1,398</td>
<td>3.3</td>
<td>34,065</td>
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<tr>
<td>3.8 Hip fracture hospital admissions 65 years and over</td>
<td>484 to 787</td>
<td>1.5</td>
<td>21,502</td>
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<tr>
<td>3.9 Hip fracture average length of stay in hospital by peer group – 65 years and over</td>
<td>5.3 to 16.9 days</td>
<td>2.1</td>
<td>14,744 admissions</td>
</tr>
</tbody>
</table>
Recommendations

Knee arthroscopy hospital admissions 55 years and over

3a. The Commission recommends to the MBS Review Taskforce that, given the lack of clinical evidence for the efficacy of knee arthroscopy for people with degenerative changes in the knee that the relevant MBS item(s) be amended to remove knee arthroscopy for this group.


3c. State and territory health departments consider mechanisms to improve coding, analytics and collection of outcome data for knee arthroscopy.

3d. Relevant clinical colleges ensure education and training material, as well as continuing professional development requirements, are in keeping with the applicable Clinical Care Standard for management of osteoarthritic knee pain.

3e. The Commission promotes the collection of patient-reported outcome measures for surgical interventions for knee pain.

Cataract surgery 40 years and over

3f. The Commission works with the relevant clinical colleges to develop a Clinical Care Standard for cataract surgery, including considering pre- and post-operative visual acuity scoring.

3g. The Commission undertakes a quality review of existing patient information about cataract surgery as part of developing supporting material for a Clinical Care Standard on cataract surgery.

3h. The MBS Review Taskforce reviews the relevant MBS item(s) for cataract surgery to require adherence to an applicable Clinical Care Standard for the surgery.

3i. State and territory health departments consider mechanisms to improve coding, analytics and collection of outcome data on cataract surgery.

3j. Relevant clinical colleges ensure education and training material, as well as continuing professional development requirements, are in keeping with the applicable Clinical Care Standard on cataract surgery.

3k. The Commission promotes the collection of patient-reported outcome measures for cataract surgery.

Lumbar spine surgery hospital admissions 18 years and over

3l. State and territory health departments consider mechanisms to improve coding, analytics and collection of outcome data on lumbar spine surgery in adults.

3m. The Commission promotes the collection of patient-reported outcome measures for lumbar spine surgery.

Radical prostatectomy hospital admissions 40 years and over

3n. State and territory health departments consider mechanisms to improve coding, analytics and collection of outcome data on radical prostatectomy.

3o. The Commission promotes the collection of patient-reported outcome measures for radical prostatectomy.
Key findings and recommendations

3. Surgical Interventions

Hysterectomy, endometrial ablation hospital admissions

3p. The Commission works with the Royal Australian and New Zealand College of Obstetricians and Gynaecologists and consumer groups to develop a Clinical Care Standard for managing menorrhagia.

3q. The Commission develops a patient decision support tool to increase women’s knowledge of treatment options for menorrhagia and their benefits and risks. In addition, mechanisms are considered so that relevant clinical colleges can train clinicians to use this patient decision tool.

3r. Relevant clinical colleges ensure education and training material, as well as continuing professional development requirements, are in keeping with the applicable Clinical Care Standard for menorrhagia.

Tonsillectomy hospital admissions 17 years and under

3s. The Commission reviews the need for evidence-based clinical guidelines on tonsillectomy in children as part of the ongoing national guideline prioritisation processes.

3t. The Commission reviews current patient information about tonsillectomy in Australia, in conjunction with relevant clinical colleges and consumer groups, to determine the need for better patient and carer information, and shared decision making tools, and also the need to update existing materials.

Myringotomy hospital admissions 17 years and under

3u. The Commission reviews the need for evidence-based clinical guidelines on myringotomy in children as part of ongoing national guideline prioritisation processes.

3v. State and territory health departments, in conjunction with the National Aboriginal Community Controlled Health Organisation, monitor adherence to the guidelines for managing otitis media in Aboriginal and Torres Strait Islander children and implement improvement activities.

Hip fracture hospital admissions and average length of stay in hospital 65 years and over

3w. Primary health networks and state and territory health departments work together to increase access to evidence-based falls prevention programs in hospitals, care facilities and the community.

3x. Private and public hospitals ensure patients have access to care that aligns with the Clinical Care Standard for acute management of hip fracture.

3y. Public hospitals implement the Clinical Care Standard for acute management of hip fracture through best practice pricing.

3z. Relevant clinical colleges ensure educational and training material, as well as continuing professional development requirements, are in keeping with the Clinical Care Standard for acute management of hip fracture.
Almost half the Australian population aged 16 to 85 will experience mental illness at some point in their life.

General practitioners prepared more than 950,000 mental health treatment plans. The number of services for the preparation of treatment plans in the area with the highest rate was 21 times that of the area with the lowest rate, and 3.5 times when the highest and lowest areas were excluded.

The greatest variation was shown in dispensing of prescriptions for psychotropic medicines for children and young people 17 years and under. More than 500,000 prescriptions for attention deficit hyperactivity disorder (ADHD) medicines were dispensed in Australia in 2013–14. The number of prescriptions in the area with the highest rate was 75 times more than in the area with the lowest rate. Even when the areas with the highest and lowest rates were excluded, considerable variation persisted with more than seven times higher in one local area compared to another. New South Wales had the highest average rate of dispensing out of all the states and territories, and had eight of the 12 local areas with the highest rates. Variation in rates of dispensing of antidepressant medicines and antipsychotic medicines to children and young people also varied greatly. Some local areas in New South Wales and Queensland had high dispensing rates across the three medicines for people 17 years and under.

Overall, large numbers of antidepressant medicines were dispensed in Australia. In 2013–14, nearly 15 million PBS prescriptions for antidepressants were dispensed to people aged 18 to 64. In addition, more than 400,000 prescriptions were dispensed to children and young adults, and more than 6.5 million prescriptions were dispensed to people aged 65 and over. Considerable variation is seen from area to area in the dispensing rates for prescriptions for antidepressants.

High volumes of anxiolytic and antipsychotic prescriptions were also dispensed to Australian adults, with large variation from area to area. Rates were particularly high for people aged 65 and over, and warrant scrutiny, particularly given the variation in anticholinesterase medicines dispensed for this age group which is highlighted in Chapter 6.

More than 900,000 prescriptions for antipsychotic medicines were dispensed for people aged 65 and over. The number of prescriptions was seven times higher in the area with the highest rate compared to the area with the lowest rate, and nearly 2.5 times when the highest and lowest areas were excluded. High and inappropriate prescribing of antipsychotic medicines has been documented in older people.
Key findings and recommendations

4. Interventions for mental health and psychotropic medicines

<table>
<thead>
<tr>
<th>Data item</th>
<th>Range across local areas per 100,000</th>
<th>Times difference (excluding outliers)</th>
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<tr>
<td>4.1 General practitioner mental health treatment plans</td>
<td>354 to 7,427</td>
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<td>965,946</td>
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<tr>
<td>4.2 Antidepressant medicines dispensing 17 years and under</td>
<td>386 to 16,844</td>
<td>4.1</td>
<td>404,276</td>
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<td>4.3 Antidepressant medicines dispensing 18–64 years</td>
<td>14,981 to 175,380</td>
<td>2.8</td>
<td>14,933,534</td>
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<tr>
<td>4.4 Antidepressant medicines dispensing 65 years and over</td>
<td>22,213 to 306,383</td>
<td>1.9</td>
<td>6,592,577</td>
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<tr>
<td>4.5 Anxiolytic medicines dispensing 18–64 years</td>
<td>1,079 to 41,473</td>
<td>4.8</td>
<td>2,508,346</td>
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<tr>
<td>4.6 Anxiolytic medicines dispensing 65 years and over</td>
<td>6,193 to 80,445</td>
<td>4.0</td>
<td>1,265,996</td>
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<tr>
<td>4.7 Antipsychotic medicines dispensing 17 years and under</td>
<td>306 to 6,895</td>
<td>7.1</td>
<td>104,697</td>
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<td>4.8 Antipsychotic medicines dispensing 18–64 years</td>
<td>2,076 to 39,544</td>
<td>3.2</td>
<td>2,582,447</td>
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<td>4.9 Antipsychotic medicines dispensing 65 years and over</td>
<td>8,043 to 57,130</td>
<td>2.4</td>
<td>919,026</td>
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<tr>
<td>4.10 Attention deficit hyperactivity disorder medicines dispensing 17 years and under</td>
<td>382 to 28,642</td>
<td>7.3</td>
<td>544,218</td>
</tr>
</tbody>
</table>

Recommendations

4a. The Commission refers the atlas findings on dispensing of mental health and psychotropic medications to the National Mental Health Commission for its recommendations on psychotropic drug prescribing including:
   i. use of psychotropic drugs in people 17 years and under
   ii. mechanisms for working with consumer groups to increase awareness of appropriate prescribing of antidepressant and anxiolytic medicines, as well as the benefits of non-pharmacological treatments.

4b. Clinicians adhere to current guidelines for treating behavioural and psychological symptoms in people with dementia, in particular those on the use of non-pharmacological strategies, and only prescribing medicines with demonstrated efficacy when necessary. Pharmacological treatment should target only those symptoms or behaviours that respond to medicines.

4c. The Australian Government Department of Health undertakes a national education campaign on the use of antipsychotic medicines for managing the behavioural and psychological symptoms of dementia. The campaign should ensure that clinicians and patients are aware that excessive or inappropriate use of antipsychotics in people aged 65 years and over has serious adverse effects.

4d. National boards and the Australian Health Practitioner Regulation Agency consider what actions could be taken to ensure relevant registered health practitioners have up-to-date knowledge of prescribing guidelines for antipsychotic drugs.

4e. The Australian Government Department of Health conducts an audit of antipsychotic medicines prescribing practices in the high outlier prescribing regions identified in the atlas findings.
5. Opioid medicines

In 2013–14, nearly 14 million prescriptions were dispensed through the PBS for opioids – medicines that relieve moderate to severe pain. These medicines are very effective in relieving acute pain and cancer pain, and in palliative care. However, studies have shown they are also being prescribed for chronic non-cancer pain. Current evidence does not support the long term efficacy and safety of opioid therapy for chronic non-cancer pain.

The number of prescriptions dispensed was more than 10 times higher in the area with the highest rate compared to the area with the lowest rate. However, even when the areas with the lowest and highest rates were excluded considerable variation was still seen in prescribing (2.9 times more in the areas with the highest rates than in the areas with lowest rates). No apparent explanation is available for this, although differences in access to alternative pain management options may be a factor.

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<thead>
<tr>
<th>Data item</th>
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<th>Times difference (excluding outliers)</th>
<th>Number per annum</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1 Opioid medicine dispensing</td>
<td>10,945 to 110,172</td>
<td>2.9</td>
<td>13,905,258</td>
</tr>
</tbody>
</table>

**Recommendations**

5a. The Australian Government Department of Health reviews the level of Medicare support available for effective multidisciplinary non-pharmacological treatment options and opioid dependency services, in particular for opioid prescribing for chronic non-cancer pain.

5b. State and territory health departments work with primary health networks to address the barriers in access to non-pharmacological treatments for people with chronic pain who are socioeconomically disadvantaged and those who live in rural and regional settings.

5c. State and territory health departments support Telehealth to enhance rural and remote consultations for assessment and management of chronic pain.

5d. Primary health networks and the Australian Government Department of Health progress implementation of information systems for real-time monitoring of opioid dispensing.

5e. National boards and the Australian Health Practitioner Registration Agency consider what actions could be taken to ensure relevant registered health practitioners have up-to-date knowledge of prescribing guidelines for opioid medicines.
Key findings and recommendations

6. Interventions for chronic diseases

Chronic diseases are the leading cause of illness, disability and death. Australia has higher rates of asthma compared with other countries, but the findings in the atlas demonstrate that hospitalisation is low. From 2010–11 to 2012–13, on average 15,111 children and young people were admitted to hospital for asthma in Australia each year. This may reflect a strong emphasis on the use of asthma management plans in primary care. Similarly, the number of admissions among adults was low but admission rates were higher in remote areas of Australia, which reflects the higher prevalence of asthma and chronic obstructive pulmonary disease (COPD) in Aboriginal and Torres Strait Islander peoples. Dispensing of medicines for asthma showed a strong socioeconomic trend, with dispensing rates highest in the lowest socioeconomic groups.

In 2012–13, 4,400 people were admitted to hospital for diabetes-related lower limb amputation in Australia. Once again, the rates in remote areas were higher. It is known that Indigenous people are about three times more likely to have diabetes, 10 times more likely to be admitted for diabetic foot complications and 30 times more likely to suffer diabetes-related lower limb amputation than non-Indigenous people.

Anticholinesterase medicines are used to alleviate symptoms of some types of dementia including Alzheimer’s disease. There was considerable variation in dispensing of these medicines across Australia, and dispensing rates were highest in major cities.

Similar to the patterns of hospital admissions noted for asthma and COPD, hospital admission rates for heart failure in people 40 years and over was markedly higher in remote areas. This may reflect the high prevalence of heart failure among Indigenous peoples. Multidisciplinary heart failure services can decrease the rate of hospital admissions and readmissions for this condition.

The findings in this chapter demonstrate the continued need for prevention of chronic diseases among Indigenous peoples and those living in remote areas. These efforts need to be sustained over decades given that many of these admissions are the result of years of poor health.
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<tr>
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<tr>
<td>6.1 Asthma medicines dispensing 3–19 years</td>
<td>1,298 to 53,379</td>
<td>3.2</td>
<td>1,270,400</td>
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<tr>
<td>6.2 Asthma medicines dispensing 20–44 years</td>
<td>2,244 to 44,092</td>
<td>3.4</td>
<td>1,659,993</td>
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<tr>
<td>6.3 Asthma and chronic obstructive pulmonary disease medicines dispensing 45 years and over</td>
<td>17,415 to 146,961</td>
<td>2.2</td>
<td>7,276,843</td>
</tr>
<tr>
<td>6.4 Asthma and related respiratory hospital admissions 3–19 years</td>
<td>61 to 651</td>
<td>3.3</td>
<td>15,111</td>
</tr>
<tr>
<td>6.5 Asthma hospital admissions 20–44 years</td>
<td>18 to 530</td>
<td>8.0</td>
<td>6,558</td>
</tr>
<tr>
<td>6.6 Asthma and chronic obstructive pulmonary disease hospital admissions 45 years and over</td>
<td>201 to 3,893</td>
<td>5.3</td>
<td>70,932</td>
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<td>6.7 Heart failure hospital admissions 40 years and over</td>
<td>192 to 1,397</td>
<td>2.7</td>
<td>50,983</td>
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<tr>
<td>6.8 Diabetes-related lower limb amputation hospital admissions 18 years and over</td>
<td>8 to 91</td>
<td>2.5</td>
<td>4,402</td>
</tr>
<tr>
<td>6.9 Stroke average length of stay in hospital by peer group – 65 years and over</td>
<td>4.2–17.5 days</td>
<td>2.4</td>
<td>14,554 admissions</td>
</tr>
<tr>
<td>6.10 Anticholinesterase medicines dispensing 65 years and over</td>
<td>1,843 to 28,261</td>
<td>3.7</td>
<td>427,211</td>
</tr>
</tbody>
</table>
Key findings and recommendations

6. Interventions for chronic diseases

Recommendations

6a. The Commission hosts a roundtable of service providers and consumers from remote areas to identify successful strategies for implementing best practice primary and secondary prevention services for patients with chronic disease in remote Australia.

Asthma and chronic obstructive pulmonary disease medicines dispensing and hospital admissions

6b. The Australian Government Department of Health encourages primary health networks to develop local models of integrated care for asthma and chronic obstructive pulmonary disease (COPD) to ensure properly coordinated community prevention strategies are implemented.

6c. State and territory health departments and primary health networks jointly review the uptake of vaccinations against respiratory disease in high-risk populations and their influence on local variation.

Heart failure hospital admissions 40 years and over

6d. Primary health networks, state and territory health departments and clinicians collaborate to improve access for patients with heart failure to comprehensive heart failure programs consistent with evidence-based best practice.

6e. Public and private hospitals and primary health networks adopt risk-stratified levels of support for managing diabetes care, including earlier diagnosis and intervention.

Diabetes-related lower limb amputation hospital admissions 18 years and over

6f. Primary health networks and state and territory health departments collaborate to improve access to coordinated services that deliver evidence-based care for those with diabetes, including multidisciplinary foot clinics, and care by vascular, endocrine and orthopaedic specialists.

Stroke average length of stay in hospital 65 years and over

6g. Hospital and ambulance services ensure patients have access to care that aligns with the Acute Stroke Clinical Care Standard.

6h. State and territory health departments consider mechanisms to improve coding, analytics and collection of outcome data for stroke.

6i. Relevant clinical colleges ensure educational and training material, as well as continuing professional development requirements, are in keeping with the Acute Stroke Clinical Care Standard.