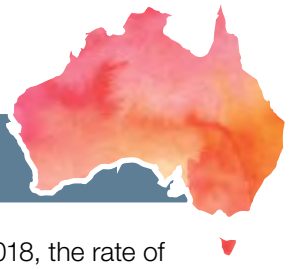
Chapter 4
Lumbar spinal surgery



At a glance

Lumbar spinal surgery refers to surgery in the lumbar spine or lower back. It is sometimes used to treat degenerative spinal disorders, which is the focus of this chapter. The Atlas excludes use of spinal surgery for treating infection, tumours or injury.

Degenerative spinal disorders are a diverse group of conditions that can cause chronic low back pain, leg pain and disability. Lumbar spinal surgery is generally only considered for certain degenerative spinal disorders if non-surgical options have not worked. There are limited data on patient outcomes, due in part to difficulties in conducting high-quality randomised controlled trials of these types of surgery. Two common lumbar spinal procedures are fusion and decompression.

Spinal fusion surgery involves joining two or more vertebrae using a bone graft. It has a role in treating a small minority of people who have degenerative spinal disorders that include nerve-related problems. Most people with chronic low back pain related to degenerative disorders do not have nerve-related symptoms. The role of spinal fusion in these circumstances is limited and controversial.

The Atlas found that, in 2015–2018, the rate of hospitalisation for lumbar spinal fusion was about 12 times higher in the local area with the highest rate than in the area with the lowest.* There was a 4% fall in the national rate of lumbar spinal fusion, and a 25% fall in the rate of lumbar spinal fusion excluding decompression, between 2012–2015 and 2015–2018.

Spinal decompression aims to increase the amount of the space in the spinal canal to relieve pressure on nerves and blood vessels.

The Atlas found that, in 2015–2018, the rate of hospitalisation for lumbar spinal decompression was about eight times higher in the local area with the highest rate than in the area with the lowest.* The national rate of lumbar spinal decompression fell by 6% between 2012–2015 and 2015–2018.

To address variation, it is important to improve access to services that provide multidisciplinary review and non-surgical treatments for chronic low back pain, and to develop the Australian Spine Registry to collect data on patient outcomes and support audit and peer review.

* After standardising to remove age and sex differences between populations.

Recommendations

The Commission consulted widely, but is solely responsible for making the recommendations; as such, the recommendations may not reflect the views of all contributors to the Atlas.

4a. Health service organisations and Primary Health Networks to implement evidence-based pathways for the management of low back pain consistent with the care described in the Low Back Pain Clinical Care Standard (planned for publication in late 2021).

4b. Health service organisations where lumbar spinal surgery is conducted to implement evidence-based guidelines; for example, the National Institute for Health and Care Excellence guidelines: *Low Back Pain and Sciatica in Over 16s: Assessment and management*.

4c. The Royal Australasian College of Surgeons to require surgeons performing lumbar spinal surgery to participate in the Australian Spine Registry as part of mandatory continuing professional development requirements.

4d. The Commission to work with relevant specialist organisations to develop a list of key safety and quality indicators for the management of specified spinal conditions, which can be used by members for audit of their practice.

4e. Health service organisations to:

i. Develop and implement scope of clinical practice models for surgeons undertaking spinal surgery

ii. Audit spinal surgery and provide the results back to clinicians to act upon in line with Action 1.28 of the National Safety and Quality Health Service (NSQHS) Standards

iii. Incorporate individual spinal surgeons' audit data as part of re-credentialing processes

iv. Report key performance indicators, trends and adverse events in spinal surgery to their governing body, consistent with the NSQHS Standards.

4f. Primary Health Networks to implement a nationally agreed health pathway for management of low back pain, including imaging and referral indications, based on the Commission's Low Back Pain Clinical Care Standard (planned for publication in late 2021).

4.1 Lumbar spinal fusion, 18 years and over

Why is this important?

Degenerative spinal disorders are a diverse group of conditions that can cause chronic low back pain, leg pain and disability.[1] Non-surgical treatments are mainly recommended as the first-line management because they help many people and the risk of harms is generally low.[2]

Spinal fusion surgery involves fusing two or more vertebrae using a bone graft. It has a role in treating a small minority of people with degenerative spinal disorders: where there is nerve or spinal cord compression[3], or where there are severe nerve-related problems.[4] Complication rates are higher for spinal fusion than for spinal decompression surgery.[5,6]

Most people with chronic low back pain related to degenerative disorders do not have nerve-related symptoms. The role of spinal fusion in these circumstances is limited and controversial.[4]

The *Second Australian Atlas of Healthcare Variation* found marked differences in rates of lumbar spinal fusion. There has been little change to the evidence base for lumbar spinal fusion since publication of the second Atlas in June 2017.

What did we find?

In 2015–2018, the rate of hospitalisation for lumbar spinal fusion was **12.4 times as high** in the area with the highest rate compared with the area with the lowest rate. Between 2012–2015 and 2015–2018, there was a small decline (4%) in the rate of lumbar spinal fusion, and a larger decline (25%) in the rate of lumbar spinal fusion excluding decompression.

What can be done?

Priority should be given to examining and improving access to services that provide multidisciplinary review and non-surgical treatments for chronic low back pain.

The substantial variation in rates of lumbar spinal fusion, a procedure recommended in limited circumstances, suggests an urgent need for high-quality evidence on who may benefit from this surgery and the degree of benefit.

Clinical trials are difficult to conduct for lumbar spinal fusion, so it is essential to improve collection of registry data on patient outcomes. The Australian Spine Registry should be developed to support data collection for all consenting patients having lumbar spinal surgery. Patients offered spinal fusion surgery should be fully informed of the potential benefits and risks for them. Surgeons should contribute data on all consenting patients, and regularly audit and review patient outcome data with their peers. Health services should include clinical audit as a credentialing requirement for surgeons who perform lumbar spinal surgery.

Lumbar spinal fusion, 18 years and over

Context

Lumbar spinal fusion is a surgical procedure that uses a bone graft to permanently join (fuse) two or more vertebrae to stop them from moving against each other. The procedure can be done with or without the use of hardware (internal fixation), such as screws, cages or plates, which support the vertebrae while the bone graft is healing.

Spinal fusion can be performed on its own or with spinal decompression, a surgical procedure that increases the amount of space in the spinal canal to relieve pressure on nearby nerves and blood vessels.

This item examines lumbar spinal fusion with or without decompression. It excludes the use of spinal fusion for infection, tumours, injury and spinal deformities such as scoliosis, and therefore focuses on the use of spinal fusion for degenerative spinal disorders and associated chronic low back pain.

Degeneration of the lumbar spinal joints and intervertebral discs is part of ageing.[5] In some people, it can cause low back pain, leg pain related to pressure on nerves (radicular pain), and reduced mobility.[7] Common types of degenerative conditions include lumbar spinal stenosis (narrowing of the spinal canal), spondylolisthesis (where one vertebra slips over another) and herniated disc (where disc material protrudes into the spinal canal or outer nerves).[5,8]

Non-surgical measures are recommended as first-line treatment for most people with acute or chronic low back pain.[7,9] These include exercise, weight loss, cognitive behavioural therapy and physiotherapy.[9] Most people with acute pain will improve within six weeks, but some people have recurrences, and around 40% develop chronic low back pain (lasting for more than three months).[10]

Surgical intervention, including spinal fusion, is recommended for patients where nerve compression from spinal degeneration causes severe or progressive weakness, or bladder and bowel problems.[4] It is also recommended in selected patients where instability (e.g. spondylolisthesis) causes nerve or spinal compression.[3]

Most people with chronic low back pain related to degenerative disorders do not have nerve-related symptoms. The role of spinal fusion in these circumstances is limited and controversial.[4]

Cochrane and other systematic reviews have reported inconclusive findings on the effectiveness of spinal fusion due to uncertainties in the available evidence, and have noted difficulties in conducting high-quality trials in this area.[2,11-13]

Spinal fusion may be an option for people who have persistent (for more than one year) disabling low back pain and significantly impaired quality of life, and who have not responded to non-surgical treatment.[4] However, most people with isolated low back pain without evidence of nerve compression are unlikely to benefit from spinal fusion.[9,14]

People who have persistent radicular pain may benefit from surgery, but the evidence about who benefits and the degree of benefit is not clear. Adding spinal fusion to decompression has not been clearly shown to achieve better outcomes for patients with spinal stenosis.[11] Added spinal fusion may result in better outcomes than decompression alone for spondylolisthesis.[6]

Sometimes spinal fusion is added to repeat decompression surgery to treat recurrent herniated disc, although this has not been shown to improve clinical outcomes compared with decompression alone.[12]

Adding fusion to decompression increases the risks of complications compared with decompression alone, and doubles the hospital costs.[5,11] Spinal fusion surgery is associated with a risk of serious complications; the risk increases with the age of the patient and complexity of the fusion procedure.[5,6] The risk of major complications with complex fusion procedures (joining of more than two vertebrae) is several times the risk of major complications of decompression alone.[5]

It is important that patients are informed about the possible complications of spinal fusion, particularly older people and Aboriginal and Torres Strait Islander people, who may have other medical conditions (comorbidity) that can increase the risk of complications.[6]

Reoperation because of continuing symptoms may also be needed. Rates of reoperation depend on the type of degenerative condition and type of surgery.[15]

Guidelines from the United Kingdom National Institute for Health and Care Excellence (NICE) recommend against spinal fusion to treat low back pain unless as part of a randomised controlled trial.[9] Belgian guidelines recommend that spinal fusion for people with low back pain should only be considered after non-surgical interventions have failed as part of a multidisciplinary evaluation. The treatment should also preferably be recorded in a register.[16]

Why revisit variation in lumbar spinal fusion?

The first and second editions of the *Australian Atlas of Healthcare Variation* examined hospitalisation rates for lumbar spinal surgery in people aged 18 years and over.[17,18]

The first Atlas examined variation in lumbar spinal decompression and lumbar spinal fusion combined, and found that, over the three-year period 2010–11 to 2012–13, the rate was 4.8 times as high in the area with the highest rate as in the area with the lowest rate.[17]

The second Atlas separately explored variation in spinal decompression (without fusion) and lumbar spinal fusion (with or without decompression). It found that, over the three-year period 2012–2015, the number of hospitalisations for lumbar spinal fusion across 305 local areas (Statistical Area Level 3 – SA3) ranged from 10 to 69 per 100,000 people aged 18 years and over. The rate was 6.9 times as high in the area with the highest rate compared with the area with the lowest rate. Rates of surgery were higher in inner regional areas than in major cities or outer regional areas, and were lowest in remote areas.[18]

It is important to continue to monitor rates of spinal fusion for degenerative spinal conditions because of the low quality of the evidence on the effectiveness of this procedure.

About the data

Data are sourced from the National Hospital Morbidity Database, and include admitted patients in both public and private hospitals.

Rates are based on the number of hospitalisations for lumbar spinal fusion (with or without decompression) per 100,000 people aged 18 years and over in 2012–13 to 2014–15 and 2015–16 to 2017–18. Hospitalisations resulting from infection, tumours, injury and spinal deformities such as scoliosis are excluded from this analysis.

Because a record is included for each hospitalisation for the procedure, rather than for each patient, patients hospitalised for the procedure more than once in the financial year will be counted more than once.

It is not possible to estimate rates of staged surgery across separate hospitalisations from these data. Hospitalisations for the same patient have not been linked. Therefore, a patient who was hospitalised for spinal fusion without decompression may have had a hospitalisation for decompression in the same data collection period.

The analysis and maps are based on the usual residential address of the patient and not the location of the hospital.

Rates are age and sex standardised to allow comparisons between populations with different age and sex structures. Data quality issues – for example, the extent of identification of Aboriginal and Torres Strait Islander status in datasets – could influence the variation seen.

It is not possible to examine variation in fusion for chronic axial back pain at a small area level because of confidentiality reasons.

Lumbar spinal fusion, 18 years and over

Principal diagnoses included and the percentage of hospitalisations for lumbar spinal fusion with or without decompression for 2015–2018* are:

- Spinal stenosis (lumbar and lumbosacral), 36%
- Lumbar and other intervertebral disc disorders with radiculopathy, 21%
- Spondylolisthesis (lumbar and lumbosacral), 25%
- Radiculopathy (lumbar and lumbosacral), 5%
- Low back pain, 5%
- Other specified intervertebral disc displacement, 5%
- Lumbago with sciatica, 1%
- Lumbar and other intervertebral disc disorders with myelopathy, 1%
- Unspecified dorsalgia (lumbar and lumbosacral) and other dorsalgia (lumbar and lumbosacral), 1%.

What do the data show?

Magnitude of variation

Over the three-year period 2015–2018, there were 14,608 hospitalisations for lumbar spinal fusion (with or without decompression), representing 24 hospitalisations per 100,000 people aged 18 years and over (the Australian rate). The median age for patients was 64 years, and varied across states and territories, from 55 in the Northern Territory to 67 in South Australia.

The number of hospitalisations for lumbar spinal fusion (with or without decompression) across 307† local areas (Statistical Area Level 3 – SA3) ranged from 7 to 87 per 100,000 people. The rate was **12.4 times as high** in the area with the highest rate compared with the area with the lowest rate. The number of hospitalisations for lumbar spinal fusion (with or without decompression) varied across states and territories, from 11 per 100,000 people in the Northern Territory to 50 in Tasmania (Figures 4.3–4.6).

After the highest and lowest 10% of results were excluded and 249 SA3s remained, the number of hospitalisations per 100,000 people was 2.7 times as high in the area with the highest rate compared with the area with the lowest rate.

There were 1,860 hospitalisations for lumbar spinal fusion excluding decompression for people aged 18 years and over during this three-year period. This equates to an Australian rate of 3 hospitalisations per 100,000 people. The graph for this analysis is available at safetyandquality.gov.au/atlas

Analysis by remoteness and socioeconomic status

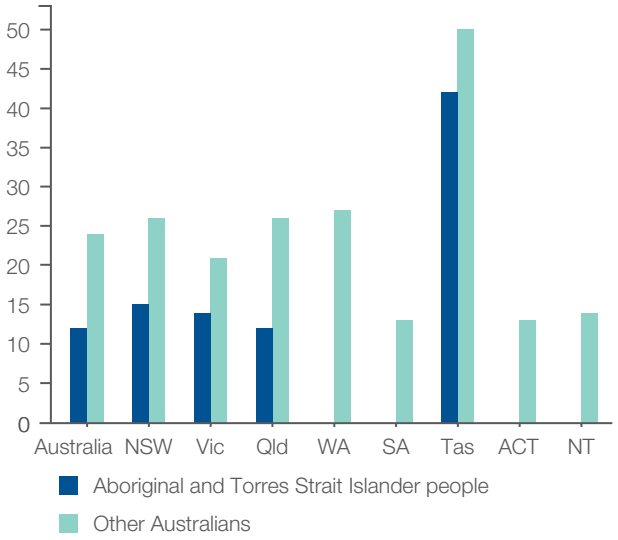
Rates for lumbar spinal fusion (with or without decompression) hospitalisations were generally higher in inner regional areas than in outer regional areas or major cities, and were lowest in remote areas. In major cities and remote areas, rates decreased with socioeconomic disadvantage, but this pattern was not evident for other categories of remoteness (Figure 4.7).

* Australian Commission on Safety and Quality in Health Care analysis of Admitted Patient Care National Minimum Data Set, 2015–16 to 2017–18.
† There are 340 SA3s. For this item, data were suppressed for 33 SA3s due to a small number of hospitalisations and/or population in an area.

Analysis by Aboriginal and Torres Strait Islander status

The rate for Aboriginal and Torres Strait Islander people (12 per 100,000 people) was 50% lower than the rate for other Australians (24 per 100,000 people). This difference was most pronounced in Queensland, where the rate for Aboriginal and Torres Strait Islander people was 54% lower than the rate for other Australians (Figure 4.1).

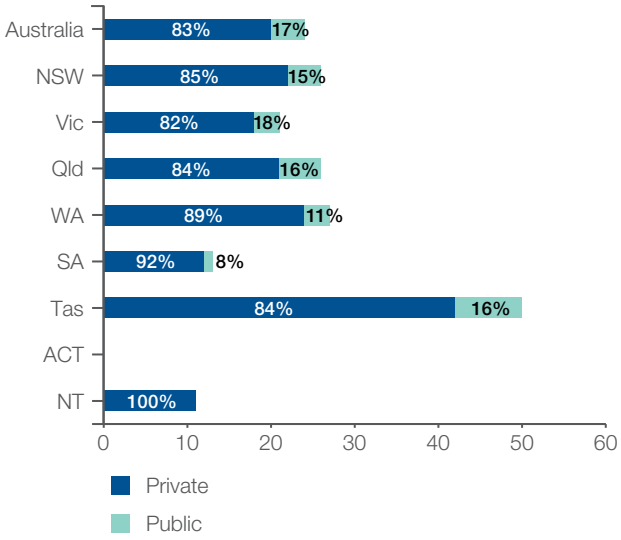
Figure 4.1: Number of hospitalisations for lumbar spinal fusion (with or without lumbar spinal decompression) per 100,000 people aged 18 years and over, age and sex standardised, by state or territory of patient residence, by Aboriginal and Torres Strait Islander status, 2015–16 to 2017–18*



Analysis by patient funding status

Overall, 83% of hospitalisations for lumbar spinal fusion (with or without decompression) were for privately funded patients. This proportion varied from 82% in Victoria to 100% in the Northern Territory (Figure 4.2).†

Figure 4.2: Number of hospitalisations for lumbar spinal fusion (with or without lumbar spinal decompression) per 100,000 people aged 18 years and over, age and sex standardised, by state or territory of patient residence, by patient funding status, 2015–16 to 2017–18†



The data for Figures 4.1 and 4.2 are available at safetyandquality.gov.au/atlas

Notes:

* Data for some states and territories (Aboriginal and Torres Strait Islander people) have been suppressed. Data by Aboriginal and Torres Strait Islander status should be interpreted with caution as hospitalisations for Aboriginal and Torres Strait Islander people are under-enumerated, with variation among states and territories.

† Data for the Northern Territory (public patients) are not published for reliability reasons. The 100% private patients are a result of rounding. For 2016–17, there were data quality issues related to the recording of patient funding source for patients admitted to ACT private hospitals. ACT private hospitals for 2016–17 are excluded from the analysis and data for the ACT are not published. Hospitalisations for public patients do not incur a charge to the patient or a third-party payer (for example, a private health insurance fund), unlike hospitalisations for private patients.

Denominator populations are the sum of the population estimates as at 31 December of 2015 to 2017. Population estimates as at 31 December are calculated as the average of the 30 June populations before and after the relevant December.

For further detail about the methods used, please refer to the Technical Supplement.

Sources: AIHW analysis of National Hospital Morbidity Database and ABS Estimated Resident Populations 30 June of 2015 to 2018.

Lumbar spinal fusion, 18 years and over

Analysis by age group

Rates for lumbar spinal fusion (with or without decompression) hospitalisations were higher for patients aged 75–84 years (73 per 100,000 people) and 65–74 years (70 per 100,000 people) than for patients aged 18–64 years (16 per 100,000 people) or 85 years and over (17 per 100,000 people).

The data and graphs for analysis by age group and by Primary Health Network are available at safetyandquality.gov.au/atlas

Trends over time

Between 2012–2015 and 2015–2018, the rate of hospitalisations for lumbar spinal fusion (with or without decompression) decreased by 4% (from 25 per 100,000 people to 24 per 100,000 people) in the Australian population as a whole (Figure 4.8).

The rate for Aboriginal and Torres Strait Islander people increased by 50% (from 8 per 100,000 people to 12 per 100,000 people) over the same period.

Over the same period, the rate of hospitalisations for lumbar spinal fusion excluding decompression decreased by 25% (from 4 per 100,000 people to 3 per 100,000 people) in the population as a whole.

The data for analysis over time for Aboriginal and Torres Strait Islander people, and analysis by Primary Health Network are available at safetyandquality.gov.au/atlas

Interpretation

Variation in rates of lumbar spinal fusion surgery is likely to be due to geographical differences in the factors discussed below.

Variations between areas may not directly reflect the practices of the clinicians who are based in these areas. The analysis is based on where people live rather than where they obtain their health care. Patients may travel outside their local area to receive care.

Clinical decision making

Problems with the current evidence base may contribute to variation in rates of spinal fusion. In the absence of good evidence and clearly established guidelines, differing perceptions among spinal surgeons about the benefits that some patients derive from spinal fusion will lead to variation in practice.

Patients' expectations

Patients' expectations about the need for spinal surgery to deal with chronic low back pain may drive variation. These expectations may be affected by psychosocial factors, such as dependence on alcohol or other drugs (e.g. opioids), depression and job loss.

Access to services

One reason for the very high variation in the rates of spinal fusion may be lack of access to affordable and accessible alternatives to surgery, such as physiotherapy with cognitive behavioural therapy, multidisciplinary back pain assessment clinics and pain clinics. People who are unable to access these types of care and who have persistent disabling pain may be referred for surgical opinion in the absence of other options for management of pain.

Having private health insurance allows affordable and timely access to spinal fusion in private hospitals. Atlas data found that most (83%) hospitalisations for lumbar spinal fusion (with or without decompression) were for privately funded patients.

Also, private health insurance may not cover the cost of non-surgical treatments for degenerative spinal conditions.

Workforce issues

Workforce factors may influence the overall rates of spinal surgery and geographic variation in rates, and this should be explored further. One possible reason for high rates in some areas is an undersupply of health practitioners who provide alternatives to surgical intervention. Differences in geographical access to spinal surgeons will also influence the use of these interventions. An oversupply of surgeons may lead to increased rates of surgery.

Addressing variation

Considering the burden of disease, the costs associated with low back pain and the number of spinal operations occurring in Australia, priority should be given to ensuring that there are appropriate services for multidisciplinary review and non-surgical management of chronic back pain in health services throughout the country.

Because of uncertainty in the evidence base and the risks of spinal fusion surgery, high-quality research is needed to identify whether there are subgroups of patients who would benefit from the surgery, and what degree of benefit might be gained compared with use of more conservative treatments. Better information on surgery outcomes, including patient-reported outcomes in the medium to longer term, is also required.

Given the burden of disease, and numbers of spinal operations occurring in Australia, priority should be given to further developing the Australian Spine Registry so that it can capture information on all eligible patients, provide information for effective peer review of spinal surgery and add to the knowledge base about outcomes for specific groups of patients.

Patients with degenerative spinal conditions who are offered the option of spinal fusion surgery should be fully informed of the potential benefits and the risk of complications for them.

All patients who decide to have surgery should be informed about the Australian Spine Registry and, if they fulfil the registration criteria, should be asked if they are willing to be included. Surgeons undertaking this procedure should contribute data on all eligible patients to the Australian Spine Registry and participate in routine peer review.

Initiatives to address variation could include the following:

High-quality research and outcome monitoring

- Undertake high-quality research to resolve uncertainties about benefit for patients with degenerative spinal conditions
- Ensure resourcing to support widespread use of the Australian Spine Registry
- Develop agreed measures for audit

Clear information for patients

- Ensure that all patients have clear information about treatment options, likely risks and benefits, and the uncertainties about the evidence base – before and after specialist referral

Access to services

- Increase access to healthcare services that provide alternatives to surgical intervention, particularly physiotherapy services with cognitive behavioural therapy and specialist pain management services, especially for those with opioid dependence
- Ensure that psychosocial factors are part of any assessment for axial chronic low back pain before referral for surgery
- Establish a targeted strategy to improve access to spinal surgery for Aboriginal and Torres Strait Islander people

Lumbar spinal fusion, 18 years and over

Training and professional development

- Improve fellowship training through ongoing curriculum review
- Improve post-fellowship training and possibly develop a qualification
- Focus on continuing professional development, mentoring and peer review
- Educate clinicians about the benefits, costs and complications of surgery compared with other options

Credentialing and scope of practice

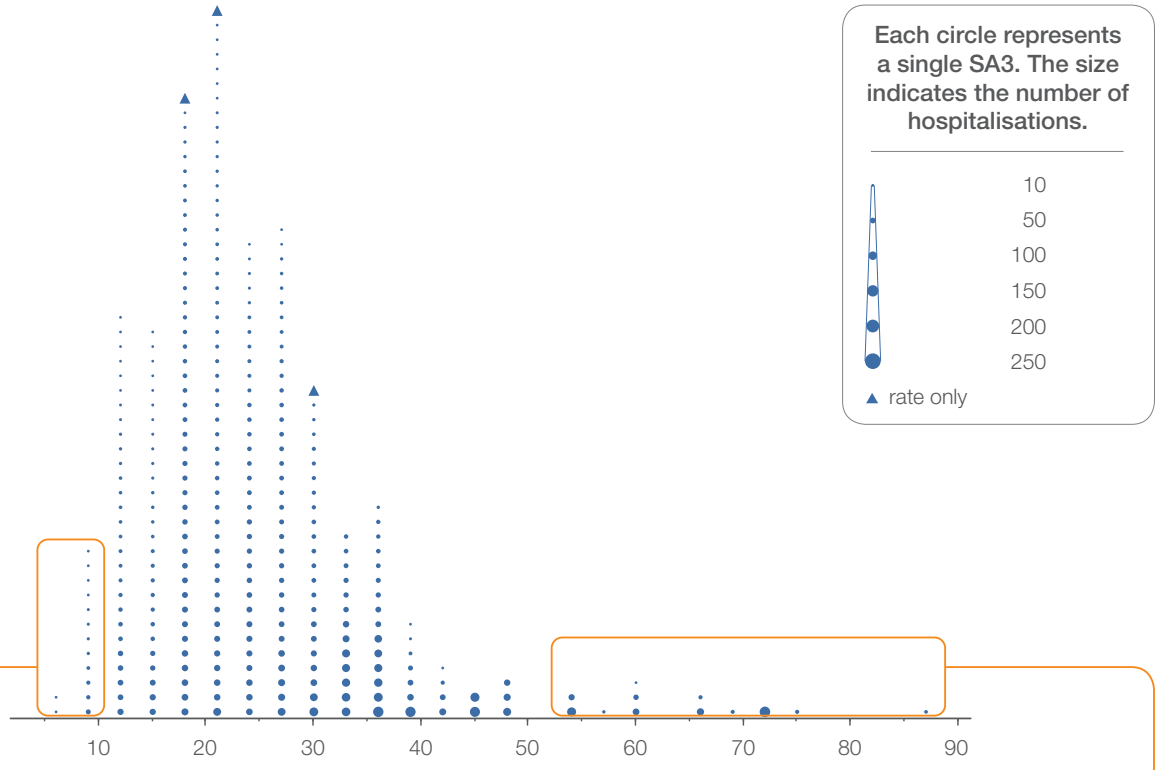
- Develop appropriate credentialing and definition of scope of practice in all hospitals
- Develop best-practice guidelines, especially in complex surgery

Care pathways

- Implement multidisciplinary clinical pathway and multidisciplinary preoperative review
- Develop evidence-based care pathways, including referral guidelines for general practitioners

Rates by local area

Figure 4.3: Number of hospitalisations for lumbar spinal fusion (with or without lumbar spinal decompression) per 100,000 people aged 18 years and over, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2015–16 to 2017–18



Lowest rate areas

SA3	State	Rate	Hospitalisations
Port Adelaide - East	SA	7	12
Burnside	SA	8	14
Marrickville - Sydenham - Petersham	NSW	9	11
Strathfield - Burwood - Ashfield	NSW	10	35
Canterbury	NSW	10	33
Murray and Mallee	SA	10	21
Leichhardt	NSW	10	15
Townsville	Qld	11	46
Fleurieu - Kangaroo Island	SA	11	27
Auburn	NSW	11	19
Maribyrnong	Vic	11	18
Campbelltown (SA)	SA	11	17
Charters Towers - Ayr - Ingham	Qld	11	13
Sunnybank	Qld	11	13

Highest rate areas

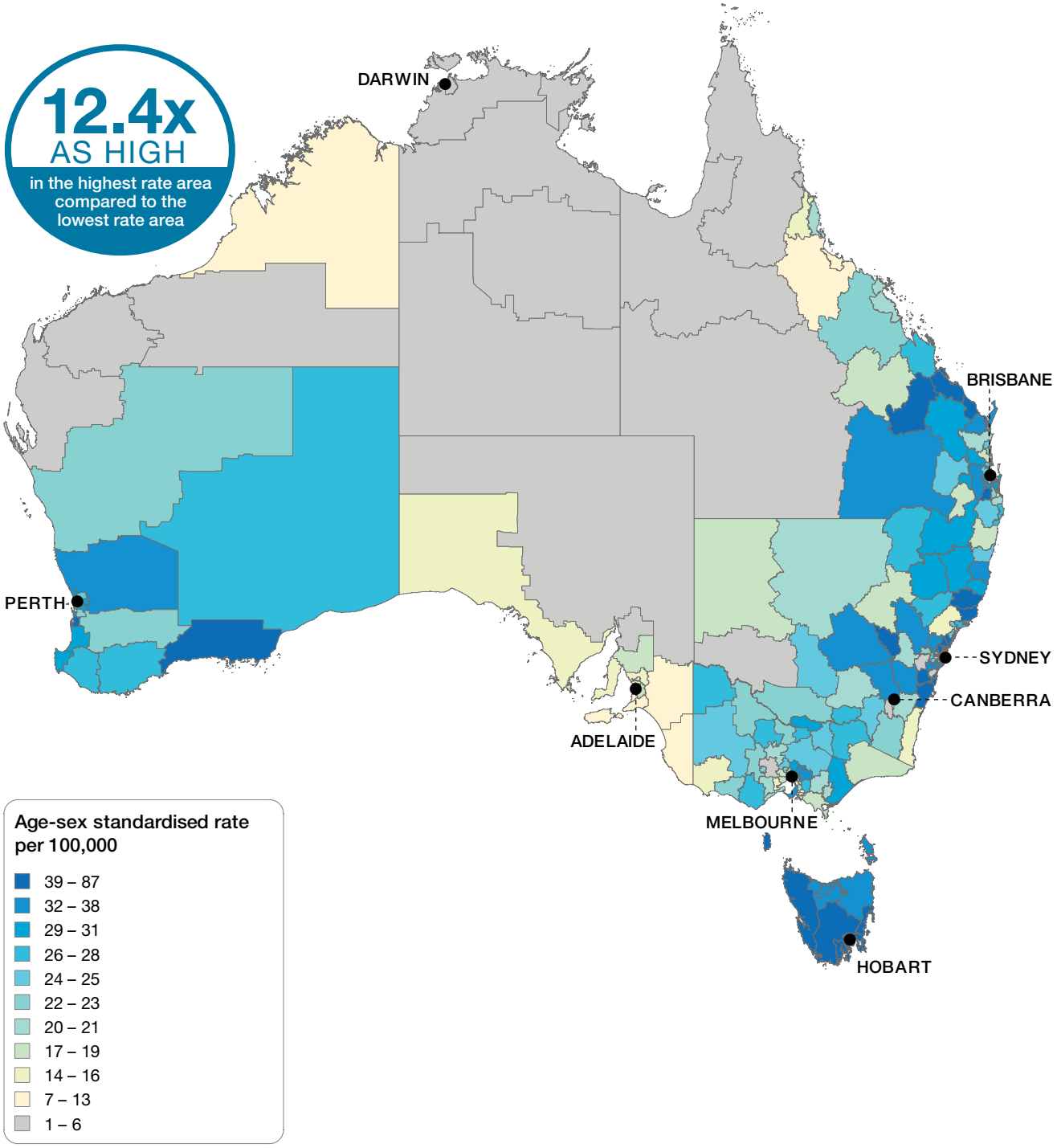
SA3	State	Rate	Hospitalisations
Central Highlands (Tas.)	Tas	87	26
Sorell - Dodges Ferry	Tas	75	32
Bundaberg	Qld	73	207
West Coast	Tas	70	31
Hobart - North East	Tas	68	98
Huon - Bruny Island	Tas	66	33
Hobart - South and West	Tas	62	55
Hobart - North West	Tas	61	86
South East Coast	Tas	61	13
Brighton	Tas	58	22
Mandurah	WA	54	151
Hobart Inner	Tas	54	72

Notes:
Triangles (▲) indicate SA3s where only rates are published. The numbers of hospitalisations are not published for confidentiality reasons.
Denominator populations are the sum of the population estimates as at 31 December of 2015 to 2017. Population estimates as at 31 December are calculated as the average of the 30 June populations before and after the relevant December.
For further detail about the methods used, please refer to the Technical Supplement.
Sources: AIHW analysis of National Hospital Morbidity Database and ABS Estimated Resident Populations 30 June of 2015 to 2018.

Lumbar spinal fusion, 18 years and over

Rates across Australia

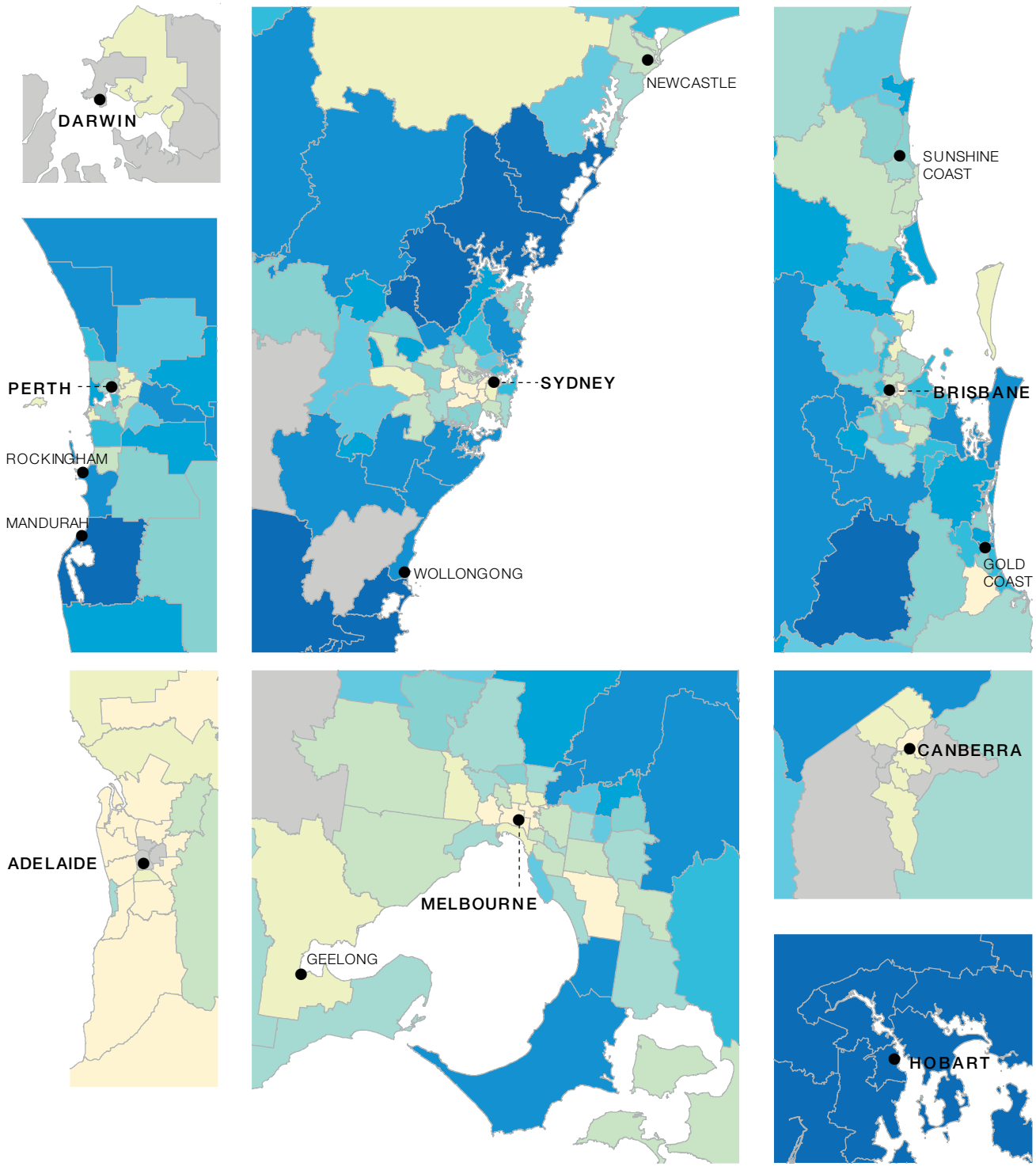
Figure 4.4: **Number of hospitalisations for lumbar spinal fusion (with or without lumbar spinal decompression) per 100,000 people aged 18 years and over, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2015–16 to 2017–18**



Notes:
Denominator populations are the sum of the population estimates as at 31 December of 2015 to 2017. Population estimates as at 31 December are calculated as the average of the 30 June populations before and after the relevant December.
For further detail about the methods used, please refer to the Technical Supplement.
Sources: AIHW analysis of National Hospital Morbidity Database and ABS Estimated Resident Populations 30 June of 2015 to 2018.

Rates across capital city areas

Figure 4.5: **Number of hospitalisations for lumbar spinal fusion (with or without lumbar spinal decompression) per 100,000 people aged 18 years and over, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2015–16 to 2017–18**



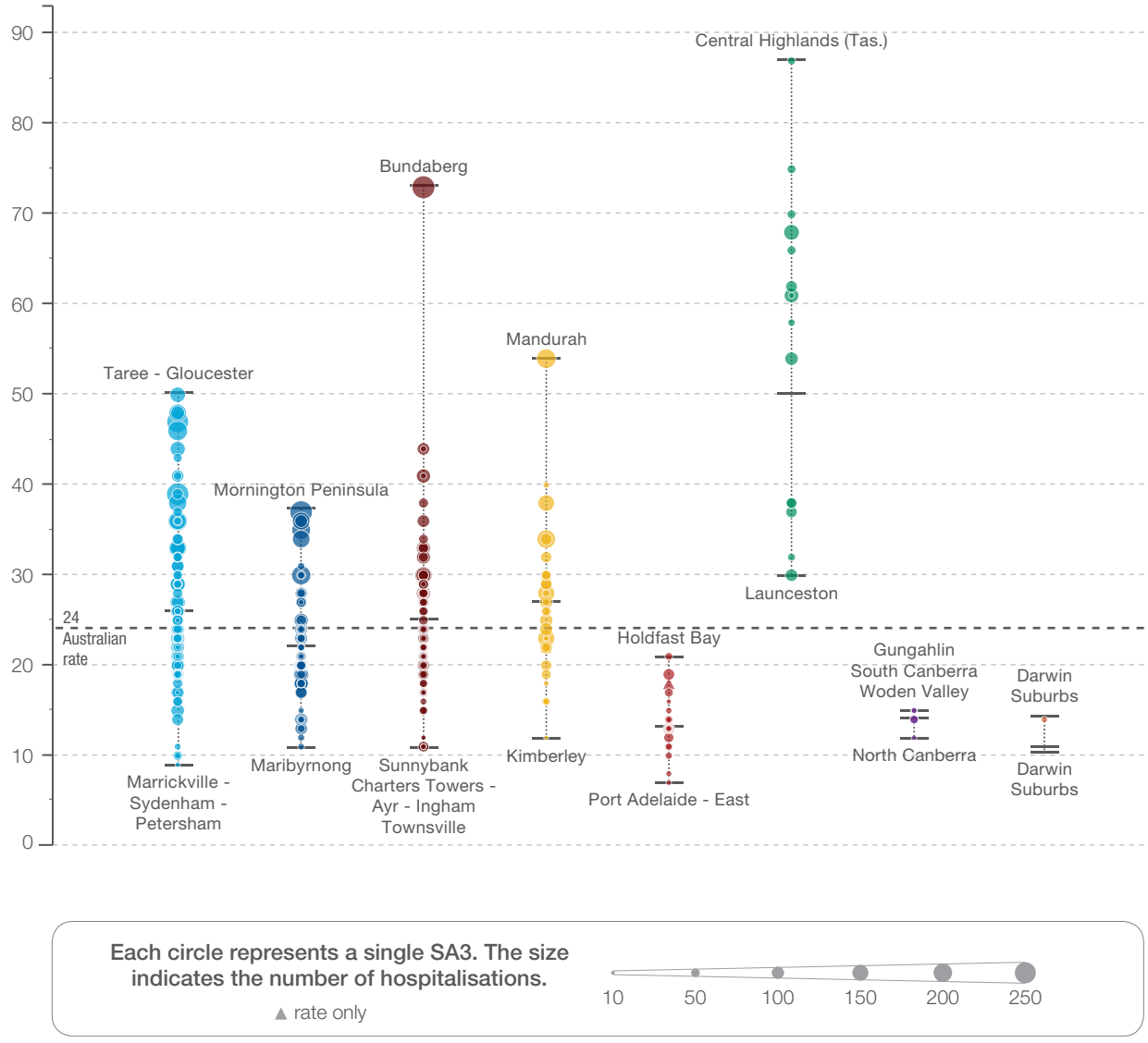
Notes:
Denominator populations are the sum of the population estimates as at 31 December of 2015 to 2017. Population estimates as at 31 December are calculated as the average of the 30 June populations before and after the relevant December.
For further detail about the methods used, please refer to the Technical Supplement.
Sources: AIHW analysis of National Hospital Morbidity Database and ABS Estimated Resident Populations 30 June of 2015 to 2018.

Lumbar spinal fusion, 18 years and over

Rates by state and territory

Figure 4.6: **Number of hospitalisations for lumbar spinal fusion (with or without lumbar spinal decompression) per 100,000 people aged 18 years and over, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2015–16 to 2017–18**

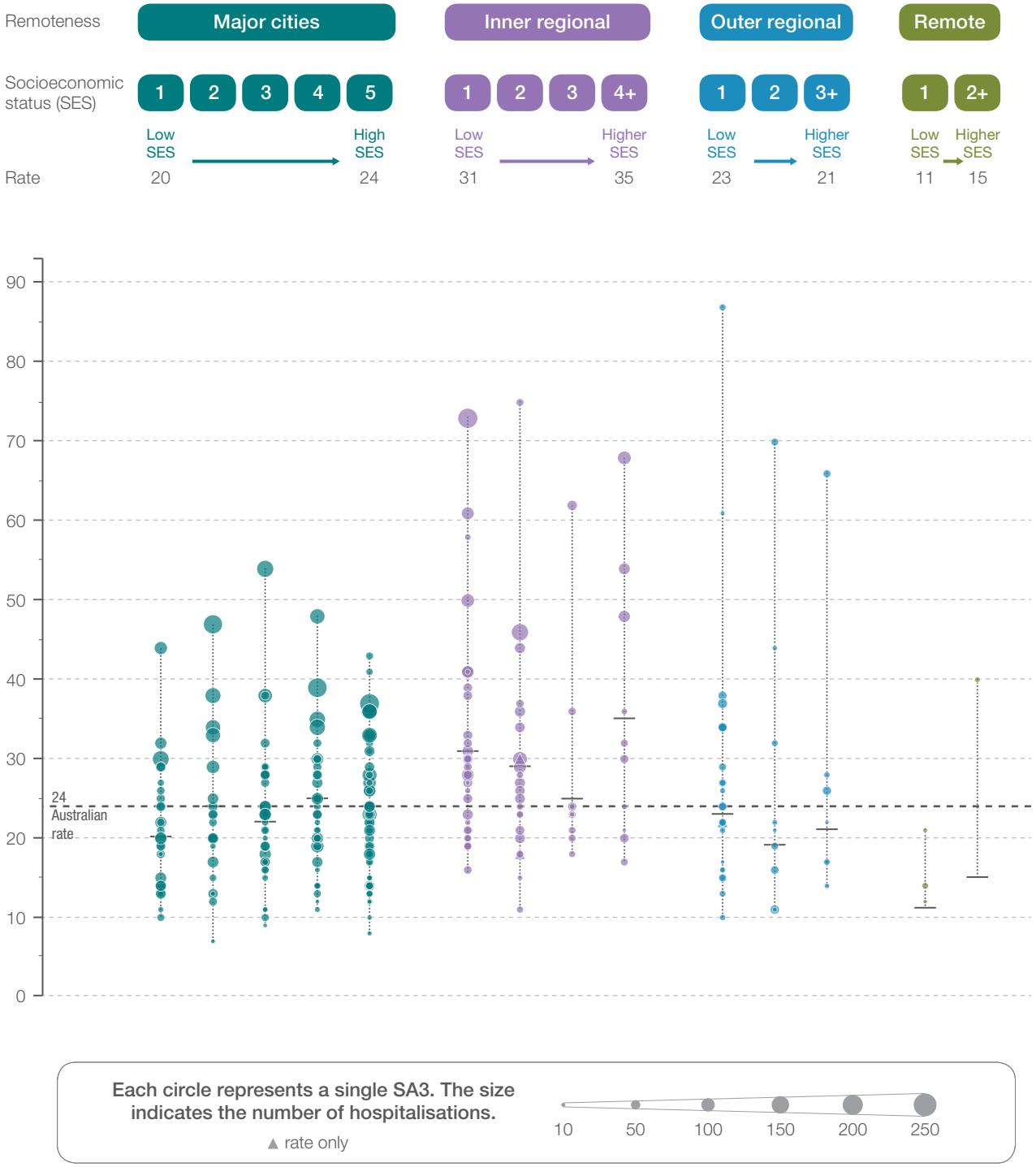
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Highest rate	50	37	73	54	21	87	15	14
State/territory	26	22	25	27	13	50	14	11
Lowest rate	9	11	11	12	7	30	12	14
No. hospitalisations	5,121	3,320	3,008	1,662	615	699	123	50



Notes:
Triangles (▲) indicate SA3s where only rates are published. The numbers of hospitalisations are not published for confidentiality reasons.
For the NT, the territory rate is lower than the minimum SA3 rate as it includes SA3 rates that are not published for reliability reasons. Only Darwin suburbs is publishable.
Denominator populations are the sum of the population estimates as at 31 December of 2015 to 2017. Population estimates as at 31 December are calculated as the average of the 30 June populations before and after the relevant December.
For further detail about the methods used, please refer to the Technical Supplement.
Sources: AIHW analysis of National Hospital Morbidity Database and ABS Estimated Resident Populations 30 June of 2015 to 2018.

Rates by remoteness and socioeconomic status

Figure 4.7: Number of hospitalisations for lumbar spinal fusion (with or without lumbar spinal decompression) per 100,000 people aged 18 years and over, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2015–16 to 2017–18



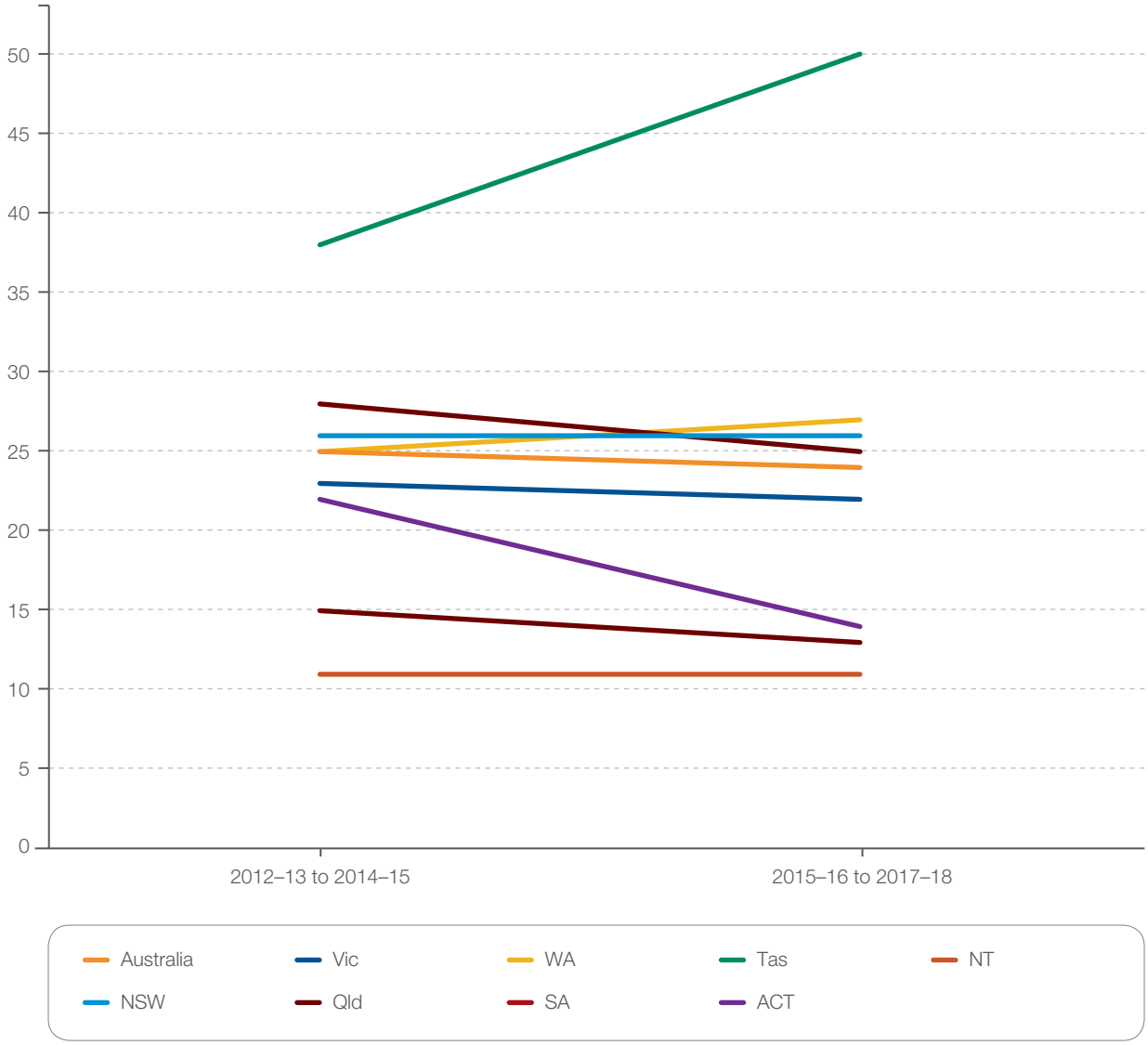
Notes:
Triangles (▲) indicate SA3s where only rates are published. The numbers of hospitalisations are not published for confidentiality reasons.
For Remote (SES of 1 and SES of 2+), the remoteness and SES rate is lower than the minimum SA3 rate as it includes SA3 rates that are not published for reliability reasons.
Denominator populations are the sum of the population estimates as at 31 December of 2015 to 2017. Population estimates as at 31 December are calculated as the average of the 30 June populations before and after the relevant December.
For further detail about the methods used, please refer to the Technical Supplement.
Sources: AIHW analysis of National Hospital Morbidity Database and ABS Estimated Resident Populations 30 June of 2015 to 2018.

Lumbar spinal fusion, 18 years and over

Rates across years

Figure 4.8: Number of hospitalisations for lumbar spinal fusion (with or without lumbar spinal decompression) per 100,000 people aged 18 years and over, age and sex standardised, by state and territory of patient residence, 2012–13 to 2014–15 and 2015–16 to 2017–18

	2012–13 to 2014–15	2015–16 to 2017–18
Highest SA3 rate	67	87
Australian rate	**25**	**24**
Lowest SA3 rate	9	7
Magnitude of variation	7.4	12.4
Magnitude of variation without top & bottom 10% SA3	2.4	2.7



Notes:
Denominator populations are the sum of the population estimates as at 31 December of 2012 to 2014 and 2015 to 2017. Population estimates as at 31 December are calculated as the average of the 30 June populations before and after the relevant December.
For further detail about the methods used, please refer to the Technical Supplement.
Sources: AIHW analysis of National Hospital Morbidity Database and ABS Estimated Resident Populations 30 June of 2012 to 2015 and 2015 to 2018.

Resources

Australian

- Spinal fusion for chronic axial low back pain: resource for clinicians, Safer Care Victoria, bettersafercare.vic.gov.au/clinical-guidance/non-urgent-elective-surgery/spinal-fusion-for-chronic-axial-low-back-pain
- Back pain, Better Health Victoria, betterhealth.vic.gov.au/health/ConditionsAndTreatments/Back-pain

International

- *Low Back Pain and Sciatica in Over 16s: Assessment and management*. Invasive treatments for low back pain and sciatica. NICE guideline NG59[9]
- The MIST guidelines: the Lumbar Spinal Stenosis Consensus Group guidelines for minimally invasive spine treatment[19]
- Danish national clinical guidelines for surgical and nonsurgical treatment of patients with lumbar spinal stenosis[7]
- Subacute and chronic low back pain: surgical treatment[4]

Australian initiatives

The Australian Spine Registry (spineregistry.org.au) has been collecting data since January 2018 about spine surgery in Australia, aiming to improve the quality of care. The registry is supported by the Spine Society of Australia, in partnership with Monash University. It collects data on the frequency of spine surgery; the usefulness, safety and results of different procedures; factors that predict favourable and unfavourable outcomes; and the care provided to Australians having spine surgery and how it compares with international best practice.

In July 2020, the Victorian Department of Health and Human Services advised health services that a range of procedures (including spinal fusion for chronic axial back pain) should be performed only for a specific list of clinical indications. Hospitals were advised that communication must involve shared and documented decision making with the patient about evidence, risks and benefits, and other options for care. Victoria is developing resources to support patients and healthcare providers to make decisions together about the most appropriate pathways of care. Spinal fusion surgery for chronic axial low back pain is one of these pathways.

Low Back Pain Clinical Care Standard (planned for publication late 2021), Australian Commission on Safety and Quality in Health Care. safetyandquality.gov.au/standards/clinical-care-standards/low-back-pain-clinical-care-standard

Lumbar spinal fusion, 18 years and over

References

1. Ferreira ML, de Luca K. Spinal pain and its impact on older people. Best Pract Res Clin Rheumatol 2017;31(2):192–202.
2. Zaina F, Tomkins-Lane C, Carragee E, Negrini S. Surgical versus non-surgical treatment for lumbar spinal stenosis. Cochrane Database Syst Rev 2016 Jan 29(1):CD010264.
3. van Wambeke P, Desomer A, Jonckheer P, Depreitere B. The Belgian national guideline on low back pain and radicular pain: key roles for rehabilitation, assessment of rehabilitation potential and the PRM specialist. Eur J Phys Rehabil Med 2020;56(2):220–7.
4. Chou R. Subacute and chronic low back pain: surgical treatment. In: Atlas SJ, editor. UpToDate. Waltham, MA: UpToDate; 2020.
5. Machado GC, Maher CG, Ferreira PH, Harris IA, Deyo RA, McKay D, et al. Trends, complications, and costs for hospital admission and surgery for lumbar spinal stenosis. Spine (Phila Pa 1976) 2017;42(22):1737–43.
6. Deyo RA, Mirza SK, Martin BI, Kreuter W, Goodman DC, Jarvik JG. Trends, major medical complications, and charges associated with surgery for lumbar spinal stenosis in older adults. JAMA 2010;303(13):1259–65.
7. Rousing R, Jensen RK, Fruensgaard S, Strom J, Brogger HA, Degn JDM, et al. Danish national clinical guidelines for surgical and nonsurgical treatment of patients with lumbar spinal stenosis. Eur Spine J 2019;28(6):1386–96.
8. Arts MP, Kursumovic A, Miller LE, Wolfs JFC, Perrin JM, Van de Kelft E, et al. Comparison of treatments for lumbar disc herniation: systematic review with network meta-analysis. Medicine (Baltimore) 2019;98(7):e14410.
9. National Institute for Health and Care Excellence. Low back pain and sciatica in over 16s: assessment and management. Invasive treatments for low back pain and sciatica. NICE guideline NG59. London: NICE; 2016.
10. Almeida M, Saragiotto B, Richards B, Maher CG. Primary care management of non-specific low back pain: key messages from recent clinical guidelines. Med J Aust 2018;208(6):272–5.
11. Shen J, Xu S, Xu S, Ye S, Hao J. Fusion or not for degenerative lumbar spinal stenosis: a meta-analysis and systematic review. Pain Physician 2018;21(1):1–8.
12. Harris IA, Traeger A, Stanford R, Maher CG, Buchbinder R. Lumbar spine fusion: what is the evidence? Intern Med J 2018;48(12):1430–4.
13. Machado GC, Ferreira PH, Yoo RI, Harris IA, Pinheiro MB, Koes BW, et al. Surgical options for lumbar spinal stenosis. Cochrane Database Syst Rev 2016 Nov 1;11:CD012421.
14. Bydon M, De la Garza-Ramos R, Macki M, Baker A, Gokaslan AK, Bydon A. Lumbar fusion versus nonoperative management for treatment of discogenic low back pain: a systematic review and meta-analysis of randomized controlled trials. J Spinal Disord Tech 2014;27(5):297–304.
15. Martin BI, Mirza SK, Comstock BA, Gray DT, Kreuter W, Deyo RA. Reoperation rates following lumbar spine surgery and the influence of spinal fusion procedures. Spine (Phila Pa 1976) 2007;32(3):382–7.
16. Van Wambeke P, Desomer A, Ailliet L, Berquin A, Demoulin C, Depreitere B, et al. Low back pain and radicular pain: assessment and management. Brussels: Belgian Health Care Knowledge Centre (KCE); 2017.
17. Australian Commission on Safety and Quality in Health Care. Australian atlas of healthcare variation. Sydney: ACSQHC; 2015.
18. Australian Commission on Safety and Quality in Health Care. The second Australian atlas of healthcare variation. Sydney: ACSQHC; 2017.
19. Deer TR, Grider JS, Pope JE, Falowski S, Lamer TJ, Calodney A, et al. The MIST guidelines: the Lumbar Spinal Stenosis Consensus Group guidelines for minimally invasive spine treatment. Pain Practice 2019;19:250–74.

4.2 Lumbar spinal decompression, 18 years and over

Why is this important?

Degenerative spinal disorders are a diverse group of conditions that can cause chronic low back pain, leg pain and disability.[1] Non-surgical treatments are mainly recommended as the first-line management because they help many people and the risk of harms is generally low.[2]

Spinal decompression surgery aims to increase the space in the spinal canal to reduce pressure on nerves and blood vessels. It may be considered when non-surgical treatments have not worked or for selected people with serious symptoms.[3]

The *Second Australian Atlas of Healthcare Variation* found marked differences in rates of lumbar spinal decompression. There has been little change to the evidence base for lumbar spinal decompression since publication of the second Atlas in June 2017.

What did we find?

In 2015–2018, the rate of hospitalisation for lumbar spinal decompression (excluding lumbar spinal fusion) was **7.7 times as high** in the area with the highest rate compared with the area with the lowest rate. There was a small decline (6%) in the national rate of lumbar spinal decompression between 2012–2015 and 2015–2018.

What can be done?

Priority should be given to improving access to services that provide multidisciplinary review and non-surgical treatments for chronic low back pain.

Clinical trials are difficult to conduct for lumbar spinal decompression, so it is essential to improve collection of registry data on patient outcomes. The Australian Spine Registry should be developed to support data collection for all consenting patients having lumbar spinal surgery. Patients offered lumbar spinal decompression surgery should be fully informed of the potential benefits and risks for them. Surgeons should contribute data on all consenting patients, and regularly audit and review patient outcome data with their peers. Health services should include clinical audit and review as a credentialing requirement for surgeons who perform lumbar spinal surgery.

Lumbar spinal decompression, 18 years and over

Context

Lumbar spinal decompression is a surgical procedure that increases the amount of space in the spinal canal to relieve pressure on nearby nerves and blood vessels.

Spinal decompression procedures include laminectomy (removal of a section of bone from one of the vertebrae) and discectomy (removal of a section of a damaged disc). In many cases, a combination of these techniques is used.

Spinal decompression is sometimes performed to treat spinal injuries such as fractures, and spinal cord compression due to metastatic cancer. Spinal decompression can be performed in combination with spinal fusion surgery (joining at least two vertebrae to stop movement), but it is often done on its own.[4]

This item focuses on the use of spinal decompression for degenerative spinal conditions. It excludes the use of spinal decompression for infection, tumours and injury, and therefore focuses on degenerative spinal disorders and associated chronic low back pain.

Spinal decompression is often performed to treat symptoms associated with degenerative conditions of the spine where there is pressure on the nerves. These conditions include lumbar spinal stenosis (narrowing of the spinal canal), spondylolisthesis (where one vertebra slips over another) and herniated disc (where disc material protrudes into the spinal canal or outer nerves).[4,5]

Degenerative spinal disorders are a diverse group of conditions that cause a range of symptoms and disabling effects. Although some patients are likely to benefit from surgery, in other patients the place of surgery for treating these conditions is not clear. There are limited data on patient outcomes, and it is difficult to conduct high-quality randomised controlled trials comparing treatment options and outcomes.[6]

Lumbar spinal stenosis

People with spinal stenosis can experience a range of symptoms due to nerve compression, including low back pain that radiates to the buttocks and legs, numbness and weakness, and problems with walking and balance. Symptoms are often worse when standing or walking.[3] Spinal stenosis is a common condition in older people[7], and sometimes occurs with degenerative spondylolisthesis.

Conservative measures are recommended as first-line treatments for most people with spinal stenosis who have mild symptoms.[3,8] Spinal decompression is recommended as an option if conservative measures have not worked and there is sciatica (pain going down one or both legs).[8] It is also recommended when there are serious symptoms, such as progressive weakness, or bladder or bowel disturbance related to nerve compression.[3,9]

Herniated disc

A herniated (or prolapsed) disc can press on nearby nerves and lead to sciatica.[8] A herniated disc is usually the result of disc degeneration due to ageing, although it can occur in a younger age group.

Most people with herniated disc will get better without treatment.[5] Conservative treatments, including physiotherapy and steroid injections, are usually tried first if symptoms persist.[5]

Spinal decompression (discectomy) is considered when there is uncontrolled pain, numbness or weakness, or bladder or bowel problems, and conservative measures have not worked.[5] It has been found to be more effective than conservative management in relieving back and leg pain and disability in people whose herniated disc has not responded to initial conservative options.[5,10]

Complications from lumbar spinal decompression

It is important that patients are informed about the possible complications of spinal decompression, particularly older people and Aboriginal and Torres Strait Islander people, who may have other medical conditions (comorbidity) that can increase the risk of complications.[11]

Reoperation because of continuing symptoms may also be needed. Rates of reoperation depend on the type of degenerative condition.[12–14]

Why revisit variation in lumbar spinal decompression?

The first and second editions of the *Australian Atlas of Healthcare Variation* examined hospitalisation rates for lumbar spinal surgery in people aged 18 years and over.[15,16]

The first Atlas examined variation in lumbar spinal decompression and lumbar spinal fusion combined. It found that, over the three-year period 2010–11 to 2012–13, the rate was 4.8 times as high in the area with the highest rate as in the area with the lowest rate.[15]

The second Atlas separately explored variation in spinal decompression (without fusion). It found that, over the three-year period 2012–2015, the number of hospitalisations for lumbar spinal decompression across 322 local areas (Statistical Area Level 3 – SA3) ranged from 30 to 156 per 100,000 people aged 18 years and over. The rate was 5.2 times as high in the area with the highest rate compared with the area with the lowest rate.[16]

Rates of surgery were higher in inner regional areas than in major cities, and were lowest in outer regional areas and remote areas. Rates of surgery decreased with socioeconomic disadvantage.[16]

It is important to continue to monitor rates of spinal decompression for degenerative spinal stenosis as the evidence on effectiveness of different therapies develops and because of changes in the supply of the health workforce.

About the data

Data are sourced from the National Hospital Morbidity Database, and include admitted patients in both public and private hospitals.

Rates are based on the number of hospitalisations for lumbar spinal decompression (excluding lumbar spinal fusion) per 100,000 people aged 18 years and over in 2015–2018. Hospitalisations resulting from infection, tumours and injury are excluded from this analysis.

Because a record is included for each hospitalisation for lumbar spinal decompression surgery, rather than for each patient, patients hospitalised for the procedure more than once in the financial year will be counted more than once.

The analysis and maps are based on the usual residential address of the patient and not the location of the hospital.

Rates are age and sex standardised to allow comparisons between populations with different age and sex structures.

Data quality issues – for example, the extent of identification of Aboriginal and Torres Strait Islander status in datasets – could influence the variation seen.

Some private hospitals in Tasmania admit public patients under a contractual arrangement. There is a small over-count of hospitalisations for the procedure in Tasmania because hospitalisations were recorded by both contracting hospital and contracted hospital.

Lumbar spinal decompression, 18 years and over

What do the data show?

Over the three-year period 2015–2018, there were 43,185 hospitalisations for lumbar spinal decompression (excluding lumbar spinal fusion), representing 74 hospitalisations per 100,000 people aged 18 years and over (the Australian rate). The median age for patients was 58 years, and varied across states and territories, from 49 in the Northern Territory to 62 in South Australia.

The number of hospitalisations for lumbar spinal decompression (excluding lumbar spinal fusion) across 327* local areas (Statistical Area Level 3 – SA3) ranged from 27 to 209 per 100,000 people. The rate was **7.7 times as high** in the area with the highest rate compared with the area with the lowest rate. The number of hospitalisations varied across states and territories, from 34 per 100,000 people in the Australian Capital Territory to 126 in Tasmania (Figures 4.11–4.14).

After the highest and lowest 10% of results were excluded and 265 SA3s remained, the number of hospitalisations per 100,000 people was 2.1 times as high in the area with the highest rate compared with the area with the lowest rate.

Analysis by remoteness and socioeconomic status

Rates for lumbar spinal decompression (excluding lumbar spinal fusion) hospitalisations were higher in inner regional areas than in major cities or outer regional areas, and were lowest in remote areas. In inner regional and remote areas, rates decreased with socioeconomic disadvantage. This pattern was not evident in major cities or outer regional areas (Figure 4.15).

Analysis by Aboriginal and Torres Strait Islander status

The rate for Aboriginal and Torres Strait Islander people (41 per 100,000 people) was 45% lower than the rate for other Australians (74 per 100,000 people) This difference was most pronounced in Western Australia, where rates for Aboriginal and Torres Strait Islander people were 79% lower than rates for other Australians (Figure 4.9).

Figure 4.9: Number of hospitalisations for lumbar spinal decompression (excluding lumbar spinal fusion) per 100,000 people aged 18 years and over, age and sex standardised, by state and territory of patient residence, by Aboriginal and Torres Strait Islander status, 2015–16 to 2017–18

* There are 340 SA3s. For this item, data were suppressed for 13 SA3s due to a small number of hospitalisations and/or population in an area.

Notes:

Data for some states and territories (Aboriginal and Torres Strait Islander people) are not published for reliability reasons.

Data by Aboriginal and Torres Strait Islander status should be interpreted with caution as hospitalisations for Aboriginal and Torres Strait Islander people are under-enumerated among states and territories.

Denominator populations are the sum of the population estimates as at 31 December of 2015 to 2017. Population estimates as at 31 December are calculated as the average of the 30 June populations before and after the relevant December.

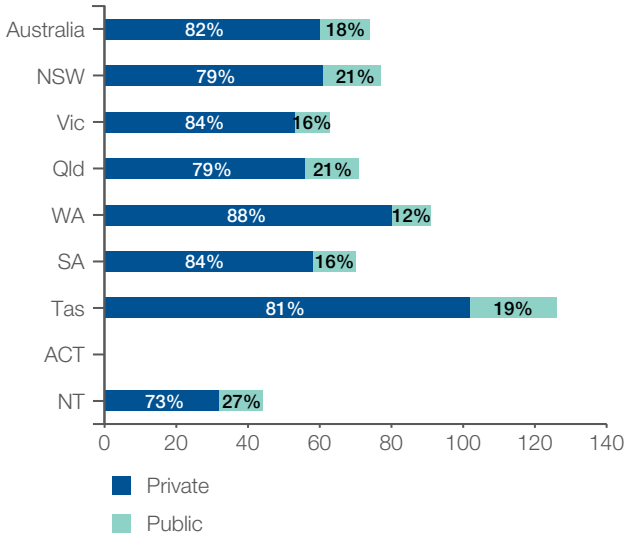
For further detail about the methods used, please refer to the Technical Supplement.

Sources: AIHW analysis of National Hospital Morbidity Database and ABS Estimated Resident Populations 30 June of 2015 to 2018.

Analysis by patient funding status

Overall, 82% of hospitalisations for lumbar spinal decompression (excluding lumbar spinal fusion) were for privately funded patients. This proportion varied from 73% in the Northern Territory to 88% in Western Australia (Figure 4.10).

Figure 4.10: Number of hospitalisations for lumbar spinal decompression (excluding lumbar spinal fusion) per 100,000 people aged 18 years and over, age and sex standardised, by state and territory of patient residence, by patient funding status, 2015–16 to 2017–18



The data for Figures 4.9 and 4.10 are available at safetyandquality.gov.au/atlas

Trends over time

Between 2012–2015 and 2015–2018, the rate of hospitalisations for lumbar spinal decompression excluding lumbar spinal fusion per 100,000 people decreased by 6% (from 79 per 100,000 people to 74 per 100,000 people) in the Australian population as a whole (Figure 4.16).

The rate for Aboriginal and Torres Strait Islander people increased by 37% (from 30 per 100,000 people to 41 per 100,000 people) over the same period.

The data for analysis over time for Aboriginal and Torres Strait Islander people, and analysis by Primary Health Network are available at safetyandquality.gov.au/atlas

Notes:
For 2016–17, there were data quality issues related to the recording of patient funding source for patients admitted to ACT private hospitals. ACT private hospitals for 2016–17 are excluded from the analysis and data for the ACT are not published.
Hospitalisations for public patients do not incur a charge to the patient or a third-party payer (for example, a private health insurance fund), unlike hospitalisations for private patients.
Denominator populations are the sum of the population estimates as at 31 December of 2015 to 2017. Population estimates as at 31 December are calculated as the average of the 30 June populations before and after the relevant December.
For further detail about the methods used, please refer to the Technical Supplement.
Sources: AIHW analysis of National Hospital Morbidity Database and ABS Estimated Resident Populations 30 June of 2015 to 2018.

Lumbar spinal decompression, 18 years and over

Interpretation

Variation in rates of lumbar spinal decompression surgery is likely to be due to geographical differences in the factors discussed below.

Variations between areas may not directly reflect the practices of the clinicians who are based in these areas. The analysis is based on where people live rather than where they obtain their health care. Some patients may travel outside their local area to receive care.

Clinical decision making

High or low rates of spinal decompression in some areas may be related to differences between clinicians in interpretation of the available evidence about the effectiveness of spinal decompression, and differing clinical beliefs about the likelihood of benefits and complications of this type of spinal surgery for some groups of patients.

Patients' expectations

Patients' expectations about the need for spinal surgery to deal with chronic low back pain may drive variation. These expectations may be affected by psychosocial factors, such as dependence on alcohol or other drugs, depression and job loss.

Access to services

One reason for the high variation in the rates of spinal decompression may be lack of access to affordable and accessible alternatives to surgery, such as physiotherapy with cognitive behavioural therapy, multidisciplinary back pain assessment clinics and pain clinics. People who are unable to access these types of care and who have persistent disabling pain may be referred for surgical opinion in the absence of other options for management of pain.

Having private health insurance allows affordable access to spinal decompression in private hospitals. Atlas data found that most (82%) hospitalisations for lumbar spinal decompression were for privately funded patients.

Also, private health insurance may not cover the cost of non-surgical treatments for degenerative spinal conditions.

Workforce issues

Workforce factors may influence the overall rates of spinal surgery and geographic variation in rates, and this should be explored further. One possible reason for high rates in some areas is an undersupply of health practitioners who provide alternatives to surgical intervention. Differences in geographical access to spinal surgeons will also influence the use of these interventions. An oversupply of surgeons may lead to increased rates of surgery.

Addressing variation

Considering the burden of disease, the costs associated with low back pain and the number of spinal operations occurring in Australia, priority should be given to ensuring that there are appropriate services for multidisciplinary review and non-surgical management of chronic back pain in health services throughout the country.

Because of uncertainty in the evidence base, high-quality research is needed to identify whether there are subgroups of patients who would benefit from spinal surgery, and what degree of benefit might be gained compared with use of more conservative treatments. Better information on surgery outcomes, including patient-reported outcomes in the medium to longer term, is also required.

Given the burden of disease and numbers of spinal operations occurring in Australia, priority should be given to further developing the Australian Spine Registry so that it can capture information on all eligible patients, provide information for effective peer review of spinal surgery and add to the knowledge base about outcomes for specific groups of patients.

Patients with degenerative spinal conditions who are offered the option of spinal decompression surgery should be fully informed about the potential benefits and the risk of complications for them.

All patients who decide to have surgery should be informed about the Australian Spine Registry and, if they fulfil the registration criteria, should be asked if they are willing to be included. Surgeons undertaking this procedure should contribute data on all eligible patients to the Australian Spine Registry and participate in routine peer review.

Initiatives to address variation could include the following:

High-quality research and outcome monitoring

- Undertake high-quality research to resolve uncertainties about benefit
- Ensure resourcing to support widespread use of the Australian Spine Registry
- Develop agreed measures for audit

Clear information for patients

- Ensure that all patients have clear information about treatment options, likely risks and benefits, and the uncertainties about the evidence base – before and after specialist referral

Access to services

- Increase access to healthcare services that provide alternatives to surgical intervention
- Ensure that psychosocial factors are part of any assessment for axial chronic low back pain before referral for surgery
- Establish a targeted strategy to improve access to spinal surgery for Aboriginal and Torres Strait Islander people

Training and professional development

- Improve fellowship training through ongoing curriculum review
- Improve post-fellowship training and possibly develop a qualification
- Focus on continuing professional development, mentoring and peer review
- Educate clinicians about the benefits, costs and complications of surgery compared with other options

Credentialing and scope of practice

- Develop appropriate credentialing and definition of scope of practice in all hospitals
- Develop best-practice guidelines, especially in complex surgery

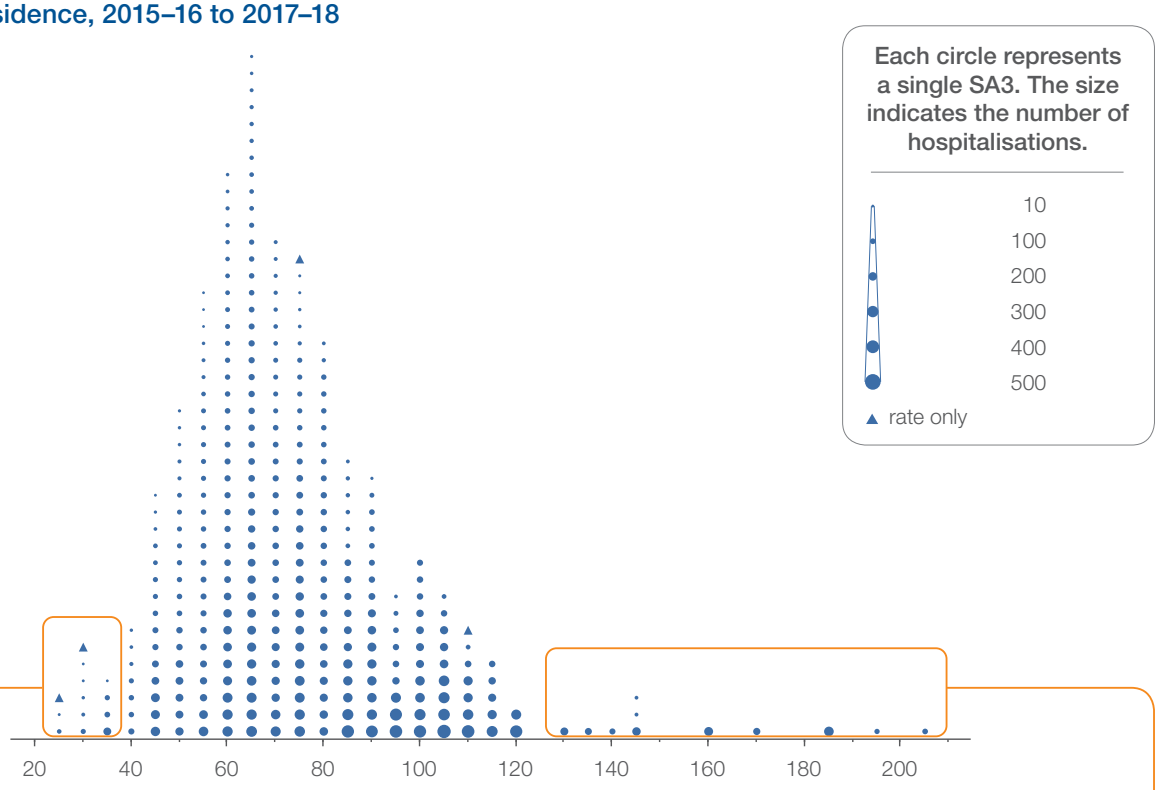
Care pathways

- Implement multidisciplinary clinical pathways and multidisciplinary preoperative review
- Develop evidence-based care pathways, including referral guidelines for general practitioners

Lumbar spinal decompression, 18 years and over

Rates by local area

Figure 4.11: Number of hospitalisations for lumbar spinal decompression (excluding lumbar spinal fusion) per 100,000 people aged 18 years and over, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2015–16 to 2017–18



Lowest rate areas

SA3	State	Rate	Hospitalisations
Belconnen	ACT	27	59
Far North	Qld	28	n.p.
Alice Springs	NT	29	24
North Canberra	ACT	30	33
Katherine	NT	30	12
Tablelands (East) - Kuranda	Qld	30	n.p.
Cairns - South	Qld	31	73
Gungahlin	ACT	32	42
South Canberra	ACT	32	23
Melbourne City	Vic	37	90
Port Douglas - Daintree	Qld	37	12
Brimbank	Vic	38	172
Tuggeranong	ACT	38	76

Highest rate areas

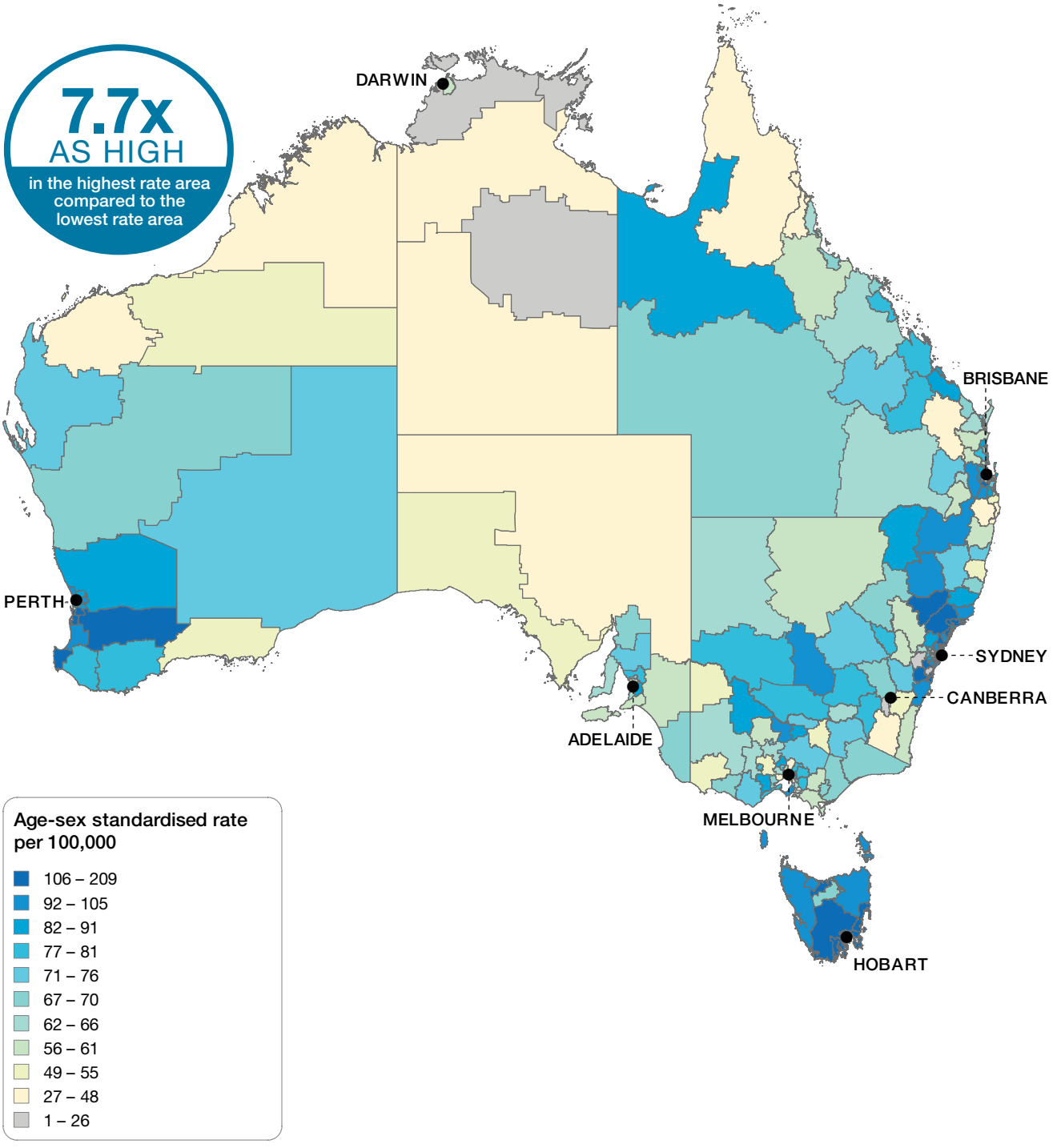
SA3	State	Rate	Hospitalisations
Sorell - Dodges Ferry	Tas	209	89
Brighton	Tas	197	77
Hobart - North East	Tas	186	257
Hobart - South and West	Tas	172	143
Camden	NSW	163	220
Hobart - North West	Tas	149	197
South East Coast	Tas	149	40
Central Highlands (Tas.)	Tas	148	42
Upper Hunter	NSW	140	102
Wollondilly	NSW	139	136
Hobart Inner	Tas	133	175

Notes:
Triangles (▲) indicate SA3s where only rates are published. The numbers of hospitalisations are not published (n.p.) for confidentiality reasons.
Denominator populations are the sum of the population estimates as at 31 December of 2015 to 2017. Population estimates as at 31 December are calculated as the average of the 30 June populations before and after the relevant December.
For further detail about the methods used, please refer to the Technical Supplement.
Sources: AIHW analysis of National Hospital Morbidity Database and ABS Estimated Resident Populations 30 June of 2015 to 2018.

Lumbar spinal decompression, 18 years and over

Rates across Australia

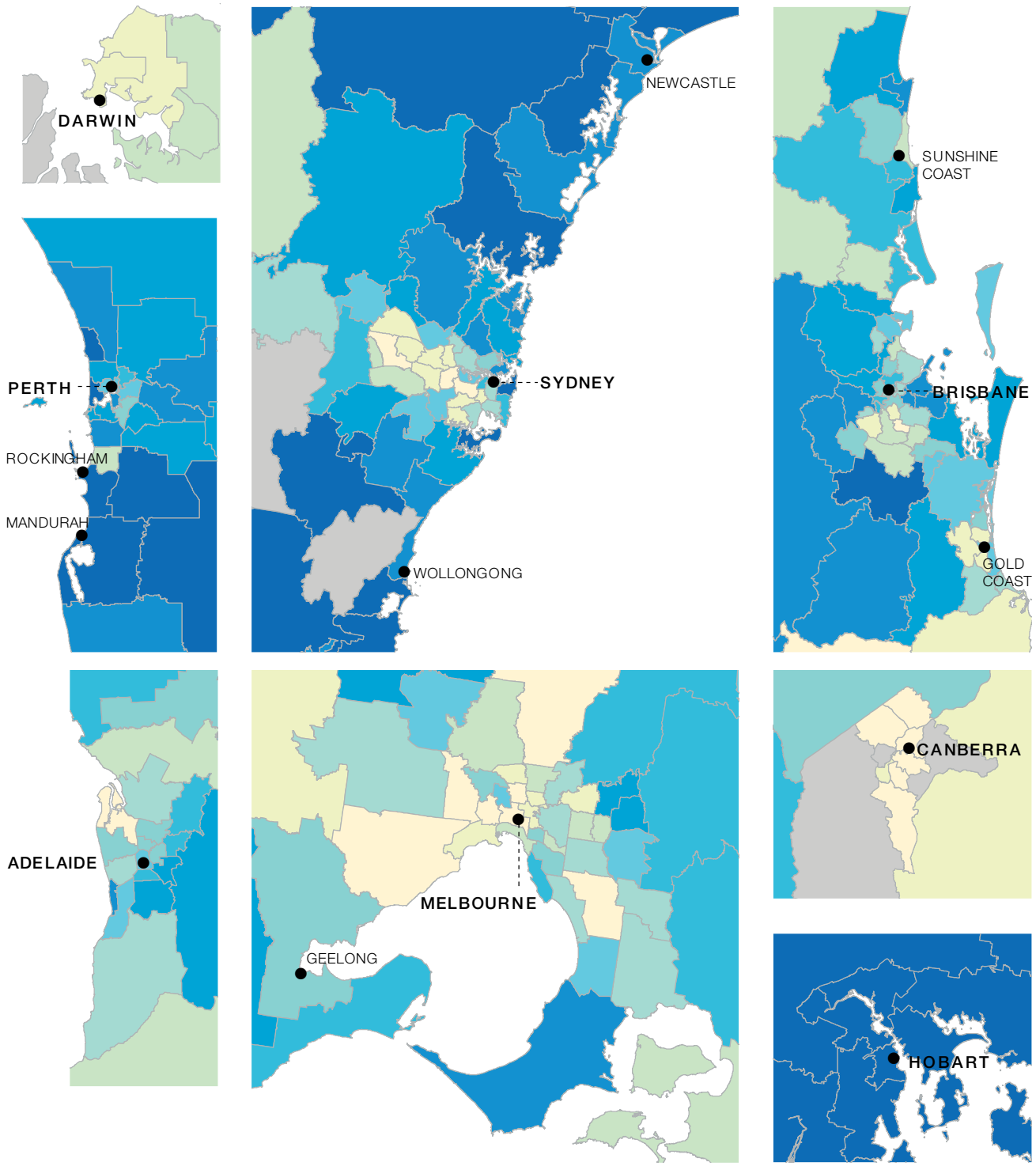
Figure 4.12: **Number of hospitalisations for lumbar spinal decompression (excluding lumbar spinal fusion) per 100,000 people aged 18 years and over, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2015–16 to 2017–18**



Notes:
Denominator populations are the sum of the population estimates as at 31 December of 2015 to 2017. Population estimates as at 31 December are calculated as the average of the 30 June populations before and after the relevant December.
For further detail about the methods used, please refer to the Technical Supplement.
Sources: AIHW analysis of National Hospital Morbidity Database and ABS Estimated Resident Populations 30 June of 2015 to 2018.

Rates across capital city areas

Figure 4.13: **Number of hospitalisations for lumbar spinal decompression (excluding lumbar spinal fusion) per 100,000 people aged 18 years and over, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2015–16 to 2017–18**



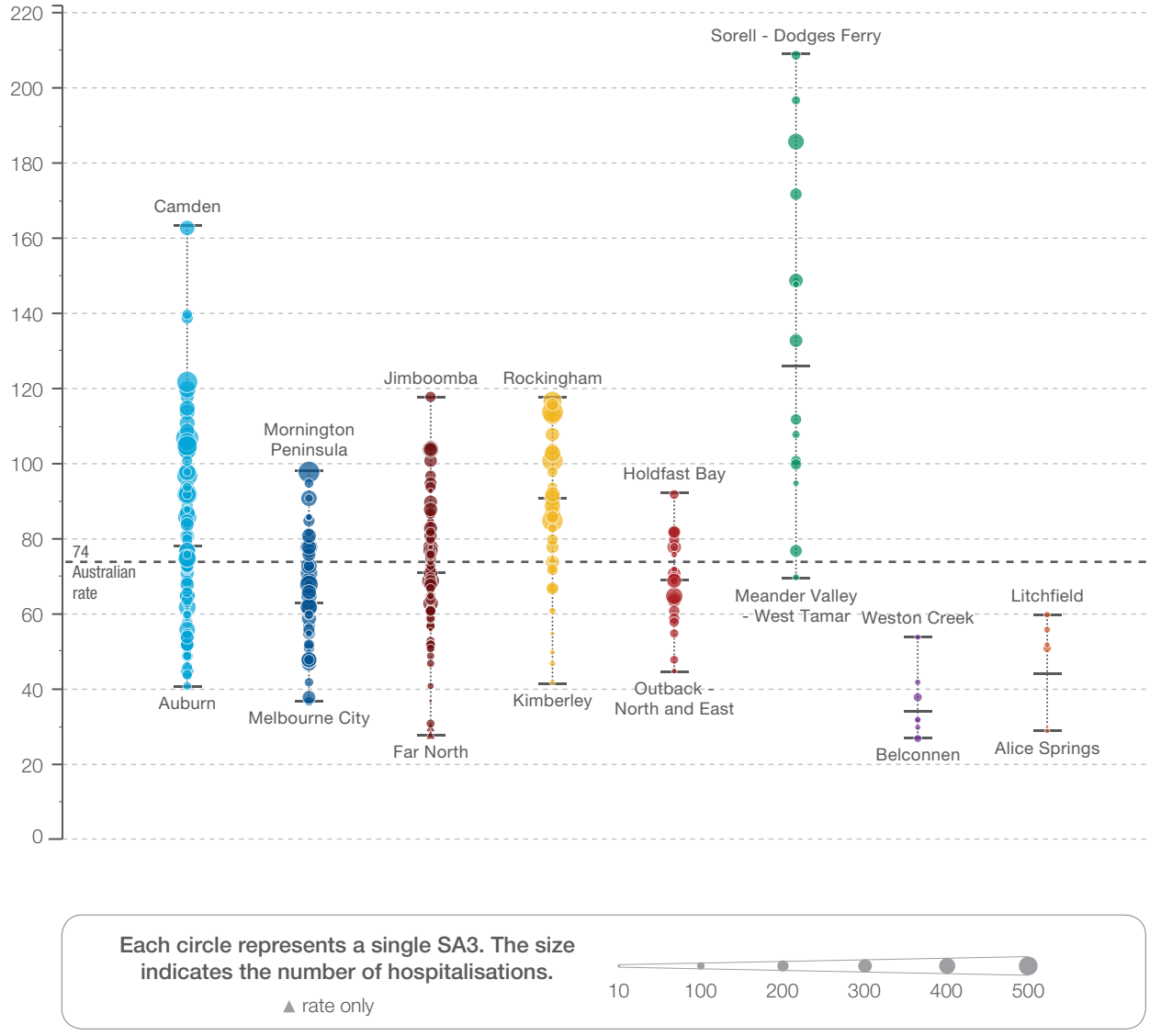
Notes:
Denominator populations are the sum of the population estimates as at 31 December of 2015 to 2017. Population estimates as at 31 December are calculated as the average of the 30 June populations before and after the relevant December.
For further detail about the methods used, please refer to the Technical Supplement.
Sources: AIHW analysis of National Hospital Morbidity Database and ABS Estimated Resident Populations 30 June of 2015 to 2018.

Lumbar spinal decompression, 18 years and over

Rates by state and territory

Figure 4.14: Number of hospitalisations for lumbar spinal decompression (excluding lumbar spinal fusion) per 100,000 people aged 18 years and over, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2015–16 to 2017–18

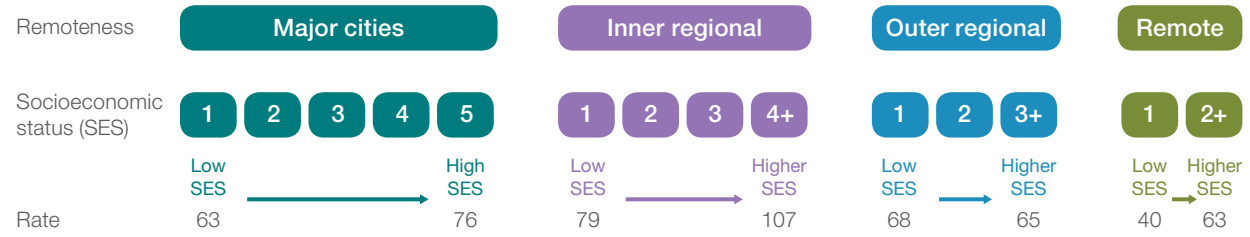
	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Highest rate	163	98	118	117	92	209	54	60
State/territory	78	63	71	91	69	126	34	44
Lowest rate	41	37	28	42	45	70	27	29
No. hospitalisations	14,783	9,490	8,144	5,462	3,059	1,657	307	229

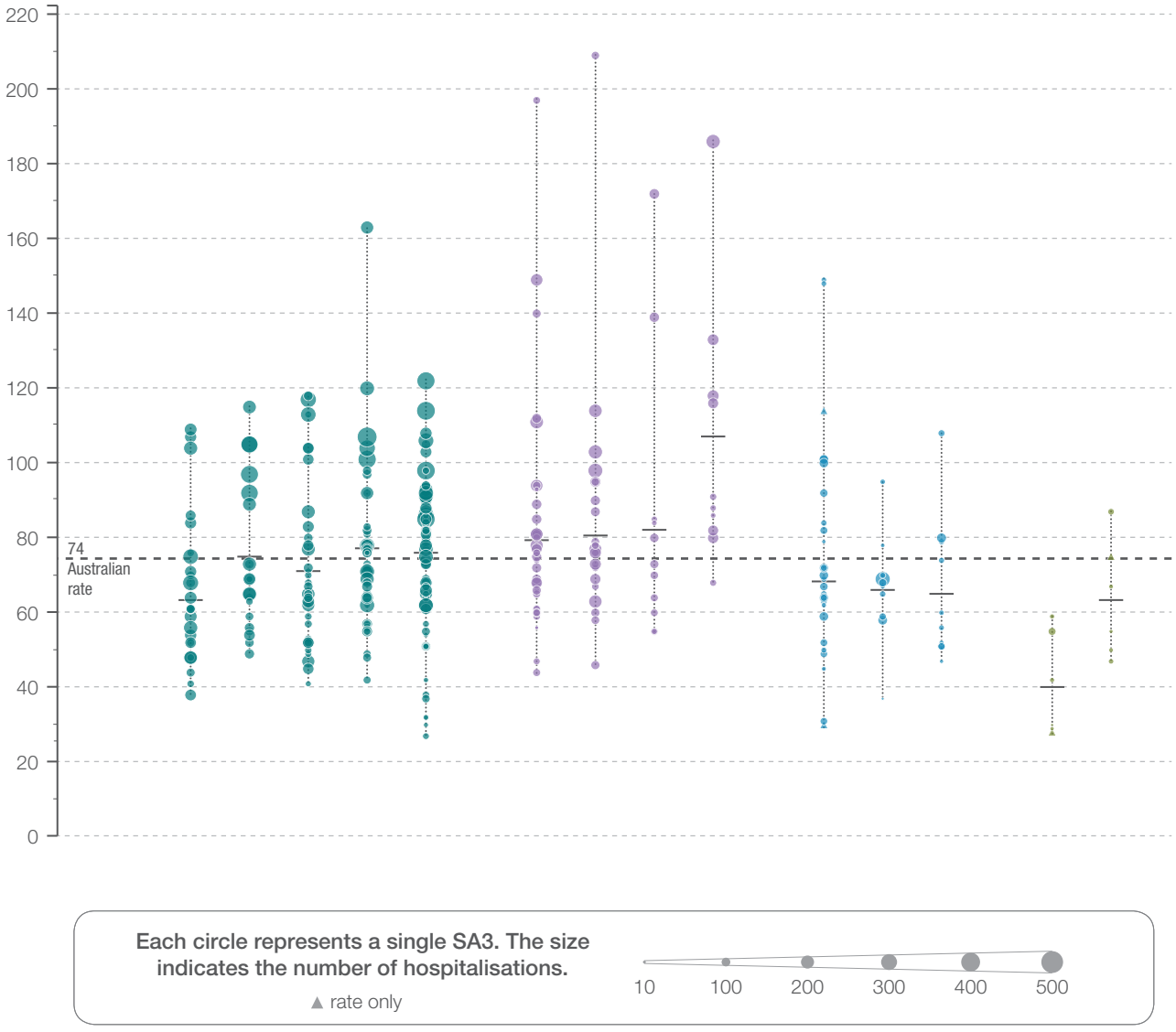


Notes:
Triangles (▲) indicate SA3s where only rates are published. The numbers of hospitalisations are not published for confidentiality reasons.
Denominator populations are the sum of the population estimates as at 31 December of 2015 to 2017. Population estimates as at 31 December are calculated as the average of the 30 June populations before and after the relevant December.
For further detail about the methods used, please refer to the Technical Supplement.
Sources: AIHW analysis of National Hospital Morbidity Database and ABS Estimated Resident Populations 30 June of 2015 to 2018.

Rates by remoteness and socioeconomic status

Figure 4.15: Number of hospitalisations for lumbar spinal decompression (excluding lumbar spinal fusion) per 100,000 people aged 18 years and over, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2015–16 to 2017–18





Each circle represents a single SA3. The size indicates the number of hospitalisations.

▲ rate only

10 100 200 300 400 500

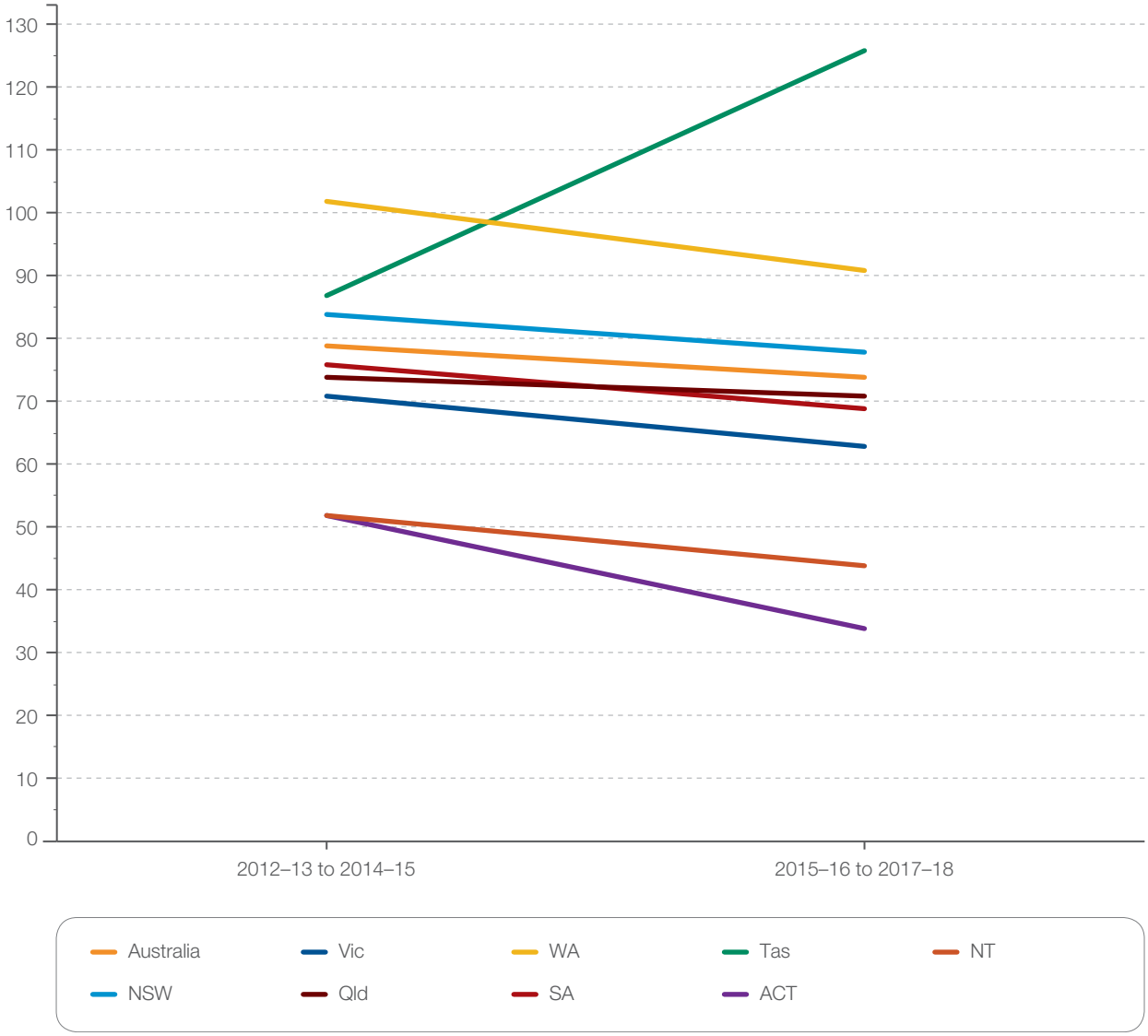
Notes:
Triangles (▲) indicate SA3s where only rates are published. The numbers of hospitalisations are not published for confidentiality reasons.
Denominator populations are the sum of the population estimates as at 31 December of 2015 to 2017. Population estimates as at 31 December are calculated as the average of the 30 June populations before and after the relevant December.
For further detail about the methods used, please refer to the Technical Supplement.
Sources: AIHW analysis of National Hospital Morbidity Database and ABS Estimated Resident Populations 30 June of 2015 to 2018.

Lumbar spinal decompression, 18 years and over

Rates across years

Figure 4.16: **Number of hospitalisations for lumbar spinal decompression (excluding lumbar spinal fusion) per 100,000 people aged 18 years and over, age and sex standardised, by state and territory of patient residence, 2012–13 to 2014–15 and 2015–16 to 2017–18**

	2012–13 to 2014–15	2015–16 to 2017–18
Highest SA3 rate	156	209
Australian rate	**79**	**74**
Lowest SA3 rate	30	27
Magnitude of variation	5.2	7.7
Magnitude of variation without top & bottom 10% SA3	2.0	2.1



Notes:
Denominator populations are the sum of the population estimates as at 31 December of 2012 to 2014 and 2015 to 2017. Population estimates as at 31 December are calculated as the average of the 30 June populations before and after the relevant December.
For further detail about the methods used, please refer to the Technical Supplement.
Sources: AIHW analysis of National Hospital Morbidity Database and ABS Estimated Resident Populations 30 June of 2012 to 2015 and 2015 to 2018.

Resources

Australian

- Back pain, Better Health Victoria, betterhealth.vic.gov.au/health/ConditionsAndTreatments/Back-pain
- Laminectomy, Better Health Victoria, betterhealth.vic.gov.au/health/conditionsandtreatments/laminectomy

International

- *Low Back Pain and Sciatica in Over 16s: Assessment and management*. Invasive treatments for low back pain and sciatica. NICE guideline NG59[8]
- The MIST guidelines: the Lumbar Spinal Stenosis Consensus Group guidelines for minimally invasive spine treatment[9]
- Danish national clinical guidelines for surgical and nonsurgical treatment of patients with lumbar spinal stenosis[3]
- Chou R. Subacute and chronic low back pain: Surgical treatment. In: Atlas SJ, editor. UpToDate. Waltham, MA: UpToDate; 2020

Australian initiatives

SUcceSS trial: SUrgery for Spinal Stenosis

This Australian trial will help to fill a gap in evidence by measuring the effect of spinal decompression versus placebo surgery on walking and function in patients with symptomatic lumbar spinal stenosis. This will be the first randomised placebo-controlled trial of surgery for spinal stenosis. It aims to provide high-quality evidence on the efficacy of spinal decompression for treating spinal stenosis.[17] The trial is enrolling participants until December 2022.

Australian Spine Registry

The Australian Spine Registry (spineregistry.org.au) has been collecting data since January 2018 about spine surgery in Australia, aiming to improve the quality of care. The registry is supported by the Spine Society of Australia, in partnership with Monash University. It collects data on the frequency of spine surgery; the usefulness, safety and results of different procedures; factors that predict favourable and unfavourable outcomes; and the care provided to Australians having spine surgery and how it compares with international best practice.

Clinical care standard

Low Back Pain Clinical Care Standard (planned for publication late 2021), Australian Commission on Safety and Quality in Health Care. www.safetyandquality.gov.au/standards/clinical-care-standards/low-back-pain-clinical-care-standard

Lumbar spinal decompression, 18 years and over

References

1. Ferreira ML, de Luca K. Spinal pain and its impact on older people. Best Pract Res Clin Rheumatol 2017;31(2):192–202.
2. Zaina F, Tomkins-Lane C, Carragee E, Negrini S. Surgical versus non-surgical treatment for lumbar spinal stenosis. Cochrane Database Syst Rev 2016 Jan 29(1):CD010264.
3. Rousing R, Jensen RK, Fruensgaard S, Strom J, Brogger HA, Degn JDM, et al. Danish national clinical guidelines for surgical and nonsurgical treatment of patients with lumbar spinal stenosis. Eur Spine J 2019;28(6):1386–96.
4. Machado GC, Maher CG, Ferreira PH, Harris IA, Deyo RA, McKay D, et al. Trends, complications, and costs for hospital admission and surgery for lumbar spinal stenosis. Spine (Phila Pa 1976) 2017;42(22):1737–43.
5. Arts MP, Kursumovic A, Miller LE, Wolfs JFC, Perrin JM, Van de Kelft E, et al. Comparison of treatments for lumbar disc herniation: systematic review with network meta-analysis. Medicine (Baltimore) 2019;98(7):e14410.
6. Jiang F, Wilson JRF, Badhiwala JH, Santaguida C, Weber MH, Wilson JR, et al. Quality and safety improvement in spine surgery. Global Spine J 2020;10(1 Suppl):17S–28S.
7. Kalichman L, Cole R, Kim DH, Li L, Suri P, Guermazi A, et al. Spinal stenosis prevalence and association with symptoms: the Framingham Study. Spine J 2009;9(7):545–50.
8. National Institute for Health and Care Excellence. Low back pain and sciatica in over 16s: assessment and management. Invasive treatments for low back pain and sciatica. NICE guideline NG59. London: NICE; 2016.
9. Deer TR, Grider JS, Pope JE, Falowski S, Lamer TJ, Calodney A, et al. The MIST guidelines: the Lumbar Spinal Stenosis Consensus Group guidelines for minimally invasive spine treatment. Pain Pract 2019;19(3):250–74.
10. Bailey CS, Rasoulinejad P, Taylor D, Sequeira K, Miller T, Watson J, et al. Surgery versus conservative care for persistent sciatica lasting 4 to 12 months. N Engl J Med 2020;382(12):1093–102.
11. Deyo RA, Mirza SK, Martin BI, Kreuter W, Goodman DC, Jarvik JG. Trends, major medical complications, and charges associated with surgery for lumbar spinal stenosis in older adults. JAMA 2010;303(13):1259–65.
12. Lurie JD, Tosteson TD, Tosteson AN, Zhao W, Morgan TS, Abdu WA, et al. Surgical versus nonoperative treatment for lumbar disc herniation: eight-year results for the spine patient outcomes research trial. Spine (Phila Pa 1976) 2014;39(1):3–16.
13. Weinstein JN, Tosteson TD, Lurie JD, Tosteson A, Blood E, Herkowitz H, et al. Surgical versus nonoperative treatment for lumbar spinal stenosis four-year results of the Spine Patient Outcomes Research Trial. Spine (Phila Pa 1976) 2010;35(14):1329–38.
14. Ghogawala Z, Dziura J, Butler WE, Dai F, Terrin N, Magge SN, et al. Laminectomy plus fusion versus laminectomy alone for lumbar spondylolisthesis. N Engl J Med 2016;374(15):1424–34.
15. Australian Commission on Safety and Quality in Health Care. Australian atlas of healthcare variation. Sydney: ACSQHC; 2015.
16. Australian Commission on Safety and Quality in Health Care. The second Australian atlas of healthcare variation. Sydney: ACSQHC; 2017.
17. Anderson DB, Ferreira ML, Harris IA, Davis GA, Stanford R, Beard D, et al. SUcceSS, SUrgery for Spinal Stenosis: protocol of a randomised, placebo-controlled trial. BMJ Open 2019;9(2):e024944.