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Chapter 3

Ear, nose and throat surgery for children and young people

At a glance

Tonsillectomy

Tonsillectomy is used to treat recurrent throat infections (tonsillitis) and obstructive sleep apnoea (OSA), but there are uncertainties about its benefits. It is one of the most common surgical procedures performed in children in Australia.

The Atlas found that, in 2017–18, the rate of hospitalisation for tonsillectomy in children and young people was six times higher in the local area with the highest rate than in the area with the lowest.* It also found that the rate of tonsillectomy hospitalisations increased by 3% between 2012–13 and 2017–18.

More information is needed to ensure evidencebased care for children with recurrent tonsillitis or OSA. Further developing the Australian Society of Otolaryngology Head and Neck Surgery ENT data registry could add to the knowledge base about outcomes for specific patient groups and support more effective peer review of tonsillectomy.

Myringotomy

Myringotomy is another common surgical procedure in young children. It is used to treat otitis media, a middle ear infection that can cause hearing loss. Myringotomy (with insertion of grommets) is recommended for children who have otitis media with effusion (fluid) and documented hearing loss in both ears for more than three months.

Otitis media is the key cause of hearing loss in Aboriginal and Torres Strait Islander children, who are at risk of earlier, more severe and longer-lasting middle ear disease than other children. This chapter examined rates in Aboriginal and Torres Strait Islander children for the first time in the Atlas series.

The Atlas found that, in 2017–18, the rate of hospitalisation for myringotomy in children and young people was about eight times higher in the local area with the highest rate than in the area with the lowest.* Although the rate for Aboriginal and Torres Strait Islander children was 6% higher than the rate for other children, it was lower than would be expected if surgery rates matched the prevalence of otitis media in this group.

A comprehensive approach combining prevention, early treatment and coordinated management is urgently required to reduce rates of otitis media in Aboriginal and Torres Strait Islander children.

^{*} After standardising to remove age and sex differences between populations. The Fourth Australian Atlas of Healthcare Variation

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.

Tonsillectomy

- 3a. The Australian and New Zealand Society of Paediatric Otorhinolaryngology to work with relevant clinical colleges to develop clinical guidelines on tonsillectomy in children, and subsequent to this the Commission to develop a clinical care standard with safety and quality indicators.
- 3b. Health service organisations to:
 - Conduct audits of indications for tonsillectomy and tonsillectomy rates to monitor variation 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
 - ii. Incorporate individual clinicians' audit data as part of re-credentialing processes.

Myringotomy

- 3c. State and territory health departments and health service organisations to set benchmarks for access to paediatric audiology services.
- 3d. The Australian Government Department of Health to develop and implement two national ear and hearing health performance indicators for Aboriginal and Torres Strait Islander children consistent with the recommendations of the National Aboriginal and Torres Strait Islander Hearing Health Advisory Panel:
 - i. Measure the proportion of Aboriginal and Torres Strait Islander children who received an annual ear and hearing health check and the proportion of these who were found to have ear and/or hearing health conditions
 - ii. Measure the proportion of Aboriginal and Torres Strait Islander children who received audiology services and the proportion of these diagnosed with hearing loss.
- 3e. The Australian Government Department of Health, as part of the Roadmap for Hearing Health, to publish data on progress against the integrated national approach to undertaking ear health checks of children aged 0–6, with the goal of every Aboriginal and Torres Strait Islander child having regular ear health checks.
- 3f. Health service organisations to:
 - Conduct audits of myringotomy and myringotomy rates to monitor variation and provide the results back to clinicians to act upon in line with Action 1.28 of the NSQHS Standards
 - ii. Incorporate individual clinician's audit data as part of recredentialing processes.

3.1 Tonsillectomyhospitalisations,17 years and under

Why is this important?

Tonsillectomy is one of the most common procedures performed in children in Australia.¹ The rate of tonsillectomy in people of all ages is higher in Australia than in New Zealand or the United Kingdom.² Tonsillectomy is used to treat recurrent throat infections that affect the tonsils (tonsillitis) and obstructive sleep apnoea (OSA), but there are uncertainties about its benefits. There is moderate-quality evidence to support tonsillectomy over watchful waiting in children with recurrent tonsillitis.³ There is also evidence that tonsillectomy benefits some children with OSA, but some children get better without surgery.⁴ Uncertainties about benefits of tonsillectomy can make it difficult for parents to make decisions about treatment.

What did we find?

In 2017–18, the rate of hospitalisation for tonsillectomy in people aged 17 years and under was **6.0 times as high** in the area with the highest rate compared with the area with the lowest rate. Between 2012–13 and 2017–18, the rate of tonsillectomy hospitalisations increased by 3%.

What can be done?

There is an urgent need for information about the short- and long-term outcomes of tonsillectomy. Further developing the ear, nose and throat (ENT) data registry of the Australian Society of Otolaryngology Head and Neck Surgery could capture information on eligible patients, provide information for effective peer review of tonsillectomy and add to the knowledge base about outcomes for specific patient groups. All parents who decide their children should have tonsillectomy should be informed about the registry. If the child meets the registration criteria, parents should be asked if they are willing for the child to be included. Surgeons should contribute data on all consenting patients, and regularly audit and review patient outcome data with their peers.

Other actions to address variation include updating the 2008 Australian clinical practice guidelines, providing information to parents about the risks and benefits of surgery, and encouraging shared decision making.

Tonsillectomy hospitalisations, 17 years and under

Context

The first Australian Atlas of Healthcare Variation identified substantial variation in age-standardised hospitalisations for tonsillectomy in children and young people. This variation – 6.5 times as high in the local area (Statistical Area Level 3 – SA3) with the highest rate as in the area with the lowest rate – warrants further investigation.⁵

Tonsillectomy is a surgical procedure to remove the tonsils, which are soft tissue masses on each side at the back of the throat. Tonsils are prone to infection and inflammation that can lead to enlargement. In some children, significant enlargement of the tonsils may cause a range of breathing problems during sleep, including OSA.⁶

Tonsillectomy can be performed with or without surgical removal of the adenoids (adenoidectomy).⁶ Adenoids are glands that sit in the back of the throat behind the nose. Like tonsils, adenoids help defend the body against harmful bacteria and viruses that enter the body through the mouth and nose. An adenotonsillectomy is when the tonsils and the adenoids are removed.

Tonsillectomy is one of the most common procedures performed in children in Australia.¹ The rate of tonsillectomies is higher in Australia than in many reporting Organisation for Economic Co-operation and Development (OECD) countries. In an analysis of OECD data on tonsillectomies per 100,000 people of all ages between 1993 and 2014, the rate in Australia was 1.7 times and 1.9 times as high as the rates in New Zealand and the United Kingdom, respectively.²

Tonsillectomy has traditionally been used to treat recurrent throat infections that affect the tonsils (tonsillitis). In the United States in the past 30 years, there has been a decline in the use of tonsillectomy to treat recurrent tonsillitis and a gradual increase in the use of tonsillectomy to treat OSA.⁶

In Australia, a multi-centre Victorian study of almost 60,000 patients showed that tonsillectomy for OSA had driven an increase in the number of tonsillectomies between 2010 and 2015.⁷ An accompanying small decline in the rate of tonsillectomies for recurrent tonsillitis led to OSA overtaking throat infections as the main reason for tonsillectomy in Victoria in 2014–15.⁷ The reason for the increase in tonsillectomies for OSA is unclear but could involve greater awareness of the possible links between OSA and learning and behavioural problems.⁷

Recurrent tonsillitis

Compared with no surgery, in children who have frequent tonsillitis, tonsillectomy reduces the number of throat infections, visits to the doctor and school absences in the first year after the procedure, but the benefits do not last.⁸

A Cochrane systematic review of adenotonsillectomy for recurrent tonsillitis in children found that children who had surgery had fewer episodes of sore throat in the first year than those who had non-surgical treatment. However, the effect was small, and many children improved spontaneously without surgery. The authors concluded that the potential benefit of surgery must be weighed against the risks of the procedure, particularly bleeding.³

There are no current Australian or United Kingdom evidence-based guidelines for the role of tonsillectomy in managing recurrent throat infections in children.

A 2018 United States guideline advises that clinicians may recommend tonsillectomy as an option for children who have frequent tonsillitis (seven or more episodes per year, five or more per year for two years, or three or more per year for three years).⁶ The guideline states that patient preference should have a substantial role in the decision.

Obstructive sleep apnoea

Children with OSA have repeated episodes of partial or complete blockage of the upper airways, which can cause problems during sleep, including snoring, gasping or choking, and pauses in breathing.⁶ Untreated OSA in some children may lead to impaired growth, cognitive and behavioural problems, and cardiovascular effects.⁹ OSA is thought to be usually caused by large tonsils and adenoids (adenotonsillar hypertrophy).⁶ It is common in children, with peak incidence between 2 and 8 years of age, most likely due to the large size of tonsils and adenoids compared with the size of the airway.⁹

OSA is more common in obese children, and in children who have Down syndrome, abnormalities of the brain and facial bones, or neuromuscular disorders.¹⁰

General practitioners (GPs) use snoring and sleeprelated symptoms to identify children with possible moderate to severe OSA who should be referred for consideration of adenotonsillectomy. Overnight sleep studies that measure obstructive respiratory events per hour are the gold standard for diagnosing OSA.^{6,11} In Australia, sleep studies can only be ordered and assessed by a sleep specialist.¹² OSA can be categorised by this type of sleep study as mild, moderate or severe.

Adenotonsillectomy is generally considered the first-line intervention for children with moderate or severe OSA and enlarged tonsils.⁹ Watchful waiting for six months may be an acceptable option for some otherwise-healthy children with mild or moderate OSA and tolerable symptoms.⁹

A Cochrane systematic review found mixed evidence about the impact of adenotonsillectomy in otherwisehealthy children aged 5–9 years with mild to moderate OSA (diagnosed by sleep study) up to 12 months after the surgery.⁴ It found:

- High-quality evidence that the procedure has no benefit in terms of objective measures of attention and cognitive function compared with watchful waiting
- High-quality evidence that it improves sleep study scores compared with watchful waiting
- Moderate-quality evidence that it is beneficial in terms of symptoms, behaviour and quality of life (as rated by caregivers).

The review noted that, in one key randomised trial (the CHAT study)¹³, sleep study findings returned to normal in 46% of the non-surgical group within seven months, compared with 79% of the surgical group.

Two recent randomised controlled trials examined a gap in evidence - the impact of adenotonsillectomy on young children with OSA. A Swedish study compared surgery with watchful waiting in 60 children aged 2-4 years with mild to moderate OSA. It found no statistically significant difference between the groups in changes in sleep study scores (the primary outcome of the study). However, surgery was more effective than watchful waiting in improving sleep study scores in a small group of children with moderate OSA (n = 24). The study also found a statistically significant difference in quality-of-life scores after adenotonsillectomy at six months compared with watchful waiting. The researchers concluded that otherwise-healthy children aged 2-4 years with mild OSA and mild effect on quality of life would benefit from watchful waiting, whereas children with moderate OSA should be considered for surgery.¹⁴

The other study, in Australia, compared outcomes in preschool children with mild to moderate OSA who had early adenotonsillectomy with children on the waiting list who had no surgery. At 12 months, no differences were seen in cognitive function between the two groups. However, children who had adenotonsillectomy had reduced obstructive respiratory events (measured by sleep study) and improved behaviour (rated by parents) compared with children who did not have surgery.¹⁵

Uncertainties about the benefits of tonsillectomy for children with OSA and limited access to formal diagnostic testing can make it difficult for clinicians and parents to make appropriate decisions about treatment. These uncertainties include a lack of evidence about the long-term impact of tonsillectomy¹⁶, and how parents and clinicians can distinguish between simple snoring and OSA in the absence of sleep studies.⁴ The Cochrane review summarised above found that there was inconclusive evidence that children who had been diagnosed with OSA based on clinical grounds alone benefit from tonsillectomy.⁴

Tonsillectomy hospitalisations, 17 years and under

Given the uncertainties around the procedure to treat OSA, the Cochrane review authors suggested that doctors and parents should carefully consider the benefits and risks of surgery versus watchful waiting, because children could get better without treatment.⁴

OSA and children with obesity

OSA is more common in children who are obese: prevalence is 19–61% in children with obesity, compared with 1–6% in children with a healthy weight.¹⁷ Children with obesity are more likely to have severe OSA.⁶

With the prevalence of childhood OSA expected to increase in line with rising obesity levels in many developed countries⁴, the management of obesityrelated OSA is a key issue.

A systematic review found that children with OSA who are obese benefited from tonsillectomy. However, the outcome was less satisfactory than in normal-weight children, and there was a higher risk of persistent OSA after surgery (33–76% in children who are obese, compared with 15–37% in normal-weight children).¹⁷ Children with obesity also have a higher risk of respiratory complications immediately after surgery.¹⁸

There is evidence that weight loss can significantly improve OSA symptoms in children and adolescents with obesity, although few studies have been conducted.¹⁷ More research is needed into the effectiveness of weight loss as a treatment for OSA in children.^{4,17} Weight loss is also recommended for children who are obese who still have OSA symptoms after adenotonsillectomy.⁹

Potential harms of tonsillectomy

Tonsillectomy has the highest rate of postoperative complications of all childhood surgical procedures.¹⁹ Complications include respiratory compromise, pain, bleeding, dehydration, nausea and vomiting, speech disorders and, rarely, death.^{6,20} Postoperative bleeding is the most common complication of tonsillectomy and can be life-threatening. Rates of readmission due to bleeding vary in studies from 2% to 5%.¹

Rates of unplanned readmission after tonsillectomy are high in Australia²¹ and internationally.¹⁹ In Australia, in 2015–16, the rate of unplanned readmission after adenotonsillectomy (34.7 per 1,000 separations) was the highest for selected procedures in public hospitals.²²

Why revisit variation in tonsillectomy?

The first Atlas examined age-standardised hospitalisations for tonsillectomy for children aged 17 years and under.

It found that, in 2012–13, the number of tonsillectomy hospitalisations was 6.5 times higher in the area with the highest rate compared with the area with the lowest rate. Rates were highest in inner regional areas and lowest in remote areas. There were no patterns in hospitalisation rates for tonsillectomy according to socioeconomic status.

However, since the first Atlas, there has been evidence of differences in rates of tonsillectomy according to socioeconomic advantage. In 2017–18, people living in the most socioeconomically disadvantaged areas had the lowest rate of separations for tonsillectomy (2.1 per 1,000 population), compared with rates of 2.5–2.7 per 1,000 population for areas with higher socioeconomic status.²³

Given the wide variation seen in the first Atlas, and evidence of differences in access to tonsillectomy according to socioeconomic status, it is important to revisit the item to provide a comparison over time, particularly to see whether local variations continue.

It is also important to revisit variation in tonsillectomy because Australia continues to have a higher rate than New Zealand or the United Kingdom², and because of uncertainties about the benefits of tonsillectomy and the lack of current Australian guidelines.

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 tonsillectomy per 100,000 people aged 17 years and under in 2012–13, 2015–16 and 2017–18.

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.

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.

What do the data show?

Magnitude of variation

In 2017–18, there were 42,509 hospitalisations for tonsillectomy, representing 750 hospitalisations per 100,000 people aged 17 years and under (the Australian rate). The median age for patients was 5 years, and this was similar across Australia.

The number of hospitalisations for tonsillectomy across 320* local areas (Statistical Area Level 3 – SA3) ranged from 305 to 1,836 per 100,000 people. The rate was **6.0 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 387 per 100,000 people in the Northern Territory to 850 per 100,000 people in the Australian Capital Territory (Figures 3.3–3.6).

After the highest and lowest 10% of results were excluded and 256 SA3s remained, the number of hospitalisations per 100,000 people was 2.2 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 tonsillectomy hospitalisations were higher in inner regional areas than outer regional areas, major cities and remote areas (Figure 3.7). There was no clear pattern according to socioeconomic status in major cities and inner regional areas. In outer regional areas, rates were higher in areas of socioeconomic disadvantage. In remote areas, rates were lower in areas of socioeconomic disadvantage.

* There are 340 SA3s. For this item, data were suppressed for 20 SA3s due to a small number of hospitalisations and/or population in an area.

Tonsillectomy hospitalisations, 17 years and under

Analysis by Aboriginal and Torres Strait Islander status

In 2017–18, the rate for Aboriginal and Torres Strait Islander children (620 per 100,000 people) was 18% lower than the rate for other Australians (759 per 100,000 people) (Figure 3.1).

Figure 3.1: Number of hospitalisations for tonsillectomy per 100,000 people aged 17 years and under, age and sex standardised, by state and territory of patient residence, by Aboriginal and Torres Strait Islander status, 2017–18



The data for Figures 3.1 and 3.2, and the data and graphs for analysis by Primary Health Networks are available at safetyandquality.gov.au/atlas

Analysis by patient funding status

Overall, 60% of hospitalisations for tonsillectomy were for privately funded patients. This proportion varied from 52% in Victoria to 76% in Western Australia (Figure 3.2).

Figure 3.2: Number of hospitalisations for tonsillectomy per 100,000 people aged 17 years and under, age and sex standardised, by state and territory of patient residence, by patient funding status, 2017–18



Notes:

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.

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.

Population estimates as at 31 December 2017 are calculated as the average of the 30 June populations in 2017 and 2018.

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

Trends over time

Between 2012–13 and 2017–18, the rate of tonsillectomy hospitalisations per 100,000 people nationally increased by 3% (Figure 3.8).

For Aboriginal and Torres Strait Islander children, the rate of tonsillectomy hospitalisations per 100,000 people nationally increased by 58% during this period (Figure 3.9).

Interpretation

Variation in rates of tonsillectomy 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.

Rates of underlying disease

Variation is warranted and desirable when it reflects variation in the underlying need for care. However, use of tonsillectomy may not match patterns of patient need.

There are indications that rates of sore throat and rates of obstructive sleep symptoms may be higher in areas of severe socioeconomic disadvantage.⁷ Indigenous children from the Torres Strait and Northern Peninsula Area had a relatively high prevalence of symptoms suggestive of obstructive sleep problems in a 2004 study²⁴, although research in this area is lacking.²⁵

Clinical decision-making

High or low rates of tonsillectomy in some areas may be related to clinical practice that is not supported by evidence.

A recent Australian study found that around one-quarter of patients with serious recurrent episodes of tonsillitis were not referred for a tonsillectomy.²⁶ A similar pattern has been observed in the United Kingdom, where a study found that selection for tonsillectomy did not regularly follow evidence-based criteria.²⁷

There is no current Australian evidence-based guideline for the use of tonsillectomy in managing recurrent throat infections and OSA in children. The most recent national document is a 2008 position paper on indications for tonsillectomy and adenotonsillectomy.²⁸

Differences in diagnosing OSA may contribute to variation. The gold standard for diagnosing OSA before tonsillectomy is an overnight inpatient sleep study.^{1,6,10} The test is expensive, and there is growing demand for use of the limited facilities that provide sleep studies for children in Australia^{1,10,29}, demonstrating the need for appropriate patient selection.

The referral process for sleep studies may also contribute to variation. Under the Medicare Benefits Schedule, a paediatric sleep specialist is required to review a child with OSA symptoms before and after the sleep study. These requirements may reduce appropriate access to sleep studies and increase waiting times for review of ENT symptoms – for example, in rural and remote areas.³⁰

Tonsillectomy hospitalisations, 17 years and under

Access to tonsillectomy services

Ability to pay out-of-pocket costs for tonsillectomy is likely to be lower in areas of socioeconomic disadvantage.

Research has identified increasing rates of adenotonsillectomy in children who live in areas of socioeconomic advantage, suggesting increasing demand for tonsillectomy in more advantaged areas and lack of access to surgery in disadvantaged groups.⁷

This pattern was not reflected across all Atlas data, apart from remote areas, where the rate was lower in areas of socioeconomic disadvantage.

Distance to travel to see ENT surgeons may affect clinical decision-making. Remote and rural patients often have to travel a long way to see a specialist. This may influence a surgeon to recommend surgery earlier, because of difficulties for the patient in returning for follow-up visits.

For metropolitan patients, healthcare access may depend on cost as well as health literacy (which may be influenced by cultural and language barriers).

Parents of Aboriginal and Torres Strait Islander children may not seek care for OSA because of lack of awareness of potential implications for the child's health. Support from family and friends is an important factor in influencing the uptake of therapy.³¹ Improved access to ENT surgeons through government programs may have contributed to the increase in tonsillectomy rates for Aboriginal and Torres Strait Islander children between 2012–13 and 2017–18.

Rates of private health insurance and waiting times

Access to a hospital bed is likely to be one of the largest influences on variation in care.

Having private health insurance allows affordable access to the procedure in private hospitals. Atlas data found that, overall, 60% of hospitalisations for tonsillectomy were for privately funded patients. This aligns with other admitted patient data that showed that, in 2017–18, 50% more tonsillectomies were performed in private hospitals than in public hospitals (1.5 operations per 1,000 population in private hospitals, compared with 1.0 per 1,000 population in public hospitals).²³

In 2017–18, the median waiting time for elective tonsillectomy in a public hospital was 121 days, ranging from 23 days in the Northern Territory to 293 days in New South Wales and 326 days in the Australian Capital Territory.³² Having private health insurance significantly reduces waiting time for a tonsillectomy in a public hospital. In 2015–16, public patients waited almost three times longer than privately insured patients to have a tonsillectomy in a public hospital (median waiting times 138 days and 49 days, respectively).³³ However, shorter waiting times for private patients may reflect severe OSA or other medical problems.

Long waits for surgery in public hospitals may mean that some parents choose to pay for their child's operation in the private system rather than having the child continue to have OSA or tonsillitis.

Lower rates of tonsillectomy among Aboriginal and Torres Strait Islander children may reflect lower rates of private health insurance cover in this population.

Parents' preference

Consumers' understanding of the options, and risks and benefits of tonsillectomy may affect variation. Parents may not understand that symptoms might resolve without treatment. They may also have unrealistic beliefs that tonsillectomy will always cure OSA.⁶ (Tonsillectomy does not resolve around 17–40% of uncomplicated cases of OSA.²¹)

The first Atlas recommended that the Australian Commission on Safety and Quality in Health Care review patient information about tonsillectomy in Australia.⁵ The review found that most (37 out of 50) resources examined did not include a description of what would occur if recurrent tonsillitis and OSA were not treated.³⁴ Similarly, an Australian study found that most online consumer health information about adenotonsillectomy for children with OSA was highly favourable about the potential benefits of surgery and downplayed potential complications or non-surgical options.³⁵ Since this study, Safer Care Victoria has published a fact sheet to help GPs and families discuss the risks and benefits of tonsillectomy.³⁶

Addressing variation

More information is needed to ensure that evidencebased care is provided to children with recurrent tonsillitis or OSA. There is an urgent need for information about the short- and long-term outcomes of tonsillectomy for different indications.

Further developing the ENT data registry of the Australian Society of Otolaryngology Head and Neck Surgery could capture information on eligible patients, provide comparative feedback to ENT surgeons on their rates of tonsillectomy and add to the knowledge base about outcomes for specific groups of patients. All parents who decide that their children should have tonsillectomy should be informed about the ENT data registry and, if their child meets the registration criteria, should be asked if they are willing for them to be included. Surgeons undertaking this procedure should contribute data on eligible patients to the ENT data registry and participate in routine peer review.

Other options to address variation include the following:

Improve evidence base, and access to diagnosis and appropriate treatment

- Improve the evidence behind the indications for surgery and non-surgical options to inform clinical practice
- Update Australian clinical practice guidelines, although in the United Kingdom variation in rates of tonsillectomy increased despite publication of guidelines³⁶
- Disseminate the guidelines and promote uptake, including through parent-focused education and an awareness strategy using fact sheets, social media and other channels

- Ensure that the updated guidelines include specific and targeted recommendations to increase access to tonsillectomy among Aboriginal and Torres Strait Islander children who need the procedure
- Prioritise public health, clinical research and intervention programs that aim to address disparity and improve Aboriginal and Torres Strait Islander children's access to surgery and other treatments
- Ensure that culturally capable and publicly funded ENT services are embedded in the Aboriginal and Torres Strait Islander community care sector, and that there are processes to ensure appropriate selection and triage for remote Aboriginal and Torres Strait Islander children to have ENT surgery in public hospitals.

Improve data about access

• Improve data about access to tonsillectomy, such as ENT surgeon distribution, rates of private health insurance by SA3 and waiting lists.

Improve shared decision making

- Encourage shared decision making so that rates of the procedure are based on patients' needs and assessment of benefits and risks³⁷
- Support shared decision making by giving patients accurate information, and informing GPs to avoid over- or underestimating the risks and benefits of tonsillectomy, which could drive variation in referral to an ENT surgeon; Safer Care Victoria's decision-making tools for GPs and parents for tonsillectomy (see 'Australian initiatives' on page 190) provide this opportunity for shared decision making and could be disseminated nationally
- Raise awareness of the health risks of untreated OSA and the benefits of treatment as an important first step for Aboriginal and Torres Strait Islander people to seek treatment.³¹

Tonsillectomy hospitalisations, 17 years and under

Rates by local area

Figure 3.3: Number of hospitalisations for tonsillectomy per 100,000 people aged 17 years and under, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2017–18



Notes:

Triangles (A) indicate SA3s where only rates are published. The numbers of hospitalisations are not published for confidentiality reasons.

Population estimates as at 31 December 2017 are calculated as the average of the 30 June populations in 2017 and 2018.

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

Tonsillectomy hospitalisations, 17 years and under Rates across Australia

Figure 3.4: Number of hospitalisations for tonsillectomy per 100,000 people aged 17 years and under, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2017–18



Notes:

Population estimates as at 31 December 2017 are calculated as the average of the 30 June populations in 2017 and 2018.

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

Rates across capital city areas

Figure 3.5: Number of hospitalisations for tonsillectomy per 100,000 people aged 17 years and under, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2017–18



Notes:

Population estimates as at 31 December 2017 are calculated as the average of the 30 June populations in 2017 and 2018.

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

Tonsillectomy hospitalisations, 17 years and under Rates by state and territory

Figure 3.6: Number of hospitalisations for tonsillectomy per 100,000 people aged 17 years and under, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2017–18



Notes:

Triangles (a) 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. Population estimates as at 31 December 2017 are calculated as the average of the 30 June populations in 2017 and 2018. For further detail about the methods used, please refer to the Technical Supplement. **Sources:** AlHW analysis of National Hospital Morbidity Database and ABS Estimated Resident Populations 30 June of 2017 and 2018.

Rates by remoteness and socioeconomic status

Figure 3.7: Number of hospitalisations for tonsillectomy per 100,000 people aged 17 years and under, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2017–18



Notes:

Triangles (a) indicate SA3s where only rates are published. The numbers of hospitalisations are not published for confidentiality reasons. Population estimates as at 31 December 2017 are calculated as the average of the 30 June populations in 2017 and 2018.

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

Tonsillectomy hospitalisations, 17 years and under

Rates across years

Figure 3.8: Number of hospitalisations for tonsillectomy per 100,000 people aged 17 years and under, age and sex standardised, by state and territory of patient residence, 2012–13, 2015–16 and 2017–18



Notes:

Population estimates as at 31 December of the relevant year 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.

Rates for Aboriginal and Torres Strait Islander people across years

Figure 3.9: Number of hospitalisations for tonsillectomy per 100,000 people aged 17 years and under, age and sex standardised, by state and territory of patient residence, by Aboriginal and Torres Strait Islander status, 2012–13, 2015–16 and 2017–18



Notes:

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, with variation among states and territories.

Population estimates as at 31 December of the relevant year 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.

Tonsillectomy hospitalisations, 17 years and under

Resources

- Clinical practice guideline: tonsillectomy in children (update), American Academy of Otolaryngology – Head and Neck Surgery⁶
- Plain language summary for patients: tonsillectomy in children, American Academy of Otolaryngology – Head and Neck Surgery³⁸
- Tonsillectomy for obstructive sleep-disordered breathing or recurrent throat infection in children, Agency for Healthcare Research and Quality⁸

Resources for GPs

Resources to support GPs in shared decision making with families were introduced in November 2018, as part of the Statewide Paediatric HealthPathways Project, under the Victorian and Tasmanian Primary Health Network Alliance partnership (vtphna.org.au/ our-work/best-practice-prevention-managementand-support/statewide-paediatric-healthpathwaysproject). The clinical pathways and associated referral pages cover:

- Snoring and obstructive sleep apnoea in children
- Sore throat in children.

Australian initiatives

ENT surgical registry

The Australian Society of Otolaryngology Head and Neck Surgery operates a surgical registry that collects data on ENT surgical procedures. The registry, which has been operating for two years, collects data on tonsillectomy, insertion of grommets and septoplasty.

Shared decision-making resources

Safer Care Victoria has developed a suite of consumer resources to support patient decision-making for tonsillectomy (bettersafercare.vic.gov.au/resources/ tools/making-a-decision-about-tonsillectomy), including a fact sheet.³⁵

HealthPathways

HealthPathways is a free online health information portal with evidence-based guidance on the assessment, management and referral of common clinical conditions.³⁹ These resources, which have been developed locally across Australia, have the potential to improve the standardisation of treatment.⁴⁰

Paediatric sleep unit in Darwin

A paediatric sleep service was established as part of the local Darwin adult sleep clinic in 2016. The service, which provides telehealth consultations by paediatric sleep physicians, and diagnostic and treatment services, has improved the management of sleep issues, including OSA, in Aboriginal and Torres Strait Islander children.⁴¹

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3.2 Myringotomyhospitalisations,17 years and under

Why is this important?

Myringotomy is one of the most common surgeries performed in young children. It is used to treat otitis media, an infection of the middle ear that can cause hearing loss.

Myringotomy (with insertion of grommets) is recommended for children who have otitis media with effusion (fluid) and documented hearing loss in both ears for more than three months.^{1,2} The likelihood of benefit of myringotomy increases with the severity of the hearing loss.²

The first Atlas found wide variation in the rates of myringotomy, and a correlation between higher rates of myringotomy and higher socioeconomic status in some areas.

There is continuing concern about variation in myringotomy rates that might not align with the expected prevalence of the conditions being treated. Otitis media is the key cause of hearing loss in Aboriginal and Torres Strait Islander children, who are at risk of earlier, more severe and longer-lasting middle ear disease than other children.³ This is the first Atlas to examine rates in Aboriginal and Torres Strait Islander children.

What did we find?

In 2017–18, the number of hospitalisations for myringotomy across 314 local areas (Statistical Area Level 3 – SA3) ranged from 198 to 1,607 per 100,000 people aged 17 years and under. The rate was **8.1 times as high** in the area with the highest rate compared with the area with the lowest rate.

The rate for Aboriginal and Torres Strait Islander children was 6% higher than the rate for other children. It is less than what would be expected if surgery rates matched the prevalence of otitis media in Aboriginal and Torres Strait Islander children.

What can be done?

A comprehensive approach combining prevention, early treatment and coordinated management is urgently required to reduce rates of otitis media in Aboriginal and Torres Strait Islander children. Prevention strategies in Aboriginal and Torres Strait Islander communities must take a wide-ranging, whole-of-community approach driven by primary health care.⁴ Strategies to ensure that children who need myringotomy surgery receive it include improving the collection and monitoring of data on ear health and hearing, obtaining better data on access to myringotomy and surgery outcomes, improving training of general practitioners (GPs) and other health professionals in diagnostic techniques, and updating Australian clinical guidelines.

Myringotomy hospitalisations, 17 years and under

Context

The first Australian Atlas of Healthcare Variation identified substantial variation in hospitalisations for myringotomy in children and young people in 2012–13. This variation – up to 6.8 times as high in the area with the highest rate compared with the area with the lowest – warrants further investigation.⁵

Myringotomy is a procedure to make a small cut in the eardrum (tympanic membrane) to drain fluid from the middle ear. It usually involves inserting grommets (tympanostomy tubes) to keep the cut open, and to allow ventilation and drainage of the middle ear.⁶

It is most commonly used to treat otitis media, an infection of the middle ear that is common in young children. Otitis media is a spectrum of diseases, ranging from otitis media with effusion (OME; where fluid builds up behind the eardrum) to acute otitis media (AOM; painful infection of the middle ear) and chronic suppurative otitis media (CSOM; perforated eardrum with chronic discharge).⁷

Myringotomy with insertion of grommets is one of the most common surgical procedures performed in children in Australia.⁷ It is most often performed in children aged 0–4 years.⁸

This Atlas again maps hospitalisation rates for myringotomy in children and young people (aged 17 years and under), and also examines rates in Aboriginal and Torres Strait Islander children and young people.

In 2016, the Medicare Benefits Schedule Review Taskforce recommended further work to examine the reasons for geographic variation in rates of myringotomy, particularly the low rates in the Northern Territory, where lack of service provision could have serious implications for hearing problems in Aboriginal and Torres Strait Islander communities.⁹

Otitis media in Aboriginal and Torres Strait Islander children

Aboriginal and Torres Strait Islander children experience the highest rate of middle ear disease in the world.⁷ Otitis media is the key cause of hearing loss in Aboriginal and Torres Strait Islander children, who are at risk of earlier, more severe and longer-lasting middle ear disease than other children.³

Recurrent episodes of acute otitis media (AOM) can lead to chronic suppurative otitis media (CSOM; 'runny ear'), which causes chronic discharge through a perforation in the eardrum. CSOM is the most disabling form of otitis media and is most likely to persist without treatment.¹⁰ The discharge from CSOM can last for years and can cause permanent hearing loss. The prevalence of CSOM in Aboriginal and Torres Strait Islander children declined from 24% in 2001 to 14% in 2012.¹¹ This is still higher than the World Health Organization's measure of 4% prevalence that indicates a 'massive public health problem'.¹²

Hearing loss in the critical first 1,000 days of life can have a devastating impact on Aboriginal and Torres Strait Islander children that can continue into adulthood. It can affect speech and language development, leading to problems in education, including language development, inattention, truancy and early school leaving.¹³

There are national guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations.² The priority for primary care programs for Aboriginal and Torres Strait Islander people is to improve identification of children with otitis media, hearing loss, or speech and language problems, and to offer early and effective guideline-recommended care.

Place of myringotomy in therapy

Myringotomy with grommets is an effective procedure for some children who have had OME for more than three months.¹⁴ It may decrease episodes in some children who have recurrent AOM, although evidence is limited.¹⁵ Guidelines do not recommend the procedure as a first-line treatment for either condition in most cases¹⁶, nor myringotomy without insertion of grommets.²

Otitis media with effusion

OME, also known as glue ear, causes a build-up of fluid (effusion) in the middle ear. It has been described as an insidious disease that may be overlooked because it usually has no symptoms apart from hearing loss.¹⁶ OME is often found in children after an episode of AOM.¹⁷

In most cases, OME resolves without treatment within three months.¹ However, OME persists in at least 25% of children, and can cause ongoing hearing loss, and problems with language, education and behaviour.¹⁶

Clinical practice guidelines note there is strong evidence to support watchful waiting for three months for children who do not have other risk factors (such as speech delays) to see if OME resolves without surgery. The guidelines recommend myringotomy (with insertion of grommets) for children who have OME in both ears for more than three months and documented hearing loss.^{1,2,16,18}

Myringotomy with grommets achieves a modest improvement in hearing for the first 6–9 months compared with watchful waiting.¹⁴ The likelihood of benefit increases with the severity of the hearing loss.² The procedure has also been found to prevent fluid build-up in the middle ear (while the grommets are in place).¹

Acute otitis media

AOM is one of the most common reasons for severe pain in babies and children. It is an infection of the middle ear that comes on suddenly and causes pain, fever, a red and bulging eardrum, and fluid in the middle ear.²

United States clinical practice guidelines advise that clinicians may offer myringotomy with insertion of grommets as an option for a child who has had three episodes of AOM in six months or four in a year.¹⁹ The American Academy of Otolaryngology recommends (on the basis of strong evidence) that grommets should not be inserted for recurrent AOM unless middle ear effusion is also present at the time of assesssment.¹⁹

A Cochrane systematic review found that children who received grommets were less likely to have recurrences of AOM than those who had active monitoring and placebo medication (low to very low-quality evidence). The effect was modest, with only one fewer episode of AOM at six months in children who received grommets.¹⁵

The review also found that it was uncertain whether grommets were more effective than antibiotics in preventing recurrent AOM. It pointed out that none of the studies had looked at how grommets affected the severity of AOM recurrences or antibiotic use. This was important because grommets could reduce the severity of AOM recurrences and allow the use of antibiotic eardrops, reducing the risk of side effects and antimicrobial resistance associated with oral antibiotics.¹⁵

The reviewers concluded that the modest potential benefits of grommets need to be balanced against the risks of both the procedure and any surgical intervention in young children, and called for new and high-quality randomised controlled trials.¹⁵

Myringotomy hospitalisations, 17 years and under

What are the potential harms?

The most common postoperative complication of grommet insertion is discharge through the grommets (otorrhoea), which occurs in about one-quarter of children while the grommet is in place.²⁰ Eardrum perforations, which may require repair, occur in about 2% of children who have short-term grommets.²⁰

Preventing otitis media

Otitis media may be prevented to some extent through improved living standards, maternal education, breastfeeding, a smoke-free environment and pneumococcal vaccination.² The pneumococcal conjugate vaccine reduces the risk of AOM and recurrent AOM in children.²

Prevention should have a whole-of-community approach driven by primary health care.²

Why revisit variation in myringotomy?

The first *Australian Atlas of Healthcare Variation* examined hospitalisations for myringotomy for people aged 17 years and under.⁵ It found that, in 2012–13, the number of myringotomy hospitalisations across 308 local areas (SA3s) ranged from 205 to 1,398 per 100,000 people aged 17 years and under.

The first Atlas found a correlation between higher rates of myringotomy and higher socioeconomic status in metropolitan, inner regional and remote areas. This correlation was reversed in outer regional areas, which had lower rates of surgery than other remote categories.

Given the wide variation seen in the first Atlas, it is important to revisit the item to provide a comparison over time, particularly to see whether variations between local areas (relatively high or low rates compared with others) continue. Examining rates over time improves the rigour of data.

There is also continuing concern about variation in myringotomy rates that might not align with the expected prevalence of the conditions being treated. In 2016, the Medicare Benefits Schedule Review Taskforce highlighted the need for further work to explore the finding in the first Atlas of geographical variation in rates of myringotomy, including higher rates on the North Shore of Sydney, and in Adelaide and Perth.⁹

This Atlas also examines rates in Aboriginal and Torres Strait Islander children and young people, given the high burden of disease and low rates of myringotomy in this group.

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 myringotomy per 100,000 people aged 17 years and under in 2012–13, 2015–16 and 2017–18.

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.

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 variations 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 are recorded by both contracting hospital and contracted hospital.

What do the data show?

Magnitude of variation

In 2017–18, there were 34,755 hospitalisations for myringotomy, representing 600 hospitalisations per 100,000 people aged 17 years and under (the Australian rate). The median age for patients was 3 years, and this was similar across Australia.

The number of hospitalisations for myringotomy across 314* local areas (Statistical Area Level 3 – SA3) ranged from 198 to 1,607 per 100,000 people aged 17 years and under. The rate was **8.1 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 458 per 100,000 people in the Northern Territory to 895 in South Australia (Figures 3.12–3.15).

After the highest and lowest 10% of results were excluded and 252 SA3s remained, the number of hospitalisations per 100,000 people was 2.3 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 myringotomy hospitalisations were higher in inner regional areas than elsewhere. There was a pattern of higher rates with higher socioeconomic status in major cities and inner regional areas; the reverse pattern was seen in outer regional areas. No socioeconomic pattern was seen in remote areas (Figure 3.16).

Analysis by Aboriginal and Torres Strait Islander status

In 2017–18, the rate for Aboriginal and Torres Strait Islander people aged 17 years and under (632 per 100,000 people) was 6% higher than the rate for other people of the same age (598 per 100,000 people) (Figure 3.10).

Figure 3.10: Number of hospitalisations for myringotomy per 100,000 people aged 17 years and under, age and sex standardised, by state and territory of patient residence, by Aboriginal and Torres Strait Islander status, 2017–18



The data for Figure 3.10 are available at safetyandquality.gov.au/atlas

Population estimates as at 31 December 2017 are calculated as the average of the 30 June populations in 2017 and 2018.

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

^{*} There are 340 SA3s. For this item, data were suppressed for 26 SA3s due to a small number of hospitalisations and/or population in an area. **Notes:**

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.

Sources: AIHW analysis of National Hospital Morbidity Database and ABS Estimated Resident Populations 30 June of 2017 and 2018.

Myringotomy hospitalisations, 17 years and under

Analysis by patient funding status

In 2017–18, overall, 68% of hospitalisations for myringotomy were for privately funded patients. This proportion varied from 51% in the Northern Territory to 78% in the Australian Capital Territory (Figure 3.11).

Figure 3.11: Number of hospitalisations for myringotomy per 100,000 people aged 17 years and under, age and sex standardised, by state and territory of patient residence, by patient funding status, 2017–18



The data for Figure 3.11, and the data and graphs for analysis by Primary Health Networks are available at safetyandquality.gov.au/atlas

Trends over time

Between 2012–13 and 2017–18, the rate of myringotomy hospitalisations per 100,000 people aged 17 years and under, nationally, decreased by 4%. The rate increased from 625 per 100,000 people aged 17 years and under in 2012–13 to 628 in 2015–16, before falling to 600 in 2017–18 (Figure 3.17).

For Aboriginal and Torres Strait Islander people, the rate of myringotomy hospitalisations per 100,000 people aged 17 years and under, nationally, increased by 30% between 2012–13 and 2017–18. The rate increased from 488 in 2012–13 to 550 in 2015–16, and rose again to 632 in 2017–18 (Figure 3.18).

Interpretation

Variation in rates of myringotomy is likely to be due to geographical differences in the factors discussed below.

Variation between areas may not directly reflect the practices of the clinicians who are based in these areas. The analysis is based on the usual residential address of the patient and not the location of the hospital. Patients may travel outside their local area to receive care.

Rates of underlying disease

Variation is warranted and desirable when it reflects variation in the underlying need for care.

Australia's Health 2018 reported that, between July 2014 and June 2016, the overall rate of myringotomy and tympanoplasty procedures for children aged 0–14 years was similar for Aboriginal and Torres Strait Islander children (5.6 per 1,000) and other children (5.7 per 1,000).²¹ However, ear disease is more common in Aboriginal and Torres Strait Islander children; if not treated, it can have devastating educational and social consequences. The burden

Notes:

Population estimates as at 31 December 2017 are calculated as the average of the 30 June populations in 2017 and 2018. For further detail about the methods used, please refer to the Technical Supplement.

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.

of disease from otitis media in Aboriginal and Torres Strait Islander children is 8.5 times as high as in other children.²¹ Also, there is substantial under-reporting of hearing impairment in the Aboriginal and Torres Strait Islander population.²²

A Western Australian study examining Aboriginal and Torres Strait Islander children's access to surgery for otitis media found that children from disadvantaged backgrounds (Aboriginal and other children) had higher rates of hospitalisation for otitis media but lower rates of grommet insertion than children from advantaged backgrounds. It found that the rates of grommet surgery increased with greater socioeconomic advantage and were higher for children living in major cities than in remote areas, even though the disease burden was greater in socioeconomically disadvantaged families.²³

This is consistent with a New South Wales study that found that the rates of grommet surgery in Aboriginal and Torres Strait Islander children aged under 4 years were around two-thirds of the rates in other children. This 'significant inequality' in grommet surgery between Aboriginal and Torres Strait Islander and other children was due to differences in socioeconomic status and geographical remoteness.²⁴

The findings of this Atlas have shown a 30% increase in the national myringotomy rates in Aboriginal and Torres Strait Islander children between 2012–13 and 2017–18.

Although the 2017–18 Atlas data show that the myringotomy rate for Aboriginal and Torres Strait Islander children is 6% higher than the rate for other children, it does not match the rate that would be expected if surgery rates matched the prevalence of otitis media in Aboriginal and Torres Strait Islander children.

Clinical decision-making

High or low rates of myringotomy in some areas may be related to clinical practice that is not supported by evidence-based guidelines. The only current national Australian guidelines on the management of otitis media in children are clinical care guidelines on the management of otitis media in Aboriginal and Torres Strait Islander populations², which were developed in 2010 and updated in 2017.

Guidelines developed in the United States¹⁹ and the United Kingdom¹⁶ also guide practice in Australia.

Despite the availability of guidelines, it can be challenging for clinicians to advise parents about treatment because recommendations vary depending on the child's age, the condition, the risk of complications and parents' preferences.⁷

There is also concern that clinicians may interpret and apply guidelines from the United States and the United Kingdom differently, and this may lead to inconsistency in care.²⁵

Parents' preferences

Consumers' understanding of the options, and risks and benefits, of myringotomy may affect variation.

Clinicians may recommend watchful waiting in line with clinical guidelines, but ultimately parents make treatment decisions and may push for surgical intervention, often after months of experiencing the social, financial and emotional impacts of caring for a child with recurrent otitis media.²⁵

A qualitative study of Australian parents who had a child booked to have grommet surgery found that parents had been frustrated with watchful waiting and the requirement for a minimum number of episodes of otitis media a year before referral to an ear, nose and throat (ENT) surgeon. Some parents who were unhappy with their GP's response had pushed for a referral or had shopped around for another GP who would refer for surgery. All parents in the study expected that surgery would improve their child's symptoms and quality of life; some parents believed that surgery would cure their child.²⁵

Myringotomy hospitalisations, 17 years and under

Parents of Aboriginal and Torres Strait Islander children may feel less empowered to push for their child to have a myringotomy because of a lack of culturally safe services.²⁶

Diagnostic skills and training

Early detection of chronic otitis media is vital to prevent hearing loss in children.³ Otitis media is often diagnosed and managed in general practice.²⁷ There are concerns that GPs may over- or underdiagnose OME, partly as a result of challenges in accurate diagnosis.²⁷

Clinical guidelines recommend the use of two diagnostic tools – pneumatic otoscopy and tympanometry – to accurately detect fluid in the middle ear.¹ A small qualitative Australian study reported that some GPs believe that pneumatic otoscopy and tympanometry may not be practical in general practice and that the techniques were not essential to diagnosing otitis media. It also found that there was a lack of training for GPs in these techniques and that GPs might need to be convinced of the benefits of using these techniques to detect otitis media in general practice.²⁷

Access to audiology services

The availability of audiology services may affect the timely detection of otitis media and rates of myringotomy. Audiology services can be used to triage children and select those requiring specialist review.²⁸

Access to myringotomy services

Access to myringotomy surgery may be affected by the availability of ENT specialists, which varies across states and territories. Australian Government Department of Health figures show that, in 2016, there were 460 ENT specialists (also known as otolaryngologists) in Australia, of whom 85% worked in a major city and 0.2% worked in the most remote areas.²⁹ South Australia had the highest ratio of otolaryngologists to population (2.3 per 100,000 people), compared with the Northern Territory, which had the lowest ratio (0.8 per 100,000 people).²⁹ These figures largely reflect surgeons' primary places of practice. Atlas data show that South Australia had the highest number of myringotomy hospitalisations (895 per 100,000 people aged 17 years and under) of any state or territory, and the Northern Territory had the lowest (458).

Distance to travel to see ENT surgeons may affect clinical decision-making. Remote and rural patients often have to travel a long way to see a specialist. These factors may influence a surgeon to recommend surgery earlier, due to difficulties in their patient returning for follow-up visits. Health literacy, cultural and language barriers may affect access in some areas.

Rates of private health insurance and waiting times

Having private health insurance allows affordable access to the procedure in private hospitals. Atlas data found that, overall, 68% of hospitalisations for myringotomy were for privately funded patients.

This aligns with other admitted patient data showing that, in 2017–18, the rate of myringotomy performed in private hospitals was almost double the rate performed in public hospitals (1.1 operations per 1,000 people in private hospitals, compared with 0.6 in public hospitals).³⁰

Having private health insurance significantly reduces the waiting time for a myringotomy in a public hospital. In 2015–16, public patients waited 3 times longer than privately insured patients to have a myringotomy in a public hospital (median waiting time 63 days versus 21 days).³¹

In areas of socioeconomic disadvantage, the burden on the public system is higher, and public patients may have no other option but to access the private system as self-funded patients rather than wait for surgery in the public system and risk hearing loss, and speech and language delays.

Addressing variation

Aboriginal and Torres Strait Islander children

Interventions to improve prevention, diagnosis and treatment of otitis media in Aboriginal and Torres Strait Islander children are a priority.

A comprehensive approach combining prevention, early treatment and coordinated management is required to address the disparity in rates of otitis media between Aboriginal and Torres Strait Islander children and other children.⁴

Primary prevention includes working with families to encourage breastfeeding, encourage healthy eating, reduce exposure to second-hand smoke, clear nasal passages, seek early medical assessment and encourage vaccination.²

Otitis media prevention must include a wide-ranging, whole-of-community approach driven by primary health care. A central part of community messaging must be awareness of the devastating implications of hearing loss at an early age.²

Once otitis media develops, medical management should be in line with the *Recommendations for Clinical Care Guidelines on the Management of Otitis Media in Aboriginal and Torres Strait Islander Populations.*²

Specific interventions could include the following:

Improved monitoring of ear health

- Improve data collection to monitor the national prevalence of ear disease, geographic distribution, wait times between referrals, and whether timely and appropriate treatments are being delivered
- Undertake annual national reporting of readily available data on hospital treatment and interventions for Aboriginal and Torres Strait Islander children with middle ear disease and hearing loss
- Develop national ear and hearing health performance indicators.

Training and workforce innovations

- Train GPs at registrar level to use pneumatic otoscopy
- Primary care networks to train all staff in appropriate otoscopy use, including encouraging and supporting development of Aboriginal and Torres Strait Islander staff in ear health
- Increase the use of alternative health professionals for ear examination, such as speech pathologists and audiologists, who could perform pneumatic otoscopy and tympanometry screening in at-risk populations. Audiologists can provide an initial assessment before a child is referred to an ENT specialist and may be more available than ENT specialists, particularly outside major urban centres³
- Use innovation in training Aboriginal and Torres Strait Islander health workers on country to be knowledge bearers and health guides to ENT access
- Focus on recruiting ENT surgeons to work in remote areas of Australia where there is reduced access to surgery.

Clinical guidelines

- Update Australian clinical practice guidelines, stratified for at-risk groups, with efforts to disseminate the guidelines and promote uptake, including parent-focused education and awareness through use of fact sheets, social media and other channels
- Ensure that guidelines are practical and appropriate for rural and remote practice, and match availability of equipment.

Myringotomy hospitalisations, 17 years and under

Improved healthcare pathways

- Develop accelerated ENT pathways specifically for Aboriginal and Torres Strait Islander people
- Develop culturally safe care pathways, such as the Australian Government's Eye and Ear Surgical Support Program, which provides wraparound care for the patient and their carer when accessing ear surgery
- Improve coordination of ENT outreach services to better accommodate patient needs.

Support for shared decision making

 Support shared decision making to establish what level of variation is appropriate based on patients' needs and assessment of risk.³² Supporting shared decision making means giving patients accurate information, as well as informing GPs to avoid over- or underestimating the risks and benefits of myringotomy, which is likely to drive variation in referral to an ENT surgeon.

Improved data collection

- Improve data about access to myringotomy, such as the distribution of ENT surgeons and length of waiting lists. This would focus efforts on improving access in areas with the lowest rates of myringotomy. Some of these efforts could include financial incentives to improve access to surgery in areas that have low rates
- Further develop the Australian Society of Otolaryngology Head and Neck Surgery data registry to record patient outcomes after surgery (see 'Australian initiatives' on page 210).

Rates by local area

Figure 3.12: Number of hospitalisations for myringotomy per 100,000 people aged 17 years and under, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2017–18



Notes:

Triangles (a) indicate SA3s where only rates are published. The numbers of hospitalisations are not published for confidentiality reasons.

Population estimates as at 31 December 2017 are calculated as the average of the 30 June populations in 2017 and 2018.

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

Myringotomy hospitalisations, 17 years and under Rates across Australia

Figure 3.13: Number of hospitalisations for myringotomy per 100,000 people aged 17 years and under, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2017–18



Notes:

Population estimates as at 31 December 2017 are calculated as the average of the 30 June populations in 2017 and 2018.

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

Rates across capital city areas

Figure 3.14: Number of hospitalisations for myringotomy per 100,000 people aged 17 years and under, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2017–18



Notes:

Population estimates as at 31 December 2017 are calculated as the average of the 30 June populations in 2017 and 2018.

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

Myringotomy hospitalisations, 17 years and under Rates by state and territory

Figure 3.15: Number of hospitalisations for myringotomy per 100,000 people aged 17 years and under, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2017–18



Notes:

Triangles (a) indicate SA3s where only rates are published. The numbers of hospitalisations are not published for confidentiality reasons. Population estimates as at 31 December 2017 are calculated as the average of the 30 June populations in 2017 and 2018. For further detail about the methods used, please refer to the Technical Supplement.

Rates by remoteness and socioeconomic status

Figure 3.16: Number of hospitalisations for myringotomy per 100,000 people aged 17 years and under, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2017–18



Notes:

Triangles (a) indicate SA3s where only rates are published. The numbers of hospitalisations are not published for confidentiality reasons. For Remote 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.

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

Population estimates as at 31 December 2017 are calculated as the average of the 30 June populations in 2017 and 2018.

Myringotomy hospitalisations, 17 years and under

Rates across years

Figure 3.17: Number of hospitalisations for myringotomy per 100,000 people aged 17 years and under, age and sex standardised, by state and territory of patient residence, 2012–13, 2015–16 and 2017–18



Notes:

Population estimates as at 31 December of the relevant year 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.

Rates for Aboriginal and Torres Strait Islander people across years

Figure 3.18: Number of hospitalisations for myringotomy per 100,000 people aged 17 years and under, age and sex standardised, by state and territory of patient residence, by Aboriginal and Torres Strait Islander status, 2012–13, 2015–16 and 2017–18



Notes:

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, with variation among states and territories.

Population estimates as at 31 December of the relevant year 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.

Myringotomy hospitalisations, 17 years and under

Resources

Australian

- Recommendations for Clinical Care Guidelines on the Management of Otitis Media in Aboriginal and Torres Strait Islander Populations²
- Insertion of middle ear ventilation tubes for middle ear disease in children, Safer Care Victoria, bettersafercare.vic.gov.au/clinical-guidance/ non-urgent-elective-surgery/insertion-of-middleear-ventilation-tubes-for-middle-ear-disease-inchildren

International

- Clinical practice guideline: otitis media with effusion (update)¹
- International consensus (ICON) on otitis media with effusion in children³³
- Clinical practice guidelines for the diagnosis and management of otitis media with effusion (OME) in children in Japan, 2015¹⁸

Australian initiatives

Roadmap for Hearing Health

The Roadmap for Hearing Health works to foster collaboration between stakeholders to address the challenges facing an estimated 3.6 million Australians who experience some form of hearing impairment. The second domain of the Roadmap – Closing the Gap for Aboriginal and Torres Strait Islander Ear and Hearing Health – addresses the catastrophic levels of ear disease among Aboriginal and Torres Strait Islander people.³⁴

Clinical guidelines

Recommendations for Clinical Care Guidelines on the Management of Otitis Media in Aboriginal and Torres Strait Islander Populations

The clinical care guidelines (otitismediaguidelines.com)² were first published in 2001, and updated in 2010 and 2017. They were disseminated nationally to all Aboriginal Community Controlled Health Services, and accompanied by clinical training and supply of equipment. The recommendations provide the evidence base for local clinical guidelines, and ear health manuals and frameworks.³⁵

Vaccination

The pneumococcal conjugate vaccine (13vPCV) is part of the National Immunisation Program, and is available for all children free of charge starting at the age of 2 months. In addition, the seasonal influenza vaccine is available free for all children aged 6 months to under 5 years. (Influenza vaccination may result in a small reduction in AOM, which often follows a viral infection such as influenza.)³⁶

Hearing support

Children need access to hearing support, including audiology services and ENT surgeons. Hearing Australia is piloting hearing testing in Aboriginal and Torres Strait Islander children. This may identify children needing myringotomy procedures.⁷

#Earhealthforlife (https://earandhearinghealth.org. au/blog/ear-health-life-taskforce) is a network that is committed to a national Aboriginal and Torres Strait Islander Hearing Health Taskforce that can provide evidence-based advice to government about hearing health.

HealthPathways provides clinicians with access to evidence-based guidelines on assessment, management and referral of children with AOM and OME. HealthPathways may help to achieve standardisation of care among GPs.³⁷

Shared decision making

In July 2020, the Victorian Department of Health and Human Services advised Victorian health services that a variety of procedures (including myringotomy) were to 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 the evidence, risks and benefits, and other options for care. See Resources for best-care guidance on insertion of grommets for middle ear disease.

Diagnosis and treatment for Aboriginal and Torres Strait Islander children

The Australian Government's Hearing Assessment Program – Early Ears (HAP-EE) started in late 2018–19. Hearing Australia is delivering ear and hearing assessments nationally. Follow-up ENT services are delivered through the Australian Government's jurisdictional fundholders for outreach hearing services.

Queensland's Deadly Ears Program

This program was started in 2007 and provides access to specialist ear and hearing services, including audiology services and ENT surgeons, for Aboriginal and Torres Strait Islander children from communities across rural and remote Queensland.³⁸

ENT surgical registry

The Australian Society of Otolaryngology Head and Neck Surgery operates a surgical register that collects data on ENT surgical procedures. The registry, which has been operating for two years, collects data on tonsillectomy, insertion of grommets and septoplasty.

Myringotomy hospitalisations, 17 years and under

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