Chapter 4
Surgical interventions

At a glance

This Atlas examined variation in six surgical interventions by Statistical Area Level 3 (SA3). Lumbar spinal fusion showed the largest variation between areas, with a seven-fold difference between the highest and lowest rates. Rates of spinal decompression showed a five-fold difference. A four-fold difference was found for rates of knee replacement, laparoscopic cholecystectomy, appendicectomy and cataract surgery.

For some of these procedures, 'indication creep' and differing clinician views of the value of the operation in new patient populations are likely to have contributed to the variation. For example, spinal fusion surgery was initially used primarily to treat fractures and deformities of the spine, but its use has now broadened to include treatment of degenerative spine disorders.[1] In the case of cholecystectomy, introduction of the laparoscopic technique was followed by a sharp rise in its use.[2] This may have been partly due to a lowering of the threshold for the procedure.[2]

Wide variation in use of a surgical procedure may reflect a lack of agreement on its indications. For procedures with uncertain benefits outside a small patient population, substantial variation raises the likelihood that rates are too high in some areas. For the interventions in this chapter where the evidence is unclear, determining whether there are subgroups of patients who are more likely to benefit from the procedure should be a priority. Identification of patients who are likely to benefit would be aided by routine collection and analysis of the severity and nature of patients' presenting symptoms, and patient-reported outcomes after surgery. Limiting spinal fusion procedures undertaken because of low back pain has been recommended in the United Kingdom.[3]

Ensuring that patients understand the evidence about the likelihood of risks and benefits is particularly important if the degree of benefit from surgical treatment is not clear. Accessible information, improved health literacy and high-quality tools for shared decision-making would support patients to make better informed choices about care.[4]

The variation in rates of cataract surgery highlights inequity of access. The rate of cataract surgery hospitalisations for Aboriginal and Torres Strait Islander Australians was 80% of the rate for other Australians.

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Recommendations

Knee replacement

4a. The Medicare Benefits Schedule (MBS) Review Taskforce to ensure that MBS descriptors reflect the care described in the Osteoarthritis of the Knee Clinical Care Standard.

4b. State and territory health departments to use the Osteoarthritis of the Knee Clinical Care Standard to promote appropriate care for the management of people with knee pain, including conservative non-surgical management using a combination of non-pharmacological and pharmacological treatments.

4c. State and territory health departments to promote timely access to joint replacement or joint-conserving surgery when conservative management no longer provides adequate pain relief or maintenance of function.

Lumbar spinal decompression and fusion

4d The Commission to lead work with relevant professional colleges and societies to develop an Australian guideline for management of low back pain and sciatica, to promote appropriate care for people with these conditions. This should be based on a modification of the 2016 National Institute for Health and Care Excellence guideline *Low Back Pain and Sciatica in Over 16s: Assessment and Management*, and any other relevant high-quality Australian and international evidence.

4e. State and territory health departments, and relevant colleges and specialist societies to implement the Australian guideline on low back pain and sciatica to promote appropriate care for people with low back pain and sciatica.

4f. The Commission to work with relevant specialists and experts to identify the next steps needed to define and deliver appropriate care for low back pain and sciatica.

4g. The Spine Society of Australia to publish the outcome of the pilot trial of the Australian Spine Registry. The Commission to work with the Spine Society of Australia to develop a business case for the development of a clinical quality registry for all patients undergoing spinal fusion and decompression surgery in Australia. All patients who have spinal fusion and decompression operations in Australia would be entered on this registry unless they opt out. The registry is to be established and operated according to the Framework for Australian Clinical Quality Registries.

Laparoscopic cholecystectomy and appendicectomy

4h. State and territory health departments to lead work with relevant professional colleges and societies to develop clinical guidance on timing, imaging and thresholds for surgery for appendicectomy and laparoscopic cholecystectomy.

4i. State and territory health departments, and relevant colleges and specialist societies to promote, disseminate and implement guidance on surgery thresholds for biliary disease and abdominal pain. To maximise implementation, the guidance should be incorporated within care pathways.

4j. The Commission to work with relevant professional colleges and specialist societies and HealthPACT to develop a technology brief to examine the evidence for the use of intraoperative cholangiography to delineate the biliary anatomy and to detect stones in the common bile duct.

Cataract surgery

4k. The Commission to develop a clinical care standard for cataract surgery, and the MBS Review Taskforce to ensure that MBS descriptors reflect the care described in the clinical care standard.

4l. State and territory health departments to work with the Aboriginal Community Controlled Health Service sector to ensure culturally appropriate, ongoing and consistent services for cataract assessment and cataract surgery in areas where these are needed.

Background

This chapter examines variation in hospitalisations for:

- Knee replacement
- Lumbar spinal decompression
- Lumbar spinal fusion
- Laparoscopic cholecystectomy
- Appendicectomy
- Cataract surgery.

Landmark accomplishments in surgical practice have revolutionised surgical care, saved countless lives, and significantly improved longevity and the quality of life. However, when new techniques are developed, it is important to define how they should best be used so that the likely benefits justify the risks and the use of resources. 'Indication creep' can contribute to variation in the use of surgical procedures as they start to be used beyond the conditions for which they were initially trialled and found to be of benefit.[5] Whereas a new technique may have been introduced for very valid reasons and brought clear benefits to the original patient group, questions about appropriateness can arise when its use is extended to a new group of patients in which the value is less clear.[5] Variation may follow when clinicians have different opinions on which patients are likely to benefit.[5] Some of the surgical interventions examined in this chapter fall into this category.

In the past, spinal fusion surgery was primarily used to treat fractures and deformities of the spine, such as severe scoliosis.[1] Over time, the conditions for which the procedure is used have broadened. Studies in the United States have shown that degenerative spine disorders are now the most common reason for spinal fusion.[6,7] Views differ in the clinical community about the value of lumbar spinal fusion operations (both with and without accompanying decompression) for low back pain resulting from degenerative disease. Some systematic reviews have highlighted the lack of high-quality evidence to allow firm conclusions to be drawn about outcomes from these surgeries.[8-11]

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Cholecystectomy (removal of the gall bladder) is another example where the indication may have broadened; in this case, the introduction of the laparoscopic technique appears to have prompted an increase in use of the procedure. Rates of cholecystectomy in many countries in the Organisation for Economic Co-operation and Development rose sharply after the introduction of the laparoscopic procedure in the 1990s. Rates of cholecystectomy had been steady for some years before this, but, within two years of introduction of the new procedure, rates had increased by 24% in Australia.[2] Offering laparoscopic cholecystectomy to patients who would not have been fit to undergo the open procedure contributed to the increase, but the threshold for cholecystectomy may also have become lower.[2,12]

In both of these examples, and some other interventions examined in this chapter, determining whether there are subgroups of patients who are more likely to benefit from the procedure should be a priority. Identification of patients who are likely to benefit would be aided by routine collection and analysis of the severity and nature of patients' presenting symptoms, and patient-reported outcomes after surgery.

Greater use of conservative options, including self-management, could reduce the need for some surgical interventions. For example, even a 5% weight loss can improve symptoms for overweight people with symptomatic osteoarthritis of the knee.[13] Cognitive interventions and exercises have been shown in some studies to result in the same improvement as lumbar fusion in patients with chronic low back pain and disc degeneration (measured on a disability index that is considered the 'gold standard' of low back functional outcome tools).[14,15]

To make well-informed decisions, patients need to understand how the risks and benefits compare between surgical and non-surgical options. More data presented in an understandable way, accessible information, improved health literacy and high-quality tools for shared decision-making would support them to do this.[4] The Commission has a number of resources to support shared decision-making and risk communication (available at www.safetyandquality.gov.au). A clinical care standard and patient information on treatment options for knee pain have also recently been released by the Commission.

The influence of private health insurance

Differences in rates of private health insurance are likely to contribute to variation in hospitalisation rates for surgical interventions. The percentage of people with private hospital insurance in 2015, by state and territory, is shown in Figure 4.1. Rates of private hospital insurance varied from 40.4% in the Northern Territory to 58.1% in the Australian Capital Territory.[16]

Figure 4.1: Percentage of people with private hospital insurance, by state and territory, 2015

Source: Australian Prudential Regulation Authority[17]

About the data

Hospital admission data are sourced from the National Hospital Morbidity Database, and include both public and private hospitals. Rates are based on the number of hospitalisations per 100,000 people. Because a record is included for each hospitalisation when a procedure occurs, rather than for each patient, patients hospitalised for a particular procedure more than once in the financial year will be counted more than once.

The analysis and maps are based on the 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 recognition of Aboriginal and Torres Strait Islander status in datasets – could influence the variation seen. For some indicators, data are aggregated over three years to provide sufficient numbers to support reporting at the local level.

Factors influencing population-based hospitalisation rates include incidence and prevalence of risk factors and disease, hospital admission practices, bed availability, and patient social factors such as the availability of carers, the availability of other treatment options, treatment compliance and travel distance.

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Australian initiatives

The information in this chapter will complement work already under way to improve surgical care in Australia. At a national level, this work includes:

- Australian Safety and Efficacy Register of New Interventional Procedures – Surgical (ASERNIP-S), The Research, Audit and Academic Surgery Division of the Royal Australasian College of Surgeons.[18] The ASERNIP-S program uses a range of methods to assess the safety and effectiveness of new and emerging surgical procedures, including full and rapid systematic reviews, technology overviews, and horizon scanning summaries and reports. The division also establishes and manages both clinical and research audits of surgical procedures.

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