

2.2 Gastroscopy hospitalisations, all ages

Why is this important?

Gastroscopy is mainly used to investigate upper gastrointestinal symptoms such as heartburn. It is also used to exclude a diagnosis of cancer.¹⁻³ Rates of gastroscopy in Australia continue to rise despite the limited role of gastroscopy in reflux and dyspepsia; and low rates of oesophageal and stomach cancers.⁴⁻⁸ Guidelines recommend acid suppression therapy or a 'test and treat' regimen for *Helicobacter pylori*, as first-line treatment for the management of upper gastrointestinal symptoms.⁶⁻⁸ Guidelines recommend against use of gastroscopy to investigate uncomplicated reflux or dyspepsia in people at low risk of oesophageal or stomach cancer.⁸ Australian data show a reduction in gastroscopy when guidelines are followed.⁹ Improving adherence to guidelines and reducing the number of inappropriate referrals for gastroscopy could free up services for higher-yield procedures, such as colonoscopy for people with positive faecal occult blood tests.

What did we find?

The Atlas found the rate of hospitalisation for inpatient gastroscopy varies up to about seven-fold between local areas across Australia. The pattern of use suggests overuse of gastroscopy in some areas. Lower rates of gastroscopy in outer regional and remote areas raise concerns about a lack of access to gastroscopy in these areas. The low rates for Aboriginal and Torres Strait Islander Australians raise similar concerns.

What can be done?

Aligning Medicare Benefits Schedule (MBS) items for gastroscopy with evidence-based criteria, together with auditing against the revised items, are important strategies that could be used to reduce inappropriate use of gastroscopy. Prioritising patients waiting for either colonoscopy or gastroscopy as a single group, rather than having separate lists, could improve the diagnostic yield from these investigations and improve patient outcomes. Education and audit for referrers could be a useful tool for improving appropriate use of gastroscopy, as could structured referral forms. Consumer education for women about the importance of excluding heavy menstrual bleeding in the management of anaemia may reduce unnecessary gastroscopy in this group.

Gastroscopy hospitalisations, all ages

Context

Gastroscopy (or upper gastrointestinal endoscopy) involves inserting a flexible tube with a camera (an endoscope) through the mouth into the oesophagus, stomach or duodenum.^{1,2} The procedure is used to investigate signs and symptoms of upper gastrointestinal disease, including iron deficiency, difficulty swallowing and possible cancer.^{1,3} Gastroscopy is also used to treat upper gastrointestinal conditions, monitor chronic conditions and perform biopsies (for example, for suspected coeliac disease).^{1,3} Therapeutic gastroscopies are not included in this data item.

Guidelines recommend against using gastroscopy to investigate uncomplicated reflux or dyspepsia in people at low risk of oesophageal or stomach cancer, such as people under 55 years of age.^{8,10} This is because most people with upper gastrointestinal symptoms can be effectively treated without investigation and do not have any abnormalities visible on gastroscopy.^{6,8} Also, upper gastrointestinal cancers are rare, particularly before 55 years of age (Figure 2.8).^{6,8}

Gastroscopy is recommended for excluding a diagnosis of cancer in people at risk, such as those aged over 55 years with signs and symptoms suggestive of cancer.^{8,10} Risk factors for stomach and oesophageal cancer include smoking, alcohol and dietary factors.⁵ Stomach cancer is also associated with *Helicobacter pylori* infection.¹¹

Rates of upper gastrointestinal cancer are relatively low in Australia. For example, in 2017, the estimated age-standardised incidence per 100,000 people for oesophageal cancer was 8.4 for men and 3.0 for women; the estimated age-standardised incidence for stomach cancer was 10.9 for men and 5.2 for women.¹² In comparison, the estimated age-standardised incidence for bowel cancer in 2017 was 67.3 for men and 49.4 for women.¹² Aboriginal and Torres Strait Islander Australians have a higher age-standardised incidence of oesophageal cancer per 100,000 people than other Australians (11.5 compared with 5.2 in 2009–2013) and a higher incidence of stomach cancer (12.2 compared with 7.8 in 2009–2013).¹³

Although the age-standardised incidence of stomach cancer per 100,000 people has fallen in Australia (from 9.4 to 8.0 between 2004 and 2014) and that of oesophageal cancer is relatively stable (5.9 in 2004 and 5.4 in 2014)¹⁴, the rate of gastroscopy is continuing to rise.⁴ The crude rate of MBS-subsidised gastroscopy per 100,000 people grew by 3% per year in Australia between 2008 and 2017.¹⁵ In 2016–17, gastroscopy was the sixth most common same-day procedure in Australian hospitals.¹⁶

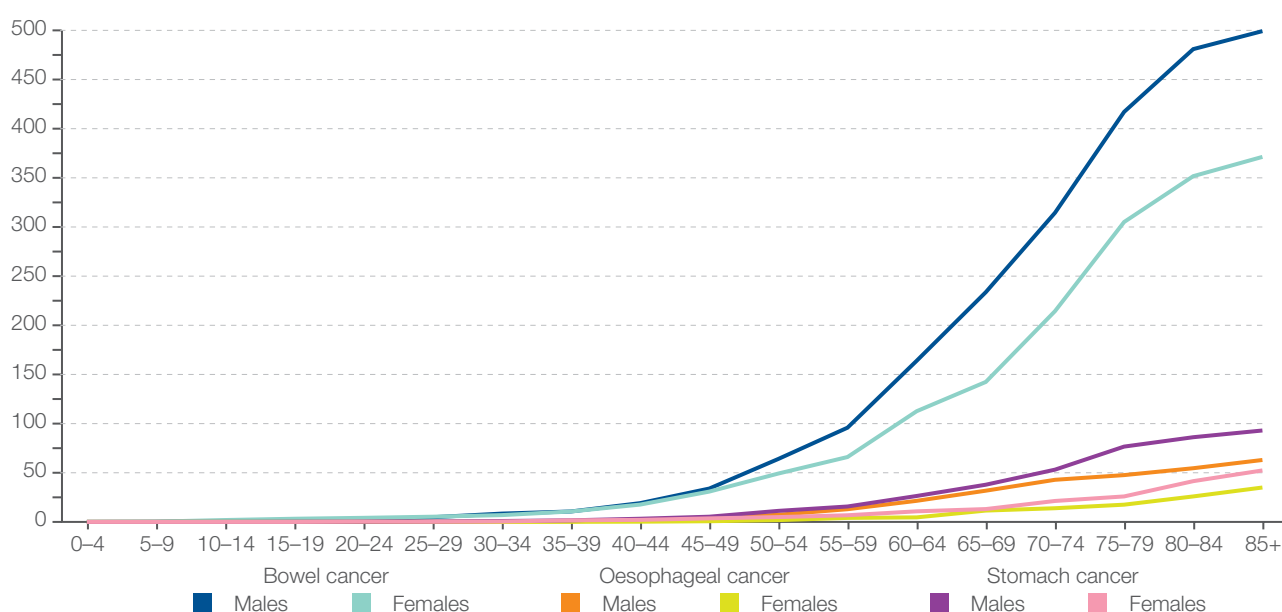
There are few international comparisons of gastroscopy rates. In 2014–15, the crude rate of gastroscopy in Australia was 1,629 MBS-subsidised services per 100,000 people¹⁵, while the age-, sex- and deprivation-standardised rate in England for the same year was 1,331 per 100,000 people.¹⁷

Use of gastroscopy was included in a recent New South Wales analysis of low-value care in public hospitals – that is, care that is unlikely to provide benefit to patients, or care for which risks exceed benefit or added costs do not provide proportional added benefit.^{18,19} The authors found that, in 2016–17, approximately 14% of gastroscopies in adults under 55 years of age in New South Wales public hospitals fitted the criteria for low-value care and cost approximately \$11 million.¹⁸ In addition, the rate of low-value gastroscopy was reported to be increasing: the proportion of gastroscopies in New South Wales public hospitals that were assessed as low value rose by approximately 8% annually between 2010–11 and 2016–17.¹⁸

Overuse of gastroscopy has also been studied internationally, with estimated rates of inappropriate requesting ranging from 7.5% to 54%.^{20,21} According to a 2018 study in the United Kingdom, gastroscopy for inappropriate indications is one of the top five most costly and commonly performed interventions that offer little benefit.²²

The five-year survival rate for stomach and oesophageal cancer is substantially lower than for bowel cancer¹², and concerns about late diagnosis and medico-legal issues may contribute to over-testing. Although diagnostic gastroscopy has a relatively low rate of adverse events (between 1 in 200 and 1 in 10,000)²³, the risks still need to be considered, particularly when the diagnostic yield in patients without alarm symptoms is also very low. Even in the presence of Barrett's oesophagus, which can progress to oesophageal cancer, guidelines note that the harms of surveillance with gastroscopy may outweigh the benefits for some patients who do not have additional risk factors.⁷

Figure 2.8: Incidence of bowel cancer, oesophageal cancer and stomach cancer per 100,000 people, by age group and sex, in Australia, 2014



Sources: Australian Institute of Health and Welfare. Australian Cancer Incidence and Mortality (ACIM) books: colorectal cancer, stomach cancer, oesophageal cancer. Canberra: AIHW; 2017.

Gastroscopy hospitalisations, all ages

About the data

Data were sourced from the National Hospital Morbidity Database (NHMD), and include admitted patients in both public and private hospitals throughout Australia. Rates are based on the number of hospitalisations for gastroscopy per 100,000 people of all ages in 2016–17.

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 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.

The NHMD includes data on people admitted to hospital as day patients or overnight, but does not include data on people who are not admitted to hospital. While the MBS database includes data on people who receive an MBS-subsidised service whether or not they are admitted, no national data are available on the number of non-admitted (that is, outpatient) gastroscopies funded publicly under a hospital budget. Therefore, it is not possible to get a complete picture of all gastroscopy activity across Australia.

Limitations of the data source may account for some variations seen.

Same-day procedure admission policies

States and territories differ in their admission policies for same-day procedures. As gastroscopies for non-admitted publicly funded patients are not included in the data shown, variation in admission policies is expected to contribute to variation in gastroscopy rates between states and territories. For example, in 2013–14 in Western Australia and Victoria, almost all endoscopy procedures occurred as admitted patient care, so the data shown should be a near complete count of gastroscopies in these states.²⁴ In contrast, many gastroscopies in South Australia occurred as non-admitted care, and so the data shown are likely to be an under-count.

In Tasmania, procedures that are bulk-billed are coded as non-admitted episodes. This will lead to an underestimate of gastroscopy rates. A substantial proportion of public patients accessing Tasmanian public hospitals may be bulk-billed and therefore not represented in the data.

Aboriginal and Torres Strait Islander identification

The identification of Aboriginal and Torres Strait Islander patients may not be accurate for all admissions, and processes for seeking and recording identification may vary among states and territories. Therefore, the data shown may under-count the number of Aboriginal and Torres Strait Islander Australians hospitalised for gastroscopy.

What do the data show?

Magnitude of variation

In 2016–17, there were 505,544 hospitalisations for gastroscopy, representing 1,931 hospitalisations per 100,000 people of all ages (the Australian rate).

The number of hospitalisations for gastroscopy across 328* local areas (Statistical Area Level 3 – SA3) ranged from 444 to 3,297 per 100,000 people of all ages. The rate was **7.4 times as high** in the area with the highest rate compared to the area with the lowest rate. The number of hospitalisations varied across states and territories, from 701 per 100,000 people of all ages in the Australian Capital Territory to 2,259 in Victoria (Figures 2.12–2.15).

After the highest and lowest 10% of results were excluded and 264 SA3s remained, the number of hospitalisations per 100,000 people of all ages was 2.1 times as high in the area with the highest rate compared to the area with the lowest rate.

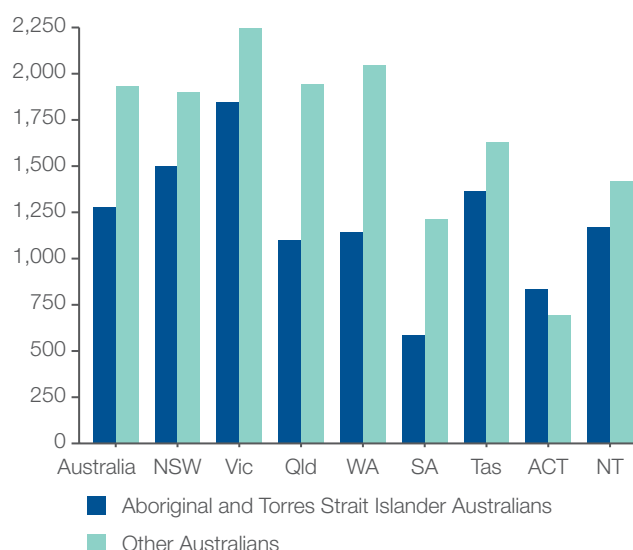
Analysis by remoteness and socioeconomic status

Rates of hospitalisation for gastroscopy were higher in major cities and inner regional areas than in outer regional and remote areas. Rates were lower in areas with lower socioeconomic status in major cities and remote areas. However, there was no clear pattern according to socioeconomic status in other remoteness categories (Figure 2.16).

Analysis by Aboriginal and Torres Strait Islander status

The rate for Aboriginal and Torres Strait Islander Australians (1,279 per 100,000 people) was 34% lower than the rate for other Australians (1,934 per 100,000 people) (Figure 2.9).

Figure 2.9: Number of hospitalisations for gastroscopy per 100,000 people of all ages, age and sex standardised, by state and territory of patient residence, by Aboriginal and Torres Strait Islander status, 2016–17



The data for Figure 2.9 are available at www.safetyandquality.gov.au/atlas.

* There are 340 SA3s. For this item, data were suppressed for 12 SA3s due to a small number of hospitalisations and/or population in an area.

Notes:

Data by Indigenous status should be interpreted with caution as hospitalisations for Aboriginal and Torres Strait Islander patients are under-enumerated and there is variation in the under-enumeration among states and territories.

Data from a number of ACT private hospitals, which undertake some gastroscopies, were not provided to the National Hospital Morbidity Database. For this reason, data for ACT should be interpreted with caution.

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 Population 30 June 2016.

Gastroscopy hospitalisations, all ages

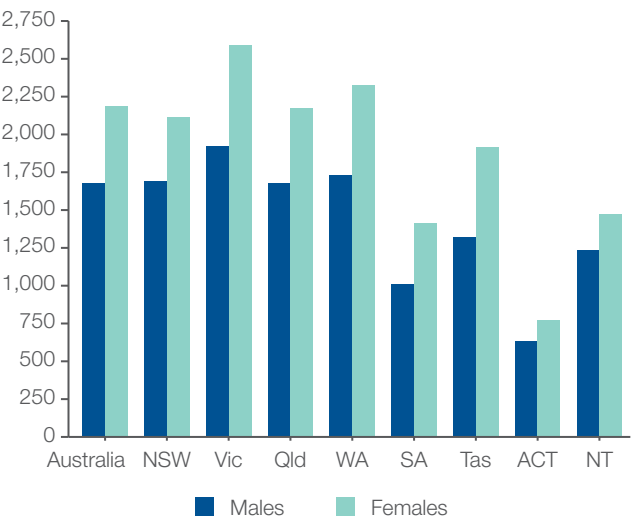
Analysis by sex

The rate of hospitalisations for gastroscopy was 1.3 times as high in females as in males.

In 2016–17, there were 220,687 hospitalisations for gastroscopy for males of all ages, representing 1,673 hospitalisations per 100,000 males (the Australian rate). The number of hospitalisations varied across states and territories, from 632 per 100,000 males in the Australian Capital Territory to 1,923 per 100,000 in Victoria.

In 2016–17, there were 284,857 hospitalisations for gastroscopy in females of all ages, representing 2,185 hospitalisations per 100,000 females (the Australian rate). The number of hospitalisations varied across states and territories, from 769 per 100,000 females in the Australian Capital Territory to 2,590 per 100,000 in Victoria (Figure 2.10).

Figure 2.10: Number of hospitalisations for gastroscopy per 100,000 people of all ages, age standardised, by state and territory of patient residence, by sex, 2016–17



The data for Figure 2.10 are available at www.safetyandquality.gov.au/atlas.

Notes:

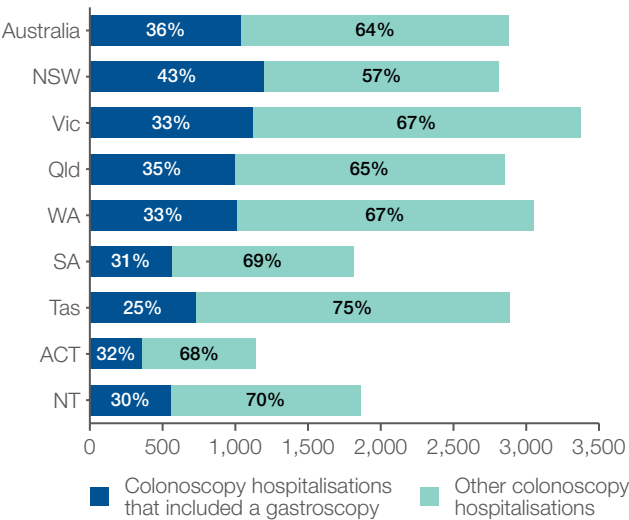
Data from a number of ACT private hospitals, which undertake some colonoscopies and gastroscopies, were not provided to the National Hospital Morbidity Database. For this reason, data for the ACT should be interpreted with caution. For further detail about the methods used, please refer to the Technical Supplement.

Sources: AIHW analysis of National Hospital Morbidity Database and ABS Estimated Resident Population 30 June 2016.

Gastroscopy and colonoscopy during the same hospitalisation

In 2016–17, 36% of hospitalisations for colonoscopy included a gastroscopy. There were 274,559 hospitalisations for colonoscopy that also included gastroscopy, representing 1,044 hospitalisations per 100,000 people of all ages (the Australian rate). The number of hospitalisations varied across states and territories, from 362 per 100,000 people in the Australian Capital Territory to 1,200 per 100,000 people in New South Wales (Figure 2.11).

Figure 2.11: Number of hospitalisations for colonoscopy per 100,000 people of all ages, age and sex standardised, by state and territory of patient residence and same hospitalisation included a gastroscopy, 2016–17



The data for Figure 2.11 are available at www.safetyandquality.gov.au/atlas.

Interpretation

The patterns of gastroscopy use suggest possible underuse in some parts of the population and overuse in others. Lower rates of gastroscopy in outer regional and remote areas raise concerns about a possible lack of appropriate access to gastroscopy in these areas. The low rates for Aboriginal and Torres Strait Islander Australians raise similar concerns.

Variation is warranted and desirable when it reflects variation in the underlying need for care. The use of gastroscopy should reflect the distribution of symptoms of upper gastrointestinal cancer and other conditions for which gastroscopy is appropriate. The pattern in major cities, where there is greater use of gastroscopy in areas of higher socioeconomic status, does not reflect need. Upper gastrointestinal symptoms and gastro-oesophageal reflux disease (GORD) are more common in low socioeconomic groups.²⁵⁻²⁸ Smoking and obesity, which are risk factors for upper gastrointestinal symptoms and cancers, are also more common in lower socioeconomic groups.^{7,29} Overall, the pattern of use does not reflect the burden of disease, suggesting a component of unwarranted variation.

Data artefacts may account for some of the disparity, as people from areas of lower socioeconomic status may be higher users of non-admitted public hospital services and therefore may be under-counted. However, this is unlikely to explain all of the association. Public-private partnership models may also influence patterns of gastroscopy use.

The Atlas has also found a clear anomaly between cancer burden and use of investigations for gastrointestinal diseases in Australia. The national rate for colonoscopy hospitalisations is about 1.5 times that for gastroscopy hospitalisations (2,881 per 100,000 compared with 1,931 per 100,000), yet the incidence of colorectal cancer is about 7 times that of stomach cancer and about 11 times that of oesophageal cancer.¹⁵ This anomaly and other patterns observed in the data raise concern about the appropriateness of this use.

The higher rate of gastroscopy in females than in males (2,185 per 100,000 versus 1,673 per 100,000) may reflect higher rates of iron deficiency in females (due to heavy menstrual bleeding), as gastroscopy is recommended to investigate some cases of iron deficiency.³⁰ Management of heavy menstrual bleeding according to the Australian Heavy Menstrual Bleeding Clinical Care Standard may reduce rates of unnecessary gastroscopy in premenopausal women.³¹ Functional dyspepsia is also more common in women, and gastroscopy may be used to rule out organic causes.^{32,33}

Clinical decision-making

Variation in adherence to guidelines may influence use of gastroscopy. According to a meta-analysis, an estimated 22% of referrals for gastroscopy are inappropriate (as defined by United States and European guidelines).²² It is likely that inappropriate gastroscopy for people aged 55 years and under contributes to variation in rates seen in Australia. Australian and United States guidelines recommend that young patients with longstanding mild reflux symptoms and no alarm symptoms be trialled with acid suppression therapy without having gastroscopy.^{11,34}

Access to endoscopy services

Availability and affordability of endoscopy services are likely to influence the pattern of gastroscopy use. Open access endoscopy services are likely to increase the rates of gastroscopy in areas where these services are available, because general practitioners (GPs) are effectively able to request a gastroscopy without further review from a specialist. Statewide triage systems for endoscopy, such as those in Western Australia and Victoria, may increase access to gastroscopy for urgent indications, but also reduce access for use that is not supported by evidence.

Gastroscopy hospitalisations, all ages

Rates of private health insurance

Access to gastroscopy is likely to be greater for people with private health insurance. This may explain the lower rate of use in areas of socioeconomic disadvantage in major cities.

Other factors

Differences in clinical opinion on management where evidence is unclear may also contribute to variation. Many clinicians are uncertain about the value of gastroscopy in screening and surveillance for Barrett's oesophagus, and this may be contributing to the variation seen. Although the risk of someone with Barrett's oesophagus developing oesophageal cancer is at least 30 times as high as that for the general population, the absolute risk of developing cancer for a patient with non-dysplastic Barrett's oesophagus is low; recent studies suggest rates close to 0.22% per year.³⁵

In suspected coeliac disease, gastroscopy is necessary to obtain a biopsy for confirmation of the diagnosis.³⁶ Coeliac disease affects approximately 1 in 100 Australians, and is often unrecognised.^{37,38} It is not clear what proportion of gastroscopies in Australia are requested for investigating suspected coeliac disease.

Variation in rates of gastroscopy between areas may also be influenced by the number of clinicians providing services to people living in the area. The practices of specific clinicians are likely to have a greater impact on rates in smaller local areas with fewer clinicians, such as rural and regional locations. Specific clinicians may influence rates across several local areas, especially those with small populations. The effects of practice styles of individual clinicians will be diluted in areas with larger numbers of practising clinicians.

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.

Addressing variation

Unwarranted variation in use of gastroscopy would be addressed by reducing the rate of inappropriate gastroscopies and increasing access in areas that are currently under-served. Australia's finite health resources should be directed to high-value care, and away from low-value care such as gastroscopy in situations where it will not change management. Reducing the number of inappropriate referrals for gastroscopy could free up resources to help reduce waiting times for public colonoscopy services in Australia.

Improving preventive care could also reduce unwarranted variation. For example, risk factors for gastro-oesophageal reflux include obesity, dietary factors and smoking. Addressing these risk factors as the first step could reduce the incidence of reflux, reduce the incidence of symptoms that do not respond to treatment and the risk of developing Barrett's oesophagus, and reduce the need for gastroscopy.

Review of MBS item descriptions

Aligning MBS item descriptions for gastroscopy with evidence- and consensus-based criteria, and likely yield, and auditing against the revised items, are important strategies that could be used to reduce inappropriate use of gastroscopy. Most patients with upper gastrointestinal symptoms can be effectively managed without gastroscopy, and long-term follow-up shows that most patients with these symptoms have a benign course.^{34,39} United States guidelines recommend reserving gastroscopy for specific indications, including:

- Upper abdominal symptoms that persist despite an appropriate trial of therapy
- Upper abdominal symptoms associated with other symptoms or signs suggesting structural disease (for example, weight loss) or new-onset symptoms in patients over 50 years of age
- Difficulty swallowing
- Persistent vomiting of unknown cause.⁴⁰

Education and clinical audit

An Australian study of GPs found that participation in clinical self-audit against Gastroenterological Society of Australia recommendations improved management of GORD.⁹ Referral for gastroscopy fell from 48% to 45% of patients during the audit program, and other aspects of management improved – for example, identification of risk factors for exacerbations (including medications), and recommendations for lifestyle modifications such as weight loss and dietary changes.⁹ Clinical audit is a valuable tool, which could be used more widely to increase appropriate use of gastroscopy in Australia.

Using guidelines to assess the appropriateness of referrals for gastroscopy could increase the diagnostic yield, according to a New Zealand study of an open access gastroscopy service.⁴¹ The study was prompted by concerns about an increase in inappropriate referrals with a low positive yield, and a consequent increase in waiting times for patients with potentially serious disease.⁴¹ The analysis found that 42% of referrals were inappropriate, according to American Society of Gastroenterology criteria.⁴¹ For hospital-based consultants, surveillance of healed benign lesions was the most common inappropriate reason to request gastroscopy (31% of consultant requests); for GPs, symptoms considered functional were the most common inappropriate reason (25% of GP requests).⁴¹

Targeting both gastroenterologists and GPs for educational programs could improve the appropriateness of requests for gastroscopy. Education could include information about the low yield of gastroscopy for simple upper gastrointestinal symptoms, and when surveillance is appropriate. Structured referral forms listing the appropriate indications for gastroscopy could serve two purposes: educating referrers and providing a basis for rejecting inappropriate referrals. Education for consumers and GPs about the limited role for gastroscopy in reflux and functional dyspepsia could also improve appropriateness of use. Similarly, consumer education about lifestyle changes to reduce the risk of gastro-oesophageal reflux would be valuable.

Concurrent gastroscopy and colonoscopy

The high rate of patients undergoing gastroscopy and colonoscopy during the same hospitalisation warrants closer scrutiny. Both investigations are indicated in only a limited number of conditions, so the high rates reported suggest some inappropriate use. The MBS Review Taskforce recommended that the Gastroenterological Society of Australia consider the need for guidelines on the appropriate concurrent use of upper and lower gastrointestinal endoscopy.⁴² See page 81 for analysis of colonoscopy services in Australia.

Concurrent gastroscopy and colonoscopy is used to investigate the cause of iron deficiency in patients, including premenopausal women.⁴³ Improving management of heavy menstrual bleeding, and adherence to the Heavy Menstrual Bleeding Clinical Care Standard³¹, may reduce the number of women presenting with iron deficiency, and reduce the number unnecessarily investigated with gastroscopy and colonoscopy. Similarly, better management of functional gastrointestinal conditions could reduce unnecessary gastroscopy and colonoscopy.

Barrett's oesophagus surveillance

There is a low level of evidence to support surveillance gastroscopy for patients with Barrett's oesophagus to prevent oesophageal cancer.^{44,45} The cost-effectiveness of this strategy has been questioned, given the very low risk of progression to cancer in some patients.^{46,47} Stopping surveillance in subgroups of patients with a very low risk of progression to cancer could result in more effective use of healthcare resources.⁴⁶ This should be complemented by addressing risk factors such as smoking, obesity and uncontrolled gastro-oesophageal reflux symptoms. A variety of biomarkers for identifying patients with Barrett's oesophagus who are most at risk of developing oesophageal cancer are currently under investigation.⁴⁷

Gastroscopy hospitalisations, all ages

Appropriate prioritisation of colonoscopy and gastroscopy

Gastrosopies and colonoscopies are often performed by the same specialists and on the same procedural list. Resources for endoscopy may be better used by prioritising patients for gastroscopy or colonoscopy according to urgency within the combined patient group, rather than within the two separate groups. Colonoscopy for patients with a positive faecal occult blood test (and therefore a relatively high risk of cancer) could then be prioritised over gastroscopy for patients with a low likelihood of findings that would change management.

Bowel cancer is much more common than cancer of the upper gastrointestinal tract, but gastrosopies currently may be inappropriately prioritised over more clinically important colonoscopies, thus contributing to access problems. One way to examine whether this is happening at a local level would be to explore the volume of each procedure being undertaken and the pathology yield rates for both colonoscopy and gastroscopy.

Western Australia and Victoria have introduced triage systems to improve use of endoscopy services.⁴⁸⁻⁵⁰ Queensland has also introduced clinical prioritisation criteria for many clinical areas, including gastroenterology, to triage patients referred to public specialist outpatient services.⁵¹ Wider use of such systems could result in more appropriate prioritisation of gastroscopy and colonoscopy.

Consumer education

Informing younger patients of their very low risk of stomach and oesophageal cancer may reduce the demand for inappropriate gastroscopy. In men under 50 years of age, the incidence of stomach cancer is less than 7 per 100,000, and the incidence of oesophageal cancer is less than 4 per 100,000.¹² In women under 50 years of age, the incidence of stomach cancer is less than 4 per 100,000, and the incidence of oesophageal cancer is less than 1 per 100,000.¹²

Consumer education for women about the importance of excluding heavy menstrual bleeding in the management of anaemia may reduce unnecessary gastroscopy in this group.

Reducing risk factors

Reducing risk factors for upper gastrointestinal cancer would reduce the burden of disease, and reduce the overall need for gastroscopy. Intensifying public health initiatives to reduce smoking, obesity and excessive alcohol consumption in high-risk groups should be a priority.

Aboriginal and Torres Strait Islander Australians and gastroscopy

Aboriginal and Torres Strait Islander Australians¹³:

- Are 1.5 times as likely as other Australians to be diagnosed with stomach cancer and 1.8 times as likely to die from it
- Are 2.2 times as likely as other Australians to be diagnosed with oesophageal cancer and 1.8 times as likely to die from it
- Have, on average, a 20% chance of surviving for five years after being diagnosed with stomach cancer, compared with an average 28% chance for other Australians.

Improving access to gastroscopy for Aboriginal and Torres Strait Islander Australians with symptoms suggesting stomach or oesophageal cancer could potentially improve survival after diagnosis. Aboriginal and Torres Strait Islander Australians have a lower rate of procedures when hospitalised, than other Australians (62% versus 81%).⁵² This disparity is likely to reflect a range of factors, such as⁵²:

- Lack of private health insurance
- Comorbidities
- Clinical judgements about post-procedural compliance
- Communication and cultural issues.

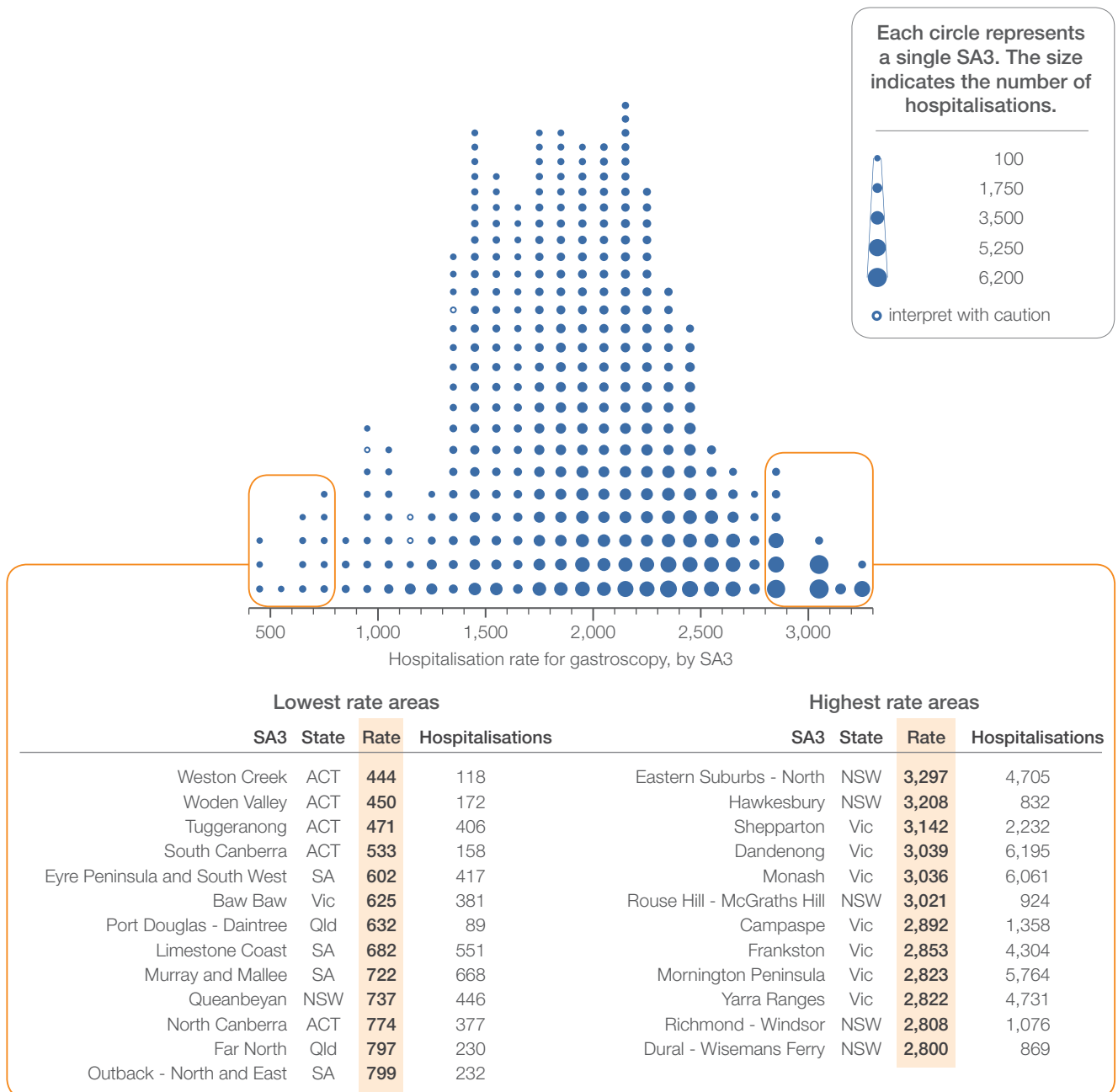
To better understand the reasons for lower rates of procedures such as gastroscopy for Aboriginal and Torres Strait Islander Australians, detailed analysis is needed to understand the population's needs and potential solutions in specific settings.⁵³ This could be done, for example, through hospital-level research that fulfils the criteria for Action 1²⁸ in the Governance standard of the National Safety and Quality Health Service Standards (second edition).⁵⁴

Increasing appropriate publicly funded access to gastroscopy, as well as culturally safe care, should be prioritised to improve care for Aboriginal and Torres Strait Islander Australians with symptoms requiring gastroscopy. Improving prevention through reducing risk factors is also fundamental to reducing rates of stomach and oesophageal cancer in Aboriginal and Torres Strait Islander Australians.

Gastroscopy hospitalisations, all ages

Rates by local area

Figure 2.12: Number of hospitalisations for gastroscopy per 100,000 people of all ages, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2016–17



Notes:

Hollow circles (○) indicate rates that are considered more volatile than other published rates and should be interpreted with caution.

Data from a number of ACT private hospitals, which undertake some gastroscopies, were not provided to the National Hospital Morbidity Database. For this reason, data for the ACT should be interpreted with caution.

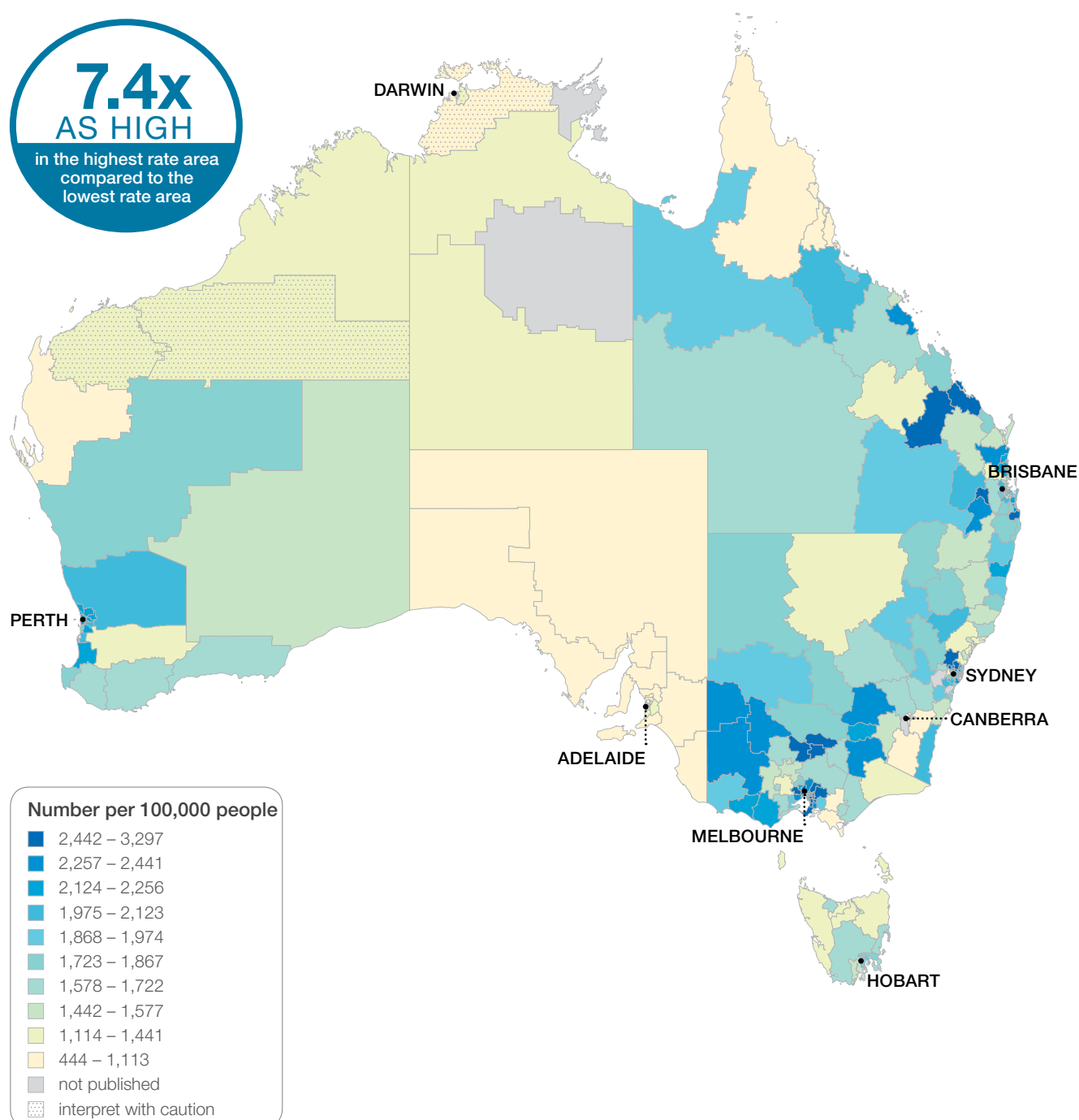
For further detail about the methods used, please refer to the Technical Supplement.

Sources: AIHW analysis of National Hospital Morbidity Database and ABS Estimated Resident Population 30 June 2016.

Gastroscope hospitalisations, all ages

Rates across Australia

Figure 2.13: Number of hospitalisations for gastroscope per 100,000 people of all ages, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2016–17



Notes:

Dotted areas indicate rates that are considered more volatile than other published rates and should be interpreted with caution. These rates are excluded from the calculation of the difference between the highest and lowest SA3 rates in Australia.

Data from a number of ACT private hospitals, which undertake some gastroscopies, were not provided to the National Hospital Morbidity Database.

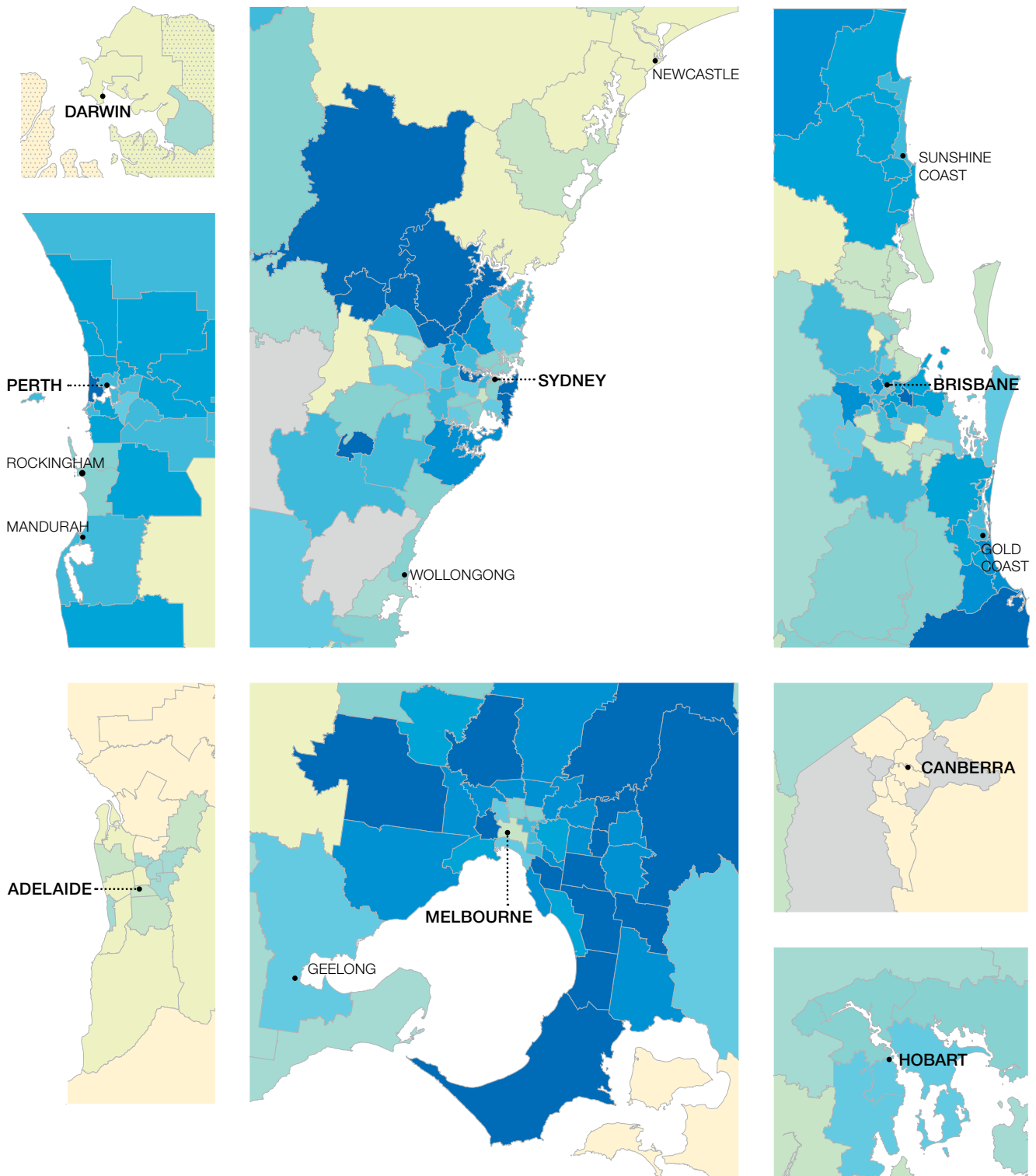
For this reason, data for the ACT should be interpreted with caution.

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 Population 30 June 2016.

Rates across capital city areas

Figure 2.14: Number of hospitalisations for gastroscopy per 100,000 people of all ages, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2016–17



Notes:

Dotted areas indicate rates that are considered more volatile than other published rates and should be interpreted with caution.

Data from a number of ACT private hospitals, which undertake some gastroscopies, were not provided to the National Hospital Morbidity Database. For this reason, data for the ACT should be interpreted with caution.

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

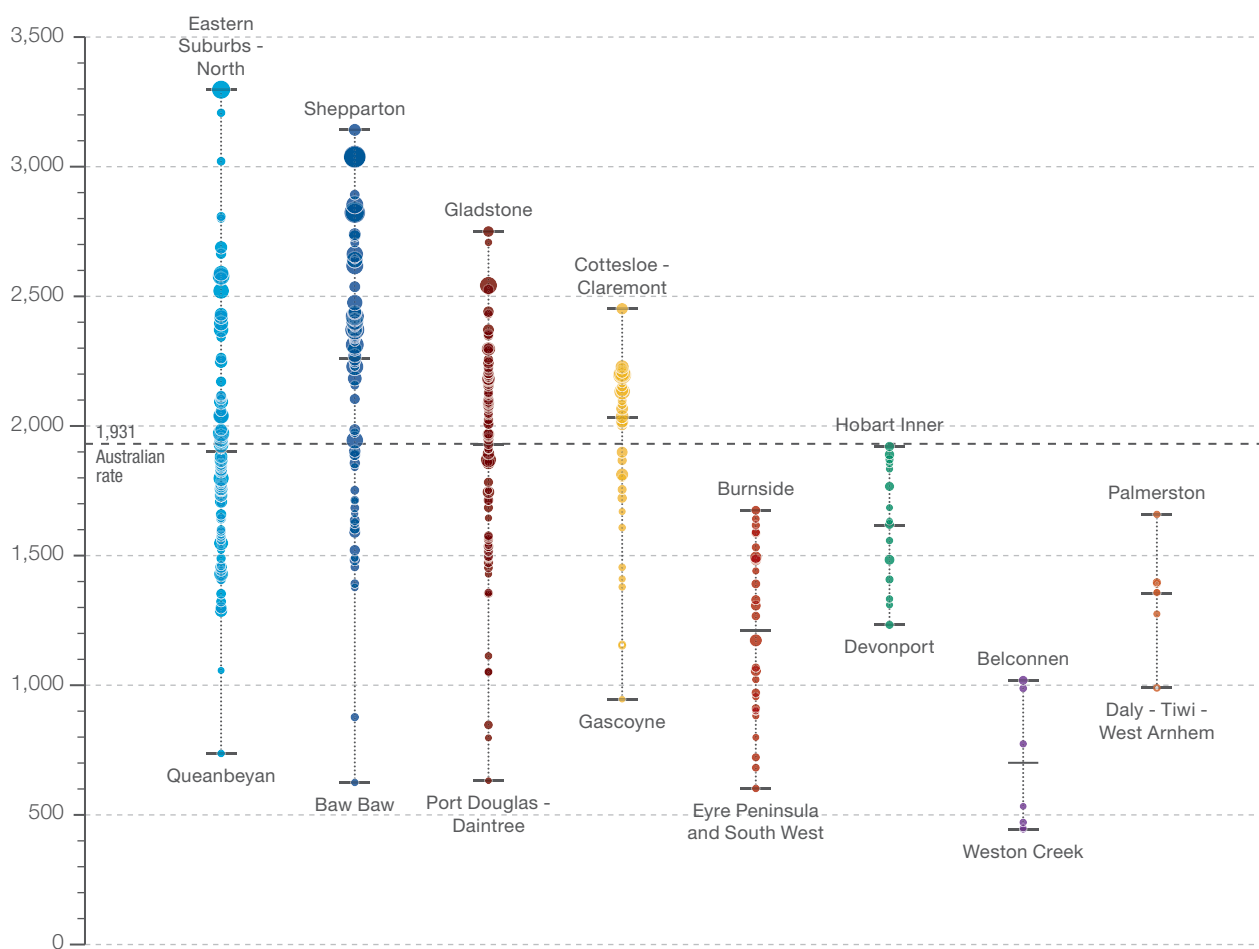
Sources: AIHW analysis of National Hospital Morbidity Database and ABS Estimated Resident Population 30 June 2016.

Gastrosocopy hospitalisations, all ages

Rates by state and territory

Figure 2.15: Number of hospitalisations for gastrosocopy per 100,000 people of all ages, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2016–17

	NSW	Vic	Qld	WA	SA	Tas	ACT	NT
Highest rate	3,297	3,142	2,750	2,452	1,675	1,921	1,019	1,659
State/territory	1,903	2,259	1,927	2,031	1,211	1,618	701	1,355
Lowest rate	737	625	632	946	602	1,233	444	990*
No. hospitalisations	161,454	149,455	100,437	54,039	24,009	10,077	2,784	2,822



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

○ interpret with caution



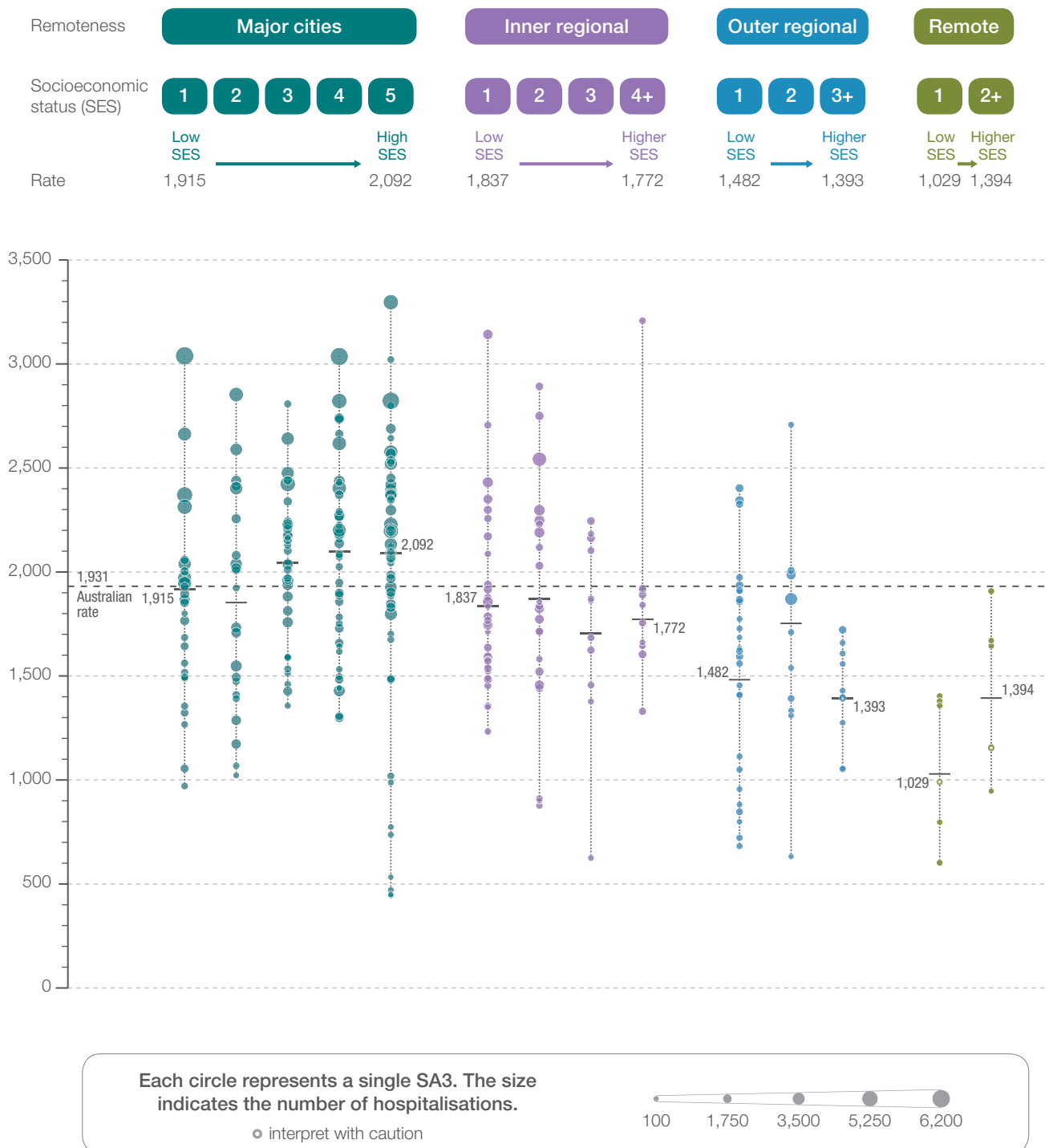
Notes:

Hollow circles (○) and asterisks (*) indicate rates that are considered more volatile than other published rates and should be interpreted with caution. Data from a number of ACT private hospitals, which undertake some gastrosocopies, were not provided to the National Hospital Morbidity Database. For this reason, data for the ACT should be interpreted with caution. 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 Population 30 June 2016.

Rates by remoteness and socioeconomic status

Figure 2.16: Number of hospitalisations for gastroscopy per 100,000 people of all ages, age and sex standardised, by Statistical Area Level 3 (SA3) of patient residence, 2016–17



Notes:

Hollow circles (○) indicate rates that are considered more volatile than other published rates and should be interpreted with caution. 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 Population 30 June 2016.

Gastroscopy hospitalisations, all ages

Resources

- Gastroenterological Society of Australia, *Gastro-oesophageal Reflux in Adults: Clinical update*⁶
- Cancer Council Australia, Australian clinical practice guideline for diagnosis and management of Barrett's oesophagus⁴⁴
- National Institute for Health and Care Excellence (NICE), *Gastro-oesophageal Reflux Disease and Dyspepsia in Adults: Investigation and management* (clinical guideline)⁷
- NICE, Section 1.2: Upper gastrointestinal tract cancers, in *Suspected Cancer: Recognition and referral* (NICE guideline)¹⁰
- Australian Health Ministers' Advisory Council, *Aboriginal and Torres Strait Islander Health Performance Framework 2017 Report*, performance measure 3.06: access to hospital procedures.⁵²

Australian initiatives

The information in this chapter will complement work already under way to improve the use of gastroscopy in Australia. At a national level, this work includes:

- Gastroenterological Society of Australia, Choosing Wisely recommendation 5: Do not perform a follow-up endoscopy less than three years after two consecutive findings of no dysplasia from endoscopies with appropriate four quadrant biopsies for patients diagnosed with Barrett's oesophagus⁵⁵
- Royal Australasian College of Surgeons, Choosing Wisely recommendation 4: Do not use endoscopy for investigation in gastric band patients with symptoms of reflux⁵⁶
- Australian Health Ministers' Advisory Council, monitoring of access to hospital procedures within the Aboriginal and Torres Strait Islander Health Performance Framework.⁵²

Many states and territory initiatives are also in place to address access to gastroscopy, including:

- Queensland Health, Endoscopy Action Plan⁵⁷
- Queensland Health, referral criteria and guidelines for gastroenterology⁴⁸
- Queensland Health, clinical prioritisation criteria for gastroenterology⁵¹
- Department of Health, Western Australia, referral guidelines for direct access gastrointestinal endoscopic procedures⁴⁹
- Department of Health, Western Australia, urgency categorisation and access policy for public direct access adult gastrointestinal endoscopy services.⁵⁰

References

- Gastroenterological Society of Australia. Information about gastroscopy. Melbourne: Digestive Health Foundation; 2012. http://cart.gesa.org.au/membes/files/Consumer%20Information/Gastroscopy_A4.pdf (accessed Aug 2018).
- Better Health Channel. Upper GI endoscopy [Internet]. Melbourne: State Government of Victoria; 2015 [updated 2015 Jun 29; cited 2018 Aug 10]. Available from: www3.betterhealth.vic.gov.au/bhcv2/bhcmcd.nsf/pages/E01lite_en
- National Health Service. Overview: gastroscopy [Internet]. London: NHS; 2018 [updated 2018 Jun 12; cited 2018 Aug 10]. Available from: www.nhs.uk/conditions/gastroscopy
- Medicare Australia Statistics. Medicare items 30473, 30476, 30478 processed from July 2006 to June 2017 per capita [Internet]. Canberra: Medicare Australia; 2018 [cited 2018 Mar]. Available from: http://medicarestatistics.humanservices.gov.au/statistics/mbs_item.jsp
- Australian Institute of Health and Welfare. Cancer in Australia 2017. Canberra: AIHW; 2017. (AIHW Cat. No. CAN 100; Cancer Series No. 101.)
- Gastroenterological Society of Australia. Gastro-oesophageal reflux disease in adults: clinical update. Melbourne: Digestive Health Foundation; 2011. http://cart.gesa.org.au/membes/files/Clinical%20Guidelines%20and%20Updates/Reflux_Disease.pdf (accessed Mar 2018).
- National Institute for Health and Care Excellence. Gastro-oesophageal reflux disease and dyspepsia in adults: investigation and management. [Internet]. London: NICE; 2014 [updated 2014 Nov; cited 2018 Aug 10]. Available from: www.nice.org.uk/guidance/cg184
- Moayyedi PM, Lacy BE, Andrews CN, Enns RA, Howden CW, Vakil N. ACG and CAG clinical guideline: management of dyspepsia. *Am J Gastroenterol* 2017;112(7):988–1013.
- Kirby CN, Piterman L, Nelson MR, Dent J. Gastro-oesophageal reflux disease: impact of guidelines on GP management. *Aust Fam Physician* 2008;37(1–2):73–7.
- National Institute for Health and Care Excellence (NICE). Suspected cancer: recognition and referral – 1.2 Upper gastrointestinal tract cancers [Internet]. London: NICE; 2015 [updated 2017 Jul; cited 2018 Aug 10]. Available from: www.nice.org.uk/guidance/ng12/chapter/1-Recommendations-organised-by-site-of-cancer#upper-gastrointestinal-tract-cancers
- Uemura N, Okamoto S, Yamamoto S, Matsumura N, Yamaguchi S, Yamakido M, et al. *Helicobacter pylori* infection and the development of gastric cancer. *N Engl J Med* 2001;345(11):784–9.
- Australian Institute of Health and Welfare. Cancer in Australia 2017 (Tables A9.9[a], A9.24[a], A9.30[a]). Canberra: AIHW; 2017. (AIHW Cat. No. CAN 100; Cancer Series No. 101.)
- Australian Institute of Health and Welfare. Cancer in Aboriginal and Torres Strait Islander people of Australia [Internet]. Canberra: AIHW; 2018 [updated 2018 Mar 15; cited 2018 Mar 30]. Available from: www.aihw.gov.au/reports/cancer/cancer-in-indigenous-australians
- Australian Institute of Health and Welfare. Australian Cancer Incidence and Mortality (ACIM) books [Internet]. Canberra: AIHW; 2017. [updated 2017 Dec 11; cited 2018 Mar 30]. Available from: www.aihw.gov.au/reports/cancer/acim-books/contents/acim-books
- Medicare Australia Statistics. Medicare items 30473, 30476, 30478 processed from Jan 2008 to Dec 2017, per capita [Internet]. Canberra: Medicare Australia; 2018 [cited Mar 2018]. Available from: http://medicarestatistics.humanservices.gov.au/statistics/mbs_item.jsp
- Australian Institute of Health and Welfare. Admitted patient care 2016–17: Australian hospital statistics [Internet]. Canberra: AIHW; 2018 [updated 2018 May 24; cited 2018 Jun 30]. Available from: www.aihw.gov.au/reports/hospitals/ahs-2016-17-admitted-patient-care/contents/table-of-contents
- NHS Rightcare. The second atlas of variation in NHS diagnostic services. London: Public Health England; 2017.
- Badgery-Parker T, Pearson S, Chalmers K, Brett J, Scott I, Dunn S, et al. Low-value care in Australian public hospitals: prevalence and trends over time. *BMJ Qual Saf* 2018; Epub ahead of print. doi:10.1136/bmjqs-2018-008338.
- Scott IA, Duckett SJ. In search of professional consensus in defining and reducing low-value care. *Med J Aust* 2015;203(4):179–81.
- O'Sullivan JW, Albasri A, Nicholson BD, Perera R, Aronson JK, Roberts N, et al. Overtesting and undertesting in primary care: a systematic review and meta-analysis. *BMJ Open* 2018;8(2):e018557.
- Di Giulio E, Hassan C, Marmo R, Zullo A, Annibale B. Appropriateness of the indication for upper endoscopy: a meta-analysis. *Dig Liver Dis* 2010;42(2):122–6.
- Malik HT, Marti J, Darzi A, Mossialos E. Savings from reducing low-value general surgical interventions. *Br J Surg* 2018;105(1):13–25.
- ASGE Standards of Practice Committee, Ben-Menachem T, Decker GA, Early DS, Evans J, Fanelli RD, et al. Adverse events of upper GI endoscopy. *Gastrointest Endosc* 2012;76(4):707–18.
- Australian Institute of Health and Welfare. Variation in hospital admission policies and practices: Australian hospital statistics. Canberra: AIHW; 2017. www.aihw.gov.au/getmedia/0bb1bc5f-deb9-4938-b346-a2b3978d16f0/aihw-hse-193.pdf.aspx?inline=true (accessed Jun 2018).
- Howell SC, Quine S, Talley NJ. Low social class is linked to upper gastrointestinal symptoms in an Australian sample of urban adults. *Scand J Gastroenterol* 2006;41(6):657–66.
- Haag S, Andrews JM, Gapasin J, Gerken G, Keller A, Holtmann GJ. A 13-nation population survey of upper gastrointestinal symptoms: prevalence of symptoms and socioeconomic factors. *Aliment Pharmacol Ther* 2011;33(6):722–9.
- Dent J, El-Serag HB, Wallander MA, Johansson S. Epidemiology of gastro-oesophageal reflux disease: a systematic review. *Gut* 2005;54(5):710–7.
- Jansson C, Nordenstedt H, Johansson S, Wallander MA, Johnsen R, Hveem K, et al. Relation between gastroesophageal reflux symptoms and socioeconomic factors: a population-based study (the HUNT Study). *Clin Gastroenterol Hepatol* 2007;5(9):1029–34.
- Australian Institute of Health and Welfare. Australia's health 2018. Canberra: AIHW; 2018. (Australia's Health Series No. 16. AUS 221.)
- Gastroenterological Society of Australia. Iron deficiency clinical update. Melbourne: GESA; 2015.
- Australian Commission on Safety and Quality in Health Care. Heavy Menstrual Bleeding Clinical Care Standard. Sydney: ACSQHC; 2017. Available at <https://www.safetyandquality.gov.au/our-work/clinical-care-standards/heavy-menstrual-bleeding/> Sydney. ACSQHC, 2018.
- Talley NJ, Ford AC. Functional dyspepsia. *N Engl J Med* 2015;373(19):1853–63.
- Napthali K, Koloski N, Walker MM, Talley NJ. Women and functional dyspepsia. *Womens Health (Lond)* 2016;12(2):241–50.
- Katz PO, Gerson LB, Vela MF. Guidelines for the diagnosis and management of gastroesophageal reflux disease. *Am J Gastroenterol* 2013;108(3):308–28.
- Bhat S, Coleman HG, Yousef F, Johnston BT, McManus DT, Gavin AT, et al. Risk of malignant progression in Barrett's esophagus patients: results from a large population-based study. *J Natl Cancer Inst* 2011;103(13):1049–57.
- Therapeutic Guidelines Ltd. Small bowel disorders – coeliac disease. In: Therapeutic guidelines: gastrointestinal [Internet]. Melbourne: Therapeutic Guidelines Ltd; 2018. [cited 2018 Mar 30]. Available from: www.tg.org.au
- Anderson RP. Coeliac disease is on the rise. *Med J Aust* 2011;194(6):278–9.
- Anderson RP, Henry MJ, Taylor R, Duncan EL, Danoy P, Costa MJ, et al. A novel serogenetic approach determines the community prevalence of celiac disease and informs improved diagnostic pathways. *BMC Med* 2013;11:188.
- Duggan AE. The management of upper gastrointestinal symptoms: is endoscopy indicated? *Med J Aust* 2007;186(4):166–7.
- ASGE Standards of Practice Committee, Early DS, Ben-Menachem T, Decker GA, Evans JA, Fanelli RD, et al. Appropriate use of GI endoscopy. *Gastrointest Endosc* 2012;75(6):1127–31.
- Tahir M. Appropriateness of upper gastrointestinal endoscopy: will the diagnostic yield improve by the use of American Society of Gastroenterology guidelines? *Euroasian J Hepatogastroenterol* 2016;6(2):143–8.
- Medicare Benefits Schedule Review Taskforce. Gastroenterology Clinical Committee report: taskforce findings – recommendation 2. Canberra: Australian Government Department of Health; 2016. [www.health.gov.au/internet/main/publishing.nsf/content/8D8DD5BA20AF8C3ACA2580290013AD4D/\\$File/Taskforce%20Summary%20-%20Gastro.pdf](http://www.health.gov.au/internet/main/publishing.nsf/content/8D8DD5BA20AF8C3ACA2580290013AD4D/$File/Taskforce%20Summary%20-%20Gastro.pdf) (accessed June 2018).

Gastroscopy hospitalisations, all ages

43. Pasricha SR, Flecknoe-Brown SC, Allen KJ, Gibson PR, McMahon LP, Olynyk JK, et al. Diagnosis and management of iron deficiency anaemia: a clinical update. *Med J Aust* 2010;193(9):525–32.
44. Cancer Council Australia Barrett's Oesophagus Guidelines Working Party. Clinical practice guidelines for the diagnosis and management of Barrett's oesophagus and early oesophageal adenocarcinoma [Internet]. Sydney: Cancer Council Australia; 2015 [updated 2015 Sep 15; cited 2018 Mar 30]. Available from: <https://wiki.cancer.org.au/australiawiki/index.php?oldid=113682>
45. Whiteman DC, Kendall BJ. Barrett's oesophagus: epidemiology, diagnosis and clinical management. *Med J Aust* 2016;205(7):317–24.
46. Lindblad M, Bright T, Schlothe A, Mayne GC, Chen G, Bull J, et al. Toward more efficient surveillance of Barrett's esophagus: identification and exclusion of patients at low risk of cancer. *World J Surg* 2017;41(4):1023–34.
47. Amadi C, Gatenby P. Barrett's oesophagus: current controversies. *World J Gastroenterol* 2017;23(28):5051–67.
48. Queensland Health. Referral guidelines: gastroenterology. Brisbane: Queensland Health; 2014. <https://cpc.health.qld.gov.au> (accessed Jun 2018).
49. Western Australian Department of Health. Referral guidelines: direct access gastrointestinal endoscopic procedures. Perth: Department of Health; 2017. ww2.health.wa.gov.au/~media/Files/Corporate/general%20documents/Central%20Referral%20Service/PDF/Direct_Access_Endoscopy_Referral_Guidelines.pdf (accessed Jun 2018).
50. Western Australian Department of Health. Urgency categorisation and access policy for public direct access adult gastrointestinal endoscopy services. Perth: Department of Health; 2017. www.health.wa.gov.au/circularsnew/pdfs/13352.pdf (accessed Jun 2018).
51. Queensland Health. Clinical prioritisation criteria: gastroenterology [Internet]. Brisbane: Queensland Health; 2018 [updated 2018 Feb 15; cited 2018 Aug 17]. Available from: <https://cpc.health.qld.gov.au/Specialty/7/gastroenterology>
52. Australian Health Ministers' Advisory Council. Aboriginal and Torres Strait Islander Health Performance Framework 2017 report. Canberra: AHMAC; 2017. https://www.pmc.gov.au/sites/default/files/publications/2017-health-performance-framework-report_1.pdf (accessed Nov 2017).
53. Fisher DA, Weeramanthri TS. Hospital care for Aboriginals and Torres Strait Islanders: appropriateness and decision making. *Med J Aust* 2002;176(2):49–50.
54. Australian Commission on Safety and Quality in Health Care. National Safety and Quality Health Service Standards. 2nd ed. Sydney: ACSQHC; 2017.
55. Choosing Wisely Australia. Gastroenterological Society of Australia: tests, treatments and procedures clinicians and consumers should question – recommendation 5 [Internet]. Sydney: NPS MedicineWise; 2016 [updated 2016 Oct 1; cited 2018 Jun 30]. Available from: www.choosingwisely.org.au/recommendations/gesa
56. Choosing Wisely Australia. Gastroenterological Society of Australia: tests, treatments and procedures clinicians and consumers should question – recommendation 4 [Internet]. Sydney: NPS MedicineWise; 2016 [updated 2016 Oct 1; cited 2018 Jun 30] Available from: <http://www.choosingwisely.org.au/recommendations/racs>
57. Queensland Health. Endoscopy Action Plan. Brisbane: Queensland Health; 2017.