

12 Discussion

This is the first time that general practice activity in Australia has been examined across each of the 7 categories of RRMA. The first three years of these data were described in the previous report *'It's different in the bush': a comparison of general practice activity in metropolitan and rural areas of Australia 1998–2000*.² However, due to sample size constraints, the earlier report aggregated the RRMA categories into three strata (metropolitan, large rural and small rural) based on population size (e.g. Large Rural Centres and Remote Centres were combined into the large rural strata). This grouping may have confounded some aspects of geographic remoteness with population density. The current report incorporates an extra three years of data to increase the sample size in each RRMA category and allows each to be examined individually. The analysis has also made use of the ASGC Remoteness Structure to further illuminate differences due to geographic remoteness. Therefore the findings of the current report provide more detail and some conclusions may be somewhat different from those in the earlier report.

In the broadest terms there were many similarities across geographical regions in general practice activity and many observed differences between regional locations were those of degree. The most common reasons patients gave for the encounters were similar across geographical regions and in general most of the common problems GPs managed were also similar. However, there were a number of salient differences in terms of the order and the frequency of particular problems managed and the treatments given by GPs, indicating differences in priorities and in practise patterns that were related to the geographical location of the practice. Some of these differences are discussed below in the context of comparing the two classifications.

RRMA versus ASGC

The comparison of general practice activity both by RRMA and ASGC Remoteness revealed some important differences between the two classifications. The ASGC Remoteness Structure was able to identify some salient differences related to geographical remoteness from services that were not evident in the RRMA classification. Three main themes emerged from the application of the ASGC Remoteness Structure to the data.

- There were a number of observed increasing or decreasing trends in general practice activity with increasing geographical remoteness from services.
- There were differences between Remote and Very Remote Australia.
- Inner Regional Australia demonstrated quite distinctive patterns of general practice activity.

Trends with increasing remoteness

The ASGC Remoteness Structure classifies localities using the Accessibility and Remoteness Index of Australia (ARIA). ARIA is a continuous measure of geographical remoteness calculated from a single dimension, road distance to services,¹⁴ and therefore ASGC Remoteness areas are truly ordinal categories of increasing remoteness. The ASGC Remoteness Structure was able to clarify those differences that were related to geographical remoteness from services in a more systematic way than RRMA.

New patients, check-ups and pathology test orders

There was a strong trend towards more frequent general check-ups with increasing remoteness. This was accompanied by an increase in pathology ordering rates. Previous work by Britt et al.²⁶ has shown an inverse relationship between encounter frequency and pathology ordering at each encounter. In the current study, less frequent visits per patient and an increasing proportion of encounters with new patients indicates that there was less continuity of care for patients as remoteness from service increases. This could explain the increasing frequency of check-ups at encounters in more remote locations as GPs take the opportunity to provide a complete health check for their patients at each (infrequent) visit. The introduction of Medicare items to encourage check-ups as an early intervention to detect health problems among Indigenous patients could also account for some of the increase in check-ups undertaken in more remote locations.¹¹ In addition, difficulties with access to GP services with increasing remoteness may lead to delayed presentation and more severe morbidity, which could also explain the higher rates of test orders with increasing remoteness. All the above factors may alert GPs in remote locations to the potential need to thoroughly check their patients at all possible opportunities.

Increased EUC, HbA1c and haematology tests with increasing remoteness may reflect increasing management rates of diabetes and an increasing proportion of Aboriginal patients and Torres Strait Islander patients with increasing remoteness. Increased use of coagulation studies in Outer Regional Australia and Remote Australia may reflect the broader scope of patient management by regional and remote GPs in the absence of specialist clinics which may otherwise manage these patients.

Diabetes and URTI

Diabetes was the second or third most frequently managed problem in Remote and Very Remote Australia compared with the fifth most common in Major Cities. There are higher death rates and hospitalisation rates for diabetes in rural and remote Australia.²⁷ Therefore the management rate of diabetes in general practice could reflect an increase in the prevalence of diabetes with increasing remoteness, especially among Indigenous patients. Another factor contributing to the increase in diabetes management however, is the decreasing frequency of patient visits to a GP with increasing remoteness. With less access to GPs, patients may have continued to visit the GP for the regular management of important health problems such as diabetes, but were less likely to visit for other common but more transient health problems, such as URTI. This may have resulted in diabetes becoming a relatively greater part of the workload for GPs in more remote practices.

Pregnancy and female genital check-ups

GPs in more remote locations played a greater role in the management of pregnancy and obstetric issues, including placing orders for obstetric ultrasounds more frequently. This is to be expected as tertiary obstetric services are relatively unavailable outside large population centres.^{27,28}

However, higher management rates of obstetrics did not translate into more preventive care for women in remote locations. A decreasing rate of Pap smears with increasing remoteness was not entirely explained by fewer female encounters, and may indicate that less continuity of care created a barrier to regular genital check-ups for women in remote locations.

Referrals

Previously published research from BEACH has indicated that lack of a nearby specialist surgeon does not reduce the referral rate to surgeons by GPs in rural and remote areas.²⁹ The lack of specialists in private practice may explain the increasing rate of hospital

referrals/admissions with remoteness as GPs referred patients to hospital-based specialists. In more remote locations GPs may also have referred patients to local hospitals, where the same GP provides ongoing care. This is a likely scenario in Remote Australia, where GPs recorded undertaking a large number of hospital consultations. A third factor affecting hospital referral rates may be the referral of some patients to a hospital outside the area for major episodes of in-patient care which could explain the higher rate of hospital referrals in Very Remote Australia, where GPs very rarely recorded doing any hospital consultations themselves.

Overall the increasing rates of procedural treatments, test orders, and management of pregnancy/obstetrics indicated that as remoteness increased so did the scope of the GP's management of problems at the encounter.

Very Remote Australia

The ASGC Remoteness Structure has more sensitivity at the remote end of the scale than RRMA and allows extreme remoteness to be examined in the category of Very Remote Australia. Although the sample of encounters from the ASGC category Very Remote Australia was small relative to the total BEACH sample of encounters, the inclusion of this category in the analysis illuminates some of the unique aspects of general practice in Australia's most remote locations. ASGC Remoteness Structure divides Remote and Very Remote Australia and revealed some qualitative differences in general practice activity between Very Remote Australia and Remote Australia that were concealed by the broader RRMA category Other Remote Areas.

One salient difference between Very Remote Australia and Remote Australia was the very large proportion of encounters with Indigenous patients in Very Remote Australia, especially those who spoke a language other than English. Very Remote Australia also had the greatest proportion of encounters with male patients and the smallest proportion of encounters with patients aged 65 years and older. These demographic differences were reflected in some observed differences in morbidity and management between Very Remote Australia and other ASGC Remoteness categories.

The higher rates of solar keratosis and skin neoplasms managed in Inner Regional, Outer Regional and Remote Australia, were accompanied by higher rates of excision procedures in these locations, and may indicate the high levels of occupational sun exposure in these areas. However, solar keratosis/sunburn and skin neoplasms were less common in Very Remote Australia, perhaps because such sun-related skin problems are less common among Indigenous people.

Other distinctive aspects of general practice activity in Very Remote Australia compared with Remote Australia were the higher management rates of urological problems, more new presentations of lipid disorders, and lower management rates of psychological problems, including depression and sleep disturbance. Remote Australia on the other hand had the highest management rates of otitis externa, while the management rate for otitis externa in Very Remote Australia was similar to the rest of Australia.

Long and prolonged consultations were twice as common in Very Remote Australia compared with Remote Australia. This could reflect the extremely low GP visit rate per head of population in Very Remote Australia, coupled with more complex morbidity managed in more remote locations. Hospital consultations by the GP, which were common in Remote Australia, were almost non-existent in Very Remote Australia where local facilities may be limited.

Inner Regional Australia

Sixty-six per cent of the GP sample from the RRMA rural zone (Large Rural Centres, Small Rural Centres and Other Rural Areas) were classified into ASGC Inner Regional Australia, 32% as Outer Regional Australia and 2% as Remote Australia. This re-classification using the ASGC Remoteness Structure showed that Inner Regional Australia had certain characteristics that distinguished these locations from those in Major Cities and Outer Regional Australia.

Patients seen at encounters in Inner Regional Australia were older than the national average. GPs in Inner Regional Australia were seeing fewer new patients, a greater proportion of concession card holders, fewer NESB patients and fewer Indigenous patients than GPs in other parts of Australia. This patient profile was reflected in the problems managed at encounters in Inner Regional Australia.

The ASGC Remoteness Structure revealed that the higher rates of chronic problems seen in the RRMA rural zone were in fact concentrated in Inner Regional Australia. Patients seen at encounters in Inner Regional Australia had more chronic problems and fewer new or acute problems managed. The management rates of depression, back complaint, osteoarthritis, oesophageal disease and ischaemic heart disease were all significantly higher in Inner Regional Australia than the national average. These higher rates of chronic problems managed were not seen in either Major Cities or Outer Regional Australia, and marks Inner Regional Australia as distinct from its neighbouring categories in terms of the patterns of morbidity managed.

The ASGC Remoteness category 'Inner Regional Australia' includes satellite areas around the Major Cities of Australia and large sections of the coastal areas of south-east Australia. These areas are undergoing major demographic change as people migrate from the large cities to coastal and other satellite areas. In addition older Australians from more remote areas may move into Inner Regional Australia for better access to health services. The ASGC Remoteness category of Inner Regional Australia captured the effect of this social phenomenon on general practice, an effect which was obscured by the rural categories of the RRMA classification. The results for Inner Regional Australia also indicate that not all aspects of demographics and health care have a simple linear relationship to remoteness.

National Health Priority Areas

The National Health Survey (NHS) 2001 provides population prevalence estimates of health problems based on a community survey of self-reported health.³⁰ The NHS 2001 used the ASGC Remoteness Structure to report the prevalence of health problems across geographical regions. Therefore the NHS 2001 can be used to compare differences in estimated population prevalence across geographical regions with encounter rates seen in general practice, especially long-term conditions defined as National Health Priority Areas.²³ In the NHS 2001 the estimated prevalence of ischaemic and other heart disease was higher in Inner Regional Australia (2.2%) than in Major Cities (1.9%) or Outer Regional, Remote and Very Remote Australia (1.9%).³⁰ This was reflected in the current study by the higher than average rate of management of circulatory problems, including ischaemic heart disease in general practice in Inner Regional Australia. Similarly for arthritis, in the NHS 2001 the self-reported prevalence of arthritis and rheumatism in Inner Regional Australia (17.5%) was higher than that in either Major Cities (14.0%) or Outer Regional, Remote and Very Remote Australia (15.6%). In the current study this pattern of arthritis prevalence was reflected in the significantly higher management rate of arthritis problems in Inner Regional Australia. The NHS 2001 also

estimated higher prevalence of mental and behavioural problems in Inner Regional Australia, which in the current study was reflected in the higher management rates of psychological problems in Inner Regional Australia.

The National Health Survey was based on respondent's self-report and had relatively small sample sizes outside the Major Cities. Therefore the NHS may not detect all differences in prevalence across ASGC categories, especially for rarer events. However, not all differences in management rates across regions are explained simply by differences in underlying prevalence. Accessibility to a GPs and other health services, the relative importance of a health problem and the role of the GP in managing the problem are all factors that interact with prevalence to affect the rate with which a problem is managed in general practice across geographical categories.

GP visit rates per head of population

General practice consultations (MBS A1 item claims) per head of population

Medicare Benefits Schedule (MBS) claims data show that the mean number of GP visits per head of population decreases with increasing remoteness (see Chapter 1, Figures 1.3 and 1.4). In 2001, the mean number of visits per head of population in Capital Cities was 5.8 visits per year, almost double the rate in Other Remote Areas (2.8 visits per year). Therefore, where management rates per 100 patient encounters are equivalent between two geographical categories, this may indicate a relatively lower management rate per head of population for the more remote category. The decreasing visit rate per head of population with increasing remoteness may indicate a lack of services available in more remote locations. The issue of work force availability was reflected in the smaller proportions of sampled GPs who worked part-time in the RRMA remote zone.

This report, however, describes how location affects general practice in terms of the morbidity and treatment of those patients seen by GPs. This is a separate question to whether or not GP services are meeting the underlying health needs of the population in each region or area. The relative infrequency of GP visits together with underlying differences in prevalence of particular problems and differences in patient demographics, all contribute to the distinct profile of general practice in remote locations. As discussed above, difficulties of access may mean that transient health problems are seen less often in remote general practice, while certain chronic problems form an increasingly greater proportion of GP workload as remoteness increases.

GP services through other payment methods/other services

Not all GP services are provided at consultations claimed through Medicare. GP consultations funded through state-based and community health services become increasingly important with increasing remoteness.¹¹ GPs who were substantially remunerated through sources other than Medicare may not be sampled in BEACH as the sampling frame was defined on a minimum number of MBS claims. Therefore there may be a sector of general practice activity in more remote locations that is not described by BEACH. It remains to be demonstrated, however, whether GPs who are not MBS funded differ appreciably from their regional counterparts who do claim through Medicare, in terms of patient demographics, morbidity and management.

Vaccinations are an example of services that are usually supplied by GPs in more accessible locations but are supplied through other health services or professionals in more remote locations. The rate of allergy/immune system medications (vaccinations) given by the GP decreased with remoteness. Allergy/immune system medications include childhood vaccinations and influenza vaccinations in the elderly. However, only 61% of childhood vaccinations in Australia are given by GPs at consultations claimed through Medicare.³¹ In the Northern Territory, which is entirely classified as Outer Regional, Remote or Very Remote Australia, the share of vaccinations given in general practice is only 3.3%. However, in 2003 the vaccination coverage for 2 year old children in the Northern Territory was nearly 95%, the highest in Australia.³¹ Therefore the decreasing rates of vaccinations seen in general practice with increasing remoteness appears to be an artefact of the lesser role played by GPs in administering vaccinations in remote locations rather than an indicator of any decrease in vaccination coverage across regions.

12.1 Methodological issues

Combining and analysing 6 years of continuous general practice data has provided large enough subsamples to allow comparisons between remote areas and the rest of Australia. Other reports on regional health differences have not been able to examine differences within remote areas of Australia due to sample size constraints.^{2,30}

Even though there was a small sample of GPs recruited from Very Remote Australia, the recruitment rate was proportional to the number of GPs in these locations (see Chapter 3, Figures 3.2 and 3.3). Therefore encounters from Remote and Very Remote Australia were well represented in the BEACH sample. However, the small subsample sizes achieved by random sampling made some findings of potential differences between Very Remote Australia and the rest of Australia inconclusive. This is particularly so for a cluster sample where a GP with very different practice profile can have a large influence on the intra-cluster correlation and the width of 95% confidence intervals.

Stratification sampling to increase the numbers of GPs recruited from Remote and Very Remote Australia would theoretically provide more power to detect real differences between Remote and Very Remote Australia. In practice however, over-sampling is limited by the absolute numbers of eligible GPs in Very Remote Australia. The sampling frame in BEACH is based on a threshold of Medicare A1 item claims (the equivalent of 1,500 per year). Over 6 years BEACH recruited 27 GPs from Very Remote Australia. In 2001, there were around 46 FWE GPs practising in Very Remote Australia (based on MBS claims activity). However, primary care practitioners in Very Remote Australia are often remunerated through sources other than the MBS.¹¹ Therefore broadening the sampling frame for Very Remote Australia to include those medical practitioners who are working in primary care but claiming fewer A1 MBS items may potentially increase the sample size in Very Remote Australia and allow a fuller comparison with the rest of Australia.⁵

Combining 6 years of data may mask any changes that were happening in general practice activity across regions over time. In particular the recent focus on incentives for attracting and retaining GPs in rural and remote areas may have promoted some changes in rural and remote practice that may have modified the differences between regions over the 6 years of the study.³² However, while changes over time cannot be assessed in this large aggregated sample, it does allow more power to assess average differences between regions.

13 Conclusion

This report aimed to describe general practice activity across each of the 7 categories of the Rural, Remote and Metropolitan Areas (RRMA) classification, using 6 continuous years of data from the BEACH program. Although many differences were detected between general practice activity across remote, rural and metropolitan areas, it was difficult to detect systematic differences that distinctly defined each RRMA category from its neighbours. The ASGC Remoteness Structure is based on the Accessibility and Remoteness Index of Australia, a measure of distance to services, and was more successful in defining trends in general practice activity in terms of increasing remoteness.

The ASGC Remoteness Structure was also more sensitive than RRMA at the very remote tail and was able to illustrate some unique aspects of general practice activity in Very Remote Australia, in particular the large proportion of Indigenous patients who spoke a language other than English. Although sample size constraints in Very Remote Australia remain an issue in achieving sufficient power to detect all differences, the inclusion of Very Remote Australia as a separate category from Remote Australia is important for properly describing general practice in more remote locations.

The ASGC Remoteness Structure divided rural Australia into Inner Regional and Outer Regional Australia. Inner Regional Australia was distinct from its neighbouring categories (Major Cities and Outer Regional Australia) in terms of patient demographics and morbidity managed. Inner Regional Australia captured the demographic of older Australians who have moved from Major Cities and Outer Regional Australia into satellite areas and to coastal areas in striking distance of the Major Cities. Outer Regional Australia, on the other hand, represented the more traditional definition of 'rural' Australia separate from the satellite areas and coastal communities of Inner Regional Australia.

The greater effectiveness of the ASGC Remoteness Structure in describing general practice activity in terms of geographical location indicates that RRMA may no longer be the best geographical classification system to use as the standard for describing health care statistics or for health service policy development.