

6 Problems managed

6.1 Number of problems managed at encounter by stratum

As demonstrated in Table 6.1, there were no significant differences between the number of problems managed at encounters in the three strata.

Table 6.1: Number of problems managed at encounter by stratum

Number of problems managed at encounter	Metropolitan (n = 149,489)			Large rural (n = 14,800)			Small rural (n = 37,100)		
	Rate per 100 encs	95% LCI	95% UCI	Rate per 100 encs	95% LCI	95% UCI	Rate per 100 encs	95% LCI	95% UCI
One problem	64.8	64.0	65.6	62.2	59.9	64.7	63.3	61.8	64.8
Two problems	24.8	24.3	25.3	25.8	24.5	27.2	25.4	24.6	26.2
Three problems	8.1	7.8	8.4	9.4	8.3	10.4	8.7	8.1	9.3
Four problems	2.3	2.0	2.6	2.5	1.9	3.2	2.6	2.1	3.0
Total	147.9	146.5	149.3	152.1	148.0	156.3	150.5	148.0	153.1

Note: Encs—encounters; UCI—upper confidence interval; LCI—lower confidence interval.

6.2 Problems managed (in ICPC-2 chapter groups) by stratum

The differences between the strata in the relative rates of problems managed (in ICPC-2 chapter groupings) reflected some of the differences earlier demonstrated in RFEs.

As shown in Table 6.2 there were no significant differences between the two rural strata in the rates of management of problems related to any of the ICPC-2 chapters.

When compared with the metropolitan stratum:

- Skin problems were managed significantly more often in both rural categories.

- Small rural areas demonstrated lower management rates of respiratory problems and a higher management rate of circulatory problems and those associated with pregnancy and family planning.

- The large rural stratum demonstrated significantly higher rates of ear problems.

Table 6.2: Problems managed by ICPC-2 chapters, by stratum

Problems managed	Metropolitan (n = 149,500)			Large rural (n = 14,800)			Small rural (n = 37,100)		
	Rate per 100 encs ^(a)	95% LCI	95% UCI	Rate per 100 encs ^(a)	95% LCI	95% UCI	Rate per 100 encs ^(a)	95% LCI	95% UCI
Respiratory	23.7	23.2	24.2	22.6	21.1	24.0	21.3	20.4	22.2
Musculoskeletal	17.0	16.5	17.5	18.2	17.0	19.5	17.8	17.1	18.4
Skin	16.5	16.2	16.9	18.1	17.1	19.3	17.9	17.2	18.5
Circulatory	16.3	15.7	16.8	16.3	14.8	17.9	18.3	17.3	19.2
General & unspecified	14.2	13.8	14.6	14.9	13.7	16.0	13.8	13.1	14.5
Psychological	11.4	10.9	11.9	11.9	10.7	13.1	10.2	9.6	10.9
Digestive	10.2	10.0	10.4	10.1	9.5	10.7	10.2	9.7	10.6
Endocrine & metabolic	9.1	8.8	9.4	8.1	7.3	9.0	9.4	8.8	9.9
Female genital system	7.2	6.8	7.6	7.2	6.3	8.0	7.3	6.5	8.0
Ear	4.4	4.3	4.6	5.2	4.7	5.7	4.6	4.4	4.9
Pregnancy & family planning	4.0	3.8	4.3	5.1	4.3	5.9	5.5	4.9	6.1
Neurological	4.0	3.9	4.1	4.1	3.7	4.5	4.1	3.8	4.4
Urology	3.0	2.9	3.1	3.3	3.0	3.7	3.1	2.9	3.4
Eye	2.8	2.7	2.9	2.8	2.4	3.1	2.7	2.5	2.9
Blood	1.8	1.5	2.0	1.5	1.2	1.8	1.9	1.6	2.1
Male genital system	1.3	1.2	1.4	1.5	1.2	1.7	1.6	1.4	1.7
Social problems	1.0	0.7	1.2	1.1	0.6	1.5	0.9	0.7	1.2
Total problems (n)	221,082	..	..	22,515	..	..	55,836	..	..

(a) Figures do not total 100.0 as more than one problem can be managed at each encounter.
 Note: Shading indicates statistically significant differences between strata. Encs— encounter; UCI—upper confidence interval; LCI—lower confidence interval.

6.3 Most frequent individual problems managed by stratum

The most common managed (defined as individual ICPC-2 rubrics or combinations of them) are listed in Table 6.3 and their frequencies compared by stratum. Only those problems that were reported at a rate of 1.5 per 100 encounters in at least one of the strata are listed. In total, 78 comparisons have been made in this table and the use of 95% confidence intervals means that up to four differences could have occurred by chance and do not, in fact, reflect a true difference. With this in mind there were twelve significant differences demonstrated.

When compared with rates in metropolitan areas:

URTI was managed significantly less often in both rural strata.

Depression was managed significantly more often in large rural areas.

Lipid disorders were less commonly managed in large rural areas.

Contact dermatitis was less frequently managed in small rural areas when compared with metropolitan areas.

Oesophageal disease was more commonly managed in both rural strata.

Solar keratosis was more frequently managed in both rural strata.

Malignant skin neoplasms were more frequently managed in small rural areas.

Pre/postnatal care was provided more often in small rural areas.

Table 6.3: Most frequent individual problems managed by stratum

Problem managed	Metropolitan (n = 149,500)			Large rural (n = 14,800)			Small rural (n = 37,100)		
	Rate per 100 encs ^(a)	95% LCI	95% UCI	Rate per 100 encs ^(a)	95% LCI	95% UCI	Rate per 100 encs ^(a)	95% LCI	95% UCI
Hypertension*	8.5	8.1	8.8	8.2	7.2	9.1	8.8	8.2	9.3
URTI	6.9	6.6	7.2	5.1	4.3	5.9	4.3	3.6	5.0
Immunisation/vaccination (all)*	5.0	4.6	5.3	4.9	4.0	5.9	4.3	3.6	5.0
Depression*	3.6	3.4	3.7	4.6	4.0	5.1	3.8	3.4	4.1
Asthma	3.1	2.9	3.2	3.4	3.0	3.7	3.2	2.9	3.5
Acute bronchitis/bronchiolitis	2.9	2.8	3.1	3.7	3.1	4.3	3.1	2.7	3.4
Back complaint*	2.7	2.4	2.9	3.0	2.6	3.5	2.8	2.6	3.0
Lipid disorder	2.6	2.5	2.8	2.0	1.6	2.4	2.4	2.1	2.6
Diabetes*	2.5	2.4	2.7	2.6	2.1	3.1	2.9	2.6	3.1
Osteoarthritis*	2.1	1.9	2.3	2.5	2.0	3.0	2.4	2.2	2.7
Female genital check-up*	2.0	1.7	2.3	1.7	1.2	2.1	2.0	1.5	2.5
Contact dermatitis	1.9	1.9	2.0	1.7	1.4	1.9	1.5	1.3	1.7
Anxiety*	1.9	1.7	2.0	1.7	1.2	2.1	1.5	1.2	1.7
Sprain/strain*	1.8	1.6	1.9	1.7	1.2	2.2	1.5	1.2	1.7
UTI*	1.7	1.7	1.8	1.7	1.5	2.0	1.7	1.6	1.9
Insomnia	1.7	1.5	1.8	1.5	1.1	1.8	1.5	1.2	1.7
Prescription (all)*	1.7	1.4	1.9	1.7	1.2	2.3	1.6	1.1	2.1
General check-up *	1.6	1.4	1.7	1.9	1.6	2.2	2.2	2.0	2.5
Menopausal symptom	1.6	1.4	1.7	1.7	1.4	2.0	1.6	1.4	1.9
Acute otitis media/myringitis	1.6	1.4	1.7	1.8	1.4	2.1	1.6	1.4	1.8
Sinusitis acute/chronic	1.5	1.4	1.7	1.6	1.2	2.0	1.4	1.2	1.6
Viral disease NOS	1.5	1.3	1.7	1.2	0.8	1.6	1.1	0.8	1.3
Oesophageal disease	1.4	1.3	1.5	1.9	1.6	2.2	1.9	1.7	2.1
Solar keratosis/sunburn	0.9	0.7	1.0	1.5	1.2	1.9	1.6	1.4	1.9
Malignant neoplasm skin	0.7	0.6	0.9	1.3	0.9	1.6	1.5	1.2	1.7
Pre/post-natal care	0.8	0.5	1.2	1.5	0.8	2.2	2.0	1.5	2.6
Sub-total (n, %)	94,675	42.8%	..	9,512	42.2%	..	22,768	40.5%	..
Total problems (n)	221,082	..	..	22,515	..	..	55,836	..	..

(a) Figures do not total 100.0 as more than one problem can be managed at each encounter. Only those problems managed at a rate of 1.5 per 100 encounters in at least one stratum are included.

* Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 6. <http://www.aihw.gov.au/publications/gep/ruralgp/index.html>).

Note: Shading indicates statistically significant differences between strata. Encs— encounter; UCI—upper confidence interval; LCI—lower confidence interval.

6.4 Discussion

The lower management rates of respiratory problems in small rural areas (compared with metropolitan areas) found in the current study had been suggested (for rural versus metropolitan) in the 1969-74 study and was statistically confirmed (for rural versus metropolitan) in 1990-91. In the current study, however, the difference was not apparent between the large rural stratum and the metropolitan stratum. The 1990-91 hypothesis that this difference was due to lower levels of presentation of minor viral infection as against bacterial conditions, was also supported by the current study, there being no differences between the strata in the relative rates of acute bronchitis, sinusitis and tonsillitis (results not presented). In contrast, the relative frequency of URTI decreased significantly with level of rurality.

A lower rate of management of circulatory problems in rural areas had been suggested by the 1969-74 study and was confirmed statistically in the 1990-91 study. However, in the current study the reverse was demonstrated, circulatory problems being managed significantly more often in small rural areas than in the metropolitan stratum. This reversal could be due to the changes in age distribution of the rural patient population since the last study (see Sections 5.1 and 5.3.1), the patients at encounter now being somewhat older in small rural areas than in metropolitan areas.

The higher relative management rates in small rural areas of problems associated with pregnancy and family planning, and with pre/postnatal care in particular, were also reported in both 1990-91 and in 1969-74. In contrast, although both the earlier studies reported lower rural contact rates for problems related to the female genital system (and for Pap smears in particular) the current study found no significant difference between the three strata. This could be due to the higher proportion of women GPs now available in rural areas when compared with earlier years (See section 3.3). Female GPs manage problems related to the female genital system significantly more often than male GPs (Britt et al. 1996) and the increase in their availability may have provided rural women with better access to female practitioners for the management of these problems. In previous years women may well have travelled out of their small rural environment to the cities or large rural towns, for the care of these types of problems. It is also possible that the Commonwealth Papsmear campaigns and establishment of registers could have had a differential effect among the strata.

The higher relative management rate of skin problems in rural areas was also demonstrated in the 1990-91 study. However, the findings of the current study of higher rates of management of solar keratosis in both rural strata and of malignant skin neoplasms in small rural areas were not apparent in the earlier study. These higher rates are not unexpected, reflecting the greater sun exposure associated with outdoor occupations.

The higher rate of management of problems associated with the ear in the large rural areas had not been suggested by earlier work. Although there has been considerable evidence of increasing numbers of people being recognised as depressed (McManus et al. 2000) and increasing rates of its management in general practice overall (Britt et al. 2000) the significantly higher rate of management of depression in large rural areas has not been noted previously. Whether these two differences are manifestations of a Type 1 error or whether they represent a real difference in morbidity patterns in the large rural stratum is not known.

7 Medications

As earlier reported (Table 4.3) there were no significant differences in the overall medication rate (including prescribed medications, advised over-the-counter medications and medications supplied by the GP) between the strata. GPs in the metropolitan stratum advised over-the-counter medications relatively more often than GPs in small rural areas, but there were no significant differences in prescription rates between the strata.

7.1 Rates of medications prescribed (in groups and sub-groups) by stratum

The prescribing rates of the more commonly prescribed medication groups and sub-groups are compared in Table 7.1. Only those groups or sub-groups which arose at a rate => 1.0 per 100 encounters in any of the strata are included in the table. No differences were found between strata in rates of prescribing of less frequent medication groups or sub-groups.

Note that 47 medication groups or sub-groups are included and that comparisons are made between the three strata resulting in 141 comparisons. As these comparisons are using 95% confidence intervals to test for statistical significance, up to seven differences of significance may be due to chance rather than reflecting true differences. With this in mind, the remarkable thing about the rates is their consistency across the three strata. Only eleven statistically significant differences were identified and these differences were in general very small.

The prescribing rate of other cardiovascular medications was significantly lower in large rural areas than in metropolitan areas.

The prescribing rate of simple analgesics was significantly lower in large rural areas than in metropolitan areas.

The prescribing rate of psychological medications was significantly higher in large rural areas than in metropolitan areas and this was partly due to higher relative rates of prescription of anti-depressants in large rural areas when compared with the metropolitan stratum.

The prescribing rate of hormones was significantly higher in small rural areas than in metropolitan areas and this was also reflected in significantly higher rates of prescribing of corticosteroids in small rural areas compared with those in metropolitan areas.

The prescribing rates of skin medications and more specifically topical steroids were significantly lower in small rural areas than in metropolitan areas.

In small rural areas there were significantly higher prescribing rates for anti-ulcerants when compared with metropolitan areas.

Prescribing rates of urogenital medications and, in particular, diuretics were significantly higher in small rural areas when compared with metropolitan areas.

Table 7.1: Relative prescribing rates of common medication groups and sub-groups by stratum

Medication group	Medication sub-group	Metropolitan (n = 149,500)			Large rural (n = 14,800)			Small rural (n = 37,100)		
		Rate per 100 encounters	95% LCI	95% UCI	Rate per 100 encounters	95% LCI	95% UCI	Rate per 100 encounters	95% LCI	95% UCI
Antibiotics		16.3	15.8	16.7	16.7	15.4	17.9	15.2	14.4	16.0
	Penicillins	1.4	1.2	1.5	1.9	1.5	2.3	1.7	1.4	1.9
	Broad spectrum penicillins	4.6	4.3	4.8	4.6	3.8	5.4	4.2	3.8	4.6
	Cephalosporins	4.0	3.8	4.2	3.6	3.0	4.2	3.5	3.1	3.8
	Tetracycline	1.3	1.2	1.4	1.3	1.0	1.7	1.2	1.0	1.5
	Other antibiotics	3.4	3.3	3.6	3.6	3.1	4.1	3.4	3.0	3.7
Cardiovascular		13.5	12.9	14.1	12.5	11.1	13.9	14.4	13.2	15.5
	Anti-hypertensives	7.1	6.7	7.4	6.5	5.6	7.4	7.5	6.9	8.2
	Anti-angina	1.3	1.2	1.5	1.4	1.1	1.7	1.5	1.2	1.7
	Beta-blockers	1.7	1.5	1.8	1.8	1.5	2.2	2.0	1.7	2.2
	Other cardiovascular medications	2.3	2.1	2.4	1.7	1.5	2.0	2.1	1.8	2.4
CNS		11.3	10.8	11.7	10.7	9.6	11.8	10.9	10.2	11.6
	Simple analgesics	4.9	4.6	5.1	3.8	3.2	4.3	4.2	3.8	4.6
	Narcotic analgesics	1.3	0.7	1.8	1.5	0.8	2.1	1.4	1.1	1.7
	Compound analgesics	3.0	2.8	3.1	3.2	2.7	3.7	3.0	2.7	3.3
	Anti-emetic/anti-nausea	1.5	1.4	1.6	1.4	1.1	1.6	1.4	1.2	1.6
Psychological		7.6	7.3	7.9	8.9	8.0	9.9	7.7	7.2	8.2
	Sedative hypnotics	2.0	1.9	2.2	2.0	1.5	2.5	1.8	1.6	2.1
	Anti-anxiety	2.1	2.0	2.3	2.4	1.9	2.9	2.0	1.7	2.3
	Anti-depressants	2.9	2.7	3.0	3.7	3.2	4.1	3.2	2.9	3.4

(continued)

Table 7.1 (continued): Relative prescribing rates of common medication groups and sub-groups by stratum

Medication group	Medication sub-group	Metropolitan (n = 149,500)			Large rural (n = 14,800)			Small rural (n = 37,100)		
		Rate per 100 encounters	95% LCI	95% UCI	Rate per 100 encounters	95% LCI	95% UCI	Rate per 100 encounters	95% LCI	95% UCI
Respiratory		6.9	6.6	7.2	6.8	5.9	7.7	6.8	6.2	7.5
	Bronchodilators	3.5	3.3	3.7	3.8	3.2	4.4	3.7	3.3	4.1
	Asthma preventives	2.3	2.1	2.4	2.3	1.9	2.8	2.5	2.2	2.8
Hormones		5.8	5.5	6.0	6.3	5.5	7.1	6.6	6.1	7.1
	Sex hormones	2.3	2.1	2.4	2.6	2.2	3.0	2.4	2.1	2.7
	Corticosteroids	1.2	1.1	1.3	1.8	1.1	2.4	1.7	1.5	1.9
	Hypoglycaemics	1.7	1.5	1.9	1.5	0.9	2.0	1.9	1.6	2.2
Musculoskeletal		5.5	5.3	5.7	5.5	4.9	6.0	5.8	5.4	6.2
	NSAID/anti-rheumatoid	4.4	4.2	4.6	4.5	4.0	5.0	4.5	4.2	4.8
Allergy, immune		5.1	4.7	5.5	5.8	4.5	7.0	4.6	3.9	5.3
	Vaccines	4.2	3.7	4.6	5.2	3.9	6.5	3.9	3.1	4.6
Skin		4.7	4.6	4.9	4.3	3.9	4.8	3.8	3.5	4.1
	Anti-infection skin	1.0	0.9	1.1	1.1	0.9	1.4	0.8	0.6	1.0
	Topical steroids	2.9	2.8	3.0	2.6	2.3	2.9	2.4	2.2	2.6
Digestive		4.3	4.1	4.4	4.1	3.7	4.5	4.4	4.1	4.8
	Anti-ulcerants	2.1	2.0	2.2	2.4	2.0	2.7	2.6	2.4	2.8
Urogenital		2.2	2.0	2.3	2.3	1.9	2.6	2.7	2.4	3.0
	Diuretics	1.6	1.4	1.7	1.6	1.3	2.0	2.1	1.8	2.4
Ear, nose topical		2.4	2.3	2.6	2.4	2.1	2.7	2.1	1.9	2.3
	Topical otic	0.9	0.8	1.0	1.1	0.8	1.5	0.9	0.7	1.1
	Topical nose	1.5	1.4	1.6	1.2	1.0	1.5	1.3	1.1	1.4
Contraceptives		1.8	1.7	1.9	1.9	1.6	2.3	1.8	1.5	2.1

(continued)

Table 7.1 (continued): Relative prescribing rates of common medication groups and sub-groups by stratum

Medication group	Medication sub-group	Metropolitan (n = 149,500)			Large rural (n = 14,800)			Small rural (n = 37,100)		
		Rate per 100 encounters	95% LCI	95% UCI	Rate per 100 encounters	95% LCI	95% UCI	Rate per 100 encounters	95% LCI	95% UCI
Blood		1.5	1.4	1.6	1.8	1.3	2.4	2.0	1.6	2.4
	Haemopoietic	0.8	0.7	0.9	1.0	0.5	1.6	1.0	0.4	1.5
Eye medications		1.7	1.6	1.8	1.6	1.3	1.9	1.6	1.4	1.8
	Anti-infectives	1.1	1.0	1.1	1.0	0.8	1.3	1.0	0.8	1.2
Nutrition/ metabolic		1.3	1.2	1.5	1.2	0.8	1.7	1.2	0.8	1.5

Note: Shading indicates statistically significant differences between strata. Encs— encounters, Scripts – prescriptions, UCI—upper confidence interval; LCI—lower confidence interval.

Table 7.2: Most frequently prescribed medications by stratum

Generic medication *	Metropolitan (n = 149,500)			Large rural (n = 14,800)			Small rural (n = 37,100)		
	Rate per 100 encs	95% LCI	95% UCI	Rate per 100 encs	95% LCI	95% UCI	Rate per 100 encs	95% LCI	95% UCI
Paracetamol	4.0	3.7	4.3	3.0	2.3	3.8	3.3	3.0	3.7
Amoxicillin	2.9	2.7	3.1	2.8	2.3	3.3	2.6	2.3	3.0
Paracetamol/Codeine	2.4	2.2	2.5	2.5	2.1	2.9	2.4	2.2	2.7
Salbutamol	2.2	2.1	2.3	2.3	2.0	2.7	2.4	2.1	2.6
Cephalexin	2.0	1.9	2.2	1.9	1.5	2.3	2.0	1.7	2.3
Cefaclor monohydrate	1.8	1.6	2.0	1.5	1.0	2.0	1.2	0.8	1.6
Roxithromycin	1.8	1.6	1.9	1.8	1.3	2.4	1.7	1.4	2.0
Amoxicillin/potass.clavulanate	1.6	1.5	1.8	1.6	1.2	2.0	1.5	1.2	1.9
Influenza virus vaccine	1.5	0.8	2.2	1.7	0.0	3.5	1.6	0.1	3.1
Temazepam	1.5	1.4	1.6	1.5	1.1	1.9	1.4	1.2	1.6
<i>Subtotal (n, %)</i>	32,524	23.5%	..	3,056	22.1	..	7,495	21.8%	..
Total medications prescribed	138,604	..	..	13,812	..	..	34,393	..	..

Note: Shading indicates statistically significant differences between strata. Encs— encounter; UCI—upper confidence interval; LCI—lower confidence interval. * Only those medications prescribed at a rate of 1.5 or more per 100 encounters in any of the strata are included.

7.2 Most frequently prescribed generic medications by stratum

The ten most frequently prescribed generic medications were common to all three of the stratum (Table 7.2). The top ten generic medications accounted for between 22% and 24% of all medications prescribed in each stratum. The rate of prescribing of all of these medications did not differ between the strata. There were no significant differences between the strata in the relative frequency of prescribing of any of the next twenty most commonly prescribed individual generic medications (results not presented).

7.3 Discussion

The prescribing rates did not differ among the strata but GPs in metropolitan areas advised purchase of over-the-counter medications relatively more often than GPs in the small rural stratum. This may reflect the lower level of new problem presentation in this rural stratum, which in turn probably reflects less frequent management of minor illnesses. The demonstrated lower rate of management of URTI in both rural strata (Chapter 6) lends some support to this hypothesis, for URTI has elsewhere been shown to be the most common new problem presenting to general practitioners in Australia (Britt et al. 1999b p.47). Further, it has been shown that almost half (44%) the over-the-counter medications advised by GPs are for simple analgesics and expectorants (Britt et al. 1999b p.74).

The uniformity in overall medication rates across rural and metropolitan strata was also apparent in the 1990-91 study. The earlier study found lower rates of antibiotic prescribing in some rural areas but these results were not supported in the current study either at the medication group or sub-group level.

Higher prescribing rates for medications acting on the musculoskeletal system and of non-steroidal anti-inflammatory medications in particular were demonstrated in the 1990-91 study but this difference was no longer apparent in 1998-2000.

In the current study the prescribing of medications acting on the central nervous system (CNS) (and simple analgesics in particular) was relatively higher in metropolitan areas than in the large rural stratum but there were no significant differences in prescribing rates of specific sub-groups of CNS medications. These results are contrary to those found in 1990-91 which indicated higher prescribing rates of CNS medications in medium-sized rural towns and higher prescribing rates in rural areas for compound analgesics, narcotic analgesics and anticonvulsants.

The reported higher rate of prescribing in large rural areas of psychological medications, particularly anti-depressants, aligns with the relatively higher rate of management of depression in this stratum. The higher prescribing rate of anti-ulcerants in small rural areas also reflects the differences in morbidity patterns, oesophageal disease being significantly more often managed in this stratum. The lower prescribing rate for topical steroids in the small rural stratum probably aligns with the significantly lower rate of management of rashes in this stratum. None of these differences were apparent in the 1990-91 study.

In the 1990-91 study, rates of prescribing paracetamol were demonstrated to be lower in rural areas than in metropolitan areas. There was a similar apparent trend in the current study, but the differences between strata failed to reach significance.

8 Other (non-pharmacological) treatments

In Table 4.3 the relative rate of other treatments (including both clinical treatments and therapeutic procedures) provided by GPs was demonstrated to be significantly lower in the small rural stratum than in metropolitan areas.

8.1 Clinical treatments by stratum

Table 4.3 also demonstrated that GPs in the small rural stratum recorded significantly fewer clinical treatments relative to their total number of encounters than those in the metropolitan stratum. Table 8.1 presents rates across the strata, of specific types of common clinical treatments.

Although there were apparent trends for rates of each clinical treatment to be higher in the metropolitan stratum, slightly lower in the large rural stratum and lower again in the small rural stratum, the sample size rendered the confidence intervals too broad in most cases to produce statistical significance. The exception was counselling and advice about nutrition or weight which was significantly more often provided in metropolitan areas than in either of the rural strata.

Table 8.1: Clinical treatments by stratum

Clinical treatment	Metropolitan (n = 149,500)			Large rural (n = 14,800)			Small rural (n = 37,100)		
	Rate per 100 encs	95% LCI	95% UCI	Rate per 100 encs	95% LCI	95% UCI	Rate per 100 encs	95% LCI	95% UCI
Advice/education—treatment	6.5	6.0	6.9	6.4	4.5	8.3	5.3	4.6	6.1
Counsel/advice—nutrition/weight	4.4	4.0	4.7	3.1	2.5	3.6	2.9	2.5	3.3
Advice/education	4.2	3.7	4.8	4.1	2.3	6.0	4.1	3.2	5.0
Counselling—problem	3.5	3.0	4.0	3.9	2.0	5.8	3.1	2.3	3.8
Counselling—psychological	3.0	2.7	3.3	2.6	1.8	3.2	2.3	1.9	2.6
Advice/education—medication	2.9	2.6	3.2	3.2	2.4	3.9	2.9	2.5	3.3
Reassurance, support	1.7	1.4	2.0	1.6	0.9	2.4	1.6	1.1	2.0
Counsel/advice—exercise	1.8	1.4	2.2	1.3	0.8	1.9	1.2	0.8	1.7
Other admin/document	1.8	1.6	2.0	1.7	1.3	2.2	1.5	1.2	1.7
Total clinical treatments	35.6	34.2	36.9	33.0	28.9	37.2	29.5	27.4	31.7

* Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 7. <http://www.aihw.gov.au/publications/gep/ruralgp/index.html>).

Note: Shading indicates statistically significant differences between strata. Encs— encounter; UCI—upper confidence interval; LCI—lower confidence interval.

8.2 Therapeutic procedures

In contrast with the results for clinical treatments, rates of procedural treatments were earlier demonstrated to be significantly higher in both rural areas when compared with the rate in metropolitan areas. Table 8.2 provides a comparison of rates of the most common therapeutic procedures. The two differences that emerged were the significantly higher rate of excisions/removal tissue/biopsy in both of the rural strata and the significantly higher rate of repair/fixation in the small rural stratum when compared with metropolitan areas.

Table 8.2: Procedural treatments by stratum

Treatment type	Metropolitan (n = 149,500)			Large rural (n = 14,800)			Small rural (n = 37,100)		
	Rate per 100 encs	95% LCI	95% UCI	Rate per 100 encs	95% LCI	95% UCI	Rate per 100 encs	95% LCI	95% UCI
Excision/removal tissue/biopsy/ destruction/debridement/cauterise	2.5	2.3	2.7	3.8	3.3	4.3	3.7	3.4	4.0
Dressing/press/compress/tamponade	2.1	1.9	2.2	2.1	1.5	2.6	2.0	1.7	2.3
Physical medicine/rehabilitation	1.7	1.3	2.2	1.9	1.0	2.8	1.5	1.2	1.9
Repair/fixation—suture/cast/ prosthetic device (apply/remove)	0.9	0.7	1.1	1.2	0.9	1.5	1.4	1.2	1.7
Incision/drainage/flushing/aspiration	1.0	0.9	1.1	1.1	0.8	1.4	1.2	1.0	1.4
Other therapeutic procedures/surgery	1.1	0.4	1.9	1.6	0.0	4.4	0.8	0.1	1.4
Pap smear	0.8	0.5	1.0	0.9	0.5	1.3	1.0	0.5	1.5
Electrical tracings	0.4	0.2	0.6	0.5	0.0	0.9	0.5	0.3	0.7
Total therapeutic procedures	11.8	11.3	12.3	14.6	13.0	16.2	13.8	13.0	14.6

* Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 8. <http://www.aihw.gov.au/publications/gep/ruralgp/index.html>).
Note: Shading indicates statistically significant differences between strata. Encs— encounter; UCI—upper confidence interval;
LCI—lower confidence interval.

8.3 Discussion

The lower recording rate of clinical non-pharmacological treatments in small rural areas when compared with metropolitan areas was also apparent in the 1990–91 study. Although many of the specific types of counselling and advice failed to reach significance the trend for lower rates of counselling/advice with increased rurality was apparent in most cases. These lower rates may reflect time constraints of GPs in small rural areas, where the GP supply is less than that in metropolitan areas.

The higher rates of therapeutic procedural work in both rural strata were also apparent almost a decade ago. The higher rate of excisions/removals/biopsies is likely to be a result of the higher management rate of solar keratosis and skin neoplasms in the rural strata. The higher rate of repair/fixation in small rural areas was not associated with the rates of management of any injury group or sub-group, for which there were no significant differences between strata (data not shown). One can only hypothesise that GPs in the small rural stratum undertake more of their own procedures involving repair of lacerations and fractures than GPs in metropolitan areas or in large rural towns. This could occur in areas of limited access to hospital and specialist services in small rural and remote regions of Australia.

9 Referrals and admissions

9.1 Referral rates to specialists and allied health professionals

In Table 4.3 it was shown that the rate of referral to medical specialists did not differ across the strata but that the referral rate to allied health professionals increased with rurality and was significantly higher in small rural areas than in the metropolitan stratum.

Table 9.1 provides the rates of referral to each of the more common specialist and allied services. There was only one significant difference in the rates of referrals to specialists and that was to surgeons where the referral rate in small rural areas was significantly higher than that reported in metropolitan areas. Of the referrals to allied health professionals, those to a physiotherapist were by far the most common in all three strata, the frequency of referrals to other specific services being relatively rare. However, no significant differences were apparent between the strata for referrals to any of the allied health services groups.

In the 1990–91 study there were also no differences in overall rates of referral to specialist. However, a higher rate of referral to obstetricians and gynaecologists reported in that study in rural areas was not reproduced in the current study. The higher rate of referral to allied health professionals in small rural areas perhaps reflects the result for medium country towns in the earlier study.

Table 9.1: Most frequent referrals to specialists and allied health professionals

Professional to whom referred	Metropolitan (n = 149,500)			Large rural (n = 14,800)			Small rural (n = 37,100)		
	Rate per 100 encs	95% LCI	95% UCI	Rate per 100 encs	95% LCI	95% UCI	Rate per 100 encs	95% LCI	95% UCI
Medical specialist	8.0	7.7	8.2	7.2	6.5	7.9	7.6	7.1	8.0
Surgeon	0.8	0.7	0.8	1.0	0.7	1.3	1.2	1.0	1.4
Ophthalmologist	0.8	0.7	0.9	0.7	0.4	1.0	0.7	0.5	0.8
Orthopaedic surgeon	0.7	0.5	0.8	0.7	0.4	1.0	0.8	0.6	1.0
Gynaecologist	0.6	0.5	0.7	0.7	0.4	1.1	0.6	0.4	0.8
ENT specialist	0.5	0.4	0.6	0.5	0.1	0.9	0.5	0.3	0.7
Dermatologist	0.7	0.6	0.8	0.4	0.0	0.8	0.4	0.1	0.6
Cardiologist	0.4	0.3	0.6	0.2	0.0	0.6	0.4	0.2	0.7
Allied health professional	3.1	3.0	3.3	3.1	2.6	3.5	3.8	3.5	4.2
Physiotherapy	1.0	0.8	1.1	1.0	0.6	1.4	1.3	1.0	1.5

* Includes multiple ICPC–2 and ICPC–2 PLUS codes (see Appendix 9. <http://www.aihw.gov.au/publications/gep/ruralgp/index.html>).
 Note: Shading indicates statistically significant differences between strata. Encs—encounter; UCI—upper confidence interval; LCI—lower confidence interval.

9.2 Problems referred to specialists

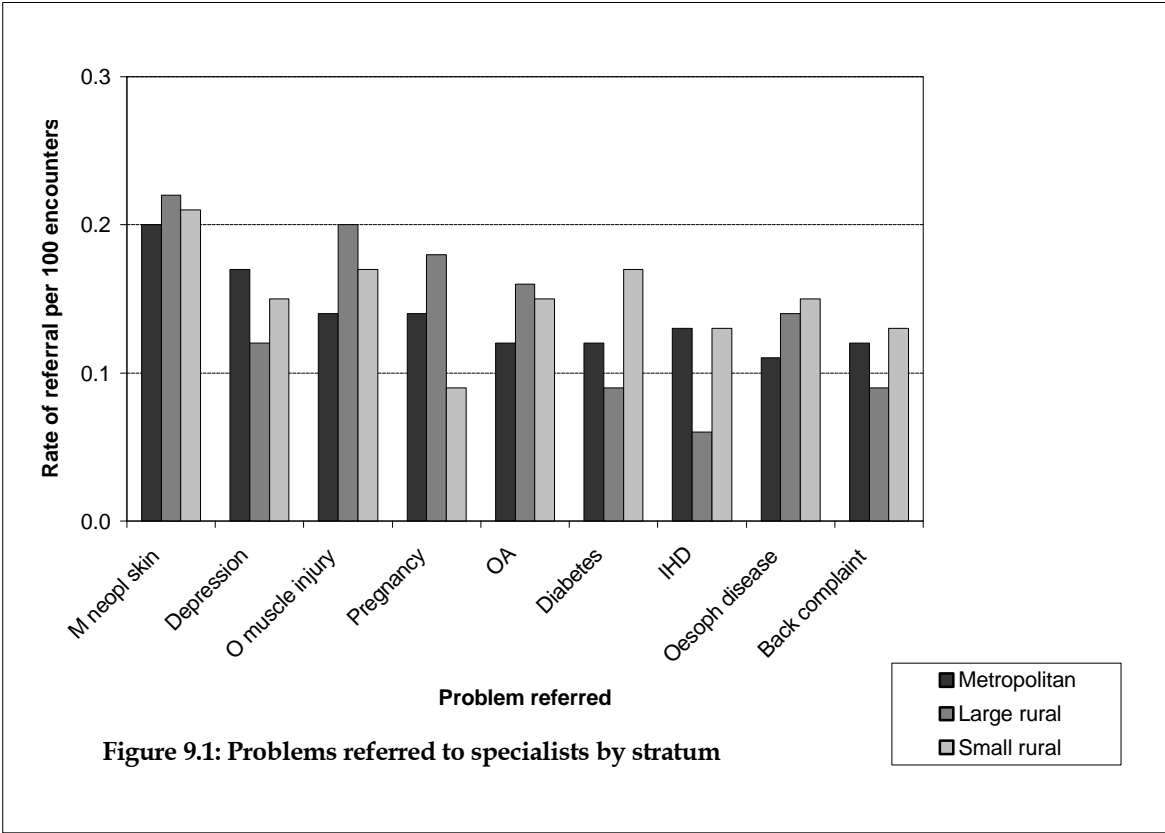
As shown above, there were no significant differences between the strata in the overall referral rate to specialists in the current study. The 1990-91 study had suggested however that a different pattern of disease was referred across strata. Further analysis of the referred morbidity in the current study was therefore undertaken. Possibly due to the small numbers involved, no significant differences in referred morbidity were found between the strata (results not presented).

The descriptive data are nevertheless of interest. The top ten problems referred to a specialist from the total sample were selected for comparison among the strata. Figure 9.1 demonstrates considerable variation between the groups. In all strata malignant skin neoplasm was the problem most frequently referred to a specialist.

In Section 6.3 it was shown that depression was managed significantly more often in large rural areas than in metropolitan areas. However, the referral rate of depression to specialists was somewhat lower in large rural areas. This suggests that general practitioners in large rural areas are managing depression more often in the community rather than referring these cases to specialist care.

The significantly higher rate of management of pre/postnatal care in small rural areas (Section 6.3) might also be associated with the relatively low referral rate to specialists for pregnancy in these areas.

The relative management rate of oesophageal disease was earlier shown to be significantly higher in both rural strata than in metropolitan areas. The referral rates for this disease in rural areas are likely to reflect this difference in relative rate of management.



Note: M neopl skin—malignant neoplasm skin; O muscle injury—other musculoskeletal injury (excluding fracture and sprain/strain); OA—osteoarthritis; IHD—ischaeemic heart disease; Oesoph disease—oesophageal disease.

9.3 Problems referred to allied health professionals

The distributions of the most common problems referred to an allied health professional are compared across strata in Figure 9.2. Back complaints followed by sprains and strains were the most common problems referred to allied health in all strata. Neck syndrome, osteoarthritis and other musculoskeletal injuries (excluding sprains and fractures) were also among the top problems referred in all strata.

These results reflect the fact that physiotherapists received by far the majority of allied health referrals in all strata (Section 9.1). It is interesting to note that while depression ranked third in the problems referred to an allied health professional in all strata, it was referred at a slightly higher rate in rural areas than in metropolitan areas. This suggests that GPs in metropolitan areas are more likely to refer depression to a specialist whereas those in country areas are more likely to be referred to a psychologist. This may be related to the relative availability of specialist and allied health mental services in rural areas.

The slightly higher rates of referral of diabetes and ischaemic heart disease in small rural areas may suggest greater involvement of the GP in the ongoing care of these patients in areas where specialist care is often available on a sessional rather than a permanent basis. Drug abuse was also relatively frequently referred to allied health services in metropolitan areas (2.0% of all referrals) but was rare in large and small rural areas (results not shown).

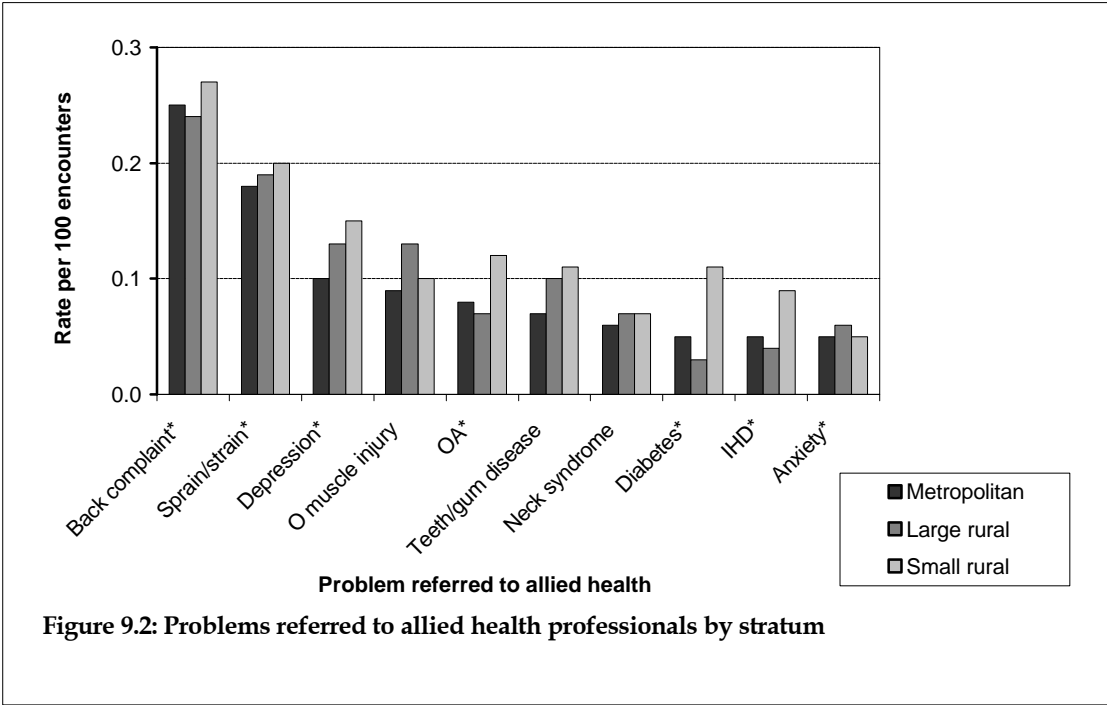


Figure 9.2: Problems referred to allied health professionals by stratum

* Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 6. <http://www.aihw.gov.au/publications/gep/ruralgp/index.html>).

9.4 Problems referred for hospital admission

Hospital admissions was rare in all strata (ranging from 0.7 per 100 encounters in metropolitan areas to 1.0 in the small rural stratum) (see Section 4.2). Rates of admission for specific diseases were therefore negligible and no statistically significant differences in admitted morbidity could be demonstrated. The most common problems referred for admission to hospital were pneumonia, fractures, back complaints, cholecystitis, depression, chronic obstructive airways disease and pregnancy.

10 Test ordering

10.1 Pathology ordering by stratum

There was a steady increase in the rate of pathology ordering per 100 encounters with increased levels of rurality. However, although the pathology ordering rate was significantly higher in small rural areas (30.6, 95% CI: 28.8–32.5) than in metropolitan areas (26.4, 95% CI: 25.4–27.3), it did not differ significantly from that of large rural areas (29.8 per 100 encounters, 95% CI: 26.9–32.7) (Table 10.1).

Order rates for blood chemistry tests and in particular for electrolyte, urea and creatinine (EUC) were significantly higher in small rural areas than in the metropolitan stratum and those for haematology were significantly higher in both rural strata when compared with rates in metropolitan areas. However, the rate of orders for full blood counts was significantly higher in small rural areas only when compared with the metropolitan stratum, and not in large rural areas.

Table 10.1: Pathology orders by group and most frequent individual tests by stratum

Pathology test type	Metropolitan (n = 149,500)			Large rural (n = 14,800)			Small rural (n = 37,100)		
	Rate per 100 encs	95% LCI	95% UCI	Rate per 100 encs	95% LCI	95% UCI	Rate per 100 encs	95% LCI	95% UCI
Chemistry	12.0	11.5	12.5	13.0	11.2	14.6	14.0	12.9	15.0
Lipids	2.4	2.2	2.5	2.4	1.9	2.8	2.6	2.2	2.9
Liver function	1.9	1.6	2.1	1.7	1.1	2.2	1.8	1.5	2.2
EUC	1.5	1.3	1.7	1.7	1.3	2.2	2.2	1.8	2.6
Glucose/tolerance	1.5	1.3	1.6	1.3	0.9	1.7	1.6	1.3	2
Thyroid function	1.3	1.2	1.4	1.3	1.0	1.7	1.3	1.1	1.5
Multibiochemical analysis	0.8	0.4	1.2	1.0	0.0	2.2	0.9	0.2	1.6
Haematology	5.1	4.8	5.4	6.3	5.5	7.1	6.8	6.2	7.3
Full blood count	3.5	3.3	3.7	4.2	3.6	4.7	4.6	4.2	5.0
ESR	0.8	0.6	0.9	1.1	0.7	1.5	0.9	0.6	1.1
Microbiology	4.6	4.4	4.9	5.4	4.6	6.3	4.8	4.3	5.2
Urine MC&S	1.6	1.5	1.7	1.8	1.5	2.2	1.7	1.4	1.9
Cytology	1.9	1.6	2.2	1.9	1.5	2.3	2.1	1.7	2.5
Pap smear	1.8	1.6	2.1	1.8	1.4	2.2	2.01	1.6	2.4
Other NEC	1.5	1.2	1.7	1.2	0.6	1.8	1.3	0.8	1.8
Total pathology tests	26.4	25.4	27.3	29.8	26.9	32.7	30.6	28.8	32.5

* Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 10. <http://www.aihw.gov.au/publications/gep/ruralqp/index.html>).

Note: Shading indicates statistically significant differences between strata. Encs— encounter; UCI—upper confidence interval; LCI—lower confidence interval, NEC —not elsewhere classified.

10.2 Imaging orders by stratum

No significant differences were demonstrated between ordering rates for plain, contrast or other imaging tests. Further, no significant differences were identified in ordering rates for any specific imaging test types between the strata (Table 10.2).

Table 10.2: Most frequent imaging ordered by stratum

Imaging test ordered	Metropolitan (n = 149,500)			Large rural (n = 14,800)			Small rural (n = 37,100)		
	Rate per 100 encs	95% LCI	95% UCI	Rate per 100 encs	95% LCI	95% UCI	Rate per 100 encs	95% LCI	95% UCI
Plain	4.5	4.3	4.7	4.3	3.7	4.8	4.8	4.5	5.1
X-ray; chest	1.0	0.8	1.1	1.0	0.7	1.3	1.3	1.1	1.5
Mammography; F	0.5	0.3	0.6	0.3	0.0	0.7	0.4	0.1	0.7
Contrast / ultrasound/ CT	2.6	2.5	2.7	2.9	2.6	3.3	2.8	2.6	3.1
Other	0.4	0.2	0.6	0.4	0.0	0.8	0.5	0.0	0.9
Total imaging tests	7.5	7.2	7.8	7.5	6.8	8.3	8.1	7.6	8.6

* Includes multiple ICPC-2 and ICPC-2 PLUS codes (see Appendix 11. <http://www.aihw.gov.au/publications/gep/ruralgp/index.html>).

Note: Encs— encounter; UCI—upper confidence interval; LCI—lower confidence interval.