

A Comparison of Primary Health Care Provided by Rural and Non-Rural General Practices

The National Primary Medical Care
Survey (NatMedCa): 2001/02
Report 4

Phil Hider¹
Roy Lay-Yee²
Peter Davis¹

with the assistance of:

Alistair Scott
Antony Raymont
Sue Crengle
Daniel Patrick
Janet Pearson

and with the support of co-investigators:

Gregor Coster
Peter Crampton
Marjan Kljakovic
Murray Tilyard
Les Toop

¹ Department of Public Health and General Practice, Christchurch School of Medicine and Health Sciences, University of Otago

² Centre for Health Services Research and Policy, School of Population Health, Faculty of Medical and Health Sciences, University of Auckland

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Contents

Executive Summary	ix
1 Introduction	1
2 Methodology	4
2.1 Organisation	4
2.2 Research design	4
2.3 Questionnaires	4
2.4 Ethnicity	5
2.5 Sampling	5
2.6 Timing	7
2.7 Sampling of visits	7
2.8 Recruitment and data collection process	8
2.9 Data	8
2.10 Grouping reasons-for-visit and problems, and drugs	10
2.11 Ethical issues	12
3 Recruitment and Data Collection	13
4 Characteristics of Patients	16
5 Relationship with Practice	21
6 Visit Characteristics	23
7 Reasons-for-Visit	27
8 Problems Identified and Managed	33
9 Tests and Other Investigations	45
10 Pharmaceutical Treatment	51
10.1 Anti-bacterials (Tables 10.7, 10.8 and 10.9)	55
10.2 Nervous system (Tables 10.10, 10.11 and 10.12)	56
10.3 Cardiovascular system drugs (Tables 10.13, 10.14 and 10.15)	58
10.4 Respiratory system drugs (Tables 10.16, 10.17 and 10.18)	60
10.5 Alimentary drugs (Tables 10.19, 10.20 and 10.21)	61
10.6 Musculoskeletal drugs (Tables 10.22, 10.23 and 10.24)	63
10.7 Dermatologicals (Tables 10.25, 10.26 and 10.27)	64
10.8 Blood and blood-forming organs (Tables 10.28, 10.29 and 10.30)	66
10.9 Systemic steroids (Tables 10.31, 10.32 and 10.33)	67
10.10 Genito-urinary drugs (Tables 10.34, 10.35 and 10.36)	69
10.11 Sensory organ drugs (Tables 10.37, 10.38 and 10.39)	70

11	Non-drug Treatments	73
12	Disposition	75
13	A Comparison of Rural and Non-Rural Practices and their Practice Nurses	83
14	Summary and Discussion	88
14.1	Summary of key results	88
14.2	Strengths and limitations of the survey	91
14.3	Definition of rural practice	93
14.4	Comparisons with results from other New Zealand reports	93
14.5	Selected policy implications	100
14.6	International comparisons	102
14.7	Final conclusion	104
	References	105
	Appendices	
	Appendix A: Practice Questionnaire - see separate file on website	
	Appendix B: Practitioner Questionnaire - see separate file on website	
	Appendix C: Log of Visits - see separate file on website	
	Appendix D: Visit Report - see separate file on website	
	Appendix E: Practice Nurse Survey - see separate file on website	
	Appendix F: Rural Ranking Scale	119
	Glossary and List of Acronyms	120

List of Tables

Table 2.1:	Practitioner population, by practice type and stratum	6
Table 2.2:	Sample size and sampling percentage, all strata	7
Table 2.3:	READ2 chapter headings	11
Table 2.4:	List of level 1 categories (Pharmacodes/ATC system)	12
Table 3.1:	Number of GPs responding and number of log (and visit) questionnaires submitted	13
Table 3.2:	Percentage response rate (of number eligible) for GPs and practices	14
Table 3.3:	Characteristics of participant GPs	15
Table 4.1:	Distribution of rural and non-rural patients, by age and gender, as percentage of all visits (from log)	16
Table 4.2:	Ratio of visits to national population, by age and gender (log data)	17
Table 4.3:	Percentage distribution of all patients, by ethnicity and card status (from log)	17
Table 4.4:	Social support, NZDep2001 of residence and fluency in English: percentage of all patients	18
Table 4.5:	Relationship between measures of deprivation	19
Table 5.1:	Relationship with practice: three measures	21
Table 5.2:	New patients: percentage of age group	21
Table 5.3:	Patient-reported number of visits to practice in previous 12 months: percentage distribution	22
Table 5.4:	Practitioner-reported rapport: percentage distribution	22
Table 6.1:	Source and type of payment cited, as percentage of visits	23
Table 6.2:	Duration of visit as percentage distribution	24
Table 6.3:	Urgency and severity of visit, as percentage distribution	24
Table 6.4:	Level of disability as percentage distribution	25
Table 6.5:	Percentage distribution of level of uncertainty as to appropriate action	25
Table 6.6:	Relationships between patient and visit characteristics	26
Table 7.1:	Reasons-for-visit: age- and gender-specific rates (per 100 visits)	27
Table 7.2:	Distribution of reasons-for-visit, chapters and sub-chapters	29
Table 7.3:	Frequency of reasons-for-visit (per 100 visits)	31
Table 7.4:	Reason-for-visit components as percentage of all reasons	32
Table 8.1:	Percentage distribution of number of problems per visit	33
Table 8.2:	Number of problems: age- and gender-specific rates (per 100 visits)	33
Table 8.3:	Distribution of problems managed, by READ2 chapter and sub-chapter	35
Table 8.4:	Frequency of problems (per 100 visits)	37
Table 8.5:	Age and gender distribution of new problems (per 100 visits)	38
Table 8.6:	Frequency of new problems (per 100 visits)	39
Table 8.7:	Percentage distribution of problem status	39
Table 8.8:	Rural practices: age- and gender-specific rates (per 100 visits) of common groups of problems	41
Table 8.9:	Non-rural practices: age- and gender-specific rates (per 100 visits) of common groups of problems	42
Table 8.10:	Rural practices: seasonal variation – groups of problems as percentage of all problems	43

Table 8.11: Non-rural practices: seasonal variation – groups of problems as percentage of all problems	44
Table 9.1: Rate per 100 visits at which tests and investigations were ordered	46
Table 9.2: Any test: age- and gender-specific rates (per 100 visits)	46
Table 9.3: Haematology: age- and gender-specific rates (per 100 visits)	47
Table 9.4: Biochemistry: age- and gender-specific rates (per 100 visits)	47
Table 9.5: Microbiology culture: age- and gender-specific rates (per 100 visits)	47
Table 9.6: Cervical smear: age-specific rates (per 100 visits)	47
Table 9.7: Imaging: age- and gender-specific rates (per 100 visits)	48
Table 9.8: Other tests: age- and gender-specific rates (per 100 visits)	48
Table 9.9: Problems most frequently managed at visits that included an order for a laboratory test	49
Table 9.10: Problems most frequently managed at visits that included an order for an X-ray	50
Table 10.1: Percentage of visits at which treatments were given, by treatment modality	51
Table 10.2: Number of treatment items per 100 visits and per 100 problems	52
Table 10.3: Any prescriptions: age- and gender-specific rates (per 100 visits)	52
Table 10.4: Prescription items: age- and gender-specific rates (per 100 visits)	53
Table 10.5: Distribution of drugs, by group (Pharmacodes/ATC level 1)	53
Table 10.6: Most frequently prescribed drug sub-groups	54
Table 10.7: Infections: agents for systemic use – sub-groups	55
Table 10.8: Anti-infective drugs: age- and gender-specific rates (per 100 visits)	55
Table 10.9: Most frequent problems managed by anti-infective drugs	56
Table 10.10: Nervous system drugs: sub-groups	57
Table 10.11: Nervous system drugs: age- and gender-specific rates (per 100 visits)	57
Table 10.12: Most frequent problems managed by nervous system drugs	58
Table 10.13: Cardiovascular system drugs: sub-groups	58
Table 10.14: Cardiovascular drugs: age- and gender-specific rates (per 100 visits)	59
Table 10.15: Most frequent problems managed by cardiovascular drugs	59
Table 10.16: Respiratory system drugs: sub-groups	60
Table 10.17: Respiratory drugs: age- and gender-specific rates (per 100 visits)	61
Table 10.18: Most frequent problems managed by respiratory drugs	61
Table 10.19: Alimentary system drugs: sub-groups	62
Table 10.20: Alimentary drugs: age- and gender-specific rates (per 100 visits)	62
Table 10.21: Most frequent problems managed by alimentary drugs	63
Table 10.22: Musculoskeletal system drugs: sub-groups	63
Table 10.23: Musculoskeletal drugs: age- and gender-specific rates (per 100 visits)	63
Table 10.24: Most frequent problems managed by musculoskeletal drugs	64
Table 10.25: Dermatological drugs: sub-groups	64
Table 10.26: Dermatological drugs: age- and gender-specific rates (per 100 visits)	65
Table 10.27: Most frequent problems managed by dermatological drugs	65
Table 10.28: Blood and blood-forming organs drugs: sub-groups	66

Table 10.29: Blood and blood-forming organs drugs: age- and gender-specific rates (per 100 visits)	66
Table 10.30: Most frequent problems managed by blood/blood-forming organs drugs	67
Table 10.31: Systemic hormone drugs: sub-groups	67
Table 10.32: Systemic hormone drugs: age- and gender-specific rates (per 100 visits)	68
Table 10.33: Most frequent problems managed by systemic hormone drugs	68
Table 10.34: Genito-urinary drugs: sub-groups	69
Table 10.35: Genito-urinary drugs: age- and gender-specific rates (per 100 visits)	69
Table 10.36: Most frequent problems managed by genito-urinary drugs	70
Table 10.37: Sensory organ drugs: sub-groups	70
Table 10.38: Sensory organ drugs: age- and gender-specific rates (per 100 visits)	71
Table 10.39: Most frequent problems managed by sensory organ drugs	71
Table 10.40: Prescribing rates for different drug groups (script items per 100 visits)	72
Table 11.1: Frequency of non-drug treatments	73
Table 11.2: Health advice: age- and gender-specific rates (per 100 visits)	74
Table 11.3: Minor surgery: age- and gender-specific rates (per 100 visits)	74
Table 12.1: Frequency of types of disposition (percent of visits)	75
Table 12.2: Follow-up to three months: age- and gender-specific rates (per 100 visits)	75
Table 12.3: Rates of follow-up, by problem grouping	76
Table 12.4: Referral: age- and gender-specific rates (per 100 visits)	77
Table 12.5: Elective medical/surgical referral: age- and gender-specific rates (per 100 visits)	77
Table 12.6: Rates of elective referral, by problem grouping	78
Table 12.7: Emergency referral: age- and gender-specific rates (per 100 visits)	78
Table 12.8: Rates of emergency referral, by problem grouping	79
Table 12.9: Non-medical referral: age- and gender-specific rates (per 100 visits)	80
Table 12.10: Rates of non-medical referral, by problem grouping	81
Table 12.11: Destination of referrals: percentage distribution and frequency per 100 visits	82
Table 13.1: Characteristics of rural and non-rural practices	84
Table 13.2: Characteristics of participating rural and non-rural practice nurses	86

Executive Summary

Aims. The National Primary Medical Care Survey was undertaken to describe primary health care in New Zealand, including the characteristics of providers and their practices, the patients they see, the problems presented and the management offered. The study covered private general practices (i.e. family doctors), community-governed organisations, and Accident and Medical (A&M) clinics and Emergency Departments. It was intended to compare data across practice types as well as over time.

Subsidiary aims included gathering information on the activities of nurses in primary health care, trialling an electronic data collection tool and developing coding software.

This report describes the characteristics of practitioners, patients and patient visits for general practices located in rural areas – defined as those practices with a rural ranking score equal to or greater than 35. This is the criterion for eligibility for Ministry of Health rural health benefits. The characteristics of these practices are compared to those of all others, called “non-rural” in this report. Other reports in the series describe private family doctors, Māori doctors, and after-hours activities and other types of practice, and will analyse differences in practice content that have occurred over time or that exist between practice settings.

Methods. A nationally representative, multi-stage sample of private general practitioners (GPs), stratified by place and practice type, was drawn. Each GP was asked to provide data on themselves and on their practice, and to report on a 25% sample of patients in each of two week-long periods. Over the same period, all community-governed primary health care practices in New Zealand were invited to participate, as were a 50% random sample of all A&M clinics, and four representative Hospital Emergency Departments.

Rural location was defined according to a scale allocating points according to the following Ministry of Health criteria:

- frequency of on-call responsibilities
- requirement to be on-call for major trauma
- occurrence of regular peripheral clinics
- travel times to nearest hospital, nearest colleague, and the most distant boundary.

Medical practitioners in general practices, community-governed non-profit practices, and A&M clinics completed questionnaires, as did the nurses associated with them. Patient and visit data were recorded on a purpose-designed form.

Results. Data for this report were contributed by 47 rural GPs and 197 urban doctors. There were 8686 visits logged and 1957 patient encounters at the rural practices, with 31,991 logged visits and 7315 patient encounters recorded at non-rural practices. The findings included the following.

- Rural practitioners were predominantly male and aged 35–44 years. More had graduated overseas than their urban counterparts, and their practices were smaller, but with greater throughput.
- While the age and gender profile of patients was similar across practice locale, rural providers had more patients from deprived areas and with a Community Services Card, more Māori (and European), but fewer judged to have language difficulties.
- The visiting profile of patients was the same – that is, the proportion new to the practice, number of previous visits, payment source, pattern of severity – but consultation length was slightly longer in rural practices and patients presented slightly fewer problems and reasons for visit.
- In general, patients presented much the same types of problems across practice locale, but rural GPs tended to order fewer tests and investigations than their urban counterparts. Furthermore, patients at non-rural practices tended to receive more treatments and treatment items. Similarly, there was a slightly lower rate of follow-up at rural practices (although similar rates of referral).
- In comparing practice characteristics by locale, there were fewer full-time equivalent practice nurses in rural settings and practice fees were lower, but more services provided, such as evening surgery, group health promotion and doctors involved in maternity care. Rural practice nurses also seemed to offer a slightly greater range of services.

Conclusions. The National Primary Medical Care survey has provided the most comprehensive and representative sampling of the character of rural and non-rural practice in New Zealand. Although the study has not been able to generate important information on work outside standard office hours (which could be more substantial in rural areas), its findings – as outlined above – bear a close similarity to earlier studies in New Zealand and comparable investigations overseas. Overall, the impression is of a very similar pattern of presentation of patient problems across locale. Yet it also appears that rural providers have a higher workload and smaller practices, and generally allocated slightly fewer services (such as tests and investigations, treatments and treatment items, and follow-up). While these differences are not large, they do raise matters of potential policy interest in maintaining a viable rural primary health care system in New Zealand.

1 Introduction

The assessment of patient encounters with general practitioners (GPs) at both rural and urban settings is a remarkably under-researched area in New Zealand. Despite the importance of this information for the planning, funding and delivery of local health services and both undergraduate and postgraduate medical education, only a handful of studies have attempted to describe the nature and frequency of visits to general practices based in either urban or country areas.

The Medical Council of New Zealand annually provides data about the profile of the medical workforce, including GPs (see www.mcnz.org.nz). Medical Council information describes the age, gender, tenths worked, place of registration and qualifications of the general practice workforce, but data about the content of their work, the characteristics of their patients and the problems that are dealt with are not routinely collected.

An important previous source of data about the content of general practice care provided at both rural and non-rural sites is the Waikato Medical Care Study (WaiMedCa).¹ This study was conducted in the Waikato region between September 1991 and August 1992 and surveyed patient encounters during four single weeks over the course of the 12-month period. In all, some 12,833 encounters with 182 GPs at 95 practices were analysed.

Although WaiMedCa did not originally present comparisons between geographical areas, a subsequent assessment by Gribben et al² was prepared in conjunction with data from a random sample of the 25% of Auckland GPs involved in the Auckland Stroke Study between 1990 and January 1991 along with a postal questionnaire of GPs in the Taranaki region. The study compared the workloads of some 184 rural GPs in Taranaki and Waikato with 247 of their urban counterparts in Auckland and Waikato. The main findings included a higher proportion of overseas-trained GPs in rural areas and marked variations between regions in the average number of GPs in each practice, staff ratios, the average number of patients seen each week and the relative use of computers for patient management and administration.

Other assessments of geographical variation in primary health care services have largely focused on the availability, distribution and utilisation of GPs, using General Medical Services claims data.³ These studies have highlighted significant disparities in the availability and distribution of GPs in New Zealand and have illustrated that among the relatively lower numbers of GPs in rural areas a higher proportion were trained overseas.

The most recently published assessment of the rural GP workforce and their workload involved an anonymous questionnaire sent to 559 rural and semi-rural GPs in 1999.⁴ Among the 417 respondents, some 338 (60%) were deemed to be rural GPs and their responses were further analysed. The mean age of the rural respondents was 44 years, 72% were male and 93% were of New Zealand European ethnicity, although fewer than 50% had graduated from a New Zealand medical school. Some 59% had received specialist training in general practice, most (79%) worked full-time, while 39% worked part-time as rural hospital doctors and 72 (21%) provided obstetric care.

The GPs identified that the lack of locum relief, onerous on-call responsibilities, and rural GP shortages were all important problems for rural health service delivery. Similar warnings have been issued by other commentators, and the urgent need for incentives to both recruit and retain rural GPs have been strongly advocated.⁵

Internationally, a number of studies have considered the problems of the rural medical workforce and their needs for specialised training and support.⁶ Extensive work has been undertaken in Australia to describe the nature of the Australian medical workforce and illustrate various differences that exist in the morbidity managed at either rural or urban locations. An important contribution to this research is the comparison of country and urban general practice published in 1993.⁷ This comparison documented some 51,741 encounters with country GPs and 11,351 with urban GPs at 177 country and 54 non-rural practices between October 1990 and October 1991. Some of the main findings from this report were that rural GPs were more likely to be male, undertook more consultations and procedures than their urban counterparts, and were less likely to encounter a respiratory or cardiovascular problem but more frequently managed a pre- or post-natal obstetric issue. Fewer preventive procedures and referrals for counselling were provided at country practices but there were proportionally more prescriptions, patients were admitted at a higher rate and more investigations were ordered. Recognising the differences in morbidity encountered by rural GPs and the added burden of managing a heavy workload in the context of relative professional isolation has led both educational and government organisations to initiate a number of incentive programmes to encourage more medical graduates into pursuing rural careers while also supporting GPs already involved in country practice.⁶

NatMedCa 4 provides the first comprehensive analysis of general practice activity in rural and non-rural practices around New Zealand. The main aims of NatMedCa 4 are to measure the parameters of primary care and to compare these parameters across settings. No previous work has extensively compared patient encounters based on a reliable representative sample of GPs, coupled with structured questionnaires that were completed soon after the consultation. Previous studies have relied on the subjective opinions of the GPs who chose to respond to a questionnaire⁴ abstractions from General Medical Subsidy (GMS) claims data³ or non-contemporaneous comparisons based on data from multiple sources.²

The primary aim of this report is to compare aspects of the GP workforce, and their activity, between rural and non-rural practices during usual daytime office hours.

Specific comparisons include:

- **characteristics of the GPs and their hours of work**
- **patients' reasons for consultation**
- **morbidity managed by the GPs**
- **management of the problems, including prescribing and non-drug treatments**
- **referrals for specialist care, either medical, non-medical or emergency**
- **requests for investigations, including laboratory and radiology-based tests.**

2 Methodology

Following is a summary description of methods used in the NatMedCa survey. A more detailed account of the background to the study and the methods is given in the first report in this series.⁸ No statistical tests are applied in this report. Any comparative judgements made are evaluative only and do not carry the weight of statistical significance. The tables in this report exclude missing data unless otherwise indicated. Note that percentages may not add up to exactly 100% due to rounding.

2.1 Organisation

The research, funded by the Health Research Council of New Zealand, was undertaken by a project team based in the Centre for Health Services Research and Policy, School of Population Health, Faculty of Medical and Health Sciences, University of Auckland. Advice and support were provided by a research team representing the Departments of General Practice and/or Public Health at each of the four New Zealand Medical Schools.

2.2 Research design

The research followed the general methodology developed by the National Ambulatory Medical Care Survey (NAMCS) in the United States and previously used in New Zealand by Scott et al, the Royal New Zealand College of General Practitioners (RNZCGP) and McAvoy et al.^{9,1} Randomly selected GPs were asked to complete reports on a quarter of all consultations for a period of one week. This data collection was repeated after an interval of six months. The survey covered the whole country and makes provision for a comparison of practice types.

2.3 Questionnaires

Copies of the questionnaires are provided in the appendices. The log questionnaire (Appendix C), completed for all patients seen during the data collection period, recorded gender, date of birth, ethnicity and community card status. It also provided the means for recording the address of the fourth patient. The address was detached (at the practice) and sent to an independent agency for coding to the New Zealand Index of Deprivation (NZDep96/01), a measure of residential area deprivation.¹⁰

The visit questionnaire (Appendix D) recorded data about the patient, his or her problem(s) and the management recommended. Questions were added concerning

the patient's level of social support, the presence of a "hidden agenda", and an evaluation of the urgency and gravity of the problem. The practitioner questionnaire (Appendix B) obtained data on practitioner background and current activities. The practice nurse questionnaire (Appendix E) gathered data on the range of clinical responsibilities and other duties. The expanded practice questionnaire (Appendix A) was derived from the work of Crampton et al¹¹ and covered hours of access, services provided, equipment on site, personnel employed and various aspects of practice management. In particular, the history and contractual arrangements within the practice were recorded.

2.4 Ethnicity

Previous studies of general practice have been criticised for inaccurate data on patient ethnicity. In the present study, copies of the ethnicity question used in the 2001 Census were provided for use with each patient. Multiple choices were allowed; in reporting, a single ethnicity was derived giving priority first to Māori affiliation and then to Pacific people affiliations. This formula corresponds to that used by Statistics New Zealand in providing summary data.

2.5 Sampling

Sampling practitioners. The goal of the practitioner sampling process was to achieve representation of all practice types with adequate numbers in each category. At the same time it aimed to meet two criteria: to ensure representation of the whole country and to recruit participants who had contributed to the WaiMedCa Study in 1991 so that changes over time could be better assessed.

Sampling frame. A sampling frame of all active GPs was generated from telephone White Pages listings. In addition, a list of community-governed non-profit organisations was obtained from the umbrella organisation Health Care Aotearoa (HCA), and to this were added other such organisations. Further details are presented elsewhere.⁸ For the purposes of this report, practices have been defined as rural providers if their rural ranking score was equal to or greater than 35 (refer to Appendix F for the rural ranking scale). This is the criterion for the Ministry of Health's rural health benefits eligibility. The scale allocates points on the basis of the frequency of on-call responsibilities, requirement to be on-call for major trauma, the occurrence of regular peripheral clinics, and the times required to travel to the nearest hospital, the nearest colleague and the most distant boundary.

A follow-up survey of participating practices located in country areas with a resident population less than 30,000, for which no score had been provided, was carried out following data collection in order to ascertain and confirm rural provider status

according to the Ministry's criteria. In addition, to ascertain the population of rural provider organisations a complete list was sourced via the Ministry.

Sampling process. Table 2.1 provides a summary of the grid used for constructing the sampling frame for the different arms of the survey.

Table 2.1: Practitioner population, by practice type and stratum

	Independent	IPA	Capitated	Community-governed non-profit [†]	Total
North Shore City	35	99	2	1	137
Waitakere City	52	34	6	9	101
Auckland City	122	168	12	3	305
Manukau City	46	81	24	13	164
Auckland	255	382	44	26	707
Hamilton	22	9	27	3	61
Wellington	97	161	0	25	283
Christchurch	60	257	0	3	320
Dunedin	10	77	0	0	87
Cities	189	504	27	31	751
Rural Auckland	49	47	8	0	104
Rural Waikato	17	31	33	2	83
Rural Wellington	16	29	0	0	45
Rural Canterbury	12	59	0	0	71
Rural Otago	11	55	0	0	66
City-surrounding rural[‡]	105	221	41	2	369
City	9	4	30	0	43
Rural [‡]	8	24	43	0	75
WaiMedCa	17	28	73	0	118
Northland	3	62	20	8	93
Bay of Plenty*	28	11	150	0	189
Gisborne	26	4	4	10	44
Taranaki*	26	12	38	3	79
Hawke's Bay	5	92	11	1	109
Wanganui*	0	39	3	4	46
Manawatu	7	75	0	0	82
Wairarapa	13	10	0	0	23
Nelson/Blenheim	5	82	0	0	87
West Coast	1	11	0	0	12
Southland*	28	65	0	0	93
Towns/rural[‡]	142	463	226	26	857
National total	708	1598	411	85	2802

* Area in sample.

† Community-governed non-profits sampled wherever identified.

‡ Here "rural" indicates regions with resident population less than 30,000.

Seven strata were used in the sample selection of GPs, where the first stratum covered those GPs working in community-governed practices (Table 2.2). In the

analysis presented in this report, results are given a weight to reflect the likelihood of being sampled.

Table 2.2: Sample size and sampling percentage, all strata

Stratum	Description	Population of GPs	Sample drawn	GP weights	GPs in sample
1	Community-governed	66	63	1.00*	63
2	WaiMedCa	118	58	2.03	38
3	City independent	444	50	8.88	23
4	City IPA	886	72	12.31	51
5	City capitated	71	40	1.78	21
6	Areas around the big cities	367	55	6.67	33
7	Remaining town and rural	831	59	14.08	33
Total		2783	397		262

* Sampled with certainty. Note that 19 practitioners were identified after sampling and were not included in data collection, although they were enumerated as part of the sampling frame in the previous table.

Replacement and ineligibility. When attempts were made to contact a GP it was sometimes found that he or she was on sabbatical, had moved or had retired. In such cases, if a new practitioner had been appointed specifically to take on the departed person’s workload, the new practitioner was asked to participate. Where there was no direct replacement, the sampled GP was marked ineligible. The other cause of ineligibility was the discovery that the individual was in specialty practice.

2.6 Timing

GPs were approached serially in order to distribute data collection periods seasonally. Data collection began in March 2001 and continued over 18 months. Each practitioner was asked to initiate the second week of data collection six months after the first.

2.7 Sampling of visits

A pad of forms, structured to select each fourth patient, was provided. On the first page, the visits of four patients could be logged; on the second, a detailed record of the visit of the fourth patient was entered. The process was repeated on each subsequent pair of pages.

2.8 Recruitment and data collection process

Recruitment of selected practitioners included the following steps:

1. a letter from the project team requesting participation, accompanied by a letter of support from the local Professor of General Practice
2. a phone call from the Clinical Director or the Project Manager requesting an interview
3. a practice visit, at which an information booklet was presented and, with agreement, a time for data collection was set; an estimate of weekly patient numbers was obtained and practitioners signed a consent form
4. delivery of the visit record pad and other questionnaires by courier
5. a phone call early in the week of data collection as a reminder
6. follow-up phone call(s) if the data pack was not returned
7. a phone call prior to the second week of data collection
8. delivery of the visit record pad by courier
9. follow-up phone call(s) if the second data pack was not returned.

Note that a small payment was made to practitioners based on the number of completed visit forms. This was seen as recognition of the opportunity cost of contributing to research and was based on an hourly rate similar to the after-cost earnings of GPs. The Royal New Zealand College of General Practitioners recognised participation as a practice review activity able to be submitted for postgraduate education credit (MOPS).

2.9 Data

Data management and entry. Unique identifying numbers were assigned to each practice and each practitioner who agreed to participate. A separate number was assigned to the associated practice nurses. These numbers were entered on the questionnaires and visit report pad prior to dispatch. The practitioners returned the forms at the end of the week of data collection using a pre-addressed courier pack. The patients' addresses were recorded and sent from the practice directly to an independent organisation for geo-coding and assignment of NZDep scores.

The progress of recruitment was entered on the master sheet. First, refusal, ineligibility or agreement to participate was recorded. Subsequently, dispatch and receipt of both phases of documents were logged. Data entry was undertaken by trained experienced individuals using pre-formatted electronic forms. A data manager checked entries for accuracy using predetermined processes.

Weighting. In drawing the sample of practitioners for NatMedCa, stratification was used in order to obtain adequate representation of each practice type and each area of the country (Table 2.2). In each data base (Practices, Practitioners, Visits), each line of data was weighted to compensate for this stratification and for the variable rates of sampling. Seven weighting strata were defined for the study population (details are given in the first report in this series).⁸

Visit weights were calculated as GP weight x 4 (where 4 is the inverse of the sampling probability of each patient visit). The weight for each practice was calculated approximately by multiplying the GP weight by the inverse of the number of GPs in the practice, to compensate for the increased likelihood of sampling large practices. The weights for nurses were calculated as the practice weight multiplied by the number of nurses in the practice.

Statistical considerations. The proportions given in this report, and the companion reports, are estimated using analytic approaches that take account of the stratified, multi-stage sampling scheme, the weights associated with each stratum, and clustering at different sampling stages. The precision of these estimated proportions can be assessed using standard error estimates that take into account the study's design parameters.

For the GP dataset (N = 244), standard errors of the percentages varied from approximately 3.3% on small percentages (around 4%) to approximately 9.1% on larger percentages (around 50%). For the practice dataset (N = 187), standard errors of the percentages varied from approximately 2.7% on small percentages (around 4%) to approximately 9.7% on larger percentages (around 50%). For the visits dataset (N = 9272), standard errors of the percentages varied from approximately 0.83% on small percentages (around 5%) to approximately 2.2% on larger percentages (around 50%). Ninety-five percent confidence intervals can be estimated as approximately the percentage ± 2 standard errors of the percentage.

Standard errors have not been included routinely in the results to avoid cluttering already dense tables. Standard errors for means vary according to the distribution of the variable, so it is not possible to include indicative standard errors here.

Data classification. Patients' addresses were collected and coded, using the NZDep classification of Census mesh blocks, into one of 10 deprivation categories (1 = lowest; 10 = highest). Note that in order to maintain patient anonymity, the addresses were sent directly from the practices to an independent organisation for coding. The dataset available to the research team contained only the NZDep96/01 deciles for each patient.

Reason-for-visit and diagnosis were also coded, using READ version 2 (READ2). A significant number of visits to GPs do not result in a clear pathological diagnosis and READ makes provision for symptoms, administrative functions, intended actions and other types of entry. Practitioners entered the variables as free text, and coding was performed electronically. The coding software assigned a READ code to each entry. When no fit was found, the software presented a set of options and the operator could choose an appropriate term. Once an entry had been manually coded, any repeat would be coded in the same way. When a coding fit was questionable, the entry was reviewed by medical personnel, who also undertook random checks of all coding. Drugs were coded using similar software, as were other therapeutic actions.

2.10 Grouping reasons-for-visit and problems, and drugs

READ is a hierarchical system and classifies reasons-for-visit and diagnoses either into pathology-based groups identified by a letter or, when specific pathology has not been reported, into numbered categories which include symptoms and proposed actions. The primary (first digit) categories are given in Table 2.3. READ2 chapter headings. In reporting the frequency of the various categories, the first digit of the code was used as a grouper (e.g. H = respiratory). The more sizeable sub-groups of problems, indicated by the second digit (e.g. H3 = chronic obstructive airway disease) are also reported.

However, all the numbered actions, investigation and administration categories (see Table 2.3) are treated as a single category and the value of the number is used as the second-level grouper. Where a symptom was system-specific (e.g. cough), the case was assigned to the equivalent lettered category.

Table 2.3: READ2 chapter headings

Pathology-based categories	Other categories
A. Infectious/parasitic	1. History and symptoms
B. Cancers/neoplasms	2. Examination
C. Endocrine/nutritional/metabolic/immunity	3. Diagnostic procedures
D. Blood/blood-forming organs	4. Laboratory tests
E. Mental	5. Radiology
F. Nervous system/sense organs	6. Preventive procedures
G. Cardiovascular/circulatory	7. Surgical procedures
H. Respiratory system	8. Other procedures
J. Digestive system	9. Administration
K. Genito-urinary system	
L. Pregnancy/childbirth/puerperium	
M. Skin/subcutaneous tissue	
N. Musculoskeletal/connective tissue	
P. Congenital	
Q. Perinatal	
R. Symptoms	
S/T. Injury/poisoning	
Z. Unspecified conditions	

Drugs were classified using the Pharmacodes/ATC system. The categories are anatomically based. However, anti-bacterials, which may be used across systems, make up their own sub-group under anti-infective agents (Table 2.4). Analgesics, which may also be used across systems, are included in drugs affecting the nervous system. In general, each group has a variety of sub-groups which may be quite disparate. We have followed the system consistently even when reassignment of drug groups might have been possible (e.g. lipid-lowering drugs could have been put under the cardiovascular system but were left in metabolic).

Table 2.4: List of level 1 categories (Pharmacodes/ATC system)

Drug group	
1	Alimentary tract and metabolism
4	Blood and blood-forming organs
7	Cardiovascular system
10	Dermatologicals
13	Genito-urinary system
14	Systemic hormone preparations (excludes oral contraceptives)
16	Infections – agents for systemic use
19	Musculoskeletal system
22	Nervous system
25	Oncology agents and immunosuppressants
28	Respiratory system and allergies
31	Sensory organs
38	Extemporaneously compounded preparations and galenicals
40	Special foods

2.11 Ethical issues

Ethical approval, co-ordinated by the Auckland Ethics Committee, was obtained from ethics committees in all areas represented in the survey. Of particular concern was the long-term management of the data. An advisory and monitoring committee was appointed with representation from the general public and from each of the relevant professional groups. This group has the overall task of ensuring that the data is used in the public interest. Proposed analyses are provided to the group for comment, as are papers being prepared for dissemination.

Practitioners were provided with a full description of the research and were aware that they could withdraw from the study at any time. A signed consent was obtained at the time of recruitment, following an open discussion of the project. Practitioner confidentiality was maintained and the dataset identifies individuals by code only.

Practitioners were specifically requested to refrain from putting any questions to their patients that were not justified by clinical “need-to-know”. Given the anonymity of the patient data and the fact that GPs’ questioning and management were not altered for the study, patient consent was not sought.

3 Recruitment and Data Collection

Table 3.1 gives the number of GPs contributing to the survey, by practice site and type. Rural GPs accounted for nearly one-fifth (19%) of all respondents. Response rates for the various study arms are reported in Table 3.2. Among the 47 participating rural GPs, 33 were based in the North Island (12 of whom contributed to WaiMedCa) and 14 were located in the South Island. Non-rural respondents included relatively fewer South Island GPs (15% compared to 30%) but more GPs who had contributed to WaiMedCa (26% versus 14%). Most (45/47) rural participants were involved in private general practice. In the North Island only two rural respondents were involved in community-governed or Māori provider practices. No South Island rural participants were involved in non-private types of practices.

Table 3.1 also gives the number of returned log and visit questionnaires. The numbers in brackets in the table are the recorded visits and the unbracketed numbers are the total patients seen. Overall, 8686 visits were logged and 1957 detailed questionnaires were completed by rural GPs. The number of log and visits questionnaires were only 27% of the total numbers provided by non-rural GPs. Among rural practices, higher proportions of the log and visit questionnaires were obtained from South Island and WaiMedCa practices. Only 1.6% of the log and visit questionnaires were obtained from non-private rural practices (compared to 14% and 13% respectively from non-rural practices).

Table 3.1: Number of GPs responding and number of log (and visit) questionnaires submitted

	Rural*		Non-rural	
	Private	Other [†]	Private	Other
North Island	19 4053 (913)	2 140 (32)	101 17,179 (3942)	40 3888 (875)
South Island	14 2083 (448)	–	26 5120 (1176)	3 438 (107)
WaiMedCa (Waikato)	12 2410 (564)	–	27 5366 (1215)	–
All New Zealand	45 8546 (1925)	2 140 (32)	154 27,665 (6333)	43 4326 (982)

* Practice's rural ranking score ≥ 35 .

† Community-governed or Māori providers.

Table 3.2: Percentage response rate (of number eligible) for GPs and practices

	Rural		Non-rural	
	Private: GPs*	Other: practices†	Private: GPs*	Other: practices†
All New Zealand	73.8% (45/61)	66.7% (2/3)	70.6% (154/218)	89.5% (17/19)

* Sampling unit is the GP.

† Sampling unit is the practice.

The characteristics of participating GPs are compared in Table 3.3. Participating rural GPs were predominantly male, aged between 35 and 54 years and had 6 to 15 years in practice. Participating rural GPs were similar except that a higher percentage of participating non-rural GPs had between 16 and 25 years in practice and relatively fewer had been in practice for between 6 and 15 years. On average, rural GPs had been in practice for less time (14.4 versus 15.7 years) and had also been at their current practice for a shorter duration (8.8 versus 11.4 years). Markedly more rural participants graduated overseas (especially the United Kingdom) and fewer were members of the RNZCGP (63.2% versus 81.8%) or the NZMA (44.8% versus 54.1%).

Rural participants worked in smaller practices than their urban counterparts (1.7 versus 2.3 FTEs), they worked on average more half-days per week (8.2 versus 7.7) and they also saw more patients per week (on average 117 versus 99 patients).

Table 3.3: Characteristics of participant GPs

	Rural (N = 47)	Non-rural (N = 197)
Gender %		
Female	36.8	38.5
Male	63.2	61.5
(N)	(47)	(197)
Age %		
< 35	8.7	10.0
35–44	46.3	42.7
45–54	32.0	34.2
55–64	7.9	9.4
> 64	5.1	3.7
Mean	44.8 years	45.2 years
(N)	(46)	(195)
Years in practice %		
< 6	9.2	8.3
6–15	59.5	44.9
16–25	18.2	35.0
> 25	13.1	11.8
Mean	14.4 years	15.7 years
(N)	(47)	(195)
Years this practice %		
< 6	37.6	28.2
6–15	48.7	41.6
16–25	7.6	23.1
> 25	6.2	7.0
Mean	8.8 years	11.4 years
(N)	(46)	(194)
Place of graduation %		
New Zealand	43.6	70.7
UK	23.5	9.4
Australia	–	2.9
Other	32.9	17.0
(N)	(47)	(197)
% RNZCGP	63.2	81.8
(N)	(46)	(182)
% NZMA	44.8	54.1
(N)	(46)	(190)
Size of practice (FTE doctors)	1.7	2.3
(N)	(39)	(146)
Mean daytime patients/week	117.2	99.0
(N)	(47)	(196)
Mean half-days/week	8.2	7.7
(N)	(47)	(197)
Mean daytime patients per half-day	14.3	12.9

4 Characteristics of Patients

This report provides detailed information on patient visits (approximately one in four of logged visits) during “office hours” (Monday to Friday 8 am to 6 pm).

Table 4.1 shows the distribution of logged visits by patient age, gender and practice location. In general, the distribution of visits by people in the various age groups was similar between rural and non-rural practices. Older (75+) females at non-rural practices were associated with the highest percentage of all visits (13.6%).

Table 4.1: Distribution of rural and non-rural patients, by age and gender, as percentage of all visits (from log)

Age group	Rural*			Non-rural		
	Males	Females	All [†]	Males	Females	All [‡]
< 1	4.5	3.6	4.0	5.7	3.5	4.4
1–4	11.2	8.0	9.4	12.1	8.1	9.7
5–14	12.2	8.8	10.3	11.2	7.5	9.0
15–24	9.4	10.0	9.7	7.2	9.8	8.7
25–34	7.3	11.0	9.4	8.7	12.3	10.8
35–44	11.7	12.2	12.0	10.9	12.7	11.9
45–54	13.0	11.9	12.3	11.1	12.3	11.8
55–64	9.9	10.8	10.4	11.5	10.3	10.8
65–74	10.8	11.6	11.3	10.9	9.6	10.2
75+	9.3	11.4	10.5	10.0	13.6	12.1
Missing	0.7	0.8	0.8	0.7	0.5	0.6
Total (N)	100% (3780)	100% (4891)	100% (8686)	100% (13,292)	100% (18,634)	100% (31,991)

* Practice’s rural ranking score ≥ 35 .

[†] 15 missing gender.

[‡] 65 missing gender.

The percentage distribution of logged visits as a ratio of the age and gender distribution of the national population is presented in Table 4.2 in relation to rural and non-rural GPs. In both rural and urban locations, young children (aged 0–4 years) and older patients (aged 65+) made more frequent visits compared to other age groups in the population. At both rural and non-rural practices, males had lower consulting rates compared to females. Rural males between 25 and 34 years and non-rural males aged 15 to 24 years had the lowest rates (0.47 and 0.44, respectively) of visiting compared to the other age/sex groups in the national population.

Table 4.2: Ratio of visits to national population, by age and gender (log data)

	All ages	0–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75+
Rural										
Male	0.88	1.82	0.66	0.60	0.47	0.67	0.87	0.96	1.47	1.92
Female	1.12	1.89	0.68	0.85	0.86	0.87	1.03	1.36	1.96	1.94
Non-rural										
Male	0.85	2.01	0.59	0.44	0.54	0.61	0.72	1.08	1.44	2.00
Female	1.14	1.92	0.59	0.85	0.98	0.92	1.09	1.32	1.66	2.36

Table 4.3 shows that a similar proportion of rural and non-rural patients were European (75.6% versus 74.9%, respectively). However, visits by Māori patients were twice as frequent at rural practices compared to non-rural practices (20.2% versus 10.1%). Correspondingly, at rural practices fewer visits were made by patients from other ethnic groups. Fewer rural patients had no community services card of any type (45.5% versus 52.8%). In particular, rural patients more frequently possessed a Community Services Card, although slightly fewer rural patients had either a High Use Card or a High Use Card as well as a Community Services Card.

Table 4.3: Percentage distribution of all patients, by ethnicity and card status (from log)

	Rural	Non-rural
N	8686	31,991
Ethnicity		
New Zealand European	75.6	74.9
Māori	20.2	10.1
Samoan	0.2	2.5
Cook Island	0.2	0.9
Tongan	0.2	1.1
Niuean	0.01	0.4
Chinese	0.2	2.2
Indian	0.2	2.3
Other	3.1	5.7
Card status		
No card	45.5	52.8
Community Services Card only	48.5	40.2
High Use Card only	1.8	3.0
Both cards	1.9	2.4
Missing	2.4	1.6

* Ethnicity was self-reported, with multiple categories allowed. One ethnic category was then assigned per patient according to prioritisation of Māori and Pacific peoples. 165 rural and 323 non-rural patients had no ethnicity specified and were not included when calculating percentages.

Table 4.4 considers three measures of social wellbeing. In similar proportions of rural and non-rural patients, social support was considered to be good or very good (74.1% versus 75.9%), and poor or very poor (5.5% versus 5.7%). The NZDep decile results suggest that rural patients were less affluent: nearly twice as many rural patients were in decile 10 and only 17.2% of rural patients were in deciles 1 to 3 compared to 32.4% of non-rural patients. Relatively few rural patients were not fluent in English (1.2% versus 4.9% of non-rural patients).

Table 4.4: Social support, NZDep2001 of residence and fluency in English: percentage of all patients

Social support	Rural	Non-rural
5. Very good	46.0	47.7
4. Good	28.1	28.2
3. Average	16.7	15.2
2. Poor	4.9	5.0
1. Very poor	0.6	0.7
Unknown	3.7	3.3
(N)	(1942)	(7264)
Decile		
1	3.7	12.2
2	6.9	10.4
3	6.6	9.8
4	10.5	10.6
5	12.0	10.4
6	9.9	8.8
7	11.0	9.0
8	11.7	10.4
9	9.3	9.1
10	18.5	9.4
(N)	(1480)	(6443)
Not fluent in English		
(N)	1.2 (1741)	4.9 (6536)

Several of the measures of social wellbeing appeared to be inter-correlated for patients in both rural and non-rural practices (Table 4.5). At both locations, the proportion of patients who possessed a Community Services Card increased between NZDep2001 quintiles. The increase was stepwise for both rural and non-rural patients, while rural patients consistently exhibited higher levels of card ownership at all the NZDep2001 quintiles. Card ownership increased for both rural and non-rural patients with deteriorating levels of social support (Table 4.5b). The proportion of patients with very poor social support who have a Community Services Card was particularly high in rural areas (97.6% versus 77% in non-rural areas). At both rural and non-rural locations, deprivation appeared to be related to the patient's level of social support (Table 4.5c). Overall, increasing social support was associated with less deprivation at both settings.

The mean social support score decreased stepwise across NZDep 2001 quintiles at both rural and non-rural practices. However, the relationship appears to be complex: the proportion of patients reporting very good social support increases with more affluence while the rates of all other levels of social support (including good, average, poor or very poor) generally increase with increasing deprivation. The pattern was again similar at both rural and non-rural locations. Patients from the most deprived rural areas had a 29.4% chance of having very good social support, whereas those from the most privileged neighbourhoods had a 65.5% chance. By comparison, patients from the most deprived non-rural areas had a 30.5% chance of having very good social support and a 60.5% chance if they resided in an affluent area.

Table 4.5: Relationship between measures of deprivation

A. Percent possessing a Community Services Card, by NZDep2001 quintile					
Quintile	1	2	3	4	5
Card					
Rural (N)	31.3% (142)	40.5 (253)	54.5 (317)	61.2 (327)	72.4 (408)
Non-rural (N)	29.0% (1252)	38.3 (1129)	47.4 (1107)	56.4 (1255)	67.0 (1547)

B. Percent possessing a Community Services Card, by level of social support						
Social support	5 Very good	4 Good	3 Average	2 Poor	1 Very poor	Unknown
Card						
Rural (N)	43.3 (848)	56.2 (554)	70.7 (314)	77.9 (96)	97.6 (13)	55.6 (75)
Non-rural (N)	34.0 (3231)	51.1 (1998)	66.1 (1105)	76.9 (396)	77.0 (68)	37.3 (291)

C. Percentage distribution of social support, by NZDep2001 quintile					
Quintile	1	2	3	4	5
Rural					
5. Very good	65.5	52.3	49.1	40.2	29.4
4. Good	20.6	26.3	27.9	30.6	34.1
3. Average	8.5	14.4	15.9	16.9	24.0
2. Poor	3.0	4.1	3.2	8.9	4.8
1. Very poor	0.6	0	0.3	1.0	1.3
Unknown	1.8	2.8	3.6	2.3	6.4
	100%	100%	100%	100%	100%
Mean score	4.5	4.3	4.3	4.0	3.9
Non-rural					
5. Very good	60.5	51.7	47.2	43.5	30.5
4. Good	25.4	27.5	28.5	29.6	30.9
3. Average	9.3	14.1	15.0	17.3	22.4
2. Poor	1.5	3.2	6.2	6.1	8.9
1. Very poor	0.4	0.7	0.7	0.7	1.7
Unknown	2.8	2.9	2.5	2.9	5.6
	100%	100%	100%	100%	100%
Mean score	4.5	4.3	4.2	4.1	3.8

5 Relationship with Practice

The proportion of patients that were new to the practice was almost identical at rural and non-rural practices. However, slightly fewer patients at rural practices were new to the doctor (10.9% versus 12.9%) (Table 5.1).

New-to-doctor patients at rural and non-rural practices were spread across all the age groups, with the lowest percentages consistently associated with older people (3% rural and 5% non-rural) (Table 5.2). The highest proportion of new-to-practitioner visits were made by patients aged between 15 and 24 years at rural practices and under one year at non-rural practices. Some 54.0% of new-to-doctor visits were made by patients under 15 years at non-rural practices compared to only 40.2% at rural practices. Patients who were new to the practice were also spread across all age groups at both rural and non-rural settings. Relatively more new-to-practice patients were aged 15 to 44 years at rural practices and the proportion who were under 15 years was similar at both locations (29.3% rural versus 30.4% at non-rural). New-to-practice visits were relatively uncommon for patients aged over 45 years at rural locations.

Table 5.1: Relationship with practice: three measures

	Rural	Non-rural
% new to practice (N)	7.6 (1943)	7.5 (7287)
% new to doctor (N)	10.9 (1938)	12.9 (7275)
% not usual source (N)	7.7 (1928)	8.1 (7195)

Table 5.2: New patients: percentage of age group

Age group	Percent of age group new to doctor		Percent of age group new to practice	
	Rural (N = 1911)	Non-rural (N = 7185)	Rural (N = 1916)	Non-rural (N = 7197)
< 1	16.7	24.8	14.2	16.0
1-4	9.1	13.2	5.9	5.7
5-14	14.4	16.0	9.2	8.7
15-24	28.4	22.3	22.8	15.0
25-34	18.0	17.0	12.3	10.7
35-44	11.4	13.9	8.6	7.6
45-54	6.3	11.1	2.7	6.9
55-64	7.1	9.8	2.8	5.1
65-74	3.0	5.0	2.3	2.6
75+	3.3	4.7	3.1	2.0

The largest proportion of patients at rural and non-rural practices reported only one visit to the practice in the previous 12 months (Table 5.3). Patients made a similar number of visits, on average, to rural compared to non-rural practices (6.5 versus 6.6). Some 66.1% of patients at rural practices visited six or fewer times over the preceding year in comparison to 65.1% of non-rural patients. Slightly fewer patients recorded 10 or more visits at rural practices (20.9% versus 21.4%), and the maximum number of visits to a rural practice was 111 compared with 154 at a non-rural location.

Table 5.3: Patient-reported number of visits to practice in previous 12 months: percentage distribution

Number*	Rural	Non-rural
1	17.2	16.8
2	9.1	9.9
3	11.1	10.4
4	9.6	10.9
5	8.3	8.2
6	10.8	8.9
7	3.6	4.8
8	6.7	5.7
9	2.6	3.1
> 9	20.9	21.4
Maximum	(111)	(154)
Mean (N)	6.5 (72)	6.6 (7109)

* Includes the current visit.

Practitioner-reported rapport was rated as high in 63.7% of rural visits and in 70.0% of non-rural visits (Table 5.4). Slightly more rural visits (34.6% versus 28.7%) were judged by GPs to have medium rapport. Up to 2% of visits were considered by GPs to be associated with low rapport at both rural and non-rural practices.

Table 5.4: Practitioner-reported rapport: percentage distribution

Rapport	Rural	Non-rural
1. Low	1.7	1.3
2. Medium	34.6	28.7
3. High	63.7	70.0
Total (N)	100% (1926)	100% (7193)

6 Visit Characteristics

The source of payment is listed in Table 6.1. Most visits at either rural or non-rural practices (86.0% and 89.3%, respectively) were standard medical consultations financed by the patient with or without general medical benefit subsidisation. The percentages allocated to the sub-groups suggest that at rural practices subsidised under six (Y) visits were less common, subsidised child (J1) visits were more frequent and adult card (A1) visits were also more usual compared to non-rural practices, although the differences were small in each case.

Visits funded by the Accident Compensation Corporation (ACC) were more common at rural practices (11.8% compared to 8.3% at non-rural practices). Maternity visits were slightly less frequent at rural practices (2.2% versus 2.4%).

Table 6.1: Source and type of payment cited, as percentage of visits

Source of payment*	Rural	Non-rural
% visits cash/GMS	86.0	89.3
Under 6 (Y)	16.9	18.6
Child, card (J1)	6.6	3.9
Child, no card (J3)	5.0	6.1
Adult, card (A1)	40.0	35.1
Adult, no card (A3)	31.5	36.4
Total cash/GMS	100%	100%
% visits ACC payment	11.8	8.3
% visits maternity care	2.2	2.4
Total (N)	100% (1847)	100% (7001)

* Categories are mutually exclusive, with maternity or ACC taking precedence over cash/GMS where more than one is cited.

Mean visit duration was marginally shorter at rural practices (14.0 minutes compared to 15.2) (Table 6.2). Rural practices were associated with a larger proportion of shorter (under 10 minutes) consultations (13.6% versus 11.5%) and relatively fewer longer consultations (7.8% versus 12.2% were over 20 minutes) compared with non-rural practices.

Table 6.2: Duration of visit as percentage distribution

Duration	Rural	Non-rural
Shorter < 10 minutes	13.6	11.5
Average 10–15 minutes	65.3	60.8
Longer 15–20 minutes	13.3	15.6
Longest > 20 minutes	7.8	12.2
Total (N)	100% (1874)	100% (7110)
Mean duration (minutes)	14.0	15.2

More visits were judged to be very urgent (ASAP or “as soon as possible”) at rural practices (5.9% versus 4.9%) and relatively fewer were considered to be not urgent (see “this month”) (17.9% versus 18.9%). Approximately one-third (32%) at both settings were considered urgent enough to require same-day attention. About one in fifty visits at either location included a life-threatening problem (e.g. acute chest pain). Similar proportions of problems were determined to be self-limiting (34.5% at rural versus 34.3% at non-rural practices).

Table 6.3: Urgency and severity of visit, as percentage distribution

	Rural	Non-rural
Urgency		
4. ASAP	5.9	4.9
3. Today	32.2	32.8
2. This week	44.1	43.4
1. This month	17.9	18.9
Total (N)	100% (1940)	100% (7240)
Severity		
4. Life-threatening	1.9	2.0
3. Intermediate	40.8	41.2
2. Self-limiting	34.5	34.3
1. Not applicable	22.8	22.5
Total (N)	100% (1910)	100% (7206)

The patient’s level of disability also provides some information about the significance of the visit. A similar proportion of patients at both rural and non-rural practices had no disability (33.7% versus 33.9%), while slightly more at rural locations had minor disability (57.0% versus 54.6%). Temporary disability was slightly more frequent at rural practices (76.5% versus 74.8%) and minor temporary disability was also somewhat more common (69.5% versus 68.8%).

Table 6.4: Level of disability as percentage distribution

Level of disability	Rural	Non-rural
No disability	33.7	33.9
Minor	57.0	54.6
Major	9.3	11.5
Total (N)	100% (1915)	100% (7200)
Temporary	76.5	74.8
Permanent	23.5	25.2
Total (N)	100% (1283)	100% (4612)
Minor temporary	69.5	66.8
Major temporary	6.9	8.0
Minor permanent	16.2	15.5
Major permanent	7.5	9.7
Total (N)	100% (1277)	100% (4592)

At about one-half of the visits, GPs reported no uncertainty as to the appropriate action regardless of practice setting (Table 6.5). When uncertainty was present, rural GPs indicated that it was more often high (5.7% versus 2.0%) and less frequently low or medium (32.2% and 11.0% versus 35.2% and 13.0%) compared with their non-rural counterparts.

Table 6.5: Percentage distribution of level of uncertainty as to appropriate action

Level of uncertainty	Rural	Non-rural
1. None	51.1	49.8
2. Low	32.2	35.2
3. Medium	11.0	13.0
4. High	5.7	2.0
Total (N)	100% (1943)	100% (7254)

The final table (Table 6.6) in chapter 6 illustrates the relationships between some of the characteristics of the patients and their visits. New-to-practice visits were more commonly made by males, especially at non-rural practices. At rural practices new-to-practice visits were more likely to be made by patients from less deprived areas. Mean rapport levels did not vary much across age groups, between genders or in relation to deprivation levels at rural and non-rural practices. Mean consultation duration generally lengthened with increasing patient age, although the longest consultations occurred with patients aged 45 to 64 years at both rural and non-rural locations. Consultations were slightly longer for females at both rural and non-rural practices. Consultations were longer at non-rural practices in relation to all age groups, genders and levels of deprivation. At both rural and non-rural practices, patients in the lowest deciles (8 to 10) received the shortest visits; non-rural patients in deciles 1 to 3 were associated with visits of longer mean duration. Urgency was very similar at both settings in relation to patient age, gender and deprivation. At both locations, younger people (under 25 years) had the highest levels of urgency. Mean severity and urgency levels were slightly higher for patients from the most deprived areas. Mean levels of uncertainty were relatively constant, and were similar between rural and non-rural practices in relation to various patient characteristics.

Table 6.6: Relationships between patient and visit characteristics

	Age < 25	Age 25–44	Age 45–64	Age 65+	Male	Female	Decile 1–3	Decile 4–7	Decile 8–10
Rural									
% new to practice	12.6	10.1	2.8	2.7	8.5	7.0	9.9	6.3	7.6
Mean rapport*	2.6	2.6	2.7	2.6	2.6	2.6	2.7	2.7	2.5
Mean duration (minutes)	11.8	15.0	15.4	14.5	13.6	14.2	14.2	14.4	13.4
Mean urgency*	2.5	2.2	2.2	2.1	2.3	2.2	2.2	2.3	2.2
Mean severity*	2.1	2.2	2.3	2.3	2.2	2.2	2.0	2.2	2.3
Mean uncertainty*	1.6	1.8	1.7	1.8	1.6	1.8	1.6	1.7	1.8
Minimum N for column	(596)	(412)	(439)	(401)	(784)	(1084)	(236)	(608)	(571)
Non-rural									
% new to practice	10.6	9.1	6.0	2.3	9.0	6.4	6.6	7.3	8.2
Mean rapport*	2.6	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.6
Mean duration (minutes)	12.8	16.1	17.0	15.9	14.9	15.4	15.8	15.3	14.4
Mean urgency*	2.4	2.2	2.1	2.1	2.2	2.2	2.1	2.3	2.3
Mean severity*	2.1	2.2	2.3	2.4	2.3	2.2	2.2	2.2	2.2
Mean uncertainty*	1.6	1.7	1.7	1.7	1.6	1.7	1.7	1.7	1.7
Minimum N for column	(2307)	(1737)	(1557)	(1421)	(2905)	(4151)	(1782)	(2264)	(2223)

* Categories converted to numerical scores as indicated in Tables 5.4, 6.3 and 6.5.

7 Reasons-for-Visit

Practitioners were asked to record up to four reasons for each visit using, wherever possible, the patient’s own words.

Table 7.1 lists the number of reasons-for-visit (RfV) per hundred consultations, by patient age and gender. Non-rural men and women had more RfVs than patients at rural locations. Women presented more RfVs than men in most age groups, and especially ages 15 to 44 years at both rural and urban settings. Males aged below 15 years presented more RfVs compared to females at both rural and non-rural settings. Except for the very young (under one year) and very old (over 75 years), patients at both locations generally presented more RfVs with increasing age. Overall, women aged 55 to 64 years in urban areas had the highest number of RfVs (168) while boys aged one to four years in the rural setting were associated with the lowest number (110).

Table 7.1: Reasons-for-visit: age- and gender-specific rates (per 100 visits)

	All ages	< 1	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75+
Rural											
Male	128	139	110	118	113	124	124	137	132	147	129
Female	139	137	115	115	135	146	141	142	141	153	156
Non-rural											
Male	140	127	125	122	124	133	144	156	155	161	149
Female	147	124	122	119	143	146	153	159	168	159	150

Table 7.2 shows the frequency of RfVs grouped by READ2 chapter (first digit level). The first two columns give their occurrence as a percentage of visits and the second two give their frequency as a percentage of all reasons.

The largest grouping in either rural or non-rural practices was “actions”, which made up between 19.0 and 20.6% of reasons and were reported at 23.0 to 26.6% of visits. Within this category, therapeutic procedures accounted for most reasons at both locations. Preventive procedures, operations and administration were also common reasons for visits at both locations. Slightly fewer preventive procedures were recorded at rural practices (4.6% versus 6.1% of reasons).

The most common system-based grouping was respiratory. Respiratory RfVs made up about 17% of visits at both rural and non-rural practices. Respiratory symptoms and pneumonia/influenza were slightly more common RfVs at rural practices while acute respiratory infections were cited less often.

Non-specific symptoms were also relatively frequent reasons for visits and accounted for a significant percentage of RfVs at both rural and non-rural practices. Rural practices were associated with a slightly lower rate of non-specific symptoms as a percentage of visits and RfVs. Ear nose and throat non-specific symptoms were slightly less frequent at rural practices.

Other common groupings in both rural and non-rural practices included investigations, musculoskeletal/connective tissue, nervous system/sense organs, injury/poisoning, skin/subcutaneous tissue, unspecified conditions, digestive, genito-urinary and cardiovascular/circulatory conditions. Investigations, particularly examinations, were more frequent RfVs at rural practices. The frequency of musculoskeletal/connective tissue and injury/poisoning related reasons were higher in rural practices, while mental health and endocrine/nutritional/metabolic/immunity problems were less common. Otherwise, rural and non-rural practices exhibited a similar distribution of the RfVs for the main groupings, although some small differences were evident among the sub-headings. For example, skin infections, arthropathies, disorders of the eye and genito-urinary symptoms were more common at rural practices, while dermatitis and non-organic psychoses were less frequent.

Table 7.2: Distribution of reasons-for-visit, chapters and sub-chapters

RFV grouping READ2 chapter*	RFV grouping: percent of visits		RFV grouping: percent of reasons	
	Rural	Non-rural	Rural	Non-rural
Actions	23.0	26.6	19.0	20.6
Therapeutic procedures			8.7	8.2
Preventive procedures			4.6	6.1
Operations			3.0	3.6
Administration			2.5	2.5
Respiratory	17.0	17.1	13.2	12.6
Respiratory symptoms			8.1	6.9
Acute respiratory infections			2.2	2.8
Chronic obstructive airways disease			0.9	1.2
Pneumonia and influenza			1.3	0.9
Symptoms non-specific	14.6	17.2	11.6	12.3
Ear, nose and throat symptoms			3.1	3.7
Abdominal and pelvic symptoms			1.2	1.5
Head and neck symptoms			0.9	0.6
Investigations	10.6	10.7	8.3	7.6
Examination			4.6	3.7
History			2.1	2.2
Diagnostic procedures/lab test/radiology			1.6	1.8
Musculoskeletal/connective tissue	10.7	10.0	8.2	6.9
Rheumatism, excluding the back			3.0	2.4
Vertebral column syndromes			2.8	2.5
Arthropathies and related disorders			2.4	1.8
Nervous system/sense organs	8.9	10.0	6.8	7.1
CNS symptoms			3.1	3.7
Ear diseases			1.5	1.7
Disorders of eye and adnexa			1.7	0.9
Injury/poisoning	8.6	6.2	6.6	4.3
Abrasions			0.6	0.5
Open wound of arm			0.6	0.2
Sprains and strains of joints and adjacent muscles			0.3	0.5
Skin/subcutaneous tissue	5.9	6.4	4.5	4.5
Symptoms affecting skin and integumentary tissue			1.8	1.7
Skin and subcutaneous tissue infection			1.3	0.9
Dermatitis/dermatoses			0.5	1.0
Unspecified conditions	6.5	6.2	4.9	4.4
Health status and contact with health services factors			4.6	4.1

RfV grouping READ2 chapter*	RfV grouping: percent of visits		RfV grouping: percent of reasons	
	Rural	Non-rural	Rural	Non-rural
Digestive Gastrointestinal symptoms	5.9	6.0	4.5 3.7	4.2 3.3
Genito-urinary Genito-urinary symptoms Female genital tract disorders Urinary system diseases Disorders of breast	5.2	5.2	3.9 1.9 0.8 0.6 0.5	3.7 1.2 1.0 0.6 0.6
Cardiovascular/circulatory Cardiovascular symptoms BP – hypertensive disease	4.0	5.2	3.1 1.5 0.9	3.9 1.4 1.3
Infectious/parasitic Viral and chlamydial diseases	1.8	2.3	1.4 0.6	1.7 0.8
Mental Neurotic, personality, other non-psychotic disorders Non-organic psychoses	1.6	3.6	1.4 1.0 0.4	2.6 1.4 1.1
Endocrine/nutritional/metabolic/immunity Endocrine gland diseases, including goitre	1.3	2.3	1.0 0.7	1.6 1.0
Cancers/neoplasms Benign neoplasms	1.5	1.7	1.2 0.9	1.2 0.7
Pregnancy/childbirth/puerperium	0.2	0.2	0.1	0.2
Blood/blood-forming organs	0.05	0.2	0.04	0.1
Congenital	0.1	0.2	0.08	0.1
Perinatal	0	0.01	0	0.01
Not coded	0.3	0.5	0.3	0.3
Total (N)	1957	7315	100% (2620)	100% (10,551)

* Major groupings are based on READ2 chapters. Where possible, symptoms from chapters 1 and R have been attributed to the corresponding body system (chapters A to Q). Chapters 1 to 5 have been broadly classified under “Investigations”, and chapters 6 to 9 and a to v under “Actions”. READ2 sub-chapters at the two-digit level are shown where they comprise $\geq 0.5\%$ of all reasons.

The frequencies of RfVs are provided in Table 7.3, grouped by READ2 chapter (first digit level). The most commonly identified system-related RfVs were respiratory, musculoskeletal/connective tissue, nervous system/sense organs and injury/poisoning. Many presentations were not attributed to any organ system, and “actions” (examination or prescription) were overall the most common RfV category: 25.5% of visits in rural and 29.7% of visits in non-rural areas were associated with actions. Non-specific symptoms and investigations were also common groupings not related to any specific organ systems. The overall frequency of RfVs was slightly lower in rural compared to non-rural locations (134.3 versus 144.2 per 100 visits) and most categories exhibited slightly fewer reasons-for-visit. By contrast, injury/ poisoning was a slightly more frequent reason-for-visit at rural locations (8.8% versus 6.3%) (see Table 7.3).

Table 7.3: Frequency of reasons-for-visit (per 100 visits)

READ2 chapter	Rural	Non-rural
Actions	25.5	29.7
Respiratory	17.8	17.8
Symptoms non-specific	15.6	18.1
Investigations	11.2	11.0
Musculoskeletal/connective tissue	11.0	10.0
Nervous system/sense organs	9.2	10.2
Injury/poisoning	8.8	6.3
Unspecified conditions	6.6	6.3
Skin/subcutaneous tissue	6.1	6.5
Digestive	6.0	6.1
Genito-urinary	5.3	5.3
Cardiovascular/circulatory	4.1	5.6
Infectious/parasitic	1.9	2.4
Mental	1.8	3.8
Cancers/neoplasms	1.5	1.7
Endocrine/nutritional/metabolic/immunity	1.3	2.4
Pregnancy/childbirth/puerperium	0.3	0.3
Congenital	0.2	0.2
Blood/blood-forming organs	0.10	0.2
Perinatal	0	0.01
Not coded	0.05	0.5
Total reasons per 100 visits	134.3	144.2

Reasons for visit components were broadly similar at rural and non-rural regions (see Table 7.4). This table classified RfV by components; i.e. type of reason rather than anatomical system. There were few major differences between components at either location. Injury/poisoning was slightly higher at rural practices (6.6% versus 4.3%) while prevention (4.6% versus 6.1%) and disease (29.2% versus 31.0%) were somewhat less frequent components of rural visits.

Table 7.4: Reason-for-visit components as percentage of all reasons

READ2 component	Rural	Non-rural
Symptoms	31.8	31.7
Disease	29.2	31.0
Treatments	11.9	12.0
Investigations	8.3	7.6
Injury/poisoning	6.6	4.3
Unspecified conditions	4.9	4.4
Prevention	4.6	6.1
Administrative	2.5	2.5
Not coded	0.3	0.3
Total (N)	100% (2620)	100% (10,551)

8 Problems Identified and Managed

The term “problem” allowed for GPs to record a wider range of reasons-for-visit than traditional diagnostic groupings. Up to four diagnoses/problems per visit could be recorded. Problems included other aspects of practice such as well-person care, psycho-social difficulties and practitioner-identified issues. A list of the number of problems per visit is given in Table 8.1. The mean number of problems per visit was slightly lower in rural compared to non-rural practices (1.61 versus 1.69). More visits to rural practices were associated with a single problem (58.3% versus 54.7%) and relatively fewer patients presented more than two problems.

Table 8.1: Percentage distribution of number of problems per visit

Number of problems	Rural	Non-rural
No problem	0.1	0.3
One problem	58.3	54.7
Two problems	26.8	26.5
Three problems	10.3	12.2
Four problems	4.5	6.3
Total (N)	100% (1957)	100% (7315)
Mean number of problems	1.61	1.69

With some exceptions (e.g. children under one year at both locations and males 5 to 14 at rural practices), successively older patients who visited rural or urban practices presented an increasing number of problems at each visit (see Table 8.2). In general, females presented more problems than males at both settings. However, males under five at non-rural practices, males 55 to 64 years at rural locations and males aged 5 to 14 years at both rural and non-rural settings exceeded the number of problems per visit presented by female patients.

Table 8.2: Number of problems: age- and gender-specific rates (per 100 visits)

	All ages	< 1	1–4	5–14	15–24	25–34	35–44	45–54	55–64	65–74	75+
Rural											
Male	156	142	113	141	125	133	146	157	190	186	196
Female	165	147	136	127	148	166	166	166	171	193	195
Non-rural											
Male	163	142	134	135	135	157	165	177	192	195	182
Female	175	132	132	129	162	168	185	192	197	204	191

Table 8.3 shows the distribution of problems grouped by READ2 chapter (first digit level). The first pair of columns gives their occurrence as a percentage of visits in rural and non-rural practices, the second two give their frequency as a percentage of all problems, and the last pair of columns gives their frequency as a percentage of new problems. As per RfV, where possible, an item is attributed to an anatomical system (e.g. respiratory) or process (e.g. cancer) recognised by the initial alphabetical digit of the READ2 code; a significant number of problems cannot be attributed in this way and are presented under actions, investigations and non-specific symptoms.

Respiratory problems were the most common at both rural and non-rural practices and accounted for 23.4 and 22.8% of visits, 15.6 and 14.5% of all problems and 22.6 and 23.3% of new problems, respectively, at each location. Actions, injury/poisoning, nervous system/sense organs, cardiovascular/circulatory and skin/subcutaneous tissue problems were responsible for more than 10% of visits at both locations. There were minor differences between rural and non-rural practices in relation to the chapter headings and sub-chapter level groupings. For example, injury was a more frequent problem at visits to rural practices and also accounted for a higher proportion of all problems and a larger percentage of new problems at rural compared to urban practices. At the sub-chapter level, nearly all the injury sub-groups for new problems were more common at rural practices. Mental health problems were less frequently recorded at rural practices and the sub-group headings “neurotic, personality & other non-psychotic disorders” and “non-organic psychoses” comprised a lower percentage of all problems as well as new problems at rural practices. Skin infections were more frequent problems (especially new problems) at rural practices, while acute respiratory infections were less common. Nervous system/sense organ problems overall accounted for a lower percentage of new problems at rural compared to non-rural practices. Ear diseases were a less common new problem at rural practices but eye disorders were more frequent.

Table 8.3: Distribution of problems managed, by READ2 chapter and sub-chapter

Problem grouping READ2 chapter*	Problem grouping: percent of visits		Problem grouping: percent of problems		Problem grouping: percent of new problems	
	Rural	Non-rural	Rural	Non-rural	Rural	Non-rural
Respiratory	23.4	22.8	15.6	14.5	22.6	23.3
Acute respiratory infections			7.7	8.0	15.2	17.2
Chronic obstructive airways disease			3.9	3.1	1.5	0.8
Pneumonia and influenza			1.8	1.2	2.7	2.4
Respiratory symptoms			1.3	1.2	2.3	1.8
Actions	15.0	17.5	11.0	11.4	5.4	5.8
Preventive procedures			5.2	5.5	2.9	3.1
Operations			2.2	2.3	1.2	1.2
Therapeutic procedures			2.1	1.9	0.3	0.6
Administration			1.1	1.1	0.9	0.7
Injury/poisoning	14.4	10.8	9.2	6.6	13.0	9.2
Sprains and strains of joints and adjacent muscles			2.3	2.3	3.6	3.7
Abrasions			0.8	0.5	2.0	0.8
Contusion			0.8	0.5	1.6	1.0
Fracture of lower limb			0.7	0.2	0.8	0.2
Open wound of arm			0.6	0.2	0.7	0.3
Nervous system/sense organs	12.4	13.4	7.8	8.3	9.1	10.1
Ear diseases			3.3	3.9	4.4	5.5
Disorders of eye and adnexa			2.0	1.4	3.2	2.2
CNS symptoms			1.1	1.4	0.9	1.7
Cardiovascular/circulatory	12.6	14.0	8.7	9.3	3.0	3.2
BP – hypertensive disease			4.6	4.6	0.6	0.7
Arteriosclerotic heart disease			1.3	1.6	0.4	0.3
Cardiovascular symptoms			0.3	0.5	0.5	1.0
Skin/subcutaneous tissue	10.5	10.7	7.0	6.6	9.5	9.2
Skin and subcutaneous tissue infections			2.3	1.2	3.9	2.2
Dermatitis/dermatoses			2.2	2.6	2.7	3.2
Musculoskeletal/connective tissue	10.0	8.7	6.6	5.4	4.6	4.3
Arthropathies and related disorders			2.5	2.0	0.7	1.2
Rheumatism, excluding the back			2.1	1.6	2.5	1.6
Vertebral column disorders			1.4	1.4	0.8	1.3
Osteopathy/chondropathy/acquired musculoskeletal deformity			0.6	0.6	0.6	0.3
Investigations	7.3	8.9	4.8	5.5	4.3	4.2
History			2.7	2.5	2.3	1.5
Examination			1.5	1.7	1.8	1.8
Diagnostic procedures/lab test/radiology			0.7	1.3	0.4	0.8

Problem grouping READ2 chapter*	Problem grouping: percent of visits		Problem grouping: percent of problems		Problem grouping: percent of new problems	
	Rural	Non-rural	Rural	Non-rural	Rural	Non-rural
Infectious/parasitic	6.5	6.9	4.2	4.3	7.2	7.1
Viral and chlamydial diseases			1.2	1.4	1.7	2.1
Bacterial food poisoning			1.0	0.9	2.0	2.0
Mycoses			0.9	1.0	1.7	1.6
Viral diseases with exanthema			0.6	0.5	1.1	0.7
Genito-urinary	7.4	7.4	4.7	4.6	4.6	5.5
Urinary system diseases			1.3	1.3	2.1	1.8
Female genital tract disorders			1.1	1.5	0.5	1.4
Genito-urinary symptoms			0.9	0.7	0.8	0.8
Male genital organ diseases			0.6	0.4	0.3	0.2
Digestive	6.4	7.4	4.1	4.5	4.8	4.5
Duodenal diseases			1.6	1.5	0.8	1.2
Gastrointestinal symptoms			1.5	1.4	2.3	1.7
Oral cavity, salivary glands, jaw diseases			0.5	0.4	1.0	0.6
Diseases of intestines and peritoneum			0.3	0.5	0.4	0.5
Endocrine/nutritional/metabolic/immunity	6.0	6.2	4.2	4.0	1.2	0.9
Endocrine gland diseases, including goitre			2.1	2.2	0.4	0.3
Metabolic and immunity disorders			1.9	1.6	0.5	0.4
Mental	5.5	8.3	3.6	5.3	2.3	3.4
Neurotic, personality and other non-psychotic disorders			1.9	2.7	1.6	2.3
Non-organic psychoses			1.7	2.4	0.7	1.0
Symptoms non-specific	4.7	5.9	3.0	3.6	3.2	4.4
Ear, nose and throat symptoms			0.5	0.5	0.8	0.9
Cancers/neoplasms	3.9	3.9	2.4	2.4	1.9	2.6
Benign neoplasms			0.8	0.8	0.8	1.3
Unspecified conditions	3.0	4.0	1.9	2.4	1.6	1.5
Health status and contact with health services factors			1.8	0.2	1.6	1.4
Blood/blood-forming organs	0.9	0.7	0.5	0.4	0.5	0.2
Pregnancy/childbirth/ puerperium	0.5	0.4	0.3	0.3	0.4	0.3
Congenital	0.3	0.3	0.2	0.2	0.2	0.09
Perinatal	0.2	0.03	0.09	0.02	0.3	–
Not coded	0.5	0.8	0.3	0.5	0.3	0.4
Total (N)	1957	7315	100% (3079)	100% (12371)	100% (1099)	100% (4386)

* Major groupings are based on READ2 chapters and a similar process was applied as for reason-for-visit. Sub-chapters are shown where they comprise $\geq 0.5\%$ of all problems.

Table 8.4 shows the frequency of problems grouped by READ2 chapter (first digit level). Overall, fewer problems per 100 visits were recorded at rural practices (160.9 versus 169.5). With the exceptions of respiratory, injury/poisoning, musculoskeletal/connective tissue, blood/blood forming organs, pregnancy/childbirth/puerperium, and perinatal problems, rural practices recorded fewer problems per visit for all the READ2 categories. Mental health problems appeared to be less frequently recorded at rural practice (5.8 versus 8.9). The rank ordering of the categories was similar at rural and non-rural practices. Urban practices ranked injury in particular, but also endocrine/nutritional/metabolic/immunity and infectious/parasitic problems lower in the list while mental health was ranked higher than in rural practices. Respiratory problems were consistently the most common at both rural and non-rural practices (25% and 24.5%).

Table 8.4: Frequency of problems (per 100 visits)

READ2 chapter	Rural	Non-rural
Respiratory	25.0	24.5
Actions	17.7	19.3
Injury/poisoning	14.7	11.2
Cardiovascular/circulatory	14.0	15.8
Nervous system/sense organs	12.6	14.0
Skin/subcutaneous tissue	11.2	11.2
Musculoskeletal/connective tissue	10.6	9.2
Investigations	7.8	9.3
Genito-urinary	7.5	7.7
Endocrine/nutritional/metabolic/immunity	6.7	6.8
Infectious/parasitic	6.7	7.3
Digestive	6.6	7.6
Mental	5.8	8.9
Symptoms non-specific	4.8	6.1
Cancers/neoplasms	3.9	4.1
Unspecified conditions	3.0	4.1
Blood/blood-forming organs	0.9	0.7
Pregnancy/childbirth/puerperium	0.5	0.4
Congenital	0.3	0.3
Perinatal	0.1	0.03
Not coded	0.5	0.8
Total problems per 100 visits	160.9	169.5

On average, males and females presented new problems at similar rates at rural and non-rural practices (see Table 8.5). Most age/gender groups presented broadly similar rates of new problems regardless of location, except for males aged either 5 to 14 years or over 75 years, where rural rates were both over 10 per 100 visits higher than the corresponding non-rural rates. For both genders, the number of new problems tailed off with increasing age at both rural and non-rural practices. Overall, rural males aged 5 to 14 years presented the highest number of new problems (98 per 100 visits) and older non-rural males over 75, the least (33 per 100 visits).

Table 8.5: Age and gender distribution of new problems (per 100 visits)

	All ages	< 1	1-4	5-14	15-24	25-34	35-44	45-54	55-64	65-74	75+
Rural											
Male	59	71	69	98	67	61	60	51	38	43	45
Female	58	60	74	70	76	64	65	55	42	44	46
Non-rural											
Male	58	76	72	76	67	69	64	52	44	49	33
Female	59	62	69	73	71	65	61	55	50	45	37

Table 8.6 lists the frequency of new problems per 100 visits according to setting. Overall, an almost identical number of new problems were presented at rural and non-rural practices (58.5 versus 58.3). Some small differences between locations were evident among the chapters. New nervous system /sense organ, genitor-urinary, non-specific and mental health problems were less frequently seen in rural practice. By contrast, injury/poisoning was a more frequent new problem at rural locations.

Table 8.6: Frequency of new problems (per 100 visits)

READ2 chapter	Rural	Non-rural
Respiratory	13.2	13.6
Injury/poisoning	7.6	5.4
Skin/subcutaneous tissue	5.6	5.4
Nervous system/sense organs	5.3	5.9
Infectious/parasitic	4.2	4.1
Actions	3.2	3.4
Digestive	2.8	2.6
Musculoskeletal/connective tissue	2.7	2.5
Genito-urinary	2.7	3.2
Investigations	2.5	2.4
Symptoms non-specific	1.9	2.6
Cardiovascular/circulatory	1.8	1.8
Mental	1.4	2.0
Cancers/neoplasms	1.1	1.5
Unspecified conditions	0.9	0.9
Endocrine/nutritional/metabolic/immunity	0.7	0.5
Blood/blood-forming organs	0.3	0.1
Pregnancy/childbirth/puerperium	0.3	0.2
Perinatal	0.2	0
Congenital	0.1	0.1
Not coded	0.1	0.2
Total new problems per 100 visits	58.5	58.3

The status of problem (new, follow-up, etc) was recorded by GPs at each visit (see form in Appendix D). Table 8.7 describes their distribution between rural and non-rural areas. Generally, the status of problems was similar at both locations, although rural practices received slightly more visits for new problems and short-term follow-up but fewer for long-term follow-up (with or without flare-up) and fewer preventative care visits.

Table 8.7: Percentage distribution of problem status

Status	Rural	Non-rural
New problem	36.4	34.4
Short-term follow-up	16.0	14.1
Long-term follow-up	21.5	23.7
Long-term with flare-up	6.6	8.4
Preventative	4.2	5.1
Not given	15.4	14.4
Total (N)	100% (3979)	100% (12,371)

Age- and gender-specific rates of common problems are presented in Table 8.8 for rural practices and in Table 8.9 for non-rural practices. The rates were broadly similar in both locations and both exhibited a similar pattern of variation for different groups of problems. A few notable discrepancies between rural and non-rural practices were present: in relation to respiratory problems, males aged under 25 had a lower rate of respiratory problems at rural locations (36 versus 41 per 100 visits) but males aged over 65 had a higher rate than non-rural patients (26 versus 18 per 100 visits). Males aged over 65 years exhibited a higher rate of injury/poisoning at rural practices but had markedly lower rates of cardiovascular problems compared to their non-rural counterparts. In relation to mental health problems, males aged 25 to 64 years (particularly those 25 to 44 years) had a markedly lower rate of attendance compared to non-rural patients. Finally, males under 25 years at rural practices were associated with a considerably lower rate of nervous system /sensory organ problems and males aged over 65 years at rural practices were associated with a notably lower rate of digestive problems.

Table 8.8: Rural practices: age- and gender-specific rates (per 100 visits) of common groups of problems

	All ages	< 25	25–44	45–64	65+
Respiratory					
Male	27	36	24	20	26
Female	23	32	19	22	18
Injury/poisoning					
Male	17	16	18	19	17
Female	13	14	12	12	13
Cardiovascular					
Male	14	0.3	5	26	27
Female	14	-	4	19	39
Nervous system/sense organs					
Male	12	12	14	7	16
Female	13	14	11	13	14
Skin/subcutaneous tissue					
Male	12	17	7	9	12
Female	11	13	8	8	14
Musculoskeletal					
Male	10	1	11	17	14
Female	11	2	10	14	22
Infectious/parasitic					
Male	7	12	13	3	0.2
Female	7	13	4	4	4
Genito-urinary					
Male	5	2	4	6	13
Female	9	6	13	12	6
Endocrine/nutritional/metabolic/immunity					
Male	7	0.7	4	13	12
Female	6	0.5	8	10	9
Digestive					
Male	5	6	6	5	4
Female	7	5	7	8	10
Mental					
Male	5	5	3	5	6
Female	7	3	10	8	6
Cancers/neoplasms					
Male	5	0.8	3	6	11
Female	3	2	2	6	5

Table 8.9: Non-rural practices: age- and gender-specific rates (per 100 visits) of common groups of problems

	All ages	< 25	25–44	45–64	65+
Respiratory					
Male	28	41	26	17	18
Female	22	34	19	18	16
Injury/poisoning					
Male	13	11	20	13	9
Female	10	8	10	11	13
Cardiovascular					
Male	16	0.8	6	30	39
Female	16	1	7	21	39
Nervous system/sense organs					
Male	14	21	12	10	10
Female	14	17	12	14	13
Skin/subcutaneous tissue					
Male	11	11	11	10	12
Female	11	13	10	8	13
Musculoskeletal					
Male	8	2	10	14	13
Female	10	2	7	13	19
Infectious/parasitic					
Male	7	11	8	4	3
Female	7	12	8	5	2
Genito-urinary					
Male	4	3	3	4	7
Female	11	6	16	13	8
Endocrine/nutritional/metabolic/immunity					
Male	7	1	5	15	13
Female	7	1	5	11	11
Digestive					
Male	8	7	8	7	11
Female	7	6	7	9	9
Mental					
Male	8	5	14	10	7
Female	9	3	13	12	10
Cancers/neoplasms					
Male	4	0.3	3	6	10
Female	4	2	4	6	5

Tables 8.10 and 8.11 give the percentages of problems in relation to three-month periods across the year in order to illustrate any potential seasonal variations in attendance. With the exception of respiratory problems, there was no obvious seasonal variation in attendance rates. Respiratory attendances peaked during winter between June and August at both rural and non-rural practices. At both locations the data suggest that “Actions” may have been slightly less frequent during winter (June to August) and at rural practices investigations were less frequently noted during winter compared to non-rural practices.

Table 8.10: Rural practices: seasonal variation – groups of problems as percentage of all problems

READ2 chapter	March– May (autumn)	June– August (winter)	September– November (spring)	December– February (summer)
Respiratory	14.7	19.4	14.7	14.0
Actions	11.3	9.5	12.4	10.1
Cardiovascular/circulatory	9.8	7.9	7.6	9.6
Nervous system / sense organs	9.1	7.9	7.0	6.7
Injury/poisoning	8.3	10.0	9.0	9.8
Skin / subcutaneous tissue	7.8	6.1	5.8	8.3
Musculoskeletal / connective tissue	5.9	6.1	8.0	6.2
Genito-urinary	4.8	4.5	4.3	5.3
Investigations	4.7	2.7	6.4	5.1
Endocrine/nutritional/metabolic/immunity	4.5	5.9	3.3	2.9
Infectious/parasitic	4.3	5.1	3.1	4.5
Digestive	3.8	3.1	5.1	4.1
Mental	3.2	3.6	3.3	4.8
Cancers/neoplasms	3.0	2.0	2.3	2.2
Symptoms non-specific	2.4	3.1	3.8	2.4
Unspecified conditions	1.0	2.1	2.3	2.4
Blood / blood-forming organs	0.5	0.1	0.5	1.2
Pregnancy/childbirth/puerperium	0.2	0.6	0.2	0.3
Congenital	0.2	0.1	0.2	0.2
Perinatal	0.2	0	0	0.2
Not coded	0.2	0.2	0.6	0
Total (N)	100% (836)	100% (852)	100% (855)	100% (536)

Table 8.11: Non-rural practices: seasonal variation – groups of problems as percentage of all problems

READ2 chapter	March– May (autumn)	June– August (winter)	September– November (spring)	December– February (summer)
Respiratory	14.7	18.2	14.9	9.6
Actions	13.3	9.1	10.6	12.6
Cardiovascular/circulatory	9.0	9.5	9.5	9.4
Nervous system / sense organs	7.8	8.4	9.1	7.9
Skin / subcutaneous tissue	6.6	5.6	6.5	8.0
Injury/poisoning	6.6	7.1	6.6	6.1
Mental	5.5	5.4	4.1	6.1
Investigations	5.4	5.6	4.9	6.0
Musculoskeletal / connective tissue	5.2	4.5	6.5	5.7
Digestive	4.8	4.4	4.6	4.0
Symptoms non-specific	4.3	2.7	3.7	3.7
Genito-urinary	4.1	4.7	4.4	5.2
Endocrine/nutritional/metabolic/immunity	3.7	4.8	3.7	3.9
Infectious/parasitic	3.4	4.5	4.6	4.8
Unspecified conditions	2.7	1.9	2.4	2.7
Cancers/neoplasms	1.9	2.3	2.5	3.0
Blood / blood-forming organs	0.4	0.3	0.6	0.4
Pregnancy/childbirth/puerperium	0.3	0.3	0.2	0.3
Congenital	0.1	0.3	0.1	0.4
Perinatal	0.02	0	0	0.1
Not coded	0.3	0.6	0.7	0.2
Total (N)	100% (2974)	100% (3678)	100% (2837)	100% (2882)

9 Tests and Other Investigations

Overall, rural GPs ordered fewer tests and investigations compared to their non-rural counterparts (see Table 9.1). Laboratory tests (haematology, biochemistry and other lab tests), in particular, were less frequently requested at rural practices, while imaging tests, and other investigations (spirometry and ECG tests) were ordered at comparable rates to urban practices. Notably among the test sub-groups plain X-ray investigations were ordered more frequently at rural practices.

The comparison of gender-specific rates for all types of testing between rural and non-rural practices suggested that investigations were less frequently ordered for both sexes at rural settings (see Table 9.2). A detailed examination of age- and gender-specific rates indicates that for patients aged up to 45 years, investigations were ordered less often for males compared to females regardless of location. Older men (over 65) at urban practices had a similar rate of investigations ordered compared to women, and at rural and non-rural practices they actually received more tests. Males aged 45 to 64 years at non-rural practices had notably more investigations ordered per 100 visits than similar patients at rural locations, and their age-specific rate was higher than the rate for females.

Rates of ordering according to each category of test (haematology, biochemistry, microbiology, cervical smear, imaging and other) are described in Tables 9.3 to 9.8. Rates for most investigations are generally lower at rural practices and lowest for rural males. There was some variation between investigations in relation to their age-specific rates, although in general the highest rates of testing usually occur between ages 25 and 64. There were some notable discrepancies among comparisons of the age- and gender-specific rates for particular types of tests between rural and non-rural practices. For example, rates of biochemistry testing for males aged 45 to 64 and over 65 were much lower (15 and seven rural compared to 23 and 18 non-rural per 100 visits) and cervical smears rates were considerably lower for women aged 25 to 44 (four rural compared to eight non-rural) and 45 to 64 (one rural compared to five non-rural per 100 visits) at rural compared to urban practices. Among older people (over 65) at rural practices imaging investigations and at non-rural practices biochemistry tests were not more frequently ordered for women than men.

Table 9.1: Rate per 100 visits at which tests and investigations were ordered

Test group*	Test sub-group	Rural (N = 1957)	Non-rural (N = 7315)
Any laboratory test		12.8	18.4
Haematology		6.7	9.7
	Full blood count	6.7	9.3
	Sed rate	2.7	4.1
	Fe, B12, folic acid	1.5	3.3
Biochemistry		8.3	11.7
	Serum glucose	3.5	6.0
	Creatinine/urea	4.7	6.4
	Liver function	3.7	5.3
	Lipids	2.8	5.7
	Thyroid	3.4	4.3
	Other chemistry	3.0	3.8
Other		4.4	5.6
	Culture	3.8	4.2
	Pap smear	1.0	2.1
Imaging		4.4	4.0
	Plain X-ray	3.4	2.8
	Contrast	0.2	0.1
	Ultrasound	1.0	1.2
Other		7.4	8.5
	ECG	0.5	0.4
	Spirometry	0.1	0.1
	Other	6.8	8.1
Any test/investigation		21.0	25.9

* "Missing" is counted as "None".

Table 9.2: Any test: age- and gender-specific rates (per 100 visits)

	All ages	< 5	25–44	45–64	65+
Rural					
Male (N = 822)	18	13	17	24	22
Female (N = 1127)	23	14	30	30	21
Non-rural					
Male (N = 2986)	23	11	28	34	28
Female (N = 4275)	28	18	35	32	27

Table 9.3: Haematology: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Rural					
Male (N = 822)	6	1	8	11	4
Female (N = 1127)	7	3	12	9	6
Non-rural					
Male (N = 2986)	9	3	13	15	11
Female (N = 4275)	10	5	13	11	12

Table 9.4: Biochemistry: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Rural					
Male (N = 822)	8	2	9	15	7
Female (N = 1127)	9	3	11	12	10
Non-rural					
Male (N = 2986)	12	2	14	23	18
Female (N = 4275)	11	4	13	15	15

Table 9.5: Microbiology culture: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Rural					
Male (N=822)	2	4	0.2	0.6	3
Female (N = 1127)	5	5	6	6	3
Non-rural					
Male (N=2986)	3	4	3	2	1.0
Female (N = 4275)	5	7	7	4	3

Table 9.6: Cervical smear: age-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Rural					
Female (N = 1127)	2	2	4	1	0
Non-rural					
Female (N = 4275)	4	2	8	5	0.4

Table 9.7: Imaging: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Rural					
Male (N = 822)	5	4	6	4	7
Female (N = 127)	4	3	4	6	4
Non-rural					
Male (N = 2986)	3	2	4	5	3
Female (N = 4275)	5	2	7	5	4

Table 9.8: Other tests: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Rural					
Male (N = 822)	7	3	6	11	8
Female (N = 1127)	8	4	12	9	7
Non-rural					
Male (N = 2986)	8	5	10	12	9
Female (N = 275)	9	7	10	8	8

Table 9.9 describes the problems managed when a pathology test was ordered. Visits involving a laboratory test were most often related to cardiovascular, genitourinary, respiratory or endocrine systems at both rural and non-rural practice. Although the ranking of the most common problems managed with the use of a laboratory test were similar between rural and non-rural practices, the rate of test use per total visits was often quite different between the two locations, with rural practices invariably associated with a markedly lower rate of laboratory test ordering for every 100 visits (middle column). Results from the last column describe these discrepancies more clearly. For example, laboratory usage in the management of cardiovascular problems was 60% lower at rural practices. Problems related to every problem grouping (except congenital) were less frequently investigated with a laboratory test at rural practices. In the most extreme example, a pathology test was only ordered for haematology problems at 34.8% of visits to rural practices compared to 60.2% of visits at urban practices. Similarly, for cardiovascular, non-specific symptoms and pregnancy problems, the difference between rural and non-rural practices in the percentage of visits where a laboratory test was ordered was more than 10%. Visits designated actions or investigations were also less often associated with a laboratory test in rural practices compared to non-rural practices.

Table 9.9: Problems most frequently managed at visits that included an order for a laboratory test

Problem grouping (READ2 chapter)	Rate per 100 visits where lab test ordered		Rate per 100 – all visits		Percent of visits for that problem grouping where lab test ordered	
	Rural (N=242)	Non-rural (N=1345)	Rural (N=1957)	Non-rural (N=7315)	Rural	Non-rural
Cardiovascular/circulatory	18.9	23.4	2.4	4.3	19.2	30.7
Actions	16.8	25.8	2.2	4.7	14.4	27.0
Genito-urinary system	20.5	15.3	2.6	2.8	35.8	38.1
Respiratory system	15.4	16.1	2.0	3.0	8.4	13.0
Endocrine/nutritional/metabolic/ immunity	14.1	12.7	1.8	2.3	30.3	37.7
Skin/subcutaneous tissue	11.1	10.8	1.4	2.0	13.5	18.5
Musculoskeletal/connective tissue	12.4	9.9	1.6	1.8	15.9	20.9
Investigations	9.9	15.1	1.3	2.8	17.3	31.3
Nervous system/sense organs	9.9	10.4	1.3	1.9	10.3	14.2
Digestive system	10.7	10.6	1.4	2.0	21.6	26.6
Symptoms non-specific	6.6	11.0	0.9	2.0	18.2	34.5
Infectious/parasitic	8.7	7.8	1.1	1.4	17.2	20.6
Mental	9.6	10.7	1.2	2.0	22.4	23.7
Injury/poisoning	4.8	5.9	0.6	1.1	4.3	10.0
Unspecified conditions	4.3	5.2	0.6	1.0	18.5	23.9
Cancers/neoplasms	2.9	4.0	0.4	0.7	9.6	18.8
Blood/blood-forming organs	2.3	2.4	0.3	0.4	34.8	60.2
Pregnancy/childbirth/puerperium	0.4	0.7	0.1	0.1	9.7	27.9
Congenital	0.8	0.5	0.1	0.1	34.4	29.9
Perinatal	0	0	0	0	0	0
Not coded	0.8	0.8	0.1	0.2	19.5	19.7

Table 9.10 provides information about problems classified by READ2 chapter and the frequency that an X-ray was ordered for the condition. Not surprisingly, injury and musculoskeletal/connective tissue problems were the most common conditions for which an X-ray was ordered in both rural and non-rural practice. For most problems, X-rays were ordered at a generally similar proportion of visits at either rural or non-rural locations. Small variations were evident: some conditions were more likely to involve an X-ray at a rural practice (endocrine, cancer) while others were less frequently associated with a radiological investigation (mental, digestive, infectious).

Table 9.10: Problems most frequently managed at visits that included an order for an X-ray

Problem grouping (READ2 chapter)	Rate per 100 visits where X-ray ordered		Rate per 100 – all visits		Percent of visits for that problem grouping where X-ray ordered	
	Rural (N=59)	Non-rural (N=217)	Rural (N=1957)	Non-rural (N=7315)	Rural	Non-rural
Injury/poisoning	39.0	29.9	1.3	0.83	9.3	7.7
Musculoskeletal/connective tissue	40.3	34.4	1.4	0.96	13.8	11.1
Respiratory system	14.0	22.4	0.48	0.63	2.1	2.8
Actions	10.9	14.0	0.37	0.39	2.5	2.2
Endocrine/nutritional/metabolic/ immunity	8.5	2.2	0.29	0.06	4.9	1.0
Investigations	6.2	12.8	0.21	0.36	2.9	4.0
Cardiovascular/circulatory	7.1	9.3	0.24	0.26	1.9	1.9
Symptoms non-specific	3.2	6.2	0.11	0.17	2.4	2.9
Genito-urinary system	5.7	6.1	0.20	0.17	2.7	2.3
Cancers/neoplasms	5.7	3.4	0.20	0.09	5.0	2.4
Nervous system/sense organs	4.3	4.7	0.15	0.13	1.2	1.0
Mental	2.9	10.5	0.10	0.29	1.8	3.5
Digestive system	2.9	6.2	0.10	0.17	1.6	2.4
Unspecified conditions	1.4	3.0	0.05	0.08	1.6	2.1
Skin/subcutaneous tissue	1.4	3.4	0.05	0.10	0.5	1.0
Blood/blood-forming organs	1.4	1.4	0.05	0.04	5.6	5.5
Infectious/parasitic	0	4.4	0	0.12	0	1.8
Pregnancy/childbirth/puerperium	0	0	0	0	0	0
Congenital	0	0	0	0	0	0
Perinatal	0	0	0	0	0	0
Not coded	0	0.8	0	0.02	0	3.1

10 Pharmaceutical Treatment

This section examines the pharmacological treatments that were prescribed at rural and non-rural practices. Any number of drugs could be recorded. The percentages of visits at which various treatments were given are listed according to modality in Table 10.1. Rural and non-rural practices were similar in relation to the proportion of visits that were associated with each of the categories listed in the table. Visits with only a prescription or no treatment were more commonly provided at rural practices but fewer visits were associated with the provision of only “Other treatments” or a combination of prescription and non-prescription treatments.

Table 10.1: Percentage of visits at which treatments were given, by treatment modality

Treatment modality	Rural	Non-rural
No treatment	9.4	7.7
Script only	32.4	29.2
Other treatments only	24.9	26.0
Both types	33.3	37.2
Total (N)	100% (1957)	100% (7315)
All scripts	65.8	66.4
All other treatments	58.2	63.1

Fewer treatment items were provided for every 100 visits at rural practices compared to those practices based at urban locations (Table 10.2). In particular, only 102 non-prescription treatments were arranged at rural practices in relation to every 100 visits compared to 118 at urban practices. However, the differences between rural and non-rural practices largely disappeared when the number of treatment items was assessed in relation to every 100 problems. The number of non-prescription treatments per 100 problems was only slightly lower at rural practices and the number of prescription items was comparable.

Table 10.2: Number of treatment items per 100 visits and per 100 problems

Visits N = Problems N =		Rural 1957 3079	Non-rural 7315 12,371
All treatment types	per 100 visits	228	248
	per 100 problems	141	147
All prescriptions	per 100 visits	126	130
	per 100 problems	78	77
All other treatments	per 100 visits	102	118
	per 100 problems	63	70

Gender-specific rates suggest that prescriptions were provided at similar rates for both males and females at rural and non-rural practices (Table 10.3). When the gender-specific rates were further broken down into four age groups there are some small variations. Females aged 25 to 44 years at rural practices have a slightly lower rate of prescriptions, whereas males aged between 45 and 64 years and over 65 years have lower rates at rural practices compared to non-rural locations. Females aged 45 to 64 at non-rural practices have lower prescription rates compared to their rural equivalents.

Table 10.3: Any prescriptions: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Rural					
Male (N = 822)	65	65	64	64	67
Female (N = 1127)	66	64	57	71	73
Non-rural					
Male (N = 2986)	67	66	62	69	72
Female (N = 4275)	66	65	62	67	72

The number of items that were prescribed for each 100 visits are presented as age- and gender-specific rates in Table 10.4. The table shows that GPs at rural practices prescribed fewer items per visit for males of all ages (120 per 100 visits rural versus 132 non-rural). By contrast, the overall rates for females at rural and non-rural practices were similar (130 and 129). Consistently more items were prescribed at both locations for patients in the two older age groups. The key difference in prescribing appears to relate to male patients aged either 45 to 64 years or over 65 years. At rural practices male patients in these two age groups received relatively fewer items than females, whereas at non-rural practices older men received more items than women. Older women at rural practices received the greatest number of items of any group (181 per 100 visits).

Table 10.4: Prescription items: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Rural					
Male (N = 822)	120	104	106	122	156
Female (N = 1127)	130	103	99	142	181
Non-rural					
Male (N = 2986)	132	110	107	146	179
Female (N = 4275)	129	108	109	135	174

The distribution of the medications that were prescribed is classified according to Pharmacodes/ATC level 1 categories in Table 10.5. The results are displayed in relation to the proportion of script items and the percentage of visits. The distributions of the medication were generally similar at rural and non-rural practices. At both locations, anti-infective drugs were consistently the most common medication prescribed in relation to items or visits. Nervous system agents (predominantly analgesics and psychological drugs) were the next most common medication at both locations, although they were slightly less frequently prescribed at rural practices. More data about each of the main categories are presented in Tables 10.7 to 10.40.

Table 10.5: Distribution of drugs, by group (Pharmacodes/ATC level 1)

Drug group	Percent of all prescription items		Percent of all visits	
	Rural	Non-rural	Rural	Non-rural
16. Infections – agents for systemic use	20.8	17.7	23.8	21.0
22. Nervous system	14.1	14.6	15.0	16.2
7. Cardiovascular system	12.4	13.2	9.6	11.0
28. Respiratory system and allergies	11.7	10.6	10.0	10.1
1. Alimentary tract and metabolism	8.1	8.5	8.8	8.9
19. Musculoskeletal system	7.3	6.2	8.7	7.3
10. Dermatologicals	6.7	5.8	7.0	6.3
4. Blood and blood-forming organs	5.1	6.3	5.2	6.2
14. Systemic hormone preparations (excluding oral contraceptives)	3.4	4.6	4.1	5.6
13. Genito-urinary system	3.0	3.9	3.0	4.3
31. Sensory organs	1.3	1.3	1.6	1.6
38. Extemporaneously compounded preparations and galenicals	1.4	1.0	1.5	1.0
25. Oncology agents and immunosuppressants	0.1	0.3	0.1	0.4
40. Special foods	0.01	0.1	0.01	0.1
Medication non-specific	4.5	5.9	5.4	7.2
Total (N)	100% (2409)	100% (9579)	(1957)	(7315)

Table 10.6 presents a comparison between rural and non-rural practices of the most frequently prescribed drug sub-groups. Whether compared by means of the percentage of all prescription items or using the number of each sub-group per 100 visits, both rural and non-rural practices exhibited similar prescribing patterns. Some small variations were evident, including a higher rate of anti-bacterial prescribing and lower prescribing rates of agents affecting the renin-angiotensin system and lipid-modifying drugs at rural compared to non-rural practices.

Table 10.6: Most frequently prescribed drug sub-groups

Drug sub-group (Pharmacodes/ATC level 2)*	Percent of script items		Per 100 visits	
	Rural (N=2409)	Non-rural (N=9579)	Rural (N=1957)	Non-rural (N=7315)
Anti-bacterials	19.2	16.4	24.1	21.4
Analgesics	7.3	7.8	9.2	10.1
Anti-inflammatory non-steroidal drugs (NSAIDs)	5.7	5.0	7.2	6.5
Inhaled corticosteroids	3.8	3.4	4.8	4.5
Diuretics	3.8	3.3	4.8	4.3
Beta-adrenoceptor agonists	3.5	2.8	4.4	3.6
Antidepressants	3.1	3.1	3.9	4.0
Corticosteroids topical	2.8	2.9	3.7	3.6
Anti-ulcerants	2.8	2.4	3.5	3.1
Agents affecting the renin-angiotensin system	2.4	3.5	3.0	4.5
Anti-thrombotic agents	2.4	2.9	3.0	3.8
Beta adrenoceptor blockers	2.4	2.6	3.1	3.4
Calcium channel blockers	1.7	1.9	2.1	2.5
Corticosteroids and related agents	1.6	1.9	1.9	2.4
Lipid-modifying agents	1.4	2.2	1.7	2.9
Diabetes and diabetes management	1.2	1.8	1.5	2.3
Sedatives and hypnotics	1.2	0.8	1.5	1.2
Eye preparations	1.2	1.2	1.5	1.5
Anti-nausea and vertigo agents	1.1	0.7	1.4	0.9
Contraceptives hormonal	1.0	1.8	1.2	2.4
Antihistamines	1.0	1.6	1.3	2.1
Nitrates	1.0	1.0	1.2	1.2
Laxatives	0.8	1.1	1.0	1.4

* Includes drug sub-groups with frequencies $\geq 1\%$ of all script items.

10.1 Anti-bacterials (Tables 10.7, 10.8 and 10.9)

The two main types of anti-infective agents (anti-bacterials and urinary tract infection agents) were both prescribed slightly more frequently per 100 visits at rural practices (Table 10.7).

Table 10.7: Infections: agents for systemic use – sub-groups

Drug group (level 1) Sub-group (level 2)	Percent of all script items		Per 100 visits		Percent of drug group	
	Rural (N=2409)	Non-rural (N=9579)	Rural (N=1957)	Non-rural (N=7315)	Rural	Non-rural
16. Infections –agents for systemic use	20.8	17.7	26.2	23.1	100%	100%
Anti-bacterials:	19.2	16.4	24.1	21.4	92.3	92.7
penicillins	10.5	9.2	13.2	11.9	50.5	52.0
macrolides (erythromycins etc)	1.8	1.6	2.2	2.1	8.7	9.0
tetracyclines	1.1	1.1	1.4	1.4	5.3	6.2
cephalosporins and cephamycins	1.3	0.9	1.6	1.2	6.3	5.1
other antibiotics	2.4	2.0	3.0	2.6	11.5	11.3
Urinary tract infections	0.8	0.5	1.0	0.6	3.8	2.8

* Includes drug sub-groups comprising $\geq 0.5\%$ of all script items.

At both rural and non-rural practices, anti-infective medications were prescribed at slightly higher rates for male patients (Table 10.8). The highest gender-specific rate was associated with males at rural practices (29 per 100 visits). An assessment of the age- and gender-specific rates suggests that prescribing of these medications was characterised by a similar pattern at both rural and non-rural practices. Rates at both locations consistently declined with increasing age. However, there was one notable discrepancy between the two types of practices: males aged between 25 and 44 were prescribed anti-infective agents more often than similar patients at non-rural practices.

Table 10.8: Anti-infective drugs: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Rural					
Male (N = 822)	29	40	33	21	18
Female (N = 1127)	24	35	17	23	18
Non-rural					
Male (N = 2986)	25	39	25	15	14
Female (N = 4275)	22	35	19	17	15

Table 10.9 illustrates the main problems that were managed by the use of anti-infective medication at both rural and non-rural practices. Acute respiratory infections, skin infections and ear diseases were the most common types of problems treated with these medications at both settings. The proportion of problems treated with anti-infective medication was broadly similar at both locations, although skin infections and other urinary system diseases were more frequently treated with anti-infective agents at rural practices. New other urinary system disease problems were especially likely to be treated at rural practices with an anti-infective agent. Pneumonia and influenza were more likely to be treated with anti-bacterial medication at rural compared with non-rural practices only when they occurred as a new problem.

Table 10.9: Most frequent problems managed by anti-infective drugs

Problem (READ2 sub-chapter)*	Percent of anti-infective [†] script items		Percent of problems so treated		Percent of new problems so treated	
	Rural (N=496)	Non-rural (N=1769)	Rural	Non-rural	Rural	Non-rural
H0 Acute respiratory infections	28.1	32.2	57.6	52.6	57.0	54.9
M0 Skin and subcutaneous tissue infections	12.4	7.2	79.1	70.0	83.4	82.5
F5 Ear diseases	8.9	12.9	40.4	42.4	55.9	53.3
K1 Other urinary system diseases	6.2	5.0	72.5	53.3	84.3	69.3
H2 Pneumonia and influenza	5.6	4.7	47.5	48.9	55.1	49.6

* Includes any problem sub-chapters, for which the drug group was prescribed, with $\geq 5\%$ of group script items.

† This drug group includes systemic anti-bacterials, anti-fungals and anti-virals.

10.2 Nervous system (Tables 10.10, 10.11 and 10.12)

Nervous system drugs comprised a relatively disparate group of medications and included agents such as analgesics, antidepressants, sedatives, hypnotics, anti-nausea and vertigo drugs, anti-epilepsy drugs and anxiolytics. Overall, rural practices prescribed slightly fewer nervous system drugs per visit compared to non-rural practices (Table 10.10). Most of the difference between the two groups of practices seem to relate to a lower frequency of prescribing of analgesics at rural practices.

Table 10.10: Nervous system drugs: sub-groups

Drug group (level 1) Sub-group (level 2)	Percent of all script items		Per 100 visits		Percent of drug group	
	Rural (N=2409)	Non-rural (N=9579)	Rural (N=1957)	Non-rural (N=7315)	Rural	Non-rural
22 Nervous system	14.1	14.6	17.7	19.0	100%	100%
Analgesics	7.3	7.8	9.2	10.1	51.8	53.4
Antidepressants	3.1	3.1	3.9	4.0	22.0	21.2
Sedatives and hypnotics	1.2	0.9	1.5	1.2	8.5	6.2
Anti-nausea and vertigo agents	1.1	0.7	1.4	0.9	7.8	4.8
Anti-epilepsy drugs	0.6	0.6	0.8	0.7	4.3	4.1
Anxiolytics	0.3	0.6	0.4	0.8	2.1	4.1

* Includes drug sub-groups comprising $\geq 0.5\%$ of all script items.

Age- and gender-specific prescribing rates were comparable between rural and non-rural practices (Table 10.11). Nervous system medications were prescribed to slightly fewer patients of both genders at rural practices. The key differences in prescribing rates between the two locations mainly related to patients of both genders aged under 25 years, and to males aged 25 to 44, where patients were prescribed fewer of these medications at rural practices. By contrast, male patients aged over 65 years at non-rural practices were prescribed fewer nervous system medications.

Table 10.11: Nervous system drugs: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Rural					
Male (N = 822)	18	17	13	19	22
Female (N = 1127)	18	12	18	20	22
Non-rural					
Male (N = 2986)	19	23	18	17	16
Female (N = 4275)	19	16	16	20	23

Table 10.12 displays the most frequent problems managed by nervous system medications. The percentage of ear disease and acute respiratory infection problems treated with nervous system drugs was lower in rural practices. Presumably most of these problems were treated with analgesic medication, and because many of these problems likely occurred among people aged under 25 years, this may explain the previously noted lower rate of prescribing of analgesics among young people at rural practice (Table 10.11). It is also likely that a major proportion of the problems grouped under the sub-heading “Arthropathies and related conditions” were also treated with analgesics. These musculoskeletal conditions were more commonly treated with nervous system drugs at rural practices.

Another three groups of problems – non-organic psychoses, other central nervous system disorders, and neurotic personality and other non-psychotic disorders – were all more frequently treated with nervous system drugs at rural locations. New problems related to non-organic psychoses and other central nervous system disorders were associated with very high rates of nervous system drug prescribing (89% and 100%) at rural but not urban practices (51% and 46%).

Table 10.12: Most frequent problems managed by nervous system drugs

Problem (READ2 sub-chapter) [†]	Percent of nervous system* script items		Percent of problems so treated		Percent of new problems so treated	
	Rural (N=341)	Non-rural (N=1477)	Rural	Non-rural	Rural	Non-rural
H0 Acute respiratory infections	11.1	15.9	15.9	22.0	19.5	25.1
E1 Non-organic psychoses	13.4	16.7	78.0	61.6	88.9	51.2
E2 Neurotic, personality and other non-psychotic disorders	7.3	9.5	37.2	35.6	22.9	20.6
F2 Other central nervous system disorders	6.7	5.1	67.5	51.6	100	45.5
N0 Arthropathies and related disorders	6.0	3.4	26.4	18.9	28.0	19.1
F5 Ear diseases	2.6	5.7	7.0	15.8	9.8	20.6

* This drug group includes analgesics and psychological drugs.

† Includes any problem sub-chapters, for which the drug group was prescribed, with ≥ 5% of group script items.

10.3 Cardiovascular system drugs (Tables 10.13, 10.14 and 10.15)

Cardiovascular drugs were prescribed at comparable rates at both rural and non-rural practices (Table 10.13). The overall prescribing rate for this category of medication was only slightly lower at rural practices (12.4% versus 13.2% and 15.6 versus 17.2 per 100 visits). Among the different sub-headings of medication, only diuretics and alpha adrenoceptor blockers were more frequently prescribed at rural practices. However, the differences in prescribing rates between practice locations for the medication sub-groups were small. For example, drugs affecting the renin-angiotensin system were slightly less frequently prescribed every 100 visits at rural practices (3.0 versus 4.5).

Table 10.13: Cardiovascular system drugs: sub-groups

Drug group (level 1) Sub-group (level 2)	Percent of all script items		Per 100 visits		Percent of drug group	
	Rural (N=2409)	Non-rural (N=9579)	Rural (N=1957)	Non-rural (N=7315)	Rural	Non-rural

7. Cardiovascular system	12.4	13.2	15.6	17.2	100%	100%
Diuretics	3.8	3.3	4.8	4.3	30.6	25.0
Agents affecting the renin-angiotensin system	2.4	3.5	3.0	4.5	19.4	26.5
Beta adrenoceptor blockers	2.4	2.6	3.1	3.4	19.4	19.7
Calcium channel blockers	1.7	1.9	2.1	2.5	13.7	14.4
Nitrates	1.0	1.0	1.2	1.2	8.1	7.6
Anti-arrhythmics	0.5	0.6	0.6	0.8	4.0	4.5
Alpha adrenoceptor blockers	0.6	0.2	0.8	0.3	4.8	1.5

* Includes drug sub-groups comprising $\geq 1\%$ of all script items.

Prescribing rates for males but not females differed between rural and non-rural practices: males were prescribed fewer cardiovascular medications per visit at rural practices. Cardiovascular drugs were rarely prescribed to patients under 45 years of age at either setting, and most of the difference in prescribing rates between practice locations appears to relate to male patients over 65 years. Older (over 65 years) male patients at rural practices only received 34 cardiovascular prescriptions per 100 visits compared to 48 to 50 for females at the same location and both genders at urban practices (Table 10.14).

Table 10.14: Cardiovascular drugs: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Rural					
Male (N = 822)	14	0	2	24	34
Female (N = 1127)	17	0.3	2	23	48
Non-rural					
Male (N = 2986)	18	0.9	6	29	50
Female (N = 4275)	17	0.9	3	20	48

Hypertensive disease and two types of heart disease were associated with most cardiovascular prescriptions at both locations (Table 10.15). Comparing prescribing rates between rural and non-rural practices, it is apparent that GPs at rural practices more frequently prescribed cardiovascular drugs for hypertensive disease and other forms of heart disease but less often for arteriosclerotic heart disease.

Table 10.15: Most frequent problems managed by cardiovascular drugs

Problem (READ2 sub-chapter) *	Percent of cardiovascular script items		Percent of problems so treated		Percent of new problems so treated	
	Rural (N=309)	Non-rural (N=1140)	Rural	Non-rural	Rural	Non-rural

G2	BP – hypertensive disease	57.6	47.8	77.7	74.7	38.9	43.9
G5	Other forms of heart disease	9.9	13.2	81.8	62.5	18.9	21.5
G3	Arteriosclerotic heart disease	11.2	16.2	50.9	60.7	40.4	43.6
8B	Other therapy	8.5	4.8	32.9	21.5	0	0

* Includes any problem sub-chapters, for which the drug group was prescribed, with $\geq 5\%$ of group script items.

10.4 Respiratory system drugs (Tables 10.16, 10.17 and 10.18)

Prescribing rates for respiratory drugs appeared to be very similar when rural and non-rural practices were compared (Table 10.16). The overall prescribing rate for respiratory drugs was slightly higher at rural practices compared to non-rural practices (14.7 relative to 13.8 per 100 visits). Antihistamines were prescribed less frequently at rural practices while beta-adrenoceptor agonists were prescribed more frequently.

Table 10.16: Respiratory system drugs: sub-groups

Drug group (level 1) Sub-group (level 2)	Percent of all script items		Per 100 visits		Percent of drug group	
	Rural (N=2409)	Non-rural (N=9579)	Rural (N=1957)	Non-rural (N=7315)	Rural	Non-rural
28. Respiratory system and allergies	11.7	10.6	14.7	13.8	100%	100%
Inhaled corticosteroids	3.8	3.4	4.8	4.5	32.5	32.1
Beta-adrenoceptor agonists	3.5	2.8	4.4	3.6	29.9	26.4
Antihistamines	1.0	1.6	1.3	2.1	8.5	15.1
Nasal preparations	0.7	0.7	0.9	0.9	6.0	6.6
Inhaled combined beta-adrenoceptor agonist and anticholinergic agents	0.8	0.5	1.1	0.6	6.8	4.7

* Includes drug sub-groups comprising $\geq 1\%$ of all script items.

Respiratory drug prescribing varied between rural and non-rural practices in relation to patient gender (Table 10.17). Males were prescribed slightly fewer respiratory drugs at rural practices and women slightly more. Age/gender rates at each location suggest that male patients aged 45 to 64 years at rural practices received the lowest rate of prescribing of respiratory drugs for every 100 visits. By contrast, female patients aged 45 to 64 years at rural practices received more respiratory drug prescriptions per 100 visits than their non-rural counterparts.

Table 10.17: Respiratory drugs: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Rural					
Male (N=822)	13	16	11	8	17
Female (N=1127)	16	17	12	20	13
Non-rural					
Male (N=2986)	16	19	16	11	16
Female (N=4275)	12	13	13	12	12

Respiratory drugs were prescribed to treat four main conditions at similar rates for practices in both rural and non-rural locations (Table 10.18). Rural practices prescribed respiratory drugs more often for other upper respiratory tract diseases and respiratory symptoms, but the rates were almost identical for chronic obstructive airways disease and acute respiratory infections. New problems related to chronic obstructive airways disease were less likely to be treated with respiratory drugs at rural practices than at non-rural practices. New respiratory symptoms were more likely to be treated with respiratory drugs at rural practices.

Table 10.18: Most frequent problems managed by respiratory drugs

Problem (READ2 sub-chapter) *	Percent of respiratory script items		Percent of problems so treated		Percent of new problems so treated	
	Rural (N=267)	Non-rural (N=1042)	Rural	Non- rural	Rural	Non- rural
H3 Chronic obstructive airways disease	51.3	44.6	71.6	68.7	61.7	72.2
H0 Acute respiratory infections	16.9	18.8	18.1	17.4	19.9	14.6
H1 Other upper respiratory tract diseases	6.9	5.6	72.7	58.7	58.0	0.1
17 Respiratory symptoms	6.6	3.1	40.0	22.4	37.0	14.2

* Includes any problem sub-chapters, for which the drug group was prescribed, with $\geq 5\%$ of group script items.

10.5 Alimentary drugs (Tables 10.19, 10.20 and 10.21)

Prescribing rates for the sub-groups of alimentary drugs are listed in Table 10.19. In total, alimentary drugs were prescribed less often each 100 visits at rural practices compared to urban practices. Most of the difference between rural and non-rural practices appeared to relate to the lower prescribing rates of diabetes drugs, laxatives and vitamins.

Table 10.19: Alimentary system drugs: sub-groups

Drug group (level 1) Sub-group (level 2)	Percent of all script items		Per 100 visits		Percent of drug group	
	Rural (N=2409)	Non-rural (N=9579)	Rural (N=1957)	Non-rural (N=7315)	Rural	Non-rural
1. Alimentary tract and metabolism	8.1	8.5	10.2	11.1	100%	100%
Anti-ulcerants	2.8	2.4	3.5	3.1	34.6	28.2
Diabetes and diabetes management	1.2	1.8	1.5	2.3	14.8	21.2
Anti-diarrhoeals	0.8	0.8	1.0	1.0	9.9	9.4
Laxatives	0.8	1.1	1.0	1.4	9.9	12.9
Vitamins	0.5	0.8	0.7	1.0	6.2	9.4
Antacids	0.5	0.5	0.6	0.7	6.2	5.9
Anti-haemorrhoidals	0.5	0.4	0.7	0.5	6.2	4.7

* Includes drug sub-groups comprising $\geq 1\%$ of all script items.

Prescribing rates for alimentary drugs were similar for both genders at both practice locations (Table 10.20), although the rate for males was slightly lower at rural practices compared to non-rural practices. Age- and gender-specific rates at both settings indicated that more alimentary drugs were prescribed for patients with increasing age. Rural males aged 45 to 64 and over 65 years were associated with lower prescribing rates relative to their non-rural counterparts.

Table 10.20: Alimentary drugs: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Rural					
Male (N = 822)	9	6	10	8	15
Female (N = 1127)	11	3	9	13	21
Non-rural					
Male (N = 2986)	12	5	9	16	21
Female (N = 4275)	11	4	9	14	19

The most frequent problems treated with alimentary drugs were the same at rural and non-rural practices (Table 10.21). Two sub-chapters (duodenal disease and bacterial food poisoning) were associated with a slightly higher percentage of problems receiving treatment with these drugs at rural practices. New problems related to other endocrine gland diseases were less likely to be treated with alimentary drugs at rural practices compared to non-rural practices. Prescribing rates of alimentary drugs for new duodenal diseases and bacterial food poisoning problems were higher at rural practices.

Table 10.21: Most frequent problems managed by alimentary drugs

Problem (READ2 sub-chapter) *	Percent of alimentary script items		Percent of problems so treated		Percent of new problems so treated	
	Rural (N=179)	Non-rural (N=809)	Rural	Non-rural	Rural	Non-rural
J1 Duodenal diseases	23.1	19.0	87.6	75.6	77.6	68.2
C1 Other endocrine gland diseases	14.6	18.6	48.7	50.2	0	23.6
19 GIT symptoms	6.6	10.2	32.9	42.2	27.3	27.3
A0 Bacterial food poisoning	6.0	3.6	33.3	23.1	35.0	26.3

* Includes any problem sub-chapters, for which the drug group was prescribed, with $\geq 5\%$ of group script items.

10.6 Musculoskeletal drugs (Tables 10.22, 10.23 and 10.24)

Prescribing rates of musculoskeletal drugs were comparable between rural and non-rural practices (Table 10.22). Overall, marginally more musculoskeletal drugs (both NSAIDs and anti-gout medication) were prescribed per 100 visits at rural practices.

Table 10.22: Musculoskeletal system drugs: sub-groups

Drug group (level 1) Sub-group (level 2)	Percent of all script items		Per 100 visits		Percent of drug group	
	Rural (N=2409)	Non-rural (N=9579)	Rural (N=1957)	Non-rural (N=7315)	Rural	Non-rural
19. Musculoskeletal system	7.3	6.2	9.1	8.1	100%	100%
Anti-inflammatory non-steroidal drugs (NSAIDs)	5.7	5.0	7.2	6.5	78.1	80.6
Hyperuricaemia and anti-gout	0.7	0.5	0.8	0.7	9.6	8.1

* Includes drug sub-groups comprising $\geq 1\%$ of all script items.

Table 10.23 gives the age- and gender-specific prescribing rates for musculoskeletal drugs at rural and non-rural practices. Generally the rates were comparable between both rural and non-rural practices, although rural males aged over 65 years were more likely to be prescribed musculoskeletal drugs relative to similar patients at urban practices

Table 10.23: Musculoskeletal drugs: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Rural					
Male (N = 822)	11	4	14	16	16
Female (N = 1127)	8	4	7	11	12

Non-rural					
Male (N = 2986)	9	3	10	15	10
Female (N = 275)	8	3	9	11	9

Sprains and strains of joints and adjacent muscles, arthropathies and related disorders, rheumatism, other metabolic and immunity disorders and vertebral column disorders were the most common sub-chapters associated with musculoskeletal drug prescribing at rural and non-rural practices. Problems related to all of these sub-headings – except arthropathies and related disorders – were more likely to be treated with these medications at rural practices. New problems of all five sub-chapters were more likely to be treated with musculoskeletal medication at rural practices.

Table 10.24: Most frequent problems managed by musculoskeletal drugs

Problem (READ2 sub-chapter) *	Percent of musculoskeletal script items		Percent of problems so treated		Percent of new problems so treated	
	Rural (N=165)	Non-rural (N=591)	Rural	Non-rural	Rural	Non-rural
S5 Sprains and strains of joints and adjacent muscles	17.0	16.5	40.5	30.9	49.5	38.7
N0 Arthropathies and related disorders	14.5	14.0	33.2	33.4	43.1	17.5
N2 Rheumatism, excluding the back	13.0	8.4	31.7	23.8	48.2	28.2
C3 Other metabolic and immunity disorders	11.0	9.0	29.3	20.3	20.0	18.2
N1 Vertebral column syndromes	9.7	10.1	38.7	33.6	60.4	41.2

* Includes any problem sub-chapters, for which the drug group was prescribed, with $\geq 5\%$ of group script items.

10.7 Dermatologicals (Tables 10.25, 10.26 and 10.27)

Prescribing rates for dermatological medications did not vary greatly between rural and non-rural practices (Table 10.25). Dermatological treatments were more frequently used at rural practices (8.4 versus 7.5 per 100 visits). Among the sub-groups, topical anti-bacterials were more frequently prescribed at rural practices, but emollients and barrier creams were used less often.

Table 10.25: Dermatological drugs: sub-groups

Drug group (level 1) Sub-group (level 2)	Percent of all scripts		Per 100 visits		Percent of drug group	
	Rural (N=2409)	Non-rural (N=9579)	Rural (N=1957)	Non-rural (N=7315)	Rural	Non-rural

10. Dermatologicals	6.7	5.8	8.4	7.5	100%	100%
Corticosteroids topical	2.8	2.9	3.7	3.6	41.8	50.0
Anti-bacterials topical	0.8	0.3	1.0	0.4	11.9	5.2
Anti-fungals topical	0.8	0.7	0.9	0.9	11.9	12.1
Scalp preparations	0.6	0.5	0.7	0.6	9.0	8.6
Emollients and barrier creams	0.6	0.8	0.7	1.0	9.0	13.8

* Includes drug sub-groups comprising $\geq 1\%$ of all script items.

Dermatological drugs were prescribed at very similar age- and gender-specific rates at both rural and non-rural practices (Table 10.26).

Table 10.26: Dermatological drugs: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Rural					
Male (N = 822)	7	12	3	8	3
Female (N = 1127)	9	14	6	6	9
Non-rural					
Male (N = 2986)	7	9	5	7	6
Female (N = 4275)	8	12	7	5	5

Rural GPs more commonly prescribed dermatological medications for mycoses (either existing or new problems) compared to non-rural GPs (Table 10.27). Other conditions frequently managed with these medications at both rural and non-rural practices included dermatitis, skin infections and other skin disorders.

Table 10.27: Most frequent problems managed by dermatological drugs

Problem (READ2 sub-chapter) *	Percent of dermatological script items		Percent of problems so treated		Percent of new problems so treated	
	Rural (N=162)	Non-rural (N=587)	Rural	Non-rural	Rural	Non-rural
M1 Dermatitis/dermatoses	39.4	49.6	73.3	69.8	67.9	70.1
AB Mycoses	16.0	10.5	74.6	39.3	77.9	38.3
M0 Skin and subcutaneous tissue infections	9.9	4.3	22.7	15.5	27.5	21.7
M2 Other skin and subcutaneous tissue disorders	1.8	5.6	3.8	9.9	6.2	14.1

* Includes any problem sub-chapters, for which the drug group was prescribed, with $\geq 5\%$ of group script items.

10.8 Blood and blood-forming organs (Tables 10.28, 10.29 and 10.30)

Practice location was not clearly associated with any major differences in the overall prescribing rate of haematological medications (Table 10.28). Overall prescribing rates per 100 visits were lower at rural practices. In relation to specific agents, prescribing rates of lipid-modifying agents and anti-thrombotic agents were lower at rural practices, whereas the rate of fluid and electrolyte use was marginally higher.

Table 10.28: Blood and blood-forming organs drugs: sub-groups

Drug group (level 1) Sub-group (level 2)	Percent of all script items		Per 100 visits		Percent of drug group	
	Rural (N=2409)	Non-rural (N=9579)	Rural (N=1957)	Non-rural (N=7315)	Rural	Non-rural
4. Blood and blood-forming organs	5.1	6.3	6.4	8.2	100%	100%
Anti-thrombotic agents	2.4	2.9	3.0	3.8	47.1	46.0
Lipid-modifying agents	1.4	2.2	1.7	2.9	27.5	34.9
Fluids and electrolytes	0.7	0.4	0.9	0.5	13.7	6.3
Anti-anaemics	0.5	0.5	0.6	0.6	9.8	7.9

* Includes drug sub-groups comprising $\geq 1\%$ of all script items.

The use of blood and blood-forming drugs increased with age in both genders. This pattern was evident at both rural and non-rural practices, although the increase with age was relatively lower among males at rural compared to non-rural practices (Table 10.29).

Table 10.29: Blood and blood-forming organs drugs: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Rural					
Male (N = 822)	6	1	4	7	13
Female (N = 1127)	7	3	3	7	14
Non-rural					
Male (N = 2986)	10	2	3	16	24
Female (N = 4275)	7	2	4	6	18

Table 10.30 describes the most frequent problems that were treated with blood and blood-forming drugs at rural and non-rural practices. Some small variation in the percentage of problems treated with these medications among the sub-chapters listed was evident between the practices. Hypertensive disease, other therapy and other forms of heart disease were more often managed by blood/blood-forming organ drugs at rural practices, while arteriosclerotic heart disease and other metabolic

disorders were not. Among the sub-chapters, new problems did not receive treatment with these drugs at rural practices.

Table 10.30: Most frequent problems managed by blood/blood-forming organs drugs

Problem (READ2 sub-chapter) *	Percent of blood/blood-forming organ script items		Percent of problems so treated		Percent of new problems so treated	
	Rural (N=134)	Non-rural (N=553)	Rural	Non-rural	Rural	Non-rural
G2 BP – hypertensive disease	18.7	13.1	13.2	12.1	0	4.50
8B Other therapy	14.5	4.3	29.0	11.6	0	17.2
G3 Arteriosclerotic heart disease	10.0	23.9	23.8	48.4	0	19.3
G5 Other forms of heart disease	7.2	8.1	31.3	25.5	0	6.1
C3 Other metabolic and immunity disorders	7.1	8.5	14.6	24.1	0	

* Includes any problem sub-chapters, for which the drug group was prescribed, with $\geq 5\%$ of group script items.

10.9 Systemic steroids (Tables 10.31, 10.32 and 10.33)

Systemic hormone medications were prescribed at a broadly similar rate at rural and non-rural practices (Table 10.31). The overall rates of prescribing for medication in this category were slightly lower at rural practices. In particular, corticosteroids and hormone replacement drugs were prescribed less frequently at rural practices.

Table 10.31: Systemic hormone drugs: sub-groups

Drug group (level 1) Sub-group (level 2)	Percent of all script items		Per 100 visits		Percent of drug group	
	Rural (N=2409)	Non-rural (N=9579)	Rural (N=1957)	Non-rural (N=7315)	Rural	Non-rural
14. Systemic hormone preparations (excluding oral contraceptives)	3.4	4.6	4.3	6.0	100%	100%
Corticosteroids and related agents	1.6	1.9	1.9	2.4	47.1	41.3
Thyroid and anti-thyroid agents	0.8	0.7	1.0	1.0	23.5	15.2
Other oestrogen or progestogen preparations	0.4	0.8	0.5	1.0	11.8	17.4
Hormone replacement therapy	0.4	0.9	0.5	1.1	11.8	19.6

* Includes drug sub-groups comprising $\geq 1\%$ of all script items.

Age- and gender-specific prescribing rates were similar at rural and non-rural practices (Table 10.32). Systemic hormones were more frequently prescribed for female patients at both rural and non-rural practices for all groups over 25 years.

Prescribing rates of systemic hormones were lower among woman aged 45 to 64 years and men over 65 years at rural practices.

Table 10.32: Systemic hormone drugs: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Rural					
Male (N = 822)	2	3	2	0.9	1
Female (N = 1127)	6	2	5	8	11
Non-rural					
Male (N = 2986)	3	2	3	3	6
Female (N = 4275)	8	4	5	15	11

Rural and non-rural practices exhibited similar patterns in relation to the problems treated with systemic hormones (Table 10.33). However, rural practices were associated with lower usage of systemic hormones (presumably corticosteroids) for both new and existing problems related to chronic obstructive airways disease. New problems related to thyroid disease (struma – goitre) were less likely to be treated with systemic hormones at rural practices compared to non-rural practices (0% versus 50%).

Table 10.33: Most frequent problems managed by systemic hormone drugs

Problem (READ2 sub-chapter) *	Percent of systemic hormone* script items		Percent of problems so treated		Percent of new problems so treated	
	Rural (N=91)	Non-rural (N=404)	Rural	Non-rural	Rural	Non-rural
H3 Chronic obstructive airways disease	20.1	16.0	13.5	18.5	11.2	21.8
C0 Struma – goitre	14.4	9.0	64.0	65.3	0	50.0
H0 Acute respiratory infections	10.8	4.3	3.7	1.9	4.1	1.6
61 Contraception	7.8	5.9	23.6	17.0	4.3	4.6
8B Other therapy	9.9	8.3	12.9	18.8	0	11.5
K5 Other female genital tract disorders	3.4	10.6	8.3	24.5	16.4	20.0
N3 Osteopathy/chondropathy/acquired musculoskeletal deformity	5.6	5.5	24.9	33.0	0	14.2
15 Gynaecological history	5.4	1.7	44.9	18.9	0	15.6
N2 Rheumatism, excluding the back	2.4	5.0	3.0	11.4	0	1.8

* Includes any problem sub-chapters, for which the drug group was prescribed, with $\geq 5\%$ of group script items.

10.10 Genito-urinary drugs (Tables 10.34, 10.35 and 10.36)

Genito-urinary drugs were prescribed at a slightly lower rate at rural compared to non-rural practices (Table 10.34). In particular, hormonal contraceptives were prescribed less frequently each 100 visits at rural practices.

Table 10.34: Genito-urinary drugs: sub-groups

Drug group (level 1) Sub-group (level 2)	Percent of all script items		Per 100 visits		Percent of drug group	
	Rural (N=2409)	Non-rural (N=9579)	Rural (N=1957)	Non-rural (N=7315)	Rural	Non-rural
13. Genito-urinary system	3.0	3.9	3.8	5.1	100%	100%
Contraceptives:	2.0	2.6	2.3	3.5	66.7	66.7
hormonal	1.0	1.8	1.2	2.4	33.3	46.2
non-hormonal	0.6	0.5	0.7	0.6	20.0	12.8
unknown	0.4	0.3	0.4	0.5	13.3	7.7
Urinary agents	0.7	0.6	0.9	0.8	23.3	15.4
Gynaecological anti-infectives	0.3	0.5	0.4	0.7	10.0	12.8

* Includes drug sub-groups comprising $\geq 0.5\%$ of all script items.

Prescribing rates of genito-urinary drugs for males were generally lower than for females at both rural and non-rural practices (Table 10.35). In addition, the rate for females was marginally lower at rural compared to non-rural practices. Consistent with the lower prescribing rates for hormonal contraceptives observed in Table 10.34, genito-urinary medication prescribing for females aged 25 to 44 years was notably lower at rural practices (9 versus 15 per 100 visits).

Table 10.35: Genito-urinary drugs: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Rural					
Male (N = 822)	2	0.3	0	3	4
Female (N = 1127)	5	6	9	3	2
Non-rural					
Male (N = 2986)	2	0.7	1	3	5
Female (N = 4275)	7	9	15	2	2

Practitioners at rural and non-rural practices reported that similar problems were treated with genito-urinary medication (Table 10.36). Mycoses problems were slightly less frequently managed with these medications at rural practices, but patients with other female tract disorders and male genital tract disorders were much more likely to be prescribed these drugs at practices that were defined as rural.

Table 10.36: Most frequent problems managed by genito-urinary drugs

Problem (READ2 sub-chapter) *	Percent of genito-urinary script items		Percent of problems so treated		Percent of new problems so treated	
	Rural (N=74)	Non-rural (N=390)	Rural	Non-rural	Rural	Non-rural
61 Contraception	36.0	34.2	71.9	71.2	95.7	87.1
K5 Other female genital tract disorders	10.2	4.8	19.3	8.0	16.4	15.0
K2 Male genital organ diseases	10.4	3.7	40.2	25.2	5.0	23.3
AB Mycoses	4.6	10.2	11.9	29.1	15.9	30.8
8B Other therapy	5.1	4.7	5.8	9.4	0	1.3
1A Genito-urinary symptoms	5.2	4.1	14.0	17.1	21.0	19.4
ZV Health status and contact with health service factors	2.5	5.4	3.4	6.0	5.1	5.9

* Includes any problem sub-chapters, for which the drug group was prescribed, with $\geq 5\%$ of group script items.

10.11 Sensory organ drugs (Tables 10.37, 10.38 and 10.39)

Rural and non-rural practices were associated with an identical rate of prescribing for sensory organ drugs (Table 10.37). These medications were infrequently used at both locations: patients at less than 2% of visits were treated with these drugs. Eye preparations were the most common type of medication prescribed at both locations.

Table 10.37: Sensory organ drugs: sub-groups

Drug group (level 1) Sub-group (level 2)	Percent of all script items		Per 100 visits		Percent of drug group	
	Rural (N=2409)	Non-rural (N=9579)	Rural (N=1957)	Non-rural (N=7315)	Rural	Non-rural
31. Sensory organs	1.3	1.3	1.7	1.7	100%	100%
Eye preparations	1.2	1.2	1.5	1.5	92.3	92.3

* Includes drug sub-groups comprising $\geq 0.5\%$ of all script items.

Age- and gender-specific prescribing rates were almost identical at both rural and non-rural practices (Table 10.38). The rate for males aged 25 to 44 years was slightly higher (5 versus 2 per 100 visits) at rural compared to non-rural practices.

Table 10.38: Sensory organ drugs: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Rural					
Male (N = 822)	2	0.7	5	0.9	1
Female (N = 1127)	2	3	0.8	0.7	2
Non-rural					
Male (N = 2986)	2	2	2	2	2
Female (N = 4275)	2	2	0.9	1	2

Not unexpectedly, sensory organ medications were usually prescribed for disorders of the eyes and ears (Table 10.39). A similar percentage of eye and ear problems were treated with these medications at rural and non-rural practices. However, no problems related to foreign bodies were treated with sensory organ drugs at non-rural practices.

Table 10.39: Most frequent problems managed by sensory organ drugs

Problem (READ2 sub-chapter)*	Percent of sensory organ script items		Percent of problems so treated		Percent of new problems so treated	
	Rural (N=39)	Non-rural (N=117)	Rural	Non-rural	Rural	Non-rural
F4 Disorders of eye and adnexa	46.5	42.4	22.6	29.1	28.6	32.6
F5 Ear diseases	32.4	43.5	10.4	10.9	9.1	11.4
SG Foreign body in orifice	7.4	0	21.5	0	72.3	0

* Includes any problem sub-chapters, for which the drug group was prescribed, with $\geq 5\%$ of group script items.

Table 10.40 summarises the frequency of prescriptions for the various main drug groups at rural and non-rural practices. Prescribing rates were generally comparable between practices at the two different sites. From the 10 most common drug groups, the prescribing rates for the following six groups were marginally lower at rural practices: nervous system, cardiovascular system, alimentary tract and metabolism, blood and blood-forming organs, systemic hormone preparations and genito-urinary system.

Table 10.40: Prescribing rates for different drug groups (script items per 100 visits)

Drug group (Pharmacodes/ATC level 1)	Rural (N=1957)	Non-rural (N=7315)
16. Infections – agents for systemic use	26.2	23.1
22. Nervous system	17.7	19.0
7. Cardiovascular system	15.6	17.2
28. Respiratory system and allergies	14.7	13.8
1. Alimentary tract and metabolism	10.2	11.1
19. Musculoskeletal system	9.1	8.1
10. Dermatologicals	8.4	7.5
4. Blood and blood-forming organs	6.4	8.2
14. Systemic hormone preparations (excluding oral contraceptives)	4.3	6.0
13. Genito-urinary system	3.8	5.1
31. Sensory organs	1.7	1.7
38. Extemporaneously compounded preparations and galenicals	1.7	1.2
25. Oncology agents and immunosuppressants	0.1	0.4
40. Special foods	0.01	0.1
Medication non-specific	5.7	7.7
Total	125.5	130.2

11 Non-drug Treatments

Data on “other treatments” and “actions” are reported in this section. They were coded on the basis of individual words written by the practitioner; however, these actions sometimes overlapped (e.g. school letter would code twice to “administration”). Only one action of each type (e.g. administration) was allowed to be counted for each problem.

Table 11.1 gives the frequency of non-drug treatments and actions. Health advice was the most commonly recorded non-drug treatment at rural and non-rural localities. Across both practice locations, approximately one-third of all visits involved the provision of health advice. Overall, in relation to patient visits (middle column: frequency per 100 visits), the total number of non-drug treatments was smaller at rural practices. However, treatments involving minor surgery and dressings were slightly more frequent at rural practices. Investigations/examination/screening and referrals were relatively often recorded in both settings, while physical medicine and complementary medicine were consistently among the least frequently recorded non-drug treatments.

Table 11.1: Frequency of non-drug treatments

Non-drug treatments	Percent of all treatments		Frequency per 100 visits		Frequency per 100 problems	
	Rural (N=1941)	Non-rural (N=8668)	Rural (N=1957)	Non-rural (N=7315)	Rural (N=3079)	Non-rural (N=12,371)
Health advice	33.4	33.9	34.0	40.0	21.1	23.6
Investigation/examination/screening	23.9	25.7	24.3	30.4	15.1	17.9
Referral	15.3	13.7	15.6	16.2	9.7	9.6
Minor surgery	7.1	5.4	7.2	6.4	4.5	3.8
Administration	5.5	4.9	5.6	5.8	3.5	3.4
Follow-up	4.8	6.4	4.9	7.5	3.0	4.4
Dressing	4.4	2.3	4.5	2.7	2.8	1.6
Other procedure	3.0	3.4	3.0	4.0	1.9	2.3
Immunisation	1.4	2.0	1.4	2.3	0.9	1.4
Physical medicine	0.7	0.6	0.7	0.7	0.4	0.4
Complementary medicine	0.6	1.7	0.6	2.0	0.4	1.2
Total	100%	100%	101.7	118.0	63.2	69.6

Table 11.2 shows the age and gender distribution of patients who were recorded as having received health advice. Rates of health advice were lower in the rural setting compared to non-rural practices, and males in rural practices (especially those aged 25 to 44 or over 65 years) were associated with the lowest recorded frequency of health advice. Notably, health advice was recorded for rural women aged 45 to 64 years one-third less often than for their non-rural counterparts.

Table 11.2: Health advice: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Rural					
Male (N = 810)	29	30	28	33	25
Female (N = 1115)	37	38	51	31	30
Non-rural					
Male (N = 2960)	35	35	39	35	28
Female (N = 4244)	44	38	54	50	36

Minor surgery (see Table 11.3) was slightly more common in rural practices than in non-rural practices, although there was marked variation in the rates between the age groups, especially for males at the two locations.

Table 11.3: Minor surgery: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Rural					
Male (N = 810)	8	8	4	11	7
Female (N = 1115)	7	4	5	8	10
Non-rural					
Male (N = 2960)	7	4	8	7	11
Female (N = 4244)	6	5	7	6	6

12 Disposition

Table 12.1 describes the percentage frequency of the various types of disposition. Follow-up within three months was more frequently arranged by non-rural GPs, while the overall rate of referrals was similar at both settings. Among the types of referrals, medical/surgical specialties were slightly less frequent at rural practices compared with non-rural locations, while emergency referrals were more common.

Follow-up within three months was more frequently arranged for all age groups and both genders (except females 45 to 64) at urban locations (see Table 12.2). The frequency of follow-up was highest for older (over 65 years) patients at both settings. Age- and gender-specific referral rates were lowest among patients aged under 25 years at both settings and were similar between genders except for patients aged 25 to 44 years. Arrangements for follow-up were notably made less often for males aged 25 to 44 compared to females, especially at rural practices (see Table 12.2).

Table 12.1: Frequency of types of disposition (percent of visits)

Disposition*	Rural	Non-rural
Follow-up within three months	52.3	58.6
Referred on	15.6	15.9
Emergency	1.8	1.2
Unspecified	0.6	0.9
Medical/surgical specialties	7.3	8.2
Non-medical	5.9	5.6
(N)	(1957)	(7315)

* “Missing” is counted as “none”; follow-up and referral are not mutually exclusive; one referral is counted per visit; referral types are mutually exclusive; and “emergency” referrals are given precedence.

Table 12.2: Follow-up to three months: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Rural					
Male (N = 822)	50	34	46	61	67
Female (N = 1127)	54	37	54	63	66
Non-rural					
Male (N = 2986)	57	45	52	66	73
Female (N = 4275)	60	43	59	63	77

Rates of follow-up in relation to problem categories (READ2 chapter groupings) are displayed in Table 12.3. Follow-up was commonly provided for blood, cardiovascular, endocrine, mental, cancer and pregnancy problems at both rural and non-rural practices. Some discrepancies were evident between locations in the rates of follow-up for various problem groupings. For example, haematological problems and new cardiovascular or endocrine problems were especially likely (85% or more) to receive follow-up in the rural setting, while only new haematological problems were associated with such high follow-up rates at non-rural locations. New or existing pregnancy/childbirth, congenital and non-specific symptom problems were all less likely to be followed up by rural GPs.

Table 12.3: Rates of follow-up, by problem grouping

Problem grouping (READ2 chapter)	Percent of problems so treated		Percent of new problems so treated	
	Rural	Non-rural	Rural	Non-rural
Blood/blood-forming organs	88.2	80.3	66.1	91.5
Cardiovascular/circulatory	79.8	80.7	88.2	73.3
Endocrine/nutritional/metabolic/immunity	76.5	79.5	91.2	83.6
Mental	77.0	80.6	73.7	81.9
Cancers/neoplasms	75.9	77.5	77.0	75.6
Pregnancy/childbirth/puerperium	59.1	74.0	59.6	67.3
Genito-urinary	69.1	70.3	58.2	64.9
Musculoskeletal/connective tissue	70.0	71.5	54.9	64.8
Digestive	62.9	69.3	57.5	60.5
Symptoms non-specific	58.5	71.9	57.5	66.6
Investigations	60.9	67.8	42.4	58.9
Injury/poisoning	58.2	63.4	47.8	53.1
Nervous system/sense organs	58.4	65.2	57.9	59.5
Skin/subcutaneous tissue	50.0	57.9	48.3	51.4
Unspecified conditions	60.4	58.7	63.6	31.7
Actions	49.2	55.9	36.1	53.1
Perinatal	32.1	76.4	32.1	0
Infectious/parasitic	44.4	43.0	41.1	33.1
Respiratory	42.4	48.3	29.7	38.8
Congenital	9.9	85.5	0	75.4
Not coded	75.7	70.1	100	63.8

Rural and non-rural practices exhibited similar age- and gender-specific rates of referral (see Table 12.4). Consistently at both locations the lowest age-specific rates were among patients aged under 25 years, regardless of gender. The highest rate was associated with rural males 25 to 44 years (27 referrals per 100 visits).

Table 12.4: Referral: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Rural					
Male (N = 822)	16	8	27	13	22
Female (N = 1127)	15	9	25	16	11
Non-rural					
Male (N = 2986)	15	10	19	15	19
Female (N = 4275)	17	10	22	19	16

Age- and gender-specific elective medical/surgical referral rates were similar at rural and non-rural settings and between genders. The highest rates were associated with people aged 25 to 44 years and the lowest among young people (under 25 years) (see Table 12.5).

Table 12.5: Elective medical/surgical referral: age- and gender-specific rates (per 100 visits)

	All ages	< 5	25–44	45–64	65+
Rural					
Male (N = 822)	8	5	11	8	10
Female (N = 1127)	7	4	10	7	8
Non-rural					
Male (N = 2986)	8	4	10	9	11
Female (N = 4275)	8	4	12	9	9

Patterns of elective referrals for all types of problems as well as new ones were similar between rural and non-rural practices (see Table 12.6). The overall percentage of problems treated with an elective referral in rural practice was slightly lower for patients with pregnancy, blood, mental and skin problems and somewhat higher for patients with congenital or digestive complaints. Rural practices provided markedly lower elective referral rates for patients with new cancers, pregnancy and unspecified problems, but higher rates for those patients with new congenital or endocrine problems.

Table 12.6: Rates of elective referral, by problem grouping

Problem (READ2 chapter)	Percent of problems so treated		Percent of new problems so treated	
	Rural	Non-rural	Rural	Non-rural
Cancers/neoplasms	19.5	17.2	1.4	19.4
Genito-urinary	19.6	19.4	13.8	15.4
Musculoskeletal/connective tissue	15.0	13.9	10.8	11.0
Congenital	34.4	19.0	100	17.3
Digestive	16.5	11.6	14.5	10.3
Pregnancy/childbirth/puerperium	9.7	14.3	0	6.0
Investigations	9.0	9.4	9.7	8.2
Unspecified conditions	11.0	12.7	1.6	10.7
Symptoms non-specific	10.7	12.0	7.1	4.4
Endocrine/nutritional/metabolic/immunity	9.1	10.8	28.1	14.2
Nervous system/sense organs	9.3	11.0	17.9	6.7
Cardiovascular/circulatory	9.2	11.1	15.8	13.7
Blood/blood-forming organs	7.3	13.2	0	3.4
Mental	8.2	12.8	8.8	15.0
Actions	7.4	7.2	10.0	9.9
Injury/poisoning	6.2	6.8	4.6	5.8
Infectious/parasitic	1.7	6.1	0.8	2.6
Skin/subcutaneous tissue	2.8	7.6	3.0	4.5
Respiratory	2.8	4.0	2.7	2.7
Perinatal	0	0	0	0
Not coded	52.5	13.0	61.8	25.0

Emergency referral rates were between 0 and 2 per 100 visits for all age/gender groups except rural males over 65 years, whose rate was 5 per 100 visits (see Table 12.7).

Table 12.7: Emergency referral: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25-44	45-64	65+
Rural					
Male (N = 822)	2	2	2	2	5
Female (N = 1127)	1	1	2	2	1
Non-rural					
Male (N = 2986)	1	1	0.1	1	2
Female (N = 4275)	1	2	0.8	2	1

Table 12.8 lists rates of emergency referral in relation to different problems. The percentage of problems treated with emergency referral was higher at rural practices compared to urban practices for the seven problem groupings (cardiovascular, mental health, injury, respiratory, cancers, investigations and nervous system) that most frequently involved an emergency referral. New oncology or endocrine problems occurring at rural practices were frequently treated with an emergency referral (10.7% and 13.3%). Emergency referrals were particularly common (over 10%) for patients at urban practices compared to rural practices for both new and all pregnancy problems, and new endocrine problems.

Table 12.8: Rates of emergency referral, by problem grouping

Problem (READ2 chapter)	Percent of problems so treated		Percent of new problems so treated	
	Rural	Non-rural	Rural	Non-rural
Cardiovascular/circulatory	5.3	1.7	3.2	7.3
Mental	1.7	0.4	0	0
Injury/poisoning	2.2	1.1	3.0	1.7
Respiratory	2.1	1.3	1.4	1.3
Cancers/neoplasms	2.9	0.1	10.7	0
Investigations	0.5	0.4	0	1.2
Nervous system/sense organs	2.0	0.8	0.3	1.5
Genito-urinary	1.3	2.2	3.7	3.8
Endocrine/nutritional/metabolic/immunity	1.6	1.4	13.3	11.0
Infectious/parasitic	2.4	0.7	1.3	1.1
Skin/subcutaneous tissue	1.6	1.2	1.9	0.7
Musculoskeletal/connective tissue	0.6	0.7	1.9	0.9
Symptoms non-specific	0.3	1.1	0.8	1.4
Digestive	0.2	1.3	0.5	1.1
Actions	0.1	0.8	0	0.1
Pregnancy/childbirth/puerperium	0	23.7	0	17.4
Unspecified conditions	0	0.7	0	0
Blood/blood-forming organs	0	0	0	0
Congenital	0	0	0	0
Perinatal	0	0	0	0
Not coded	0	0	0	0

Non-medical referral rates were similar between rural and non-rural regions. Rural patients aged 25 to 44 years were associated with the highest non-medical referral rates, especially males (14 per 100 visits) (see Table 12.9).

Table 12.9: Non-medical referral: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25-44	45-64	65+
Rural					
Male (N = 822)	6	3	14	2	8
Female (N = 1127)	6	4	12	7	3
Non-rural					
Male (N = 2986)	5	4	7	4	4
Female (N = 4275)	6	4	9	8	5

Table 12.10 lists rates of non-medical referral by problem grouping. Injury and musculoskeletal problems were commonly referred for non-medical treatment in both rural and non-rural practices. Mental health problems were relatively often referred in both settings (12.1% and 10.9%), but referrals for new problems were higher in rural areas (31% versus 14.2%). Pregnancy problems were commonly referred to non-medical specialists at rural rather than non-rural practices (9.7% versus 2.9%), and rates of referral at country practices were especially high for new problems (19.2 versus 0%). Cancer-related problems were more often referred in rural areas. Blood problems were frequently referred in rural but not urban practices. Among a number of other conditions that were less often referred (under 10% of all problems so treated), new problems relating to unspecified conditions or cardiovascular problems were more frequently referred at rural practices compared to non-rural clinics (23.5 versus 3.8% and 10.9 versus 6.7%). Both new and all congenital and endocrine problems were more frequently referred at non-rural practices.

Table 12.10: Rates of non-medical referral, by problem grouping

Problem (READ2 chapter)	Percent of problems so treated		Percent of new problems so treated	
	Rural	Non-rural	Rural	Non-rural
Injury/poisoning	11.5	16.6	12.2	20.5
Pregnancy/childbirth/puerperium	9.7	2.9	19.2	0
Musculoskeletal/connective tissue	14.0	15.5	24.3	20.8
Mental	12.1	10.9	31.0	14.2
Actions	10.2	7.8	5.0	8.4
Investigations	10.2	7.3	19.0	9.5
Cancers/neoplasms	9.4	2.9	6.1	4.9
Genito-urinary	9.2	5.7	5.7	8.6
Blood/blood-forming organs	15.5	1.1	0	0
Unspecified conditions	8.1	5.3	23.5	3.8
Symptoms non-specific	8.3	6.4	5.2	9.9
Nervous system/sense organs	4.0	5.1	3.9	5.3
Digestive	3.9	6.4	7.0	5.2
Endocrine/nutritional/metabolic/immunity	3.9	7.8	2.0	10.3
Skin/subcutaneous tissue	5.1	3.6	6.3	3.0
Infectious/parasitic	6.3	0.5	4.9	0.8
Respiratory	2.8	1.8	3.2	1.7
Cardiovascular/circulatory	1.8	3.8	10.9	6.7
Congenital	0	8.9	0	51.5
Perinatal	0	0	0	0
Not coded	0	8.8	0	19.2

The destinations of referrals were generally similar at both rural and non-rural practices (Table 12.11). Rural practices were associated with a slightly higher frequency of emergency referrals (1.8 per 100 visits versus 1.2) and a lower rate of medical/surgical specialist referrals (7.3 per 100 visits compared to 8.2). Among referrals to various types of specialists, rural GPs referred less often to gynaecologists (0.27 versus 0.64), ENT specialists (0.59 versus 0.79) and psychiatrists (0.11 versus 0.4), but more frequently to orthopaedic surgeons (1.59 versus 0.98) and endocrinologists (0.16 versus 0.01). In total, non-medical referrals were similar between rural and non-rural practices. Radiology, dental and dietitian referrals were more frequent at rural locations, while referrals to physiotherapists, nurses and psychologists were slightly lower at rural locations.

Table 12.11: Destination of referrals: percentage distribution and frequency per 100 visits

Destination	Percentage of referrals		Frequency per 100 visits	
	Rural (N=327)	Non-rural (N=1166)	Rural (N=1957)	Non-rural (N=7315)
Emergency referral	11.8	7.5	1.8	1.2
Referral unspecified	3.6	5.7	0.6	0.9
Medical/surgical specialties	46.7	51.3	7.3	8.2
Orthopaedics	10.4	6.2	1.59	0.98
ENT	3.8	5.0	0.59	0.79
Cardiology	3.2	3.9	0.49	0.62
Paediatrics	4.4	1.9	0.68	0.30
Gastroenterology	2.9	2.9	0.44	0.46
Ophthalmology	2.6	2.5	0.39	0.39
Neurology	1.8	1.7	0.27	0.26
Gynaecology	1.8	4.1	0.27	0.64
Urology	2.9	2.7	0.44	0.42
Dermatology	1.3	1.9	0.19	0.30
Psychiatry	0.7	2.5	0.11	0.40
Plastic surgery	1.0	1.5	0.16	0.24
Rheumatology	1.7	1.6	0.26	0.25
Obstetric	1.3	1.2	0.20	0.19
Endocrinology	1.1	0.02	0.16	0.01
Non-medical referrals	37.9	35.5	5.9	5.6
Physiotherapist	9.4	12.0	1.43	1.89
Radiology	9.7	8.6	1.48	1.36
Counselling	2.2	2.1	0.34	0.33
Dental	2.3	0.7	0.35	0.11
Nursing	1.7	2.5	0.26	0.39
Midwife	1.9	1.3	0.29	0.20
Audiology	1.3	0.9	0.19	0.14
Dietitian	1.3	0.5	0.20	0.08
Psychologist	0.1	1.0	0.01	0.16
	100%	100%	15.6	15.9

13 A Comparison of Rural and Non-Rural Practices and their Practice Nurses

Table 13.1 compares various practice characteristics between rural and non-rural locations. The mean number of full-time equivalent doctors and nurses was found to be lower at rural practices. The mean number of hours open per week was similar between rural and non-rural practices but rural venues provided more evening surgery hours and fewer hours at weekends. Rural practices offered more of almost all the services listed in Table 13.1, including doctors providing maternity care, complementary health, group health promotion and community worker services, but a smaller proportion of practices provided independent nursing consultations. Computerised patient records were especially common at rural practices (81.2% versus 67.4%).

In relation to governance, external management structure and patient representation in management were uncommon at both settings, particularly urban practices. The legal structure of most practices regardless of location was as a sole trader business. Limited liability company status was used by more rural practices, and partnerships were the third most common legal structure at both locations. Other arrangements such as community trusts and incorporated societies were uncommon (9% and 5.2% of rural practices) among rural practices and very rare in urban settings (0.5 and 1.8% of non-rural practices).

Rural practices undertook more formal needs assessment and locality services planning than their non-rural counterparts. Formal complaints policies were relatively common at both rural and non-rural practices (62.3 and 59.2% respectively), but few (31.6% and 30%) had written policy for quality management.

Patient fees were consistently cheaper across all age groups at rural practices regardless of Community Services Card possession. More rural practices were capitated, but fewer were budget-holding practices.

Table 13.1: Characteristics of rural and non-rural practices

Practice characteristic	Rural (N=41)		Non-rural (N=146)	
Personnel (mean number)				
Full-time equivalent (FTE) doctors	1.7		2.3	
FTE nurses	1.4		1.6	
FTE community workers	0.05		0.05	
Access				
Hours open per week (mean)	49.2		48.8	
Offering evening surgery hours (%)	52.5		38.7	
Offering weekend surgery hours (%)	28.3		34.6	
Offering booking system (%)	100.0		96.2	
Services provided (%)				
Doctors providing maternity care	71.7		60.2	
Independent nursing consultations	71.1		76.4	
Complementary/alternative services	50.8		34.8	
Group health promotion	42.4		22.3	
Community worker services	9.1		5.4	
Computerisation (%)				
Computerised patient records	81.2		67.4	
Governance (%)				
Separate, or external, management structure	13.1		9.1	
Patient representation in management	6.8		2.0	
Legal practice structure (%)				
Sole trader	33.5		35.5	
Partnership	18.7		25.0	
Community trust	9.0		0.5	
Other trust	1.2		4.6	
Incorporated society	5.2		1.8	
Limited liability company	30.3		25.8	
Other	2.1		6.9	
Practice needs (%)				
Formal community needs assessment	26.0		18.1	
Locality service planning	22.1		15.5	
Inter-sectoral case management	13.3		11.2	
Quality management				
Written policy on complaints	62.3		59.2	
Written policy for quality management	31.6		30.0	
Standard fees (mean \$)	Card*	No card	Card	No card
Child (0–5 years)	0.60	0.70	0.70	1.00
Child (6–17 years)	11.80	17.30	13.60	19.10
Adult (18 years and over)	19.00	35.20	23.20	38.60
Funding regime (%)				
Capitated	35.1		25.5	
Budget holding	11.2		20.0	
Location (%)				
Urban (population > 100,000)	0		66.9	
Town (30,000–100,000)	0		21.6	
Rural area (< 30,000)	100.0		11.6	

* Combines both High User and Community Services Cards.

The characteristics of participating rural and non-rural practice nurses are described in Table 13.2. Most practice nurses, regardless of location, were New Zealand European. Only 4.7% of urban nurses and no rural nurses identified themselves as Māori. The nursing workforce was exclusively female and the mean age at both locations was about 46 years.

The initial qualifications held by nursing staff at rural and non-rural practices did not differ greatly. However, twice as many urban nurses also had a postgraduate qualification (16% versus 32.5%). Urban professionals had on average been a nurse for a longer duration (18.6 years versus 17.6) than their rural colleagues and had also spent more time as a practice nurse (9.3 years versus 8.0), although the differences were small. Most nurses irrespective of their location were members of the New Zealand Nursing Organisation.

Rural nurses spent less time at work compared to their urban counterparts, but both groups undertook a similar amount of direct patient contact and the difference between locations related to shorter periods involved with telephone contact, administration and housekeeping. Patients were able to make appointments specifically with the nurse at the majority of rural and non-rural practices. The mean number of appointments, their duration and the proportion of practices that charged a fee for the appointment were almost identical at the two settings.

A higher proportion of rural practices offered nurse clinics to assist patients with hypertension, diabetes, contraception, smears, antenatal and immunisation care. There were some minor differences between rural and urban practices in relation to all the patient contact activities that were conducted by nurses. Practices nurses were frequently (over 80% of patient contact activities) concerned with the provision of immunisations, child care advice, dressings, dietary/lifestyle advice and repeat prescriptions at both locations. Rural practice nurses were more likely to be involved with cervical screening, suturing and blood-taking than their urban colleagues. Independent activities also comprised immunisations, child care and lifestyle advice at both locations. Fewer rural nurses undertook dressings or home visiting on their own, but relatively more were involved with cervical screening, suturing, and blood-taking as independent activities.

Table 13.2: Characteristics of participating rural and non-rural practice nurses

Practice nurse* characteristic	Rural (N=34)	Non-rural (N=126)
Ethnicity (%) †		
New Zealand European	94.0	84.7
Māori	0	4.7
Pacific	0	1.0
Asian	0	4.3
Other	6.1	5.2
Gender (%)		
Female	100.0	100.0
Age (%)		
< 35	12.4	12.8
35–44	31.2	30.8
45–54	44.2	38.1
55–64	12.2	17.2
> 65	0	1.1
Mean	46.0	45.8
Initial qualifications (%)		
RGN	11.4	23.1
RGON	66.2	60.0
RCpN	21.6	22.1
EN	3.8	0.6
RM	11.0	2.4
BA/BHSc/BN	0	2.9
Other	0	4.1
Postgraduate qualifications (%)	16.0	32.5
Years as a nurse (%)		
< 6	0	3.4
6–15	57.6	39.4
16–25	24.4	36.0
> 25	18.0	21.2
Mean	17.6	18.6
Years as a practice nurse (%)		
< 6	28.4	32.3
6–15	65.4	56.9
16–25	6.2	10.9
> 25	0	0
Mean	8.0	9.3
Professional membership (%)		
NZNO	85.0	82.5
College of Nursing	4.4	12.3
Other	14.9	13.1
None	9.8	12.1

Practice nurse* characteristic	Rural (N=34)		Non-rural (N=126)	
Average hours spent per week (mean)				
Total §	26.9		31.9	
Direct patient contact	16.7		16.2	
Patient contact by phone	3.8		6.5	
Administration	5.5		6.7	
Housekeeping	1.9		2.7	
Other duties	3.8		3.3	
Patients make appointments specifically to see nurse (%)	88.0		87.4	
If so, number of appointments in average week (mean)	24.6		24.6	
Usual time allocated for a nurse appointment (mean minutes)	16.6		16.8	
Practice charges a fee for nurse appointment (%)	75.8		76.6	
Practice nurse clinics offered (%)				
None	18.1		25.4	
Hypertension	44.4		29.2	
Diabetes	65.9		55.9	
Contraception	25.9		17.7	
Smears	62.5		46.9	
Asthma	38.1		40.9	
Immunisation	73.8		55.8	
Antenatal	11.6		10.9	
Other	14.1		37.9	
Patient contact activities carried out (%)	All	Independent[†]	All	Independent
Immunisations	100.0	74.9	97.8	79.7
Child care advice	97.7	76.0	91.2	81.7
Cervical screening	58.9	49.2	48.2	40.5
Contraception	57.2	33.8	69.2	34.8
Dressings	97.1	45.2	98.7	62.8
Suturing	37.1	19.8	21.2	2.8
Counselling	65.0	48.6	63.5	52.1
Group education	9.8	7.0	12.9	7.7
Dietary/lifestyle advice	97.1	78.9	97.9	88.8
Repeat prescriptions	83.2	29.3	80.6	27.3
Blood taking	77.0	58.3	51.7	37.3
Home visiting	46.7	18.9	53.6	30.6

* Excludes nurses employed by practices affiliated with Health Care Aotearoa (HCA).

† Ethnicity was self-reported, with multiple categories allowed. One ethnic category was then assigned per nurse according to prioritisation of Māori and Pacific peoples.

‡ No doctor referral. Independent activities are a subset of all activities.

§ Reported hours spent on specific duties do not necessarily sum to the total because of missing data.

14 Summary and Discussion

14.1 Summary of key results

Some 47 rural GPs and 197 urban doctors contributed data to this comparative report describing the characteristics of rural versus non-rural GPs, the patients who attended their practices during normal working hours, and their problems. In total, 8686 visits were logged at rural practices and 31,991 attendances were recorded at non-rural practices. Details were provided from 1957 rural visits and 7315 urban consultations. Nearly all rural GPs operated private general practices, whereas 22% of urban GPs worked at community-governed or Māori-provider-based clinics.

Rural GPs were predominantly male, aged between 35 and 54 years and had 6 to 15 years in clinical practice. On average, rural GPs were slightly younger than their urban colleagues (mean 44.8 years compared to 45.2 years), they had worked for a shorter duration in general practice, and they had typically operated from their existing practice for a shorter time. More GPs graduated overseas and fewer were members of the Royal New Zealand College of General Practitioners. Rural participants worked at smaller practices than their urban counterparts (average 1.7 FTEs compared to 2.3 FTEs) but worked slightly more half-days per week and saw more daytime patients per week.

At both rural and non-rural practices, young children (0 to 4 years) and older patients (over 65 years) made disproportionately more visits to GPs. Rural males aged between 25 and 34 years and non-rural males aged 15 to 24 years were associated with the lowest rates of attendance compared to other age/gender groups. Patients who visited rural practices were more likely to be either European or Māori and to possess a Community Services Card than people who attended non-rural practices.

Measures of social wellbeing were comparable between patients who attended practices at either location. While more patients at urban practices indicated that their social support was poor or very poor, the NZDep results suggest that urban patients were more affluent; however, relatively more were not fluent in English. Indices of disadvantage appeared to be strongly correlated at both locations.

Patients were new to the practice at a similar proportion of visits to both rural and non-rural practices. At slightly more urban visits the doctor and patient did not know each other, and this was most likely for patients aged under 14 years. On average, patients had visited the practice a similar number of times during the preceding 12 months at both rural and non-rural locations. Urban GPs rated slightly more visits as being associated with high rapport, although overall levels of rapport were high at both locations.

The majority of visits at both locations were funded by the patient with or without general medical services benefit subsidisation. ACC-financed consultations were more common at rural practices.

The mean duration of each visit was slightly shorter at rural practices. A similar percentage of visits were considered to be urgent or to have life-threatening severity at both locations. Similar proportions of patients at rural and non-rural practices were associated with either no or some minor disability. Levels of uncertainty were generally comparable at country and urban practices, although slightly more visits were associated with high levels of uncertainty at rural practices (5.7% versus 2.0%). Consultation length was shorter with younger patients (under 25 years) but it was slightly longer for females at both practice locations. At both settings, patients associated with the lowest levels of deprivation received the shortest average visits. Mean severity and urgency did not appear to be related to patient deprivation.

Patients at rural practices presented on average fewer reasons for each visit than people in non-rural areas. The pattern of attendance across the age groups was similar at both locations: apart from the age extremes, the number of reasons for each visit increased with rising age.

The most common reasons for visits at rural and non-rural practices were actions, respiratory, and non-specific symptoms. An alternative classification of reasons-for-visit indicates that symptoms and disease were clearly the most frequent components of each visit and each accounted for approximately 30% of visits at both locations.

Rural visits were more commonly concerned with only one problem each visit (58.3% versus 54.7%). On average, more problems per visit were offered by patients at urban practices, and generally more problems were provided by older patients at both urban and rural practices.

The most common types of problems at both types of practice were related to the following groups: respiratory, actions, injury/poisoning, nervous system/sensory organs, cardiovascular/circulatory and skin/subcutaneous tissue. New problems were likewise mainly related to the same groupings and generally occurred at similar frequencies at both locations. Overall, new problems were more common among younger patients regardless of the setting. Injury/poisoning was a more frequent new or existing problem at rural practices, whereas mental health problems were less apparent. Follow-up visits occurred more often at non-rural practices. Age/gender rates of common groups of problems were similar at both locations and varied according to the problem. For example, cardiovascular problems were more frequent among older people whereas respiratory problems were most common among younger patients at both locations. Only respiratory problems presented any obvious seasonal variation at either setting.

Overall, rural GPs ordered fewer tests and investigations compared to their urban counterparts. Laboratory tests, in particular, were less often requested at rural

practices (especially in relation to younger male patients). Laboratory tests were ordered in association with similar problems at both settings. However, problems associated with most organ systems (especially digestive, non-specific, cancer, pregnancy and cardiovascular) were associated with a lower rate of test ordering at rural practices. By contrast, X-ray investigations were ordered at similar rates for most problems at both settings.

A prescription was provided more frequently as the only treatment at rural practices, whereas non-drug treatments were provided more often at urban locations. In addition, fewer treatment items (either script or non-drug) were provided per visit at country practices. Prescription rates and script items were slightly lower at rural practices for male patients. Across Pharmacode/ATC-level-1 categories a similar proportion of visits were associated with prescriptions for medications from the most common types of drug groups (infections, nervous system, cardiovascular system, respiratory system /allergies). The most frequently prescribed drugs were similar at the two different regions. In relation to each drug type, some (usually minor) discrepancies were evident between rural and non-rural practices. Some occasional differences were noted in the age-/gender-specific prescribing rates for the various types of medication, and the most common problems managed by each grouping also varied. Differences in prescribing should be considered in relation to variations in morbidity at each setting.

Overall, in relation to patient visits, the total number of non-drug treatments was lower at rural practices, but treatments involving minor surgery and dressings were slightly more frequent.

Rates of follow-up were lower at rural practices and a similar percentage of referrals were initiated, although emergency referrals were more frequent at rural locations. Follow-up was notably less frequently arranged for males at rural practices. Several types of problems were more likely to have follow-up arranged at both rural and non-rural practices, including: blood, cardiovascular, endocrine, mental health, cancer and pregnancy-related problems. Haematological issues were especially likely to be followed up at rural practices while digestive system, perinatal and pregnancy/childbirth problems were less likely to have further visits.

The patterns of elective referrals were similar at both locations: similar problems and age groups were provided with elective medical or surgical referrals. Rural practices arranged more emergency referrals for all of the seven most common types of problems (cardiovascular, mental health, injury/poisoning, respiratory, cancer/neoplasm, investigations, nervous system/sense organs). Non-medical referrals were somewhat more common at rural practices, especially to radiology, dieticians and dental services. The types of problems that were referred to non-medical services were comparable at both settings (injury/poisoning, pregnancy/childbirth, musculoskeletal, mental health).

The mean number of full-time equivalent practice nurses was lower at rural practices. A higher proportion of rural practices offered such services as evening surgery hours, group health promotion and doctors involved in maternity care, although fewer rural practices provided independent nursing consultations. Computerised records were common at both settings. Most practices regardless of setting operated as sole trader businesses. A higher percentage of rural practices undertook some form of formal needs assessment. Patient fees were consistently lower at rural locations.

Most practice nurses regardless of location identified their ethnicity as European. No rural nurses were Māori. Initial qualifications were similar among rural and non-rural nurses. Rural nurses had worked as a nurse for a slightly shorter duration than their urban colleagues. Although rural nurses spent slightly less time on average at work, both groups undertook a similar amount of patient contact. The duration of appointments and consultation fees were identical at both practice settings. A higher proportion of rural practices offered nurse clinics for a variety of medical conditions and services. Practice nurses at both locations were concerned with the provision of immunisations, health advice, dressings and repeat prescriptions. Rural practice nurses also were more likely to take blood, provide cervical screening and suture wounds.

14.2 Strengths and limitations of the survey

Strengths

- This report is based on survey data obtained from a reliable and representative sampling process.
- Clear definitions have been used for the variables in the study, and assistance was provided to improve the consistency of reporting by GPs.
- This study used a broadly similar methodology to other published reports in New Zealand (WaiMedCa)¹ that included rural and non-rural practices and comparable research undertaken in Australia.
- Data about rural and non-rural practices were obtained at the same relative point in time.
- This report provides the first detailed comparison of the rural and non-rural general practice workforce in conjunction with a comprehensive description of their daytime routine office hours' workload and the morbidity commonly encountered at both settings.

Limitations

- This report has not undertaken formal statistical analyses to assess the role of chance in the comparisons.
- Only daytime office workloads were assessed. The comparisons of after-hours workloads associated with rural and urban settings will be made in a separate report.
- This report has not considered any work undertaken by GPs at rural hospitals or as part of emergency responses during office hours. Unlike their urban counterparts, many rural GPs work at their local hospital.¹² The additional burden associated with hospital work has not been assessed in this report.
- In urban areas, patients can elect to attend other medical facilities (e.g. hospital Emergency Department or private Accident and Medical Clinics) that are not available in rural areas. Data from these other facilities have not been included in this report.
- GPs with low rural rating scale scores have been included with those with higher scores, thereby potentially diluting any differences between rural and non-rural practices.
- GPs serving 37% of the rural population were not sampled.
- The survey was based on patient visits to practices (utilisation) and does not represent a population-based assessment of their health needs.
- The data were concerned with visits rather than episodes of illness.
- There are some differences in the methods of the survey relative to similar work undertaken in Australia. It is possible that these differences may affect the ability to make direct comparisons between data.
- The categories used in this survey are broad and may not be able to discriminate actual differences that exist in the nature and type of problems that were presented to rural and urban practices.
- Some of the cross-tabulations may have involved a relatively small number of visits.
- The reliability and validity of the data have not been confirmed by independent measurements.
- Finally, the survey was not designed, and was not able, to capture a number of the important factors unique to rural practice. For example, the report was not able to describe any potential differences in the relationships between practitioners (and their family members) and their local community when the health care workers operated in small and possibly isolated rural communities. The Centre for Rural Health has provided a booklet describing the different ways that communities participate in rural practice.¹³

14.3 Definition of rural practice

In this review, “rural practice” has been defined using the Ministry of Health Rural Ranking Scale (see Appendix F). The scale was developed to assist with funding rural primary health care services in New Zealand and it is unique to this country. However, the scale employs concepts such as the remoteness of the practice (characterised as the travelling times to the nearest base hospital, GP colleague and practice boundary), and the on-call requirements of the GPs. Some of these concepts have been used by other researchers to define rural practice. However, because none have employed the Rural Ranking Scale, direct comparisons of the results from NatMedCa with those from other studies must be made with some caution.

14.4 Comparisons with results from other New Zealand reports

No previous New Zealand studies have comprehensively compared a national sample of patients who present during regular daytime office hours to urban and rural practices, and the problems they present. An earlier description of the organisation of general practice based on the results of the WaiMedCa survey has previously documented a number of differences between GPs located at either urban (Hamilton City) or rural (outside of Hamilton) locations in the Waikato.² The sampling methods and questionnaires employed in both the WaiMedCa and NatMedCa surveys were broadly similar, but the regions included and the years in which the surveys were conducted are markedly different.

In the earlier survey, based in the Waikato, Gribben et al observed that rural GPs (N=105) were more likely to be male (86% compared to 80% at urban practices) and a higher proportion of country GPs had graduated from an overseas university (54% versus 23%) (especially the United Kingdom).² Both of these findings are consistent with those obtained in this survey. The results from NatMedCa also suggest that there is a preponderance of male GPs in the rural workforce and a higher ratio of foreign graduates practised in rural areas. These two findings are also compatible with data obtained by Janes et al⁴ from a postal survey of 338 rural GPs. Janes et al also reported that a majority of rural GPs were male and many had graduated outside of New Zealand.⁴

Consistent with NatMedCa, urban and rural GPs in the Waikato region were previously noted to be similar in age (urban mean = 43.2 years, rural mean = 42.5 years) and GPs at both locations exhibited similar levels of membership to the Royal New Zealand College of General Practitioners (50% of GPs at rural and urban practices).² However, in contrast to NatMedCa, rural GPs in the Waikato had practised for a slightly longer period at their current location (14.5 years versus 13.9).²

In the study by Gribben et al,² the average number of GPs working at urban and rural practices in the Waikato was almost identical. The results from the current survey indicate that the average size of practices in urban areas was considerably larger (3.2 FTEs compared to 2.3 FTEs) than those in country locations. This may represent a significant change in the organisational structure of urban general practice, and suggests that urban GPs have adopted larger practice sizes. Working in larger practices may offer city GPs economic and professional advantages not available to rural GPs, because smaller and more diffuse populations cannot provide the viable financial support needed for a larger number of health professionals.

Gribben et al² reported that rural GPs worked, on average, a similar number of regular daytime office hours each week as GPs based in Hamilton City, but the average number of patients seen by rural GPs was higher (141 patients per week at rural practices compared to 126). Likewise, rural GPs in NatMedCa worked a similar number of half-days as their urban counterparts but saw more patients (a mean of 113 per week compared to 99). Consistent with the higher number of patients seen each week, rural GPs in NatMedCa were associated with more consultations that did not exceed 15 minutes duration (79.8% of rural consultations in this study were less than 15 minutes duration, compared to 73.1% of urban visits). By contrast, the results from WaiMedCa suggest that rural GPs usually booked patients for longer consultations (51% of rural GPs booked patients at less than 12.5 minute intervals compared with 65% of urban GPs).

In keeping with this survey's finding that urban GPs were presented with more problems each 100 encounters, previous results from WaiMedCa suggest that rural GPs (those based outside of Hamilton City) were required to deal with 138 problems every 100 consultations compared to 146 for their urban counterparts.¹ From this it would seem that rural GPs may provide shorter consultations on the basis that fewer problems are presented each visit. However, Gribben et al² did note that a higher proportion of the problems encountered by rural Waikato GPs were new ones (50% compared to 47% at urban practices). New problems may require more time to formulate a diagnosis and arrange treatment. Significantly, this study noted that a larger percentage of rural visits was associated with only one problem (60% of rural visits compared to 55% of urban attendances) and new problems were slightly less frequent at rural practices.

From the results obtained in NatMedCa it is therefore possible that rural GPs may be able to undertake more consultations, due to a number of possible factors: rural GPs may encourage patients to present only one or two problems per consultation, rural patients may choose to present fewer problems, urban practices may charge higher fees and therefore GPs/patients expect to deal with more issues each consultation, or more visits to rural practices may relate to accidents or injuries that are associated with fewer problems.

It is also possible that higher patient numbers at rural practices may be a result of a relative under-supply of GPs at those locations. In addition, non-rural patients have the option to access care from other facilities (such as family planning clinics or hospital emergency departments). Alternatively, it may represent problems with access for some urban dwellers, presumably on the basis of cost. It is notable, however, that potential barriers (especially distance and transport needs) to accessing GP care are also likely to exist in rural areas, and it is possible that consultation rates could be even higher if these potential factors were reduced. Data about relative morbidity and mortality rates are required in order to reliably assess whether health needs are being met by the current attendance rates to GPs at urban and country areas.

Early estimates of practitioner workload were based on measures obtained from national datasets.^{3, 14} Workloads were expressed as the number of patients seen each week, derived from general medical services claims data.² In 1986/87 the workloads reported by Malcolm and Clayton for the Auckland, Hamilton and Wanganui districts were 147, 148 and 150 patients per week, respectively.¹⁴ Data obtained by self-reported surveys have typically generated lower estimates of weekly consultation rates.² For example, a random survey of 104 GPs in Auckland in 1985 indicated that 126 patients per week were treated.¹⁵ Changes in the GMS subsidies have ensured that comparisons between utilisation data derived from national datasets and information obtained from practitioner surveys are no longer possible.²

The higher workload associated with rural GPs noted in this report may be explained by reference to an earlier study by Barnett, which concluded that the rural medical workforce was decreasing.³ Analyses of the geographical distribution of the medical workforce have highlighted increasing urban-rural differences in GP availability since 1980.³ The relative number of full-time-equivalent GPs appears to have decreased since 1980, and the ratio of the population to each GP may have increased.³

The higher number of half-days worked by rural GPs underscores the arguments made by some GPs that they have less time to undertake professional development and engage in leisure activities.¹⁶ In the context of increasing workload and less time away from providing patient care, some rural GPs have suggested that levels of stress among the workforce are high and episodes of emotional and mental exhaustion or “burn-out” are becoming more common.¹⁷ This report does not consider the workload associated with out-of-hours work, although previous reports have identified that onerous on-call responsibilities are one of the most important areas of stress for rural GPs.⁷

The most comprehensive survey of the workload and on-call rosters of rural practitioners has been provided as part of the New Zealand Annual Rural Workforce Survey undertaken by Dr Martin London.¹⁸ The 2002 survey examined the state of rural practice during the 12 months before December 2002 and followed up on previous reports from 2000 and 2001. The report presented workforce data from 216 rural practices based on a 100% return of known rural providers, defined according to the Rural Ranking Scale. Some 477 rural GPs (396 full-time equivalents) were included.

The descriptive data about these practitioners are consistent with the data presented in this NatMedCa report: approximately one-third were female, the age distribution of practitioners was similar (13% under 35 years, 41% aged 36 to 45, 31% aged 46 to 55, 12% aged 56 to 65 and 3% aged over 65), and an identical proportion (38%) of GPs had been in practice at the same location. The unique data about the turnover in the rural workforce identified that in 2001 there was a small gain, whereas in 2002 the situation was reversed. Most departing doctors were relatively young (under 45 years) and many had spent less than two years in rural practice. Importantly, the survey also described the workload of the practitioners and nurses who were involved in on-call rosters in rural areas. One-third of rural areas were identified to have doctor: patient ratios above 1:2000 and some 84 practitioners worked more than 1:4 on-call rosters. The report concluded that there were still large gaps between the current and the desirable rural workforce. While an increase in the roles of rural nurses and recent improvements in Ministry of Health funding for on-call rosters were noted, concerns were expressed about the number of young doctors who were departing rural practice and the implications these departures had for the perceived desirability of working in a rural location.

Despite the absence of data about the morbidity encountered in primary health care, other sources of information about the prevalence of common disorders are available in New Zealand. Community surveys of major cardiovascular, endocrine, respiratory and mental health conditions have been undertaken.^{19, 20, 21} It is reasonable to expect that patients with these relatively common conditions would be presenting to GPs frequently for the diagnosis and management of these disorders and their associated complications. It is therefore not surprising that respiratory, cardiovascular, diabetes and mental health conditions are common problems presenting to GPs at rural and non-rural practices. Relative differences in the frequency of presentation of these problems at rural versus urban practices may relate to dissimilarities in the underlying prevalence of the conditions, variations in patient access, or disparities in the diagnostic or management styles of GPs at different locations. Likewise the higher rate of injuries presenting to country practices may be due to the more physically hazardous nature of rural life, or the relative lack of other places to obtain care (i.e. accident and medical clinics or hospital-based emergency departments). The lower rate of mental health problems identified at rural practices may also be due to differences in the prevalence of these conditions between rural and non-rural areas, variations in the treatment-seeking

behaviour of patients with these conditions, or differences in the identification of these problems by GPs working in different settings. Further work is needed to define these issues and explore questions such as geographical variations in the incidence rates of various conditions and the reasons why patients might choose to consult a GP or another health provider for the treatment of various problems at different locations.

There are some interesting findings when comparing rates of GP attendance for various conditions with hospital discharge rates and mortality figures for the same general groupings.¹⁸ While overall mortality rates are similar between rural and non-rural residents, hospital admissions rates are generally lower for most conditions. The most notably consistent finding is the high rate of GP attendance for injury and poisoning and the relatively high rates of hospital discharge and mortality among people who dwell at rural locations. Perhaps the most striking discrepancy between rural GP attendances and hospital admissions or mortality rates was that respiratory conditions were the most common reason for attendance at rural practices but were clearly a less frequent cause of hospital admission. Mortality rates for important respiratory conditions (e.g. chronic obstructive airways disease) also appeared lower at rural locations. It should be noted that these comparisons are only tentative. There are important differences in the definitions of the samples and many potential confounders are present, so more detailed research is required before reliable conclusions could be made from analyses of these data.

The findings from this report are broadly similar to the limited amount of published data available about GP prescribing in New Zealand, although previous reports have not compared rural with non-rural practitioners. A series of papers in the *New Zealand Family Physician* by members of the RNZCGP Research Unit have presented data from an electronic database involving 49 practices and approximately 150 GPs.^{22, 23, 24} The consulting population of 225,348 patients served by the practitioners included a slight over-representation of females and higher socioeconomic groups, but the findings from this report are generally comparable with those presented in the papers authored by the RNZCGP Research Unit. Consistently, both this report and the RNZCGP Unit series have identified that the number of prescriptions and the amount of items were higher among older people. Similar therapeutic groups and sub-groups were listed among the most frequently prescribed pharmaceuticals in both this report and the RNZCGP data. However, in contrast to the RNZCGP research, the findings from this report have not demonstrated a clear increase in prescribing rates among women compared to men. The over-representation of females in the RNZCGP database may, at least in part, explain this discrepancy.

The lower overall rate of follow-up at rural practices and some variation in follow-up rates for specific conditions may indicate differences in the way that GPs in different locations manage various conditions. In turn, these variations may be due to discrepancies in the access that rural GPs and their patients have to secondary care services. Higher rates of general practice follow-up may be due to relatively better access or more acceptable rural GP services. That is, GPs in rural settings could be providing follow-up for conditions usually monitored by specialist clinics in urban settings. Thus higher rates of follow-up at country practices for patients with haematological disorders, for example, may be due to the relative lack of other services for these patients in country areas. Likewise, the lower rate of follow-up for patients with pregnancy/childbirth problems may be due to the relatively good access for women to alternative obstetric services in rural areas. Alternatively, higher rates of GP-based follow-up may indicate the possibility of over-servicing among GPs whose practices are not otherwise very busy. Further research needs to be conducted to more carefully elucidate these relationships.

The consistently lower use of laboratory tests at rural practices associated with problems related to most organ systems suggests that some factor(s) unique to rural areas may be an important determinant of laboratory usage. This finding raises issues about possible variations in the underlying prevalence of various disorders, uncertainties about the attention-seeking behaviour of patients in different locations, questions about variations in the geographical access to diagnostic services, and potential differences in the diagnostic behaviour of GPs working in different settings. This survey is unable to determine the relative importance of any of these factors. Further research needs to be undertaken in this area, especially in the light of suggestions that rural patients may be diagnosed later in the course of their illness and may present with more advanced disease.²⁵

Prescribing behaviour and the provision of non-pharmacological treatments were similar at rural and non-rural practices. That is, similar medications were prescribed at both locations for patients presenting with similar problems. However, overall, a prescription was provided at relatively fewer rural practice visits. This finding and the observation that fewer treatment items were provided per visit may relate to the higher number of visits to rural practices at which only a single problem was presented to the GP. In addition, the higher rate of presentation to rural practices of some problems that do not require drug treatment (such as injuries) is also likely to be important. The lower rate of some non-drug treatments at rural practices is also likely to be related to differences in the common problems treated at rural versus non-rural practices. Thus the relatively higher rate of dressings provided at rural practices probably reflects the relative frequency of injuries at these practices.

Referral patterns were similar at both locations: similar problems and age groups were referred for further investigation and treatment at both rural and non-rural locations. The similarity in the rates of routine referrals suggests that access to most secondary surgical and medical services may be similar. A number of new arrangements for surgery in rural locations, such as outreach clinics and mobile facilities, have recently been provided.²⁶ Higher rates of emergency referrals underpin the role of the rural GP as a main initial provider of medical care to most patients. The lack of a readily available ambulance service in some rural areas and the absence of a hospital emergency department results in rural GPs receiving a wider spectrum of conditions than their urban colleagues.

The similarities and differences in the problems managed at rural and urban practices have important implications for medical educators. The large overlap in the main problems managed at both rural and non-rural practices suggests that medical students could be expected to obtain a good general grounding in common primary health care problems at either location. However, the relative excess of urgent conditions and relative preponderance of injuries and musculoskeletal problems suggest that these areas need emphasising in both undergraduate or postgraduate courses designed to train rural GPs. Problems in rural practice need to be, at least initially, managed without specialised equipment and personnel, and additional training is needed to give GPs the necessary confidence and skills. A number of new undergraduate and postgraduate initiatives are planned for rural medical education, aimed at providing more on-site training in rural general practice.²⁷

A number of advantages for students from rural medical placements have been cited, including: exposure to generalist practice that traverses primary to tertiary care, more continuous and integrated care, and more “hands-on” experience managing trauma and undertaking procedures.^{27, 28} Advantages for rural practices and communities have also been suggested, such as the better provision of up-to-date, academic services and more resources for the clinical team.²⁸ Exposure to rural practice is viewed as a key step in securing new recruits into the rural medical workforce.^{27, 28}

Previous work by the Centre for Rural Health has surveyed the characteristics, workload and activities of practice nurses in New Zealand.²⁹ The work was based on the responses from 85 nurses who returned questionnaires disseminated to 500 rural nurses on a list compiled by the Centre. The characteristics of the respondents were similar to the features identified in this report. The mean reported age of the participants was identical (46 years), most nurses identified themselves as New Zealand European (approximately 90% in both cases), and most (around 70%) were qualified general and obstetric nurses (RGON). Unfortunately, the questionnaire did not capture comparable information about work hours and duties; however, 47% of nurses worked only part-time and another 40% worked more than 40 hours per week. Some 67% indicated their participation in health promotion work and approximately half of the nurses participated in an on-call roster for accident and emergency care, although usually with GP, ambulance or hospital back-up.

The Centre for Rural Health report identified that rural nurses were often from rural backgrounds, had a sense of confidence in their work, worked co-operatively with a wide range of health professionals and used local opportunities to maintain competence.²⁹ However, the authors also indicated that the work of rural nurses appeared to be diverse and fragmented, there appeared to be “a vacuum in relation to the role of nurses in rural areas”, and the “coherent professional practice of rural nursing” was not evident.²⁹ The report recommended some specific changes, such as improvements in the recruitment of nurses from a more diverse ethnic background, along with broader reforms such as the establishment of a clinical career structure for nurses specialising in rural nursing and more definition of the scope of rural nursing practice.²⁹

14.5 Selected policy implications

Findings from this survey can be related to some of the conclusions presented in a report presented by the Rural Expert Advisory Group to the Ministry of Health in 2002.³⁰ The Group highlighted ways to create an effective rural primary health care sector which could successfully implement the Primary Health Care Strategy, largely using primary health organisations (PHOs) and District Health Boards. The main overall aim of the report was to identify ways to create accessible and appropriate primary health care services for people living in rural New Zealand. This aim is one of five service delivery areas on which the Government wishes to focus over the short to medium term.³¹ Consistent with this survey, the report also used the Rural Ranking Scale to define rurality (although a Statistics New Zealand definition was also presented in relation to health status data). The report addressed rural issues under three headings: context, access and workforce.

Context. The Advisory Group report suggests that some rural areas may be early leaders in the development of PHOs on the basis that many rural communities may have already established health committees or trusts that could represent the forerunners of PHOs. The limited data available from this survey indicate that a small number of rural practices are constituted as trusts and a significant proportion of rural practices already undertake some form of formal community needs assessment or locality service planning.

This survey was restricted to the characteristics and activities of nurses and doctors working in primary care and has not considered their relationships with other health providers in rural areas. Some areas have rural hospitals that are staffed by nurses and medical officers, ambulance services exist in many regions, and community pharmacists are common in rural towns. Co-ordinated relationships between these health professionals is recognised as providing an important element in the effective delivery of health services in rural areas.

Access. The present report has identified that GPs in rural areas undertake comparatively more consultations during normal working hours than their urban colleagues. The higher number of consultations may be, at least in part, a consequence of relatively low GP:population ratios (i.e. few GPs to serve the population) in some rural areas.¹⁸ The high attendance rate contrasts to previous work that has identified transport difficulties for many people living in country areas. In keeping with a number of rural areas where there are high levels of deprivation, rural GPs typically charge less for their services than their urban counterparts. Rural practitioners' lower level of referrals to some health professionals may be a function of the relative scarcity of these workers in rural areas and the difficulties associated with transport for patients in obtaining their services over longer distances. Relatively higher rates of prescribing may be, in part, a response to the relatively limited alternative types of care. Significantly a large percentage of country people (63%) in the Rural Women New Zealand's Rural Health Survey noted that the most important barrier for rural households in accessing health care from GPs and pharmacists was cost, not distance (19%).³²

Issues around access and appropriateness for Māori will be addressed by another report in this series. Limited choice regarding access to female practitioners appears to be an issue for women in rural areas, although this deficiency may be ameliorated by the presence of rural practice nurses who were noted to be exclusively female in the sample obtained by this survey. Access to various specialist services may be compromised in rural areas: rural GPs may refer patients to psychiatrists at lower rates than their urban colleagues, even though presentations for mental illness are relatively common in rural practice, because fewer specialist services are available in country regions. A survey of Otago-based rural GPs indicated that limited time, poor liaison with psychiatric services and inadequate training, compounded by poor access to services, were key problems in providing mental health care in rural areas.³³ A variety of service delivery models have been proposed for rural regions to help improve access to services.³⁴

Workforce. The Advisory Group advocates a focus on retaining the rural health workforce. Heavy workloads, demanding on-call rosters and difficulties with taking leave have been cited by rural GPs as key issues for rural practitioners.⁴ This report has not considered out-of-hours work and therefore has not been able to fully assess the demands of rural practice. However, this survey has identified that during daylight hours rural GPs on average see more patients than their urban colleagues.

The report from the Rural Expert Advisory Panel raises concern at the ageing of the primary care workforce. Data from this survey indicates that the average age of GPs and nurses in both rural and non-rural areas was between 44 and 46 years. In order to attract younger primary health care workers the Panel advocates various strategies, such as expanding training places and financial incentives. Recent provision by government of some \$32 million over three years directed at both Retention Funding and Reasonable Roster Funding has met with widespread acceptance.²⁸

The relatively high use of computers among rural practices (81% provided computerised patient records) indicates the potential for technology to assist service delivery (e.g. through telemedicine) and to provide support and training to rural practitioners, possibly by means of distance learning courses.

14.6 International comparisons

A Comparison of Country and Metropolitan General Practice, published in Australia in 1993, offers the most important international comparisons with this survey.⁷ The Australian study was based on a representative survey of 231 GPs drawn from the Queensland, New South Wales and Victorian areas between October 1990 and October 1991. The research involved a generally similar sampling process and comparable questionnaire to those used in NatMedCa, and described the GPs, patients and morbidity associated with 63,092 primary health care visits over a 12-month period.⁷

Results from both the Australian study and NatMedCa suggest that rural GPs are less likely to be female and more likely than their urban colleagues to have graduated overseas. In both surveys rural GPs typically undertook more consultations each week compared with their urban colleagues. In Australia, on average, urban GPs recorded only 116 visits each week, while rural GPs documented some 153 consultations.⁷ Both of these results are considerably higher than the averages associated with New Zealand doctors (113 at rural practices and 100 at urban locations), although it is important to note that these NatMedCa results do not include visits made after-hours. Consistently, the proportion of visits made by new patients did not differ between rural and urban GPs in either country. However, the number of reasons per visit was slightly higher at rural practices in Australia, but in New Zealand the reverse was recorded. Likewise there was a discrepancy between the two countries in the number of problems treated by rural GPs. In New Zealand, the average number of problems per 100 visits was higher at urban compared to rural practices, whereas the number was similar at Australian practices. In both countries the proportion of visits associated with new problems was similar at both urban and rural locations.

Rural GPs in Australia and New Zealand were less likely to prescribe medication compared with urban GPs. However, there were differences between the countries in the referral and laboratory ordering rates. While country GPs ordered fewer tests than urban GPs in New Zealand, the opposite was evident in Australia. Although rural New Zealand GPs' referral rate for specialist treatment was lower than that documented in Australia, there was no difference in the relative frequency of referrals between rural and urban practices between the countries.

A considerable body of literature in Australia has documented the difficulties faced by rural and remote GPs. Issues such as long working hours, constant on-call

requirements, the lack of support and access to specialist services, and a paucity of locum cover have caused many rural GPs to express frustration at the demands of rural practice and have resulted in many experienced GPs leaving rural work, while young graduates are discouraged from entering the rural workforce.³⁵ In response, a number of policy initiatives have emerged at state and federal levels offering a variety of incentives for rural GPs to remain in their vocation.⁶ Similar calls have emerged in New Zealand for the provision of more government support to rural GPs.⁵ Important considerations for rural New Zealand GPs appear to be a reduction in on-call work, guaranteed time out of the practice, and consideration of options for partners and children.^{36,37}

Finally, in Australia a novel approach to characterising the complexity of patient care in different geographical locations across this large continent was provided by Humphreys et al.³⁸ The study surveyed GPs in different locations using sentinel measures of practice complexity and found that the proportion of GPs providing complex services increased with increasing remoteness. Isolated GPs in remote areas managed myocardial infarctions to a higher level than GPs in larger centres, and were more likely to administer cytotoxic drugs, perform forensic examinations, stabilise injured patients, and co-ordinate discharge planning than their urban colleagues. This alternative analysis provides further insight into the spectrum of care provided by rural GPs and could help augment the findings from epidemiological surveys. It is possible that because NatMedCa did not include any assessments of complexity, it may have missed significant differences between rural and urban practice.

Important comparisons between rural and non-rural general practice have also been undertaken in other Western countries, most notably the United Kingdom, and have generally obtained results consistent with those documented by NatMedCa. They have described a similar pattern of longer working hours and more patient visits at rural compared to urban practices,³⁹ relatively higher rates of injuries treated at rural practices and a lower number of visits by patients with mental illnesses.⁴⁰

Although there are major differences in the organisation of primary health care in the United States compared to New Zealand, information from the US-based National Ambulatory Medical Care Survey (NAMCS) still provides some informative comparisons with the results from NatMedCa.⁴¹ Both surveys have used similar structured practitioner questionnaires to define the workload and patient characteristics of primary health care attendees. Consistently, both surveys have documented the importance of musculoskeletal injuries in the rural GP's workload and the less-frequent provision of some preventive services in rural areas.⁴¹ Overall, though, both studies have largely shown that there are many important similarities in the nature and organisation of primary health care regardless of whether it is provided at a rural or an urban setting.

Finally, an observational study of inner city versus rural family physicians based in Ohio provides an interesting new methodology and contrasting results to the findings from NatMedCa.⁴² The study of 4454 consecutive patients presenting to 138 family physicians involved direct clinical observation by research nurses rather than practitioner-completed questionnaires, and concluded that inner city practices were associated with more complex consultations than those based at rural locations. The nurses documented that inner city practices were characterised by patients with multiple, chronic medical and emotional problems that typically required longer and more demanding consultations. However, the definition of rural location was not robust in this study and differences in the characteristics of the populations and practices limit the applicability of the findings to New Zealand. Nevertheless, the methodology provides an interesting and potentially complementary alternative to practitioner-based surveys, which are demanding for busy GPs. In order to overcome the potential major limitation of the Hawthorn effect, which can operate in this type of direct observational study, the researchers endeavoured to blind participants to the study hypotheses and positioned the nurses in an unobtrusive part of the clinic.

14.7 Final conclusion

A comparison of practitioner workloads and patient characteristics between rural and non-rural settings based on data obtained from the NatMedCa survey has reported a number of major similarities between rural and non-rural GPs, patients and the problems they present during daytime regular office hours. Several interesting differences have also emerged. Further work is needed to clarify the extent and significance of these differences and to elucidate the factors that have led to these results. Some of this work will be undertaken by more detailed analyses of the results from NatMedCa, and these reports will be published in the future.

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Appendix F: Rural Ranking Scale

- Please ring the number of points you are claiming under each heading.
 - Read the definitions with each section.
 - Note that all travelling times refer to one-way journeys by car in normal daytime conditions travelling within speed limits.

1. Travelling Time from the Surgery to Major Hospital (see below for a list of cities with major hospitals)

Major hospital within 30 minutes	0
Major hospital within 30-45 minutes	5
Major hospital within 45-60 minutes	10
Major hospital within 60-90 minutes	15
No major hospital within 90 minutes	20

Distance from Surgery to Major Hospital (km) _____

Northern Region: Major Hospitals: Auckland, Whangarei
Midland Region: Major Hospitals: Hamilton, Rotorua, Tauranga, New Plymouth, Whakatane
Central Region: Major Hospitals: Wellington, Upper Hutt, Palmerston North, Hastings, Wanganui, Masterton, Gisborne
Southern Region: Major Hospitals: Invercargill, Dunedin, Timaru, Christchurch, Ashburton, Nelson, Blenheim, Greymouth

2. On Call Duty:

- The on call duty is calculated on the number of GPs available to take part in an on call roster. This does not include *bona fide locums*.

1 in 6	10
1 in 5	10
1 in 4	10
1 in 3	20
1 in 2	30
1 in 1	40
- In a town where there is more than one on call roster the total number of GPs in the town is the number available to take part in a roster. For example a town with two practices one with three doctors doing a 1 in 3 roster and another practice with two doctors doing a 1 in 2 roster the total number of GPs available to take part in an on call service is five.
- If GPs agree that a colleague need not do call because of poor health that GP is considered as not being available to take part in the on call roster.

3. On call for Major Trauma: This item reflects the back-up available for rural GPs in emergencies, and the likelihood that one may need to accompany the Ambulance

Not on call for Major Trauma.....	0
On call, but with double-crewed road ambulance with at least one paramedic (at all times) available within 30 minutes.....	5
On call, with other ambulance arrangements.....	15

4. Travelling Time from Surgery to Nearest GP Colleague

- This includes partners in your own practice and other GPs in your town.

0-15 minutes	0
15-60minutes	5
over 60minutes	10

Distance to nearest GP colleague at work (km) _____

5. Travel Time to most distant practice boundary

- You must be the CLOSEST doctor to that boundary, but you may include the area covered when on call

less than 30 minutes	0
30-60 minutes	5
over 60 minutes	10

6. Regular (at least once monthly) Peripheral Clinics

This item has been included to recognise increased costs of running peripheral clinics away from the base surgery

No	0
Yes	5

TOTAL POINTS: _____

Glossary and List of Acronyms

ACC: Accident Compensation Corporation – administers the New Zealand accident compensation scheme covering work and non-work injuries.

Actions: actions undertaken by a GP – include prescribing, dressings, physical treatment, surgery, screening procedures, immunisation, reassurance, counselling and certification.

A&M: Accident and Medical Clinics – provide extended-hours primary health care cover and allow access without an appointment. The majority are situated in Auckland or Hamilton.

ATC: Anatomical Therapeutic Chemical – a system for classifying pharmaceuticals.

Capitation: a funding arrangement under which a general medical practitioner, or a group of practitioners, receives funding based on the number and characteristics of the patients registered with them for care.

BP: blood pressure.

CNS: central nervous system.

Community-governed practices: primary health care providers whose governance rests with a community body and in which the practitioners and other workers do not share profits.

CSC: Community Services Card – eligibility depends on economic need and allows access to government subsidies for primary health care and medication.

Disability: includes short-term (e.g. influenza) as well as long-term (e.g. sequelae of stroke), major and minor.

ECG: electrocardiograph.

ED: Emergency Department – operated at the public hospital in each large town.

ENT: ear nose and throat.

Fe: Iron.

FTE: Full time equivalent.

GMS: General Medical Services benefit – a payment claimed from the government by GPs on behalf of eligible patients.

GP: general practitioner.

Hidden agenda: a problem the patient wishes to have dealt with but has difficulty mentioning.

HUHC: High User Health Card – eligibility depends on frequent use of primary medical care and allows access to government subsidies for primary health care and medication.

Independent practitioners: self-employed practitioners not belonging to an IPA.

IPA: Independent Practitioners Association – undertakes contract negotiations, administrative functions and programme development for a group of GPs.

MOPS: maintenance of professional standards – a system for ongoing education of GPs.

NAMCS: National Ambulatory Medical Care Survey – an ongoing US survey which was the basis for the methodology used in this study.

NatMedCa: National Primary Medical Care Survey 2001/02, of which this document is the first report.

NSAIDs: Non-steroidal anti-inflammatory drugs.

NZ: New Zealand.

NZMA: New Zealand Medical Association.

NZNO: New Zealand Nurses organisation.

PHO: Primary Health Organisation.

Problems: issues identified by GPs for which the patient requires assistance; they include standard (including provisional) diagnoses, symptoms, psycho-social difficulties, the need for prescription medicines, practitioner-identified issues, administrative tasks and prevention or screening.

Problem status: new – first presentation of a problem; short-term follow-up – review of a problem expected to resolve completely; long-term follow-up – review of a chronic problem; long-term with flare up – a chronic problem with deterioration or new complication; preventive – a visit for screening or immunisation, etc.

Rapport: a GP's perception of the quality of the relationship with the patient during consultation.

READ: a classification and coding system for reason-for-visit and diagnosis in primary medical care, officially adopted in New Zealand.

Referral: the direction of a patient to an additional source of care.

RfV: Reason-for-visit – the statement of a patient’s reason for visiting the GP.

Sed: Sedimentary.

Severity: a GP’s assessment of the capacity for harm of the most severe of the patient’s problems; this covers life-threatening (applies only to a new problem), intermediate and self-limiting.

RNZCGP: Royal New Zealand College of General Practitioners.

Social support: includes assessment of primary and family/whānau relationships, housing and neighbourhood, work, transport and financial resources.

Treatment: synonymous with action.

Uncertainty: the degree of a GP’s lack of certainty as to how to manage the patient (uncertainty is low if diagnosis is uncertain but the need for emergency referral is clear).

Urgency: a GP’s assessment, in hindsight, of the time within which the patient should have been seen; applied to the most urgent problem detected.

Visit: an interaction between GP and patient; synonymous with consultation and encounter.

WaiMedCa: Waikato Primary Medical Care Survey 1991/92 – the previous survey similar to that reported here.

White Pages listings: the section of the telephone directory that lists Medical Practitioners and Clinics.