

Primary Health Care in Community-governed Non- Profits: The work of doctors and nurses

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

Report 2

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Citation: Ministry of Health. 2004. *Primary Health Care in Community-governed Non-Profits: The work of doctors and nurses: The National Primary Medical Care Survey (NatMedCa): 2001/02 Report 2*. Wellington: Ministry of Health.

Published in August 2004 by the
Ministry of Health
PO Box 5013, Wellington, New Zealand

ISBN 0-478-28234-6 (Book)
ISBN 0-478-28235-4 (Internet)
HP 3814

This document is available on the Ministry of Health's website:
<http://www.moh.govt.nz/natmedca>



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Acknowledgements

The NatMedCa study was funded by the Health Research Council of New Zealand. Practical support from the academic Departments of General Practice and from the Royal New Zealand College of General Practitioners is also thankfully acknowledged. We are extremely grateful to the organisations and individual doctors, nurses and support staff, and their patients, who contributed their time and effort to this research project.

Peter Crampton carried out work on this paper while he was at Johns Hopkins University as a Harkness Fellow in Health Care Policy, a programme funded by the Commonwealth Fund.

We are grateful to the Advisory and Monitoring Committee chaired by Professor John Richards. Members are: Dr Jonathan Fox, Dr David Gollogly, Dr Ron Janes, Ms Vera Keefe-Ormsby, Ms Rose Lightfoot, Ms Arapera Ngaha, Dr Bhavani Pedinti, Dr Jorgen Schousboe, Mr Henri van Roon, and Dr Matt Wildbore.

Dr Ashwin Patel developed key coding instruments and assisted with the coding of clinical information. Marijke Oed provided secretarial assistance, Andrew Sporle gave advice on Māori health issues, and Barry Gribben provided consultancy services. Sandra Johnson, Wendy Bingley and Lisa Fellowes all contributed substantially at earlier stages of the project.

We would like to extend our thanks to the following reviewers, who provided helpful and insightful comments on an earlier draft: Julia Carr, Barbara Starfield, John Richards, Jim Primrose and Peter Glensor.

We would also like to thank Alastair Scott and Clare Salmond, who provided statistical advice.

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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 six primary health care practices classified as community-governed non-profits. Other reports in the series describe private family doctors, Māori doctors, 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 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.

Community-governed non-profits met at least two of these three criteria:

- they had a community board of governance
- there was no equity ownership by GPs or others associated with the organisation
- there was no profit distribution to GPs or others associated with the organisation.

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. The results presented here relate to 44 practitioners (24 doctors and 20 nurses) employed at six community-governed non-profit practices. The findings include the following.

- Community-governed non-profits served a young population, 19.4% of whom were Māori, 34.1% Pacific and 24.0% European, and 66.1% of whom had a Community Services Card.
- Of patients attending non-profits, 23.2% were not fluent in English, and the majority lived in the 30% of areas ranked as the most deprived by the NZDep2001 index of socio-economic deprivation.

- The mean number of visits to the practice over the previous 12 months was 6.8 for visits to doctors and nurses combined, 6.7 for visits to doctors, and 7.0 for visits to nurses.
- GPs working in non-profit practices tended to be female, young and relatively new to general practice.
- In total, over one-quarter of patient visits were longer than 20 minutes (18.8% and 41.6% for doctors and nurses respectively), and about half were between 10 and 15 minutes (59.2% and 34.7% for doctors and nurses respectively).
- For doctors, by far the most frequent type of new problem was respiratory (16.2 per 100 visits), followed by skin problems and infections/parasites. For nurses the most frequent new problem was actions (6.6 per 100 visits), followed by respiratory (5.9 per 100 visits).
- Overall, about a quarter of visits resulted in a test or investigation. Nearly 20% of visits resulted in a laboratory test, which were roughly evenly split between haematology, biochemistry and other lab tests.
- A total of 67.3% of patient visits resulted in a prescription (75.2% for doctors and 53.1% for nurses), and a total of 77.2% of visits resulted in some other form of treatment (80.2% for doctors and 71.9% for nurses).
- Overall, 65% of visits resulted in suggested follow-up within three months, and over one-fifth resulted in some form of referral.

Conclusions. Given the characteristics associated with private community-governed non-profits, this ownership form deserves further research and detailed policy consideration to explore its role either in providing more extensive coverage for low-income and minority populations, or as a preferred mechanism for providing care to general populations. The capacity of community-governed non-profit practices to serve diverse ethnic and low-income population groups highlights for communities, policy makers and purchasers the hitherto relatively undeveloped potential of this alternative system of ownership and governance to deliver care for under-served populations and shape the purpose and function of primary health care practices.

1 Introduction

This report describes the characteristics of practitioners, patients and patient visits for six primary health care practices classified as community-governed non-profits. The information in this report complements that provided in the other reports in the series. In particular, it should be noted that more than half the community-governed non-profits included in the NatMedCa survey were Māori organisations, and are not described here but in the Māori report.¹ In order to gain a more complete picture of community-governed non-profit primary health care in New Zealand, this report should be read alongside the Māori document. As a part of the NatMedCa work programme, more detailed studies are under way comparing the characteristics of community-governed non-profits with their for-profit counterparts. The results of these comparative studies will be reported in a forthcoming report in this series and in the health services research literature.

1.1 Ownership

Ownership comprises the rights to use an asset, to change it in form, substance or location, and to transfer or sell these rights.² Ownership confers governance responsibility (ultimate control) for an organisation, and accountability for its actions. Primary health care organisations can be classed as (1) government owned and operated, or (2) privately owned and operated, with the latter being divided into those responsible to a community-governance board versus those that are not. Community governance seeks to ensure that an organisation is in the control of the users, constituents or clients of the organisation.³

The classical distinction between non-profit and for-profit rests largely on the non-distribution constraint – a non-profit organisation may not lawfully pay its profits to owners or anyone associated with the organisation.⁴ As with most organisational typologies there is an inevitable blurring of organisation forms – for example, general practices in the UK have characteristics in common with non-profit entities, most notably the restrictions placed on their capacity to charge patients and therefore their restricted ability to generate and distribute profits. Typically, however, government organisations, irrespective of their specific governance arrangements, are primarily accountable to government, private for-profit organisations are principally accountable to their proprietary owners or share-holders, and private non-profit organisations are mainly accountable to their governing body. Despite the blurring of ownership boundaries, clear differentiation between the public and private spheres is essential if there is to be accountability for the spending of public funds.

In a broad social policy context, Salamon has outlined a schema that categorises financing as public or private, and delivery as public (national or local) or private (non-profit or for-profit).⁵ This schema allows for simple classification of primary health care along the public/private axis (Table 1.1). Further to this schema, there is a spectrum of for-profit behaviour in health, from proprietary-style general practice (as in the UK and New Zealand) to entrepreneurial investor-owned organisations (an increasingly common US phenomenon). Proprietary health services are independent, owner-operated organisations (typical of general practices in New Zealand, Australia and the UK), and investor-owned are usually part of multi-facility systems whose stock is publicly traded and whose owners therefore have little if any direct contact with the institution.⁶ To date there has been little empirical research on differences in the structure and behaviour of proprietary for-profit primary health care organisations in comparison to non-profits. Instead, policy makers have relied on theory and empirical evidence from other sectors.

1.2 Perspectives on non-profit ownership

Many theories have been formulated to explain the scale and range of non-profit activities in different countries.^{4 7 8, p.11 9} These theories can provide a basis for understanding and interpreting the findings of the NatMedCa survey, and for forming policy recommendations based on these findings. Some of the more important theoretical perspectives derive from standard economic, social and political frameworks.

Irrespective of which theoretical orientation is adopted, empirical observations suggest that non-profit organisations (predictably) are able to fulfil a range of social functions that may be of great use to policy makers. Advantages and disadvantages of non-profit primary health care organisations are briefly summarised below and are discussed in more detail elsewhere.¹⁰

Experimenting with policy options: Overseas analysis suggests that non-profits can be expected to experiment with policy options – such as innovative service delivery mechanisms and new approaches to funding – and occupy niche roles because they are less bound by tight democratically based accountability structures than are government organisations.¹¹ This freedom to experiment with policy options may be diminished in circumstances where non-profits are bound by highly specified contracts with government. Salamon argues that this type of “third-party government” has the advantage of making possible democratically responsive priority and expenditure decisions, while leaving operational matters to smaller organisations closer to the problems being addressed.^{12, p.110}

Table 1.1 Funding and ownership of primary health care in New Zealand

Ownership			Funding	
			Public	Private
Public			For example, special medical areas; hospital A&E departments	No examples in New Zealand
Private	For profit	Non-community governed	For example, most private GPs and A&M centres are partially publicly funded	For example, some private GPs are funded largely via private sources (insurance and patient charges)
	Non-profit	Non-community governed	For example, some IPAs are structured as non-profits	No examples in New Zealand
		Community governed	For example, Health Care Aotearoa practices	No examples in New Zealand

Note: IPA = independent practice association.

Responsive to minority needs: Non-profits can be expected to respond to the needs of minority community interests⁹ (e.g. minority ethnic groups) because their governance boards are better able to closely represent minority groups compared with their for-profit counterparts, whose governance structures are likely to reflect the interests of the proprietary owners or share-holders. From a theoretical standpoint this responsiveness to minority needs may reflect a basic motivation arising from the failure of government and for-profits to serve minority populations. Salamon argues that it may also reflect the interdependency of government and the non-profit sector insofar as the non-profit sector, unlike government, is unconstrained by the needs of the “median voter”.⁹

In any event, the capacity of non-profits to independently represent the interests of minorities assumes great importance in New Zealand, where Māori have striven to establish primary health care services tailored to meet their needs. Strongly associated with the rapid growth in the number of Māori health organisations since the early 1990s has been a Māori political philosophy oriented towards self-determination and increasing control over the social determinants of health. This philosophy has found expression in primary health care, where Māori-owned services are seen as reclaiming the right to fashion and control services so that they specifically meet the needs of Māori communities.¹³ The majority of Māori-owned primary health care organisations are structured as non-profits, have boards of governance representing the local Māori community, and are funded largely through contracts with government agencies.¹⁴ In this view, government is using the non-profit sector to address long-standing unmet needs of the indigenous population in response to historical and contemporary injustices and government’s obligation to Māori under the Treaty of Waitangi.

Providing public goods: Economic theories suggest that non-profit primary health care organisations are more likely than for-profits to produce public goods or quasi-public goods; that is, goods that yield both public and private benefits (are beneficial both to the individual as well as the population).^{7 15} Examples in primary health care include immunisation and substance abuse programmes. New Zealand evidence suggests that the objectives of non-profit primary health care organisations mirror very closely those of contemporary government.^{16 17}

A convenient solution: Non-profits may act as a “convenient solution” for government, allowing the impression that difficult social problems related to the universal provision of primary health care services are being addressed, thereby blunting more extensive policy development and investment.^{18, p.114} In this formulation, non-profits provide governments with a socially acceptable mechanism to avoid their fundamental social responsibilities. Historically, New Zealand has not had universal access to primary health care services, and there is strong bipartisan political support for non-profit primary health care organisations to help to target specific populations in need.¹⁹

Loosening of central accountability: The use of third-party providers by increasing private sector involvement in programme delivery loosens the accountability structures that are necessary for fully accountable democratic government. Policy makers need to be aware of the trade-off between loss of tight democratic accountability and the convenience of shifting the responsibility of service provision closer to where social problems actually exist. A further factor in this equation is the likelihood that non-profits provide a mechanism for tighter accountability to *local* populations, rather than the majority national population, thereby increasing their chances of effectively serving diverse local communities.

Disguised profit distribution: There is a diversity of governance arrangements in the non-profit sector, just as there is in the private for-profit sector. Experience from the US, New Zealand and elsewhere suggests that non-profit sector status can provide an effective vehicle for the pursuit of business objectives (disguised profit distribution^{7, p.11 20, p.404}), as may be the case with self-employed doctors working for non-profit health organisations, or where profits are dispensed in the form of increased wages.^{7, p.11 21} Support by successive New Zealand governments of non-profit primary health care, on the basis of its objectives being congruent with those of government, should not lead to complacency in judging the merit of non-profit primary-care organisations: government should support non-profit organisations only when their objectives are consistent with government’s health objectives.

Other non-profit “failures”: While the primary accountability of private non-profits is generally to their beneficiaries and service users, this does not always result in optimal outcomes for populations. Various forms of failure can occur which justify some form of government intervention.¹² For example, philanthropic paternalism occurs when community resources are channelled into the hands of elites who then disburse them according to their perception of worthiness. The corrosive attitude of *noblesse oblige* may be adopted by non-profit organisations and can lead to “social control through philanthropy”.²² Philanthropic particularism occurs when there is relative neglect of certain population sub-groups, further highlighting the responsibility of representative democratic government for the general welfare of populations. Philanthropic amateurism may result in amateur approaches to dealing with problems, such as the provision of non-professional services to vulnerable groups.

1.3 Overview of community-governed non-profits in New Zealand

New Zealand has considerable experience with private for-profit primary health care, and growing experience with private non-profit primary health care.^{16 25} There is less experience with government-owned primary health care. The most prominent experiment with government-owned primary health care commenced in 1941 with the setting up of 34 special medical areas in rural locations, to be serviced by publicly paid salaried GPs.^{26, p.188 27, p.51} The programme provided both GP services and pharmaceuticals free of charge.²⁸ The 34 special medical areas were reduced, via discontinuance of some of the areas, to 23 in 1967, 19 in 1974, and to 12 in 1993.^{27, p.51 28 29} Private sector coverage of populations where special medical areas had been discontinued was patchy and unpredictable.

Responsibility for special medical areas was devolved to District Health Boards following the passage of the New Zealand Public Health and Disability Act in 2000. In 2003 special medical areas continued to operate in some areas of the country (e.g. there were four on the West Coast of the South Island, personal communication, Peter McIntosh, West Coast DHB, 22/10/03). Organisational changes associated with the implementation of the Primary Health Care Strategy,³⁰ particularly the establishment of Primary Health Organisations, has led to further changes in the configuration of special medical areas.

While not claiming a direct ownership stake, government has also invested heavily in other facets of New Zealand’s primary health care infrastructure over the years. For example, over the past 10 years most IPAs (independent practitioner associations) and many non-profit primary health care organisations have benefited from substantial investment by government via different funding streams.

Non-profit primary health care organisations started having a significant presence in New Zealand in the late 1980s. The first trade union health centres were set up in 1987. These centres were supported by successive Ministers of Health, and a diverse range of non-profit primary health care organisations emerged during the early and mid-1990s, most notably Māori initiatives. Although some concern was expressed regarding the cost and justification for the union health centres,³¹ the Ministry of Health actively promoted these initiatives, especially in funding, perceiving them to be a way of providing health care to vulnerable communities.³² Community trusts and iwi-owned health services were also seen by government, Māori groups and communities as worthwhile alternatives to traditional primary health care arrangements.³³

In 1993 the union health centres formed a national office to provide strategic management and co-ordination for the eight union health centres. In 1994 the union health centres national office, in collaboration with indigenous and other community-based health centres, was reconstituted as a national network of non-profit primary health care providers called Health Care Aotearoa (HCA).¹⁶ HCA aimed to provide a support network for its member organisations, which are community-managed organisations placing strong emphasis on providing services for low-income populations, and on working biculturally. In 2002 there were 51 member organisations in the HCA network, 33 of which provided comprehensive primary health care services including GP and nursing services (personal communication, P Glensor, National Co-ordinator HCA, January 2003). As well, the authors estimate that somewhere in the region of 10 non-HCA community-governed non-profit primary health care providers existed, most of them iwi-based. Information on patient socio-demographic characteristics and organisational characteristics for HCA practices has been published elsewhere.^{14 16 25}

1.4 International studies comparing non-profits with for-profits

In 2002 a systematic review of the evidence relating to involving patients in the planning and development of health care concluded that involving patients contributes to changes in the provision of services across a range of settings, but that there was no evidence base for the effects of patient involvement on use of services, quality of care, satisfaction or health of patients.³⁴ This review reported an almost complete absence of observational studies on the topic. Indeed, direct comparisons of government, private for-profit and private non-profit primary health care organisations in terms of their structural characteristics, utilisation, treatment patterns, costs and health outcomes have only rarely been conducted.

Khoury and colleagues compared non-profit and for-profit women's health centres in the US for community benefits and found that non-profits served more uninsured and rural women, offered a broader range of primary health care services and more free education and information services, and were more likely to involve women in their governance.³⁵ There were no differences in the numbers of minority women served, provision of translator services and transport. A comparison of government and non-profit providers in Dar-es-Salaam (a low-income country) found that care was better overall in non-profit facilities, but that there was a high level of inadequate care in both types of facility.³⁶ This report, and further comparative studies based on NatMedCa data, promises greater understanding of the differences between community-governed non-profits and for-profit primary health care practices.

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, along with study instruments used, is given in the first report in this series.³⁷

2.1 Organisation

The research, funded by the Health Research Council of New Zealand, was undertaken by a project team based within 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,³⁸ the RNZCGP³⁹ and McAvoy et al.⁴⁰ 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 A), 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.⁴¹

The visit questionnaire (Appendix B) 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 C) obtained data on practitioner background and current activities. The practice nurse questionnaire (Appendix D) gathered data on the range of clinical responsibilities and other duties. The expanded practice questionnaire (Appendix E) was derived from the

work of Crampton et al¹⁶ and covered hours of access, services provided, equipment on site, personnel employed and various aspects of practice management. In particular, the history and the contractual arrangements within the practice were recorded.

2.4 Ethnicity

Previous studies of general practice have been criticised for inaccurate data on patient ethnicity.^{16 42} 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, but 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 Study⁴⁰ in 1991 so that changes over time could be better assessed.

Sampling frame: Practices were defined as community-governed non-profits if they met at least two of the following three criteria:

- they had a community board of governance (i.e. board members who were not health professionals)
- there was no equity ownership by GPs or others associated with the organisation
- there was no profit distribution to GPs or others working for the organisation.

A list of community-governed non-profit organisations was obtained from the umbrella organisation Health Care Aotearoa (HCA), and to this were added other organisations that fulfilled the above criteria.

The number of practitioners working in community-governed non-profit organisations is relatively small, and these clinics are of particular interest given their dedication to poorly served populations. All clinics were approached and all practitioners and all nurses were asked to participate.

Further details of the sampling process for independent GPs and GPs associated with an IPA are provided elsewhere.³⁷ In brief, the sampling frame used for these GPs consisted of a list of all active GPs generated from telephone White Pages listings. Results relating to these GPs are not presented in this report.

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.

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 of 1 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.

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

Practitioners 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.
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 post-graduate 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 series³⁵). However, note that community-governed non-profit GPs were sampled with certainty and therefore their weight is equal to 1.

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 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 = 24), standard errors of the percentages varied from approximately 4.1% on small percentages (around 4%) to approximately 10.8% on larger percentages (around 50%). For the practice dataset (N = 6), standard errors of the percentages were approximately 20.8% on large percentages (around 50%). For the visits dataset (N = 463), standard errors of the percentages varied from approximately 1.2% on small percentages (around 5%) to approximately 3.5% on larger percentages (around 56%). Ninety-five percent confidence intervals can be estimated as approximately the percentage \pm 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,⁴¹ 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.⁴³ 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. 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 are used in the public interest. Proposed analyses are provided to the group for comment, as are papers being prepared for dissemination.

GPs 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.

2.12 Interpreting the results

The results presented here relate to 44 practitioners (24 doctors and 20 nurses) employed at six community-governed non-profit practices. Details of visits during “office hours” (Monday to Friday 8 am to 6 pm) are provided. More than half the community-governed non-profits included in the NatMedCa survey were Māori organisations, and are not described here but in the following Māori report. In order to gain a more complete picture of community-governed non-profit primary health care in New Zealand, this report should be read alongside the Māori document.

The NatMedCa survey included a pilot study of electronic data collection methods. Four community-governed non-profit primary health care organisations used electronic data collection methods, where data were captured routinely using practice management software in the course of consultations. Data from these four practices have not been included in the results presented in this report because of under-reporting of key data elements, and the consequent likelihood of introducing bias. Further information on the electronic data pilot is given in section 13.

The overall response rate amongst GPs employed in community-governed non-profit practices was 72.7% for the visits dataset, and 95.5% for the practice and practitioners dataset. Note that only a subset of results is presented here, applying to those community-governed non-profit GPs and practices that were non-Māori and not in the electronic arm of the study. In interpreting the results presented here it must be borne in mind that NatMedCa was a visits-based study which, by its nature, over-represents frequent users. For this reason care must be exercised when generalising results to the general population: the results of this study apply to users of primary health care services rather than to the general population.

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.

3 Recruitment and Data Collection

Table 3.1 shows the number of practices (six) and practitioners (44) that contributed data for this report. The majority of practices and practitioners were from the Wellington region (four out of six practices, and 31 out of 44 practitioners). In reading this report it should therefore be remembered that the results have a Wellington bias. Community-governed non-profits in other parts of the country may differ in their organisation and visit characteristics. In total there were 3242 visits.

Table 3.1 Practice and practitioner response, by geographical area: number of log and visit questionnaires

Area	Number of practices	Number of practitioners	Logs (visits)
Auckland	1	8	651 (136)
Wellington	4	31	1973 (434)
Christchurch	1	5	618 (149)
All New Zealand	6	44	3242 (719)

3.1 Characteristics of participating practitioners

GPs working in non-profit practices were more likely to be female (70.8%), young (the majority, 78.2%, were aged less than 44 years), and relatively new to general practice (Table 3.2). Thirty-seven percent had been in practice for less than six years, and a further 41.7% had been in practice for between 6 and 15 years. About 70% had been employed in their current place of work for less than six years. While about 60% were members of the RNZCGP, only 37.5% were members of the New Zealand Medical Association. They worked, on average, 6.6 half-day sessions per week, seeing 9.6 patients per half-day session and 63.3 daytime patients per week.

Practice nurses employed in the community-governed non-profits described here tended to have an expanded nursing role, substituting to some extent for doctors (see the discussion section for more on the practice nurse role). Their average age (43.9 years) was somewhat older than that of the GPs, but despite this 90% of them had been in practice for less than six years, and 80% had been in their current place of employment for less than six years. All of the practice nurses surveyed were members of the New Zealand Nurses Association. They worked, on average, 7.4 half-days per week, and saw 6.5 patients per half-day session and 48.4 daytime patients per week.

Table 3.2 Characteristics of participating practitioners

	Participants*	
	Doctors (N = 24)	Practice nurses (N = 20)
Female	70.8%	(100%)
Male	29.2	0
Age		
< 35	21.7	20.0
35–44	56.5	30.0
45–54	21.7	45.0
55–64	0	5.0
> 64	0	0
	Mean = 39.8 (N = 23)	43.9 (N = 20)
Years in practice		(as independent practitioner)
< 6	37.5	90.0
6–15	41.7	10.0
16–25	20.8	0
> 25	0	0
	Mean = 9.0 (N = 24)	2.9 (N = 10)
Years this practice		
< 6	69.6	80.0
6–15	30.4	20.0
16–25	0	0
> 25	0	0
	Mean = 4.3 (N = 23)	3.7 (N = 20)
Place of graduation		
New Zealand	70.8	75.0
United Kingdom	8.3	15.0
Other	20.9	10.0
	(N = 24)	(N = 20)
% RNZCGP	59.1 (N = 22)	College of nursing: 10.0% (N = 20)
% NZMA	37.5 (N = 24)	NZNO: 100% (N = 20)
Size of practice (mean FTE doctors/nurses)	2.9	3.2
Mean daytime patients/week	63.3 (N = 24)	48.4 (N = 19)
Mean half-days worked per week	6.6 (N = 24)	7.4 (N = 19)
Mean patients per half-day session	9.6	6.5

* Practitioners who provided visits data.

4 Characteristics of Patients

NatMedCa is a visits-based study and therefore over-represents high users. The socio-demographic profile of patients seen at community-governed non-profits is striking (Table 4.1 to Table 4.5). Somewhat over half of the patients seen were female (57.0%) and almost one-third were aged 24 years or younger (31.8%). The age distribution did not vary much by gender or by the provider visited. Overall, females made more visits, and men fewer, than would be predicted by the national sex distribution (Table 4.2). Similarly, males and females aged 0–4 years, females aged 25–74, and males aged 55–64 also had more visits than would be predicted by the national age/sex distribution.

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

Age group (years)	Whole survey				Doctors	Practice nurses
	Missing	Males	Females	All	All	All
75+	0	3.7	3.8	3.7	3.4	4.3
65–74	0	6.6	6.3	6.4	6.2	6.8
55–64	1	10.7	9.5	10.0	10.2	9.7
45–54	2	14.8	13.9	14.3	15.6	12.0
35–44	1	17.0	16.2	16.5	18.1	13.7
25–34	0	12.1	19.0	16.0	16.6	14.9
15–24	0	8.1	11.2	9.8	8.9	11.5
5–14	3	10.8	8.5	9.5	8.4	11.4
1–4	2	7.9	6.6	7.2	6.9	7.8
< 1	0	7.5	3.7	5.3	4.4	6.9
Missing	0	1.0	1.4	1.2	1.4	0.9
Total (N)	(9)	100% (1386)	100% (1847)	100% (3242)	100% (2088)	100% (1154)

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+
Male	0.88	1.81	0.59	0.52	0.78	0.98	1.00	1.04	0.90	0.76
Female	1.11	1.69	0.65	0.96	1.49	1.16	1.22	1.21	1.07	0.65

About one-quarter of patients were of New Zealand European ethnicity (24.0%), 19.4% were Māori, 34.1% were Pacific, and 22.5% were Asian or Other. There were some differences in ethnic distribution of patients seen between doctors and nurses (Table 4.3). Also, the same table shows 66.1% of patients had a Community Services Card, and 1.0% had a High User Card.

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

	Total	Doctors	Practice nurses
N	3242	2088	1154
Ethnicity*			
New Zealand European	24.0	31.0	11.1
Māori	19.4	19.0	20.3
Samoaan	26.8	21.0	37.2
Cook Island	4.2	4.2	4.2
Tongan	2.3	2.2	2.6
Niuean	0.8	0.6	1.1
Chinese	1.5	1.2	2.0
Indian	2.4	2.2	2.9
Other	18.6	18.7	18.6
Total	100%	100%	100%
Card status			
No card	25.3	26.1	23.8
Community Services Card	66.1	67.1	64.4
High User Card	1.0	1.1	0.7
Both cards	4.7	4.4	5.2
Missing	3.0	1.4	5.9
Total	100%	100%	100%

* Ethnicity was self-reported, with multiple categories allowed; one ethnic category was then assigned per patient according to prioritisation of Māori and Pacific people; 32 patients (1%) had missing data.

Nearly two-thirds of patients lived in areas ranked in the three most deprived deciles (NZDep2001, 8–10; Table 4.4). Just over 23% were not fluent in English. For ease of data collection, social support was assessed by the practitioner, and may differ from patients' assessment of their levels of social support. Just over 20% of patients were recorded as having poor or very poor social support. These patterns did not differ markedly by practitioner, although nurses seemed to see more patients who were not fluent in English (Table 4.4).

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

	Total	Doctors	Practice nurses
Social support			
5 Very good	20.6	17.0	27.7
4 Good	30.0	31.5	27.3
3 Average	25.4	24.8	26.5
2 Poor	16.1	18.0	13.4
1 Very poor	4.1	4.6	3.2
Unknown	3.4	4.1	2.0
Total (N)	100% (713)	100% (460)	100% (253)
Decile			
1	2.4	2.3	2.5
2	3.0	3.0	2.9
3	2.7	3.0	2.1
4	4.6	4.8	4.2
5	6.1	5.7	6.7
6	7.7	7.7	7.6
7	9.7	9.3	10.5
8	11.7	11.6	11.8
9	14.8	16.2	12.2
10	37.5	36.4	39.5
Total (N)	100% (677)	100% (439)	100% (238)
% not fluent (N)	23.2 (654)	19.7 (426)	29.8 (228)

Among those living in areas ranked as NZDep2001 quintile 4 and 5, 71.5% and 75.1% respectively had a Community Services Card. This compared with about half from the least deprived quintile (Table 4.5). There was a gradient in Community Services Card possession across levels of social support (Table 4.5), but less indication of a clear gradient in the proportion with very good or very poor social support across the NZDep quintiles.

Table 4.5 Relationship between measures of deprivation

A. Percent possessing a Community Services Card, by NZDep2001 quintile					
Quintile (N)	1 (33)	2 (49)	3 (89)	4 (144)	5* (344)
Card %	51.5	67.3	74.2	71.5	75.1

* Highest deprivation.

B. Percent possessing a Community Services Card, by social support						
Social support (N)	5 Very good (141)	4 Good (206)	3 Average (173)	2 Poor (114)	1 Very poor (28)	Unknown (23)
Card %	60.3	72.7	78.6	83.3	82.1	60.9

C. Percentage distribution of social support, by NZDep2001 quintile					
Quintile (N)	1 (36)	2 (49)	3 (93)	4 (144)	5* (349)
5 Very good	22.2	26.5	26.9	18.1	19.8
4 Good	33.3	26.5	31.2	29.9	29.2
3 Average	27.8	16.3	22.6	31.9	25.5
2 Poor	13.9	22.5	14.0	11.8	18.1
1 Very poor	2.8	0	2.2	4.2	4.9
Unknown	0	8.2	3.2	4.2	2.6
Total	100%	100%	100%	100%	100%
Mean score	3.6	3.6	3.7	3.5	3.4

* Highest deprivation.

5 Relationship with Practice

Just on 7.5% of patients were new to the practice, 25.3% were new to the practitioner, and for 9.4% the practice was not their usual source of care. On these three measures nurses seemed to see patients with a less established relationship to the practice (Table 5.1). Those aged less than 25 years were most likely to be both new to the practice and new to the practitioner (Table 5.2).

Table 5.1 Relationship with practice: three measures

	Total	Doctors	Practice nurses
% new to practice	7.5	6.5	9.6
% new to practitioner	25.3	24.0	27.8
% not usual source (minimum N)	9.4% (690)	6.3 (457)	15.5 (229)

Table 5.2 New patients: percentage of age group

Patient age group	Percent of age group new to practitioner (N= 684)	Percent of age group new to practice (N = 679)
65+	11.6	1.6
45–64	13.4	6.2
25–44	27.3	7.7
< 25	36.4	10.4

Approximately a fifth of patients reported more than nine visits over the previous year. The mean number of visits to the practice was 6.8 to doctors and nurses combined, 6.7 for visits to doctors, and 7.0 for visits to nurses (Table 5.3). Nearly two-thirds of practitioners reported “high rapport” during the current visit (Table 5.4).

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

Number*	Total	Doctors	Practice nurses
1	13.9	14.1	13.3
2	8.0	7.9	8.4
3	11.0	11.0	11.1
4	10.4	9.6	12.0
5	8.6	9.6	6.7
6	9.5	10.8	7.1
7	7.0	5.8	9.3
8	5.8	6.1	5.3
9	4.6	4.9	4.0
> 9	21.0	20.2	22.8
Total (N)	100% (671)	100% (446)	100% (225)
Maximum	(50)	(50)	(46)
Mean	6.8	6.7	7.0

* Includes the current visit.

Table 5.4 Practitioner-reported rapport: percentage distribution

	Total	Doctors	Practice nurses
1 Rapport low	2.8	3.0	2.3
2 Rapport medium	35.3	34.1	37.9
3 Rapport high	61.9	62.8	59.8
Total (N)	100% (679)	100% (460)	100% (219)

6 Visit Characteristics

In interpreting these results, note that more than one subsidy type could be received for each consultation. All the practices included in this report received government General Medical Services (GMS) subsidy payments via a capitation funding mechanism. GMS subsidy (via capitation) and/or cash was the payment method for 91.7% of consultations (93.1% of doctor and 88.8% of nurse consultations) (Table 6.1). A further 4.5% of consultations were funded by ACC (3.7% of doctor and 6.1% of nurse consultations), and 3.8% by maternity subsidy payments (3.2% of doctor and 5.1% of nurse consultations).

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

Source of payment*	Total	Doctors	Practice nurses
% visits cash/ GMS	91.7	93.1	88.8
Under six (Y)	19.4	16.3	26.7
Child, card (J1)	8.5	8.5	8.5
Child, no card (J3)	2.7	1.7	5.1
Adult, card (A1)	49.7	53.0	42.0
Adult, no card (A3)	19.6	20.4	17.6
Subtotal	100%	100%	100%
% visits ACC payment	4.5	3.7	6.1
% visits maternity care	3.8	3.2	5.1
Total (N)	100% (629)	100% (432)	100% (197)

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

In total, 26.8% of patient visits were longer than 20 minutes (18.8% and 41.6% for doctors and nurses respectively), and 50.6% were between 10 and 15 minutes (59.2% and 34.7% for doctors and nurses respectively) (Table 6.2). In terms of urgency, 6.5% of visits were categorised as “ASAP” (3.9% and 12.0% for doctors and nurses respectively), and 28% as “today” (27.1% and 30.0% for doctors and nurses respectively) (Table 6.3).

Table 6.2 Duration of visit: percentage distribution

Duration	Total	Doctors	Practice nurses
Shorter < 10 minutes	4.0	4.6	2.9
Average 10–15 minutes	50.6	59.2	34.7
Longer 15–20 minutes	18.6	17.4	20.8
Longest > 20 minutes	26.8	18.8	41.6
Total (N)	100% (698)	100% (453)	100% (245)
Mean duration (minutes)	21.3	17.8	27.9

Table 6.3 Urgency and severity of visit: percentage distribution

	Total	Doctors	Practice nurses
Urgency			
4 ASAP	6.5	3.9	12.0
3 Today	28.0	27.1	30.0
2 This week	46.2	49.0	40.1
1 This month	19.3	20.0	18.0
Total (N)	100% (678)	100% (461)	100% (217)
Severity			
4 Life-threatening	2.4	1.7	3.7
3 Intermediate	42.7	54.0	18.6
2 Self-limiting	29.4	27.9	32.6
1 Severity NA	25.5	16.3	45.1
Total (N)	100% (674)	100% (459)	100% (215)

Judged on severity, for the 75% of visits that had a severity code assigned, 2.4% of visits were categorised as “life-threatening” (1.7% and 3.7% for doctors and nurses respectively), and 42.7% as “intermediate” (54.0% and 18.6% for doctors and nurses respectively) (Table 6.3).

Overall, 37.7% of patients were considered to have no disability (25.3% and 65.2% for doctors and nurses respectively), and 11.6% to have a major disability (13.0% and 8.3% for doctors and nurses respectively). This suggests, as would be expected, that doctors were seeing more severely ill people than were nurses (Table 6.4).

Table 6.4 Level of disability: percentage distribution

Disability	Total	Doctors	Practice nurses
No disability	37.7	25.3	65.2
Minor	50.8	61.7	26.5
Major	11.6	13.0	8.3
Total (N)	100% (658)	100% (454)	100% (204)
Temporary	76.2	77.9	66.7
Permanent	23.8	22.1	33.3
Total (N)	100% (386)	100% (326)	100% (60)
Minor temporary	66.7	68.0	59.3
Major temporary	9.4	9.6	8.5
Minor permanent	15.2	14.9	16.9
Major permanent	8.7	7.5	15.3
Total (N)	100% (381)	100% (322)	100% (59)

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

Level of uncertainty	Total	Doctors	Practice nurses
1 None	50.1	40.8	71.3
2 Low	36.0	42.3	21.8
3 Medium	11.9	14.5	5.9
4 High	2.0	2.4	1.0
Total (N)	100% (663)	100% (461)	100% (202)

When doctors and nurses were asked about uncertainty as to diagnosis or management (Table 6.5), in 50.1% of visits were associated with no uncertainty (40.8% and 71.3% for doctors and nurses respectively), 11.9% were associated with medium uncertainty (14.5% and 5.9% for doctors and nurses respectively), and 2.0% were associated with high uncertainty (2.4% and 1.0% for doctors and nurses respectively).

Taking visit characteristics in aggregate against key socio-demographic factors, there seems to have been little variation in rapport (as judged by the practitioner), duration, urgency, severity and uncertainty by age group, gender, or deprivation status. The only pattern of any note was a gradient in the proportion of patients new to the practice (higher among younger patients) (Table 6.6).

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
% new to practice	10.4	7.7	6.2	1.6	7.4	7.7	5.7	10.9	6.0
Mean rapport*	2.5	2.5	2.7	2.8	2.5	2.6	2.7	2.6	2.6
Mean duration (minutes)	20.1	21.8	21.7	23.3	19.7	22.5	21.7	21.5	21.2
Mean urgency*	2.4	2.2	2.1	2.0	2.3	2.2	2.1	2.1	2.3
Mean severity*	2.1	2.3	2.3	2.3	2.3	2.2	2.4	2.1	2.3
Mean uncertainty*	1.5	1.8	1.7	1.7	1.6	1.7	1.7	1.8	1.6
Minimum N for column	219	208	162	64	283	376	48	183	393

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

7 Reasons for Visit

Reasons for visit represents the patients' presenting problems expressed in their own words. Up to four reasons-for-visit could be recorded. The number of reasons for patient visits increased with age, with females in all age groups having a greater array of presenting problems than males (Table 7.1). "Actions" represents a broad grouping of READ2 chapters that includes preventive procedures, operations/procedures, other therapeutic procedures, administration, and various medications/drug treatments. Actions occur where a practitioner writes an "action" for the "reason" or "diagnosis". Actions represent by far the most common reason-for-visit (24.2% of reasons), followed by non-specific symptoms (12.2%), investigations (10.6%) and respiratory symptoms (9.9%) (Table 7.2).

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

	All ages	< 25	25–44	45–64	65+
Male	158	135	161	178	168
Female	176	151	178	195	204

Table 7.2 Distribution of reasons for visit chapters

Reason-for-visit (RfV) grouping READ2 chapter*	RfV grouping, % of visits	RfV grouping, as % of reasons
Actions	33.8	24.2
Symptoms non-specific	18.5	12.2
Investigations	15.7	10.6
Respiratory	15.2	9.9
Nervous system/sense organs	8.9	5.5
Musculoskeletal/connective tissue	8.6	5.3
Skin/subcutaneous tissue	8.5	5.4
Unspecified conditions	7.8	4.9
Digestive	6.4	4.0
Endocrine/nutritional/metabolic/immunity	5.4	3.3
Injury/poisoning	4.9	2.9
Cardiovascular/circulatory	4.7	2.8
Genito-urinary	4.6	3.1
Mental	3.3	2.0
Infectious/parasitic	2.9	1.7
Cancers/neoplasms	0.6	0.3
Blood/blood-forming organs	0.4	0.3
Pregnancy/childbirth/puerperium	0.4	0.3
Congenital	0	0
Perinatal	0	0
Not coded	2.0	1.3
Total (N)	(719)	100% (1217)

* Major groupings 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".

The ranking of reasons-for-visit varied by practitioner type (doctors and practice nurses), with practice nurse visits being dominated by actions (56.3% of visits) and doctor visits being more equally spread over actions, different types of symptoms and investigations (Table 7.3).

Table 7.3 Frequency of reasons-for-visit (by READ2 chapter) across practitioner type, rate per 100 visits

RfV grouping READ2 chapter	Total	Doctors	Practice nurses
Actions*	41.0	32.6	56.3
Symptoms non-specific	20.6	21.2	19.5
Investigations	17.9	20.7	12.9
Respiratory	16.8	21.2	9.0
Nervous system/sense organs	9.3	10.6	7.0
Skin/subcutaneous tissue	9.2	10.6	6.6
Musculoskeletal/connective tissue	9.0	11.0	5.5
Unspecified conditions	8.2	7.3	9.8
Digestive	6.8	9.1	2.7
Endocrine/nutritional/metabolic/ immunity	5.6	5.2	6.3
Genito-urinary	5.3	6.3	3.5
Injury/poisoning	4.9	5.2	4.3
Cardiovascular/circulatory	4.7	5.6	3.1
Mental	3.3	4.3	1.6
Infectious/parasitic	2.9	2.6	3.5
Cancers/neoplasms	0.6	0.9	–
Blood/blood-forming organs	0.4	0.4	0.4
Pregnancy/childbirth/puerperium	0.4	0.2	0.8
Congenital	0	0	0
Perinatal	0	0	0
Not coded	2.2	0.6	5.1
Total reasons per 100 visits	169.3	175.6	157.8

* Actions includes READ2 chapters 6 (preventive procedures), 7 (operations/procedures), 8 (other therapeutic procedures), 9 (administration) and a to v (various medications/drug treatment) inclusive. Actions occur where a practitioner writes an “action” for the “reason” or “diagnosis”.

Symptoms, diseases, treatments, investigations and prevention were, in descending order, the commonest overall components of patient visits, with practice nurse visits involving relatively more prevention components than doctor visits (Table 7.4).

Table 7.4 Comparison of reason-for-visit components across practitioner type: percentage of all reasons

READ2 component	Total	Doctors	Practice nurses
Symptoms	29.2	32.2	23.0
Disease	27.0	29.9	21.0
Treatments	11.3	10.5	12.9
Investigations	10.6	11.8	8.2
Prevention	9.0	5.2	16.8
Injury/poisoning	2.9	3.0	2.7
Administrative	3.9	3.0	5.9
Unspecified conditions	4.9	4.2	6.2
Not coded	1.3	0.4	3.2
Total (N)	100% (1217)	100% (813)	100% (404)

8 Problems Identified and Managed

“Problems identified and managed” refers to problems identified and classified by the practitioner, as opposed to those identified by the patient (which are described in section 7 as “reasons-for-visit”). Up to four problems (or diagnoses) could be recorded. Table 8.1 illustrates that visits were most commonly associated with one problem (39.6%), whereas 10.9% were associated with four problems, and 0.6% with no identified problem. This pattern varied somewhat between doctors and practice nurses, with the former seeing relatively more multiple-problem patients and the latter seeing relatively more patients with a single problem. Overall, the number of problems identified by the practitioner increased with age for both sexes, with a small decrease in the number for the oldest age group (65+ years) (Table 8.2). Women had more problems identified than did men.

Table 8.1 Percentage distribution of number of problems per visit

Number of problems	Total	Doctors	Practice nurses
No problem	0.6	0	1.6
1 problem	39.6	35.0	48.0
2 problems	30.0	30.9	28.5
3 problems	18.9	19.9	17.2
4 problems	10.9	14.2	4.7
Total (N)	100% (719)	100% (463)	100% (256)
Mean number of problems	2.00	2.13	1.75

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

	All ages	< 25	25–44	45–64	65+
Male	193	165	191	223	220
Female	206	174	211	238	217

The frequency of types of problems identified was similar – but not identical – to the frequency of reasons-for-visit, with actions, respiratory and investigations being the most common problems identified (Table 8.3). Unspecified symptoms were far less common (7.7% of visits) among problems listed by practitioners compared with patients’ reasons-for-visits (18.5% of visits). The most frequent problems for both doctors and practice nurses were actions and respiratory symptoms, following which a somewhat different ranking of symptom clusters predominated for each professional type, with doctors tending to deal with more symptoms overall than nurses, who dealt more with actions (Table 8.4).

Table 8.3 Distribution of problems managed, by READ2 chapter

Problem grouping READ2 Chapter*	Problem grouping – % of visits	Percent of all problems	Percent of new problems
Actions	25.7	15.2	9.0
Respiratory	23.2	12.8	20.7
Investigations	14.3	7.7	6.9
Cardiovascular/circulatory	13.1	7.1	2.5
Mental	12.9	7.4	3.7
Endocrine/nutritional/metabolic/immunity	12.2	6.4	0.5
Nervous system/sense organs	11.8	6.2	6.2
Skin/subcutaneous tissue	11.4	5.9	8.1
Unspecified conditions	8.9	4.7	3.7
Musculoskeletal/connective tissue	8.8	4.5	4.8
Infectious/parasitic	8.3	4.2	7.8
Symptoms non-specific	7.7	4.1	6.4
Injury/poisoning	7.2	4.0	6.9
Genito-urinary	6.7	3.6	4.6
Digestive	6.0	3.1	5.8
Cancers/neoplasms	1.8	0.9	0.9
Blood/blood-forming organs	0.8	0.4	0.5
Pregnancy/childbirth/puerperium	0.8	0.4	0.9
Congenital	0.4	0.2	0.2
Perinatal	0.1	0.1	–
Not coded	2.0	1.0	–
Total (N)	(719)	100% (1437)	100% (435)

* Major groupings 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”.

Table 8.4 Comparison of frequency of problems (per 100 visits), by practitioner type

Problems (READ2 chapter)	Total	Doctors	Practice nurses
Actions*	30.5	24.8	40.6
Respiratory	25.6	28.3	20.7
Investigations	15.4	14.7	16.8
Mental	14.7	17.9	9.0
Cardiovascular/circulatory	14.2	16.2	10.5
Endocrine/nutritional/metabolic/immunity	12.8	14.0	10.5
Nervous system/sense organs	12.4	14.3	9.0
Skin/subcutaneous tissue	11.8	14.0	7.8
Unspecified conditions	9.3	9.3	9.4
Musculoskeletal/connective tissue	9.0	10.6	6.3
Infectious/parasitic	8.5	9.1	7.4
Symptoms non-specific	8.2	7.8	9.0
Injury/poisoning	7.9	8.4	7.0
Genito-urinary	7.2	9.3	3.5
Digestive	6.3	8.9	1.6
Cancers/neoplasms	1.8	2.6	0.4
Blood/blood-forming organs	0.8	0.9	0.8
Pregnancy/childbirth/puerperium	0.8	0.9	0.8
Congenital	0.4	0.4	0.4
Perinatal	0.1	–	0.4
Not coded	1.9	1.1	3.5
Total problems per 100 visits	199.9	213.4	175.4

* Actions includes READ2 chapters 6 (preventive procedures), 7 (operations/procedures), 8 (other therapeutic procedures), 9 (administration), and a to v (various medications/drug treatment) inclusive. Actions occur where a practitioner writes an “action” for the “reason” or “diagnosis”.

New problems were, overall, more common among females than males, presenting most commonly in both sexes in those aged less than 44 years (Table 8.5). For doctors, by far the most frequent type of new problem was respiratory (16.2% of visits), followed by skin problems and infections/parasites. For nurses the most frequent new problem was actions (6.6% of visits), followed by respiratory (5.9% of visits) (Table 8.6).

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

	All ages	< 25	25–44	45–64	65+
Male	58	58	70	44	52
Female	62	74	67	53	40

Table 8.6 Comparison of frequency of new problems (per 100 visits), by practitioner type

Problems (READ2 chapter)	Total	Doctors	Practice nurses
Respiratory	12.5	16.2	5.9
Actions *	5.4	4.8	6.6
Skin/subcutaneous tissue	4.9	5.6	3.5
Infectious/parasitic	4.7	5.2	3.9
Investigations	4.2	3.0	6.3
Injury/poisoning	4.2	4.3	3.9
Symptoms non-specific	3.9	4.3	3.1
Nervous system/sense organs	3.8	4.5	2.3
Digestive	3.5	4.5	1.6
Musculoskeletal/connective tissue	2.9	3.7	1.6
Genito-urinary	2.8	3.9	0.8
Mental	2.2	3.2	0.4
Unspecified conditions	2.2	2.4	2.0
Cardiovascular/circulatory	1.5	2.2	0.4
Cancers/neoplasms	0.6	0.9	0
Pregnancy/childbirth/puerperium	0.6	0.6	0.4
Endocrine/nutritional/metabolic/immunity	0.3	0.4	0
Blood/blood-forming organs	0.3	0.4	0
Congenital	0.1	0.2	0
Perinatal	0	0	0
Not coded	0	0	0
Total – new problems per 100 visits	60.5	70.4	42.6

* Actions include READ2 chapters 6 (preventive procedures), 7 (operations/procedures), 8 (other therapeutic procedures), 9 (administration), and a to v (various medications/drug treatment) inclusive. Actions occur where a practitioner writes an “action” for the “reason” or “diagnosis”.

Doctors saw more new problems than did practice nurses (33% of problems vs 24.3% respectively), who dealt with relatively more preventive care than did doctors (Table 8.7). In both cases new problems were the most common type of patient visit.

Table 8.7 Comparison of percentage of problem status across practitioner types

Status	Total	Doctors	Practice nurses
New problem	30.3	33.0	24.3
Short-term follow-up	12.0	11.6	12.9
Long-term follow-up	26.7	28.4	22.9
Long-term with flare-up	7.3	7.3	7.1
Preventative	8.1	5.6	13.9
(Not given)	15.6	14.1	18.9
Total (N)	100% (1437)	100% (988)	100% (449)

Table 8.8 presents the age- and gender-specific rates of common groups of problems. As would be expected, rates vary depending on the condition; for example, respiratory problems were most common for males and females in the youngest age group, and cardiovascular problems were most common in the oldest age group.

Table 8.8 Age- and gender-specific rates (per 100 visits) of common groups of problems

	All ages	< 25	25–44	45–64	65+
Respiratory					
Male	25	31	19	20	24
Female	26	36	23	25	11
Mental health					
Male	17	5	31	22	8
Female	14	5	21	17	4
Cardiovascular					
Male	16	0.9	14	33	44
Female	13	0.8	6	29	36
Endocrine/nutritional/ metabolic/immunity					
Male	14	3	11	27	36
Female	12	0	10	25	30
Nervous system/sense organs					
Male	11	11	12	12	4
Female	14	11	10	20	19
Skin					
Male	13	16	10	12	8
Female	11	17	12	5	6
Infectious/ parasitic					
Male	10	13	12	2	4
Female	8	16	4	6	2
Musculoskeletal					
Male	8	4	5	12	24
Female	9	0.8	8.2	18	19
Injury/poisoning					
Male	9	10	9	9	4
Female	7	7	10	7	4
Genito-urinary					
Male	4	4	4	7	0
Female	9	12	9	11	4
Digestive					
Male	6	5	5	9	0
Female	7	9	4	9	6
Cancers/neoplasms					
Male	1	0	3	0	8

Female	2	2	2	2	2
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Some of the seasonal variations noted in Table 8.9 are to be expected, such as the predominance of respiratory problems during the winter and spring months. Other variations require further investigation, such as the high frequency of actions over the summer months, and the high frequency of cardiovascular problems in spring. Small numbers may be partly responsible for some of the observed variations.

Table 8.9 Seasonal variation: groups of problems, as percentage of all problems

Problem grouping (READ2 chapter)	March–May (autumn)	June–August (winter)	September–November (spring)	December–February (summer)
Actions	15.4	14.6	12.0	19.4
Respiratory	10.9	13.7	15.6	10.8
Investigations	8.0	9.1	6.0	7.3
Mental	7.7	6.6	8.1	7.3
Cardiovascular/circulatory	7.1	5.9	10.2	5.4
Unspecified conditions	6.6	4.6	3.6	3.8
Endocrine/nutritional/metabolic/immunity	6.3	7.1	6.3	5.7
Nervous system/sense organs	5.7	6.6	6.3	6.0
Musculoskeletal/connective tissue	5.7	5.3	3.6	3.2
Skin/subcutaneous tissue	5.4	5.3	5.7	7.6
Symptoms non-specific	5.4	3.4	2.4	5.4
Genito-urinary	4.3	3.9	3.9	2.2
Injury/poisoning	4.0	2.5	4.2	5.7
Infectious/parasitic	3.1	4.8	4.8	4.1
Digestive	2.9	2.7	4.2	2.9
Cancers/neoplasms	0.3	0.9	1.5	1.0
Blood/blood-forming organs	0.3	0.2	0.9	0.3
Congenital	0.3	–	–	0.6
Pregnancy/childbirth/puerperium	–	0.9	–	0.6
Perinatal	–	0.2	–	–
Not coded	0.6	1.6	0.9	0.6
Total (N=1437)	100% (350)	100% (438)	100% (334)	100% (315)

9 Laboratory Tests and Other Investigations

In the following tables “laboratory test” includes haematology, biochemistry and other laboratory tests; “any test” refers to all tests and investigations. Overall, about a quarter of visits resulted in a test or investigation (Table 9.1). Nearly 20% of visits resulted in a laboratory test, which were roughly evenly split between haematology, biochemistry and other lab tests (8.1%, 10.2% and 8.9% of visits respectively), while 2.4% of visits resulted in a radiological investigation, the most common of which was a plain X-ray.

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

Test group*	Rate per 100 visits (N = 719)		Test sub-group
Any laboratory test	19.5		
Haematology	8.1	8.1 2.6 2.8	Full blood count Sed rate Fe, B12, folic acid
Biochemistry	10.2	6.5 6.3 5.7 4.5 3.3 3.8	Serum glucose Creatinine/urea Liver function Lipids Thyroid Other chemistry
Other	8.9	7.8 1.7	Culture Pap smear
Imaging	2.4	1.5 0 0.8	Plain X-ray Contrast Ultrasound
Other	9.7	0.8 0 8.9	ECG Spirometry Other
Any test/investigation	25.5		

* “Missing” is counted as “none”.

Overall, doctors ordered more tests and investigations than nurses (29.8 per 100 visits, versus 17.6). However, the relative frequency within those rates were comparable across both practitioner types, except that doctors appeared to order proportionally slightly more biochemistry tests and imaging procedures (Table 9.2).

Table 9.2 Frequency of tests and investigations (per 100 visits), by practitioner type

Test type	Total	Doctors	Practice nurses
All laboratory tests	19.5	22.2	14.5
Haematology	8.1	9.1	6.3
Biochemistry	10.2	12.5	5.9
Microbiology culture	7.8	8.8	7.8
Cervical smear	1.7	1.9	1.6
Imaging	2.4	3.5	0.4
Other	9.7	11.7	6.3
Any test/investigation (N)	25.5 (719)	29.8 (463)	17.6 (256)

Overall, a higher proportion of female patients received tests (Table 9.3). Similarly, for haematology tests, biochemistry tests and microbiology cultures, a slightly higher proportion of females received tests.

Cervical smears for women were less likely in the under-25 age group compared with older age groups, but were carried out at similar rates in the 25–44 years and 45–64 years age groups.

Overall, men were slightly more likely to have an imaging test ordered. Men aged 45–64 years were the group most likely to have some form of radiological investigation.

Table 9.3 Age- and gender-specific rates (per 100 visits) of tests and investigations

	All ages	< 25	25–44	45–64	65+
Any test					
Male (N=304)	22	18	22	31	12
Female (N=408)	28	31	29	31	19
Haematology					
Male	6	4	6	9	4
Female	10	4	12	15	6
Biochemistry					
Male	10	3	9	22	8
Female	10	4	12	18	11
Microbiology culture					
Male	7	13	7	4	0
Female	8	15	8	2	0
Cervical smear					
Female	2.7	2.5	3.4	3.5	0
Imaging					
Male	3	2	1	6	0
Female	2	0	4	2	2
Other tests					
Male	7	4	6	11	4
Female	12	16	10	13	19

Actions were the problem group most commonly cited in a visit at which a laboratory test was ordered (nearly a third of such visits), followed by the endocrine/nutrition/metabolic/immunity group, respiratory, and unspecified conditions (Table 9.4). The percentage of visits that generated a laboratory test was highest for the following three problems: cancers (46.2% of visits resulted in a test), genito-urinary (41.7%) and unspecified conditions (39.1%).

Table 9.4 Problems most frequently managed at visits that included an order for a laboratory test

Problem grouping READ2 chapter	Rate per 100 visits where test ordered (N = 140)	Rate per 100 – all visits (N = 719)	Percent of visits for that problem group – where test ordered
Actions	32.1	6.3	24.3
Endocrine/nutritional/metabolic/immunity	20.0	3.9	31.8
Respiratory	18.6	3.6	15.6
Unspecified conditions	17.9	3.5	39.1
Investigations	16.4	3.2	22.3
Cardiovascular/circulatory	15.0	2.9	22.3
Genito-urinary	14.3	2.8	41.7
Mental	10.7	2.1	16.1
Nervous system/sense organs	10.7	2.1	17.7
Skin/subcutaneous tissue	10.7	2.1	18.3
Digestive	9.3	1.8	30.2
Musculoskeletal/connective tissue	9.3	1.8	20.6
Symptoms non-specific	9.3	1.8	23.6
Infectious/parasitic	8.6	1.7	20.0
Injury/poisoning	5.0	1.0	13.5
Cancers/neoplasms	4.3	0.8	46.2
Pregnancy/childbirth/puerperium	1.4	0.3	33.3
Blood/blood-forming organs	0.7	0.1	16.7
Congenital	0.7	0.1	33.3
Perinatal	0.7	0.1	100.0
Not coded	2.1	0.4	21.4

Among visits that resulted in an X-ray, musculoskeletal/connective tissue, respiratory, infectious/parasitic, cancers, endocrine/nutritional, skin and non-specific symptoms were, in descending order, the most common problems (Table 9.5). Over 15% of cancer consultations resulted in an X-ray, as did 9.5% of musculoskeletal consultations.

Table 9.5 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 (N = 11)	Rate per 100 – all visits (N = 719)	Percent of visits for that problem group where X-ray ordered
Musculoskeletal/connective tissue	54.6	0.8	9.5
Respiratory	27.3	0.4	1.8
Infectious/parasitic	18.2	0.3	3.3
Cancers/neoplasms	18.2	0.3	15.4
Endocrine/nutritional/metabolic/immunity	18.2	0.3	2.3
Skin/subcutaneous tissue	18.2	0.3	2.4
Symptoms non-specific	18.2	0.3	3.6
Mental	9.1	0.1	1.1
Nervous system/sense organs	9.1	0.1	1.2
Cardiovascular/circulatory	9.1	0.1	1.1
Digestive	9.1	0.1	2.3
Actions	9.1	0.1	0.5
Investigations	9.1	0.1	1.0
Injury/poisoning	9.1	0.1	1.9
Blood/blood-forming organs	0	0	0
Genito-urinary	0	0	0
Pregnancy/childbirth/puerperium	0	0	0
Congenital	0	0	0
Perinatal	0	0	0
Unspecified conditions	0	0	0
Not coded	0	0	0

10 Pharmacological Treatment

Treatments include any drug actions related to up to four possible problems for a patient visit. All drugs were counted. Drugs were classified according to the Pharmacodes/ATC system. Treatments also include any non-drug actions related to up to four possible problems for a patient visit. However, only one action of each type (e.g. administration) was allowed to be counted for each problem. The following section describes non-drug treatments in more detail.

A total of 67.3% of patient visits resulted in a prescription (75.2% for doctors and 53.1% for nurses), and 77.2% of visits resulted in some other form of treatment (80.2% for doctors and 71.9% for nurses) (Table 10.1). The overall rate of prescribing was slightly higher among women's visits (Table 10.4). For men the highest number of prescription items was for the 65+ years age group, and for women it was the 45–64 years age group.

Table 10.1 Percentage of visits at which treatments were given, by treatment modality and practitioner type

Treatment	All visits	Doctors	Practice nurses
No treatment	7.4	5.0	11.7
Prescriptions only	15.4	14.9	16.4
Other treatments only	25.3	19.9	35.2
Both	51.9	60.3	36.7
Total (N)	100% (719)	100% (463)	100% (256)
Percent prescriptions	67.3	75.2	53.1
Percent other treatments	77.2	80.2	71.9

Table 10.2 Number of treatment items by practitioner type: rate per 100 visits and per 100 problems

N visits = N problems =		Total 719 1437	Doctors 463 988	Practice nurses 256 449
All treatments	Per 100 visits	312	336	270
	Per 100 problems	156	157	154
All script items	Per 100 visits	131	152	94
	Per 100 problems	66	71	54
All other treatment items	Per 100 visits	181	184	176
	Per 100 problems	91	86	100

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

	All ages	< 25	25–44	45–64	65+
Male	67	62	69	67	84
Female	68	68	63	71	79

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

	All ages	< 25	25–44	45–64	65+
Male	127	113	116	122	204
Female	135	133	114	173	147

Table 10.5 shows the distribution of drugs prescribed, by therapeutic group. The highest proportion of prescription items was for nervous system drugs (18.5% of script items), followed by systemic anti-infective agents (15.7%), followed by respiratory and allergy drugs (11.0%).

Table 10.5 gives the frequency of the most commonly prescribed drug groups. Anti-bacterials (prescribed in 15.0% of script items), analgesics (13.4%), asthma relievers (4.3%), and diabetes drugs (4.3%) were, overall, the most frequently prescribed drug groups.

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

Drug group	Percent of all prescription items	Rate per 100 – all visits
22 Nervous system	18.5	24.2
16 Infections – agents for systemic use	15.7	20.6
28 Respiratory system and allergies	11.0	14.5
1 Alimentary tract and metabolism	9.7	12.7
7 Cardiovascular system	9.0	11.8
10 Dermatologicals	8.3	10.8
13 Genito-urinary system	5.1	6.7
19 Musculoskeletal system	4.6	6.0
4 Blood and blood-forming organs	4.5	5.8
14 Systemic hormone preparations (excludes oral contraceptives)	3.7	4.9
38 Extemporaneously compounded preparations and galenicals	1.5	1.9
31 Sensory organs	0.7	1.0
25 Oncology agents and immunosuppressants	0.2	0.3
40 Special foods	0.2	0.3
Medication non-specific	7.4	9.7
Total (N)	100% (943)	131.2 (719)

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

Table 10.6 Most frequently prescribed drug sub-groups

Drug sub-group (Pharmacodes/ATC level 2)*	Percent of script items (N = 943)	Per 100 visits (N = 719)
Anti-bacterials	15.0	19.6
Analgesics	13.4	17.5
Beta-adrenoceptor agonists (tablets)	4.3	5.7
Diabetes and diabetes management	4.3	5.6
Corticosteroids topical	3.6	4.7
Anti-inflammatory non-steroidal drugs (NSAIDs)	3.5	4.6
Inhaled corticosteroids	3.2	4.2
Agents affecting the renin-angiotensin system	3.0	3.9
Diuretics	2.4	3.2
Antidepressants	2.3	3.1
Corticosteroids and related agents	2.2	2.9
Beta-adrenoceptor blockers	1.8	2.4
Anti-ulcerants	1.7	2.2
Emollient and barrier creams	1.7	2.2
Anti-thrombotic agents	1.7	2.2
Contraceptives non-hormonal	1.6	2.1
Contraceptives hormonal	1.4	1.8
Lipid-modifying agents	1.4	1.8
Laxatives	1.3	1.7

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

Table 10.7 to Table 10.23 give age and gender-specific prescribing rates for the following major drug groups, and the problems for which they were most frequently used: nervous system, anti-infective, respiratory, alimentary, cardiovascular, dermatological, genito-urinary, musculoskeletal, blood and blood-forming organs, and systemic hormone drugs. For example, the two most common clinical problems for which nervous system drugs (including analgesics and psychological drugs) were prescribed were acute respiratory infections (15.5% of nervous system prescription items) and non-organic psychoses, that is, psychosis of unknown cause (13.8% of nervous system prescription items).

Table 10.7 Nervous system drugs: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Male	25	24	30	20	28
Female	24	24	27	25	17

Table 10.8 Most frequent problems managed by nervous system drugs

Problem * (READ2 sub-chapter)	Percent of nervous system † prescription items (N = 174)	Percent of problems so treated
H0 Acute respiratory infections	15.5	40.3
E1 Non-organic psychoses	13.8	38.0
H2 Pneumonia and influenza	5.8	50.0
E2 Neurotic, personality and other non-psychotic disorders	5.2	16.7

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

† This drug group includes analgesics and psychological drugs.

Table 10.9 Anti-infective drugs: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Male	25	41	16	13	12
Female	18	28	15	12	11

Table 10.10 Most frequent problems managed by anti-infective drugs

Problem * (READ2 sub-chapter)	Percent of anti-infective † prescription items (N = 148)	Percent of problems so treated
M0 Skin and subcutaneous tissue infections	21.0	75.9
F5 Ear diseases	12.2	43.3
H0 Acute respiratory infections	12.2	26.9
H2 Pneumonia and influenza	6.1	38.9
H3 Chronic obstructive airways disease	5.4	12.1
M1 Dermatitis/dermatoses	5.4	20.0

* Includes any problems, 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.

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

	All ages	< 25	25–44	45–64	65+
Male	13	14	7	9	24
Female	16	17	12	25	2

Table 10.12 Most frequent problems managed by respiratory drugs

Problem * (READ2 sub-chapter)	Percent of respiratory prescription items (N = 104)	Percent of problems so treated
H3 Chronic obstructive airways disease †	49.0	56.9
H0 Acute respiratory infections	10.6	14.9
H1 Other upper respiratory tract diseases	6.7	70.0

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

† The category “chronic obstructive airways disease” includes asthma.

Table 10.13 Alimentary drugs: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Male	12	4	14	20	12
Female	14	7	6	35	17

Table 10.14 Most frequent problems managed by alimentary drugs

Problem * (READ2 sub-chapter)	Percent of alimentary prescription items (N = 91)	Percent of problems so treated
C1 Other endocrine gland diseases	40.7	41.3
J1 Duodenal diseases	11.0	66.7
19 Gastrointestinal symptoms	7.7	26.3

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

Table 10.15 Cardiovascular drugs: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Male	15	0	7	32	56
Female	10	0.8	0	21	43

Table 10.16 Most frequent problems managed by cardiovascular drugs

Problem * (READ2 sub-chapter)	Percent of cardiovascular prescription items (N = 85)	Percent of problems so treated
G2 BP – hypertensive disease	56.5	59.7
G5 Other forms of heart disease	14.1	54.6
C1 Other endocrine gland diseases †	8.2	7.9
G3 Arteriosclerotic heart disease	5.9	62.5

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

† The category “other endocrine gland diseases” includes mainly diabetes.

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

	All ages	< 25	25–44	45–64	65+
Male	9	14	4	5	4
Female	12	26	8	5	4

Table 10.18 Most frequent problems managed by dermatological drugs

Problem * (READ2 sub-chapter)	Percent of dermatological prescription items (N = 78)	Percent of problems so treated
M1 Dermatitis/dermatoses	53.9	71.4
A5 Viral diseases with exanthema	6.4	55.6
M0 Skin and subcutaneous tissue infections	5.1	13.8
M2 Other skin and/or subcutaneous tissue disorders	5.1	28.6

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

Table 10.19 Genito-urinary drugs: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Male	2	3	0	2	0
Female	11	12	17	4	0

Table 10.20 Most frequent problems managed by genito-urinary drugs

Problem * (READ2 sub-chapter)	Percent of genito-urinary prescription items (N = 48)	Percent of problems so treated
61 Contraception	29.2	40.7
1A Genito-urinary symptoms	6.3	14.3
1B CNS symptom	6.3	6.5
7E Upper female genital tract operation	6.3	6.3
AB Mycoses	6.3	33.3
K5 Other female genital tract disorders	6.3	17.7

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

Table 10.21 Musculoskeletal drugs: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Male	8	4	9	7	28
Female	4	0.8	3	9	11

Table 10.22 Most frequent problems managed by musculoskeletal drugs

Problem * (READ2 sub-chapter)	Percent of musculoskeletal prescription items (N = 43)	Percent of problems so treated
C3 Other metabolic and immunity disorders †	20.9	30.8
S5 Sprains and strains of joints and adjacent muscles	16.3	53.9
N0 Arthropathies and related disorders	14.0	28.7
N1 Vertebral column syndromes	9.3	20.0
N2 Rheumatism, excluding the back	7.0	18.8

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

† The category “other metabolic and immunity disorders” includes largely cholesterol metabolism, gout and obesity/hyperalimentation.

Table 10.23 Blood/blood-forming organ drugs: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Male	7	2	9	6	20
Female	5	2	2	11	17

Table 10.24 Most frequent problems managed by blood/blood-forming organ drugs

Problem † (READ2 sub-chapter)	Percent of blood/blood-forming organ* prescription items (N = 42)	Percent of problems so treated
G3 Arteriosclerotic heart disease	16.7	50.0
G5 Other forms of heart disease	11.9	36.4
A0 Bacterial food poisoning	9.5	40.0
C3 Other metabolic and immunity disorders	9.5	15.4

* “Blood and blood-forming organ drugs” include largely anti-thrombotic agents, lipid-modifying agents, anti-anaemics, fluids and electrolytes.

† Includes any problems, for which the drug group was prescribed, with $\geq 5\%$ of group script items.

Table 10.25 Systemic hormone drugs: age- and gender-specific rates (per 100 visits)

	All ages	< 25	25–44	45–64	65+
Male	4	2	3	4	16
Female	6	7	5	5	9

Table 10.26 Most frequent problems managed by systemic hormone drugs

Problem * (READ2 sub-chapter)	Percent of systemic hormone † prescription items (N = 35)	Percent of problems so treated
H3 Chronic obstructive airways disease	25.7	15.5
61 Contraception	14.3	18.5
C1 Other endocrine gland diseases	8.8	4.8
C0 Stroma – goitre	5.7	66.7
K5 Other female genital tract disorders	5.7	11.8
N2 Rheumatism, excluding the back	5.7	12.5
N3 Osteopathy/chondropathy/acquired musculoskeletal deformity	5.7	12.5

* Includes any problems, for which the drug group was prescribed, with ≥ 5% of group script items.

† This drug group excludes contraceptives.

The ranking of most commonly prescribed drug groups was similar, but not identical, for doctors and nurses.

Table 10.27 Comparison of prescribing rates for different drug groups, by practitioner type (per 100 visits)

Drug group (Pharmacodes/ATC level 1) (N visits)	Total (719)	Doctors (463)	Practice nurses (256)
22 Nervous system	24.2	29.4	14.8
16 Infections – agents for systemic use	20.6	25.7	11.3
28 Respiratory system and allergies	14.5	16.6	10.5
1 Alimentary tract and metabolism	12.7	14.7	9.0
7 Cardiovascular system	11.8	11.4	12.5
10 Dermatologicals	10.8	11.4	9.8
13 Genito-urinary system	6.7	7.3	5.5
19 Musculoskeletal system	6.0	6.9	4.3
4 Blood and blood-forming organs	5.8	7.1	3.5
14 Systemic hormone preparations* (excluding oral contraceptives)	4.9	5.0	4.7
38 Extemporaneously compounded preparations and galenicals	1.9	2.8	0.4
31 Sensory organs	1.0	1.1	0.8
25 Oncology agents and immunosuppressants	0.3	0	0.8
40 Special foods	0.3	0.4	0
Medication non-specific	9.7	11.7	6.3
All prescriptions – per 100 visits (N – script items)	131.2 (943)	151.6 (702)	94.1 (241)

* For example, corticosteroids.

11 Non-drug Treatments

Non-drug treatments include any non-drug actions related to up to four possible problems for a patient visit. However, only one action of each type (e.g. administration) was counted for each problem.

The three most frequently used non-drug treatments were health advice (37.7% of all non-drug treatments), investigation/examination/screening (24.3% of non-drug treatments), and referral (12.7% of non-drug treatments) (Table 11.1).

Table 11.1 Frequency of non-drug treatments

Non-drug treatments	Percentage of all non-drug treatments	Frequency per 100 visits	Frequency per 100 problems
Health advice	37.7	68.3	34.2
Investigation/examination/screening	24.3	44.1	22.1
Referral	12.7	23.1	11.6
Follow-up	8.7	15.7	7.9
Administration	6.0	10.8	5.4
Immunisation	4.1	7.4	3.7
Other procedure	2.6	4.7	2.4
Minor surgery	2.1	3.8	1.9
Dressing	1.0	1.8	0.9
Complementary medicine	0.6	1.1	0.6
Physical medicine	0.2	0.4	0.2
Total (N)	100% (1303 treatments)	181.2 (719 visits)	90.7 (1437 problems)

This ranking for the two most frequently used non-drug treatments was the same for doctors and nurses, although the frequency per 100 visits varies somewhat between the two professional groups (Table 11.4). The frequency of health advice by age and gender is shown in Table 11.2, which shows there is a tendency towards higher frequency of health advice with increasing age. The frequency of minor surgery by age and gender is shown in Table 11.3.

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

	All ages	< 25	25–44	45–64	65+
Male	63	56	61	70	84
Female	72	55	89	67	72

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

	All ages	<25	25–44	45–64	65+
Male	4	7	4	1	4
Female	3	5	0.7	4	6

Table 11.4 Comparison of non-drug treatments, by practitioner type (per 100 visits)

Non-drug treatments	Total	Doctors	Practice nurses
Health advice	68.3	71.5	62.5
Investigation/examination/screening	44.1	43.0	46.1
Referral	23.1	26.6	16.8
Follow-up	15.7	14.9	17.2
Administration	10.8	13.2	6.6
Immunisation	7.4	4.8	12.1
Other procedure	4.7	3.2	7.4
Minor surgery	3.8	3.2	4.7
Dressing	1.8	1.7	2.0
Complementary medicine	1.1	1.5	0.4
Physical medicine	0.4	0.6	0
Total (N visits) (N treatments)	181.2 (719) (1303)	184.2 (463) (853)	175.8 (256) (450)

12 Disposition

For the results in this section, only one referral per visit was counted, and referral types are mutually exclusive. Overall, 65% of visits resulted in suggested follow-up within three months (67.0% and 61.3% for doctors and nurses respectively), and 22.0% resulted in some form of referral (23.3% and 19.5% for doctors and nurses respectively) (Table 12.1).

A small minority of visits (1.8%) resulted in emergency referrals to hospital (1.9% and 1.6% for doctors and nurses respectively), 10.7% resulted in referral to medical or surgical specialists (14.2% and 4.3% for doctors and nurses respectively), and 8.6% resulted in referrals to non-medical specialists (6.0% and 13.3% for doctors and nurses respectively).

Table 12.1 Frequency of types of disposition, by practitioner type (percent of visits)

	Total	Doctors	Practice nurses
Follow-up within three months	65.0	67.0	61.3
Referred on	22.0	23.3	19.5
Emergency	1.8	1.9	1.6
Unspecified	1.0	1.3	0.4
Medical/surgical specialties	10.7	14.2	4.3
Non-medical	8.6	6.0	13.3
(N)	(719)	(463)	(256)

Follow-up within three months, total referrals, and emergency referral were all more frequent with increasing age (Table 12.2, Table 12.4 and Table 12.7).

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

	All ages	< 25	25–44	45–64	65+
Male (N=304)	64	56	57	77	84
Female (N=408)	65	50	67	79	70

Table 12.3 shows the problems that were most frequently followed up. For example, all pregnancy and childbirth problems and all perinatal problems resulted in follow-up, as did 92.2% of mental health problems.

Table 12.3 Rates of follow-up, by problem grouping

Problem grouping (based on READ2 chapters)	Percent of problems so treated	Percent of new problems so treated
Pregnancy/childbirth/puerperium	100.0	100.0
Perinatal	100.0	0
Mental	92.2	87.5
Cancers/neoplasms	90.0	66.7
Digestive	88.1	87.5
Cardiovascular/circulatory	87.9	100.0
Musculoskeletal/connective tissue	86.7	72.2
Endocrine/nutritional/metabolic/immunity	85.9	100.0
Genito-urinary	77.1	85.0
Actions	74.5	85.7
Nervous system/sense organs	73.8	70.8
Investigations	73.1	85.7
Symptoms non-specific	72.6	62.5
Skin/subcutaneous tissue	72.5	60.6
Unspecified conditions	71.9	75.0
Infectious/parasitic	70.4	60.7
Blood/blood-forming organs	66.7	50.0
Congenital	66.7	0
Respiratory	62.2	45.9
Injury/poisoning	60.4	48.3
Not coded	100.0	0

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

	All ages	< 25	25–44	45–64	65+
Male (N=304)	18	15	16	21	32
Female (N=408)	25	13	30	34	26

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

	All ages	< 25	25–44	45–64	65+
Male (N=304)	10	4	12	13	16
Female (N=408)	12	5	16	14	11

The frequency of elective referral was highest for cancers (50% of such problems resulted in elective referral), blood/blood forming organs (50%), pregnancy-related (50%), genito-urinary (36.1%) and congenital (33.3%).

Table 12.6 Rates of elective referral, by problem grouping

Problem grouping (based on READ2 chapters)	Percent of problems so treated	Percent of new problems so treated
Cancers/neoplasms	50.0	66.7
Blood/blood-forming organs	50.0	100.0
Pregnancy/childbirth/puerperium	50.0	66.7
Genito-urinary	36.1	35.7
Congenital	33.3	100.0
Digestive	22.5	18.2
Mental	19.6	18.8
Nervous system/sense organs	19.5	16.7
Endocrine/nutritional/metabolic/immunity	19.0	100.0
Cardiovascular/circulatory	17.8	30.0
Investigations	17.8	8.7
Skin/subcutaneous tissue	15.9	0
Unspecified conditions	14.0	0
Musculoskeletal/connective tissue	12.1	11.1
Actions	11.5	5.7
Injury/poisoning	10.4	7.7
Symptoms non-specific	9.5	5.0
Infectious/parasitic	6.8	4.6
Respiratory	6.7	5.1
Perinatal	0	0
Not coded	20.0	0

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

	All ages	< 25	25–44	45–64	65+
Male (N=304)	1.3	0.9	0	2.4	4.0
Female (N=408)	2.2	2.5	2.7	1.2	2.1

The frequency of emergency referral was highest for skin/subcutaneous tissue problems (5.8% of such problems resulted in emergency referral), followed by cardiovascular/circulatory problems (5.6%) and injury/poisoning (4.2%) (Table 12.8).

Table 12.8 Rates of emergency referral, by problem grouping

Problem grouping (based on READ2 chapters)	Percent of problems so treated	Percent of new problems so treated
Skin/subcutaneous tissue	5.8	3.7
Cardiovascular/circulatory	5.6	20.0
Injury/poisoning	4.2	3.9
Genito-urinary	2.8	0
Respiratory	2.7	2.5
Infectious/parasitic	2.3	0
Musculoskeletal/connective tissue	1.7	5.6
Actions	1.7	2.9
Endocrine/nutritional/metabolic/immunity	1.3	0
Nervous system/sense organs	1.3	4.2
Mental	1.1	0
Cancers/neoplasms	0	0
Blood/blood-forming organs	0	0
Digestive	0	0
Pregnancy/childbirth/puerperium	0	0
Congenital	0	0
Perinatal	0	0
Unspecified conditions	0	0
Investigations	0	0
Symptoms non-specific	0	0
Not coded	0	0

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

	All ages	< 25	25–44	45–64	65+
Male (N=304)	7	9	4	5	12
Female (N=408)	10	7	10	15	13

The problems most frequently managed by non-medical referral were, in order, unspecified conditions, musculoskeletal/connective tissue problems, nervous system/sense organ problems, cancers, and blood/blood-forming organ problems (Table 12.10).

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

Problem grouping (based on READ2 chapters)	Percent of problems so treated	Percent of new problems so treated
Unspecified conditions	19.3	33.3
Musculoskeletal/connective tissue	19.0	22.2
Nervous system/sense organs	18.2	16.7
Cancers/neoplasms	16.7	0
Blood/blood-forming organs	16.7	0
Symptoms non-specific	14.3	15.0
Actions	13.8	14.3
Mental	13.0	12.5
Endocrine/nutritional/metabolic/immunity	12.7	0
Investigations	12.2	8.7
Cardiovascular/circulatory	11.1	20.0
Digestive	7.5	4.6
Respiratory	7.4	3.8
Infectious/parasitic	4.6	4.6
Injury/poisoning	4.2	3.9
Skin/subcutaneous tissue	2.9	7.4
Genito-urinary	2.8	0
Pregnancy/childbirth/puerperium	0	0
Congenital	0	0
Perinatal	0	0
Not coded	0	0

Among referrals to medical and surgical specialists, gynaecology, ophthalmology, psychiatry and paediatric referrals were the most common (Table 12.11). Among non-medical referrals, physiotherapy and nursing were the most frequent. Nursing referrals included a wide range of nursing specialties, including such categories as community nurse, asthma nurse, diabetes nurse and ENT (ear, nose and throat) nurse.

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

Destination	Percent of all referrals	Frequency per 100 visits
Emergency referral	8.2	1.8
Referral unspecified	4.4	1.0
Medical/surgical specialties	48.4	10.7
Gynaecology	6.3	1.4
Ophthalmology	6.3	1.4
Psychiatry	3.8	0.8
Paediatrics	3.1	0.7
Orthopaedics	1.9	0.4
Urology	1.9	0.4
Cardiology	1.9	0.4
Gastroenterology	1.9	0.4
Dermatology	1.9	0.4
Rheumatology	1.3	0.3
Obstetric	1.3	0.3
Vascular	1.3	0.3
Respiratory	1.3	0.3
Breast clinic	1.3	0.3
Diabetes clinic	1.3	0.3
ENT	0.6	0.1
Sexual health	0.6	0.1
Endocrinology	0.6	0.1
Geriatrics	0.6	0.1
Pathology	0.6	0.1
Non-medical referrals	39.0	8.6
Physiotherapist	5.0	1.1
Nursing	3.1	0.7
Midwife	1.9	0.4
Audiology	1.9	0.4
Dental	1.3	0.3
Counselling	1.3	0.3
Radiology	1.3	0.3
Podiatry	1.3	0.3
Dietician	0.6	0.1
Total	100%	22.1
(N)	(159)	(719)

13 Electronic Data Collection Pilot

Data for the NatMedCa survey were collected using paper collection methods consisting of pre-printed pads on the desks of participating general practitioners and nurses. The NatMedCa survey also included a pilot study of electronic data collection methods for a total of 65 practitioners from 22 practices. Four community-governed non-profit primary health care organisations used electronic methods, where data were captured routinely using enhanced practice management software in the course of consultations. All were Auckland-based.

The visits data from these four practices provide evidence for differences in practitioner data reporting despite similar patient characteristics; thus, if grouped with paper collection practitioners, they are likely to introduce bias. The following tables show comparative results from six paper collection practices (24 doctors and 20 nurses) and four electronic practices (nine doctors and four nurses). Most importantly, in terms of the capture of comparable data, the problems per visit for GP consultations in the electronic arm of the study averaged 1.29 and reasons-for-visit averaged 0.29; in contrast to the paper collection non-profits, which averaged 2.13 and 1.76 respectively (Table 13.5 and Table 13.6).

The very low number of reasons-for-visit in the electronic arm indicates a high likelihood of systematic bias in the electronic pilot practices, as every visit should have at least one reason for the encounter (in the patient's words). Other important differences include GP referral rates (23.3% of visits in the paper practices and 7.1% in the electronic practices) (Table 13.7), and "all other treatment items" for GPs (184 per 100 visits in the paper practices and 118 per 100 visits in the electronic practices) (Table 13.8).

Some of the observed differences between these two groups of practices, which include, for example, the mean number of daytime patients per week per GP (63.3 in the paper practices and 82.2 in the electronic practices) (Table 13.2), may represent real differences or may be random variations due to the small number of practices for which data are presented.

As a result, data from the four electronic-arm practices have not been included in the results presented in this report because of under-reporting of key data elements, and the consequent likelihood of bias. The extent of under-reporting of key data elements by the electronic pilot practices has yet to be fully examined.

A likely reason for this under-reporting is that routinely used practice management software packages do not prompt (make visually available) additional reporting of survey information, as is possible with pen and paper data collection, but instead have practitioners collect information in their normal, more limited and utilitarian, manner. For example, in routine consultations not all the reasons for the visit are necessarily recorded. Practice management software systems do not readily encourage retrospective completion of the patient notes (and thus the study instrument), as the normal process is to proceed to the next fields and then exit, with billing details being automated.

The findings of the pilot of electronic data collection are important for researchers using, or intending to use, similar methods: there may be considerable under-representation of data. The difference may be due to routine versus survey-based data collection as well as electronic versus paper methods.

Table 13.1 Characteristics of community-governed practices, by data collection method

Practice characteristic*	Paper (N = 6)	Electronic (N = 4)
Personnel (mean number)		
Full-time equivalent (FTE) doctors	2.9	1.8
FTE nurses	3.2	1.9
FTE community workers	0.4	0.6
Access		
Hours open per week (mean)	45.1	42.3
Offering evening surgery hours (%)	33.3	0
Offering weekend surgery hours (%)	66.7	100
Offering booking system (%)	100	100
Ethnicity of patient population (%)		
Māori	18.1	28.0
Pacific	37.0	25.9
Services provided (%)		
Doctors providing maternity care	33.3	50.0
Independent nursing consultations	100	100
Complementary/alternative services	60.0	50.0
Group health promotion	83.3	75.0
Community worker services	66.7	50.0
Computerisation (%)		
Computerised patient records	50.0	100
Governance (%)		
Separate, or external, management structure	100	50.0
Patient representation in management	66.7	25.0

Practice characteristic*	Paper (N = 6)		Electronic (N = 4)	
Legal practice structure (%)				
Sole trader	0		0	
Partnership	0		0	
Community trust	0		75.0	
Other trust	0		0	
Incorporated society	83.3		0	
Limited liability company	16.7		25.0	
Other	0		0	
Practice needs (%)				
Formal community needs assessment	33.3		50.0	
Locality service planning	33.3		50.0	
Inter-sectoral case management	50.0		50.0	
Quality management (%)				
Written policy on complaints	100		75.0	
Written policy for quality management	83.3		75.0	
Standard fees (mean \$)	Card†	No card	Card†	No card
Child (0–5 years)	0	0	0	0
Child (6–17 years)	0.80	2.30	0	0
Adult (18 years and over)	7.00	22.00	2.50	16.30
Funding regime (%)				
Capitated	83.3		75.0	
Budget holding	16.7		0	
Location (%)				
Urban (population > 100,000)	100		100	
Town (30,000–100,000)	0		0	
Rural area (< 30,000)	0		0	

* Health Care Aotearoa (HCA) union.

† High User and/or Community Services cards.

Table 13.2 Characteristics of participant practitioners

Participant practitioners*	Paper		Electronic	
	Doctors (N = 24)	Nurses (N = 20)	Doctors (N = 9)	Nurses (N = 4)
Gender				
Female	70.8	100.0	37.5	100
Male	29.2	0	62.5	0
Total	100%	100%	100%	100%
Age				
< 35	21.7	20.0	25.0	0
35–44	56.5	30.0	50.0	33.3
45–54	21.7	45.0	12.5	66.7
55–64	0	5.0	0	0
> 64	0	0	12.5	0
Total	100%	100%	100%	100%
Mean	39.8 years	43.9	42.4	45.7
Years in practice		(as independent practitioner)		(as independent practitioner)
< 6	37.5	90.0	28.6	50.0
6–15	41.7	10.0	57.1	50.0
16–25	20.8	0	14.3	0
> 25	0	0	0	0
Total	100%	100%	100%	100%
Mean	9.0 years	2.9	9.1	6.9
Years this practice				
< 6	69.6	80.0	50.0	100.0
6–15	30.4	20.0	50.0	0
16–25	0	0	0	0
> 25	0	0	0	0
Total	100%	100%	100%	100%
Mean	4.3 years	3.7	6.6	1.6
Place of graduation				
New Zealand	70.8	75.0	75.0	66.7
United Kingdom	8.3	15.0	0	0
Australia	0	0	12.5	0
Other	20.9	10.0	12.5	33.3
Total	100%	100%	100%	100%
RNZCGP (%)		(College of Nursing)		(College of Nursing)
	59.1	10.0	62.5	25.0
NZMA (%)		(NZNO)		(NZNO)
	37.5	100	28.6	75.0
Size of practice (mean FTE doctors/nurses)	2.9	3.2	1.8	1.9
Mean daytime patients/week	63.3	48.4	82.2	101.3
Mean half-days worked per week	6.6	7.4	7.3	9.5
Mean daytime patients per half-day	9.6	6.5	11.3	10.7

* Practitioners who provided visits data.

Table 13.3 Percentage distribution of visits, by patient gender, age and ethnicity

	Paper		Electronic	
	Doctors	Nurses	Doctors	Nurses
Gender				
Male	42.9	42.5	42.4	37.9
Female	56.9	57.2	57.5	62.1
Missing	0.2	0.4	0.1	0
Total (N)	100% (2088)	100% (1154)	100% (1531)	100% (834)
Age group				
75+	3.4	4.3	4.1	2.6
65–74	6.2	6.8	7.0	5.9
55–64	10.2	9.7	12.8	8.4
45–54	15.6	12.0	17.7	15.4
35–44	18.1	13.7	16.0	19.4
25–34	16.6	14.9	15.1	17.3
15–24	8.9	11.5	10.2	12.6
5–14	8.4	11.4	9.3	8.6
1–4	6.9	7.8	4.7	5.2
< 1	4.4	6.9	3.1	4.6
Missing	1.4	0.9	0.1	0.1
Total (N)	100% (2088)	100% (1154)	100% (1531)	100% (834)
Ethnic group	*		†	
New Zealand European	31.0	11.1	10.6	12.6
Māori	19.0	20.3	18.2	20.9
Samoan	21.0	37.2	23.3	29.2
Cook Island	4.2	4.2	4.4	7.5
Tongan	2.2	2.6	5.3	7.7
Niuean	0.6	1.1	3.2	3.0
Chinese	1.2	2.0	0.5	0.1
Indian	2.2	2.9	5.1	5.3
Other	18.7	18.6	29.4	13.7
Total (N)	100% (2074)	100% (1136)	100% (1517)	100% (832)

* “Paper” – ethnicity was self-reported with multiple categories allowed; one ethnic category was then assigned per patient according to prioritisation of Māori and Pacific people; 32 patients had missing data.

† “Electronic” – ethnicity was obtained from the practice management database, which allowed for a single category per patient; “European” has been included in “New Zealand European”, and “Other European” assigned to “Other”; 16 “electronic” patients had missing data.

Table 13.4 Percentage distribution of visits, by patient NZDep2001 quintile (visits data)

NZDep2001 quintile	Paper		Electronic	
	Doctors	Nurses	Doctors	Nurses
1	5.2	5.5	6.1	1.3
2	7.7	6.3	7.0	2.6
3	13.4	14.3	11.0	2.6
4	21.0	22.3	21.1	23.7
5	52.6	51.7	54.8	69.7
Total* (N)	100% (439)	100% (238)	100% (228)	100% (73)

* Excludes missing data.

Table 13.5 Percentage distribution, and mean number of reasons per visit

No. of reasons per visit*	Paper		Electronic	
	Doctors	Nurses	Doctors	Nurses
0	0	0	73.1	59.7
1	53.4	63.7	24.8	36.4
2	24.8	21.1	2.1	3.9
3	14.7	9.0	0	0
4	7.1	6.3	0	0
Total (N)	100% (463)	100% (256)	100% (238)	100% (77)
Mean	1.76	1.58	0.29	0.44

* Up to four reasons per visit could be recorded.

Table 13.6 Percentage distribution, and mean number of problems per visit

No. of problems per visit*	Paper		Electronic	
	Doctors	Nurses	Doctors	Nurses
0	0	1.6	0.8	3.9
1	35.0	48.0	74.8	87.0
2	30.9	28.5	18.9	7.8
3	19.9	17.2	5.5	1.3
4	14.2	4.7	0	0
Total (N)	100% (463)	100% (256)	100% (238)	100% (77)
Mean	2.13	1.75	1.29	1.06

* Up to four problems per visit could be recorded.

Table 13.7 Percentage of visits where there was any test/investigation, prescription, other treatment, follow-up or referral

	Paper		Electronic	
	Doctors	Nurses	Doctors	Nurses
Test/investigation	29.8	17.6	35.7	27.3
Prescription	75.2	53.1	73.5	70.1
Other treatment	80.2	71.9	57.6	41.6
Follow-up	67.0	61.3	52.9	40.3
Referral	23.3	19.5	7.1	3.9
(N)	(463)	(256)	(238)	(77)

Table 13.8 Number of treatment items per 100 visits, and per 100 problems

	Paper		Electronic	
	Doctors	Nurses	Doctors	Nurses
All treatment items:*				
Per 100 visits	336	270	274	220
(N)	(463)	(256)	(238)	(77)
Per 100 problems	157	154	213	207
(N)	(988)	(449)	(307)	(82)
All prescription items:				
Per 100 visits	152	94	156	132
Per 100 problems	71	54	121	124
All other treatment items:				
Per 100 visits	184	176	118	88
Per 100 problems	86	100	92	83

* All treatment items = All prescription items + All other treatment items.

14 Discussion and Conclusions

14.1 Main results

As this report makes no direct comparisons between different types of primary health care, the results presented here must be interpreted alongside the other reports in the series. Also, it is important to remember that this report does not capture the full experience of the community-governed non-profit sector, as more than half the non-profits sampled in the NatMedCa survey are described in the Māori report. Nevertheless, the results presented here are notable on a number of accounts.

General practitioners and nurses: GPs working in non-profit practices tended to be female, young, and relatively new to general practice. While more than half were members of the RNZCGP, only just over a third were members of the New Zealand Medical Association. The average age of practice nurses was somewhat older than that of the GPs, but despite this 90% of them had been in practice for less than six years.

Patient sociodemographics: Community-governed non-profits served a young population, 19.4% of whom were Māori, 34.1% Pacific and 24.0% European, and 66.1% of whom had a Community Services Card. Of patients attending non-profits, 23.2% were not fluent in English, and the majority lived in the 30% of areas ranked as the most deprived by the NZDep2001 index of socio-economic deprivation. These young, low-income and largely non-European populations are highly atypical compared to the New Zealand average. Just over one-fifth of patients were recorded as having poor or very poor social support. Seven and a half percent of patients were new to the practice, one-quarter were new to the practitioner, and for nearly one-tenth the practice was not their usual source of care. The high proportion of patients who were new to the practitioner could be the result of the team-based care offered in many of the community-governed non-profits, transient and mobile populations, limited capacity for same-day appointments or appointments generally (due to lower doctor-to-patient ratios, which have been recorded previously,¹⁶ and longer appointment times), or a higher turnover of practitioners.

Utilisation and duration of visits: The mean number of visits to the practice over the previous 12 months was 6.8 for visits to doctors and nurses combined, 6.7 for visits to doctors, and 7.0 for visits to nurses. In total, over one-quarter of patient visits were longer than 20 minutes (18.8% and 41.6% for doctors and nurses respectively), and about half were between 10 and 15 minutes (59.2% and 34.7% for doctors and nurses respectively).

Presenting complaints and identified problems: The number of reasons for patient visits increased with age, with females in all age groups having a greater array of presenting problems than males. “Actions” represents a broad grouping of problems that includes preventive procedures, operations/procedures, other therapeutic procedures, administration, and various medications/drug treatments. Actions occur where a practitioner writes an “action” for the “reason” or “diagnosis”. Actions represent by far the most common reason for visit (24.2% of reasons), followed by non-specific symptoms (12.2%), investigations (10.6%) and respiratory symptoms (9.9%). Doctors saw considerably more new problems than did practice nurses (33% of problems vs 24.3% respectively), who dealt with more preventive care than did doctors. In both cases new problems were the most common type of patient visit.

“Problems identified and managed” refers to problems identified and classified by the practitioner, as opposed to those identified by the patient. Most commonly, visits were associated with one problem (39.6%), whereas 10.9% were associated with four problems and 0.6% with no identified problem. Overall the number of problems identified by the practitioner increased with age for both sexes, with a small decrease in the number for the oldest age group (65+ years). Women had more problems identified than did men.

The frequency of types of problems identified was similar – but not identical – to the frequency of reasons for visit, with actions, respiratory and investigations being the most common problems identified. New problems were, overall, more common among females than males, presenting most commonly in both sexes in those aged less than 44 years. For doctors, by far the most frequent type of new problem was respiratory (16.2% of visits), followed by skin problems and infections/parasites. For nurses the most frequent new problem was actions (6.6% of visits), followed by respiratory (5.9% of visits).

Laboratory tests and other investigations: Overall, about a quarter of visits resulted in a test or investigation. Nearly 20% of visits resulted in a laboratory test, which were roughly evenly split between haematology, biochemistry and other lab tests; 1.5% of visits resulted in a radiological investigation, the most common of which was a plain X-ray.

Treatments: A total of 67.3% of patient visits resulted in a prescription (75.2% for doctors and 53.1% for nurses), and 77.2% of visits resulted in some other form of treatment (80.2% for doctors and 71.9% for nurses). The highest proportion of prescription items was for nervous system drugs – principally analgesics (18.5% of script items), followed by anti-bacterials (15.0%) and respiratory and allergy drugs (11.0%). The three most frequently used non-drug treatments were health advice (37.7% of all non-drug treatments), investigation/examination/screening (24.3%) and referral (12.7%).

Follow-up and referral: Overall, 65% of visits resulted in suggested follow-up within three months, and over one-fifth resulted in some form of referral. Only a small minority of visits (1.8%) resulted in emergency referrals to hospital, 10.7% resulted in referral to medical or surgical specialists, and 8.6% resulted in referrals to non-medical specialists. Among referrals to medical and surgical specialists, gynaecology, ophthalmology, psychiatry and paediatric referrals were the most common. Among non-medical referrals, physiotherapy and nursing were the most frequent. Nursing referrals included a wide range of nursing specialties, including such categories as community nurse, asthma nurse, diabetes nurse and ENT nurse.

14.2 Practice nurses

Many of the data presented in this report relate to the work of practice nurses. Practice nurses in community-governed non-profits tend to have a high degree of control of nursing services within their organisation, are responsible for independent caseloads, and have separate appointments. The range of services provided by practice nurses working in union clinics includes patient assessment and treatment, immunisations, antenatal care, cervical screening, counselling, weight-loss programmes, asthma and diabetes management, triage, screening, dressings, and first aid training.⁴⁴ While there is a lack of New Zealand research regarding the impact of different doctor-to-patient ratios on staffing configuration, there have been overseas studies that examined the effects of expanding the role of the practice nurse (and substituting some GP services with nurse services), with results that suggest that nurse services are in some respects broadly comparable to those provided by GPs, and are favourably received by patients.⁴⁵⁻⁵³

14.3 Policy implications

The results presented here are largely consistent with theoretical predictions relating to the social role of the non-profit sector. Non-profit organisations predictably fulfil a range of social functions that may be of great use to policy makers and communities. In particular, they have a role catering for the diverse needs of minority populations not catered for by the government and for-profit sectors.

Historical and contemporary policies have favoured private for-profit ownership of primary health care in the UK, the US, Canada, Australia and New Zealand. For the past 10 years successive New Zealand governments have redesigned aspects of the primary health care system in their efforts to better achieve equity and efficiency objectives in health. There has been a tendency in these reforms to take the dominant ownership model – private for-profit ownership – as a constant rather than a design variable. Indeed, an explicit framework for analysing the ownership configuration of primary health care services is largely absent from the health policy debate. There are three principal ownership possibilities worthy of consideration: government ownership,

private for-profit ownership, and non-profit ownership. The advantages and disadvantages of these different ownership models must be weighed carefully by policy makers.

Non-profit status does not provide any guarantee that an organisation is chiefly concerned with non-profit public-good service. There is diversity in the non-profit sector, just as there is in the for-profit sector. Experience from the US, New Zealand and elsewhere suggests that non-profit status can provide an effective vehicle for the pursuit of business objectives (disguised profit distribution).^{7, p.11 20, p.404} Another somewhat intangible problem with the non-profit sector is its characterisation as a convenient solution for government, allowing government to create the impression that “unsolvable” social and political problems are being addressed, thus blunting more extensive policy development and investment.^{18, p.114} Extensive involvement of the non-profit sector also raises potential problems with complex and expensive contracting (especially when public sources provide the funding), and with it the inevitable loosening of direct accountability to government.

14.4 Strengths and limitations of the survey

A strength of the NatMedCa study is that the data describe the organisational arrangements of a nationally representative sample of GPs. Bias may have been introduced due to the response rate of GPs in community-governed non-profits of 72.7% for the visits dataset, and 95.5% for the practice and practitioners dataset. The magnitude and direction of any such bias is unknown.

This report is based on data from a relatively small number of practices (six) and practitioners (44). More than half the total number of community-governed non-profits included in the NatMedCa survey were Māori organisations, and are not described here but in the Māori report.¹ In order to gain a more complete picture of community-governed non-profit primary health care in New Zealand this report should be read alongside the Māori document.

Further, the majority of practices and practitioners from whom data were collected for this report were from the Wellington region (four out of six practices, and 31 out of 44 practitioners). In reading this report it should therefore also be remembered that the results have a Wellington bias. Community-governed non-profits in other parts of the country may differ in their organisation and visit characteristics.

NatMedCa was a practitioner- rather than a population-based survey. The data refer to the actual work of primary health care practitioners rather than to population utilisation or to the needs of different populations. As a visits-based study NatMedCa, by its nature, over-represents frequent users. For this reason care must be exercised when generalising results to the general population: the results of this study apply to users of primary health care services rather than to the general population. A further point to note is that social support and rapport were judged by the practitioner rather than by the patient; patient assessment of these factors may differ.

14.5 Conclusions

The community-governed non-profits described in this report served a young, low socioeconomic , largely non-European population. Given the organisational and demographic characteristics associated with non-profits, this ownership form deserves further research and detailed policy consideration to explore either its role in providing more extensive coverage for low-income and minority populations, or as a preferred mechanism for providing care to general populations. At the very least, communities, purchasers, primary health care professionals and policy makers should consider experimenting more actively with different ownership arrangements in order to gain sufficient local experience to enable informed choices to be made regarding ownership. The capacity of community-governed non-profit practices to serve diverse ethnic and low-income population groups highlights for communities, policy makers and purchasers the hitherto relatively undeveloped potential of this alternative system of ownership and governance to deliver care for under-served populations, and to shape the purpose and function of primary health care practices.

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