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## PAPER

# Maori/non-Maori patterns of contact, expressed morbidity and resource use in general practice: data from the Waikato Medical Care Survey 1991-2

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### Abstract

**Aims.** To compare patterns of contact, expressed morbidity and resource use in primary care for a representative sample of patients of Maori and non-Maori background.

**Methods.** The data are drawn from a survey of general practice in the Waikato region representing a one per cent sample of all week day encounters. The data were recorded by participating general practitioners in four collection weeks spaced over the period of a year. In total, 12 833 patient encounter forms were completed.

**Results.** Annual rates of general practitioner contact for Maori are slightly lower than those for patients of non-Maori background. The case-mix pattern of general practitioner contact is very similar between the two groups. There is a limited correspondence between ethnic patterns of general practitioner usage and health need (as measured by mortality levels and rates of public hospital discharge).

**Conclusions.** The near equivalence in ethnic rates of general practitioner contact revealed in this study contrasts strikingly both with the level of hospitalisation for Maori, which is nearly double that of non-Maori, and with the difference in mortality rates (30% higher for Maori). Attention devoted to improving access to general practitioner services among Maori may be necessary if important areas of ill health and hospital resource use are to be addressed effectively.

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Although improvements in the health status of Maori over the last two decades can be amply documented, marked and troubling ethnic differentials remain. For example, while there was a reduction in the age standardised death rate for Maori of nearly 15% over the period of the 1980s, this improvement was no more rapid than it was for non-Maori and it left undiminished an ethnic differential of 35%.<sup>1</sup>

Given the persistence of such differentials in health status between Maori and non-Maori, investigators have studied the extent to which ethnic variations in need are reflected in health service usage. While data on public hospital care are unequivocal-Maori rates are 80% higher than non-Maori - evidence on the use of general practitioner services is not so clear.<sup>1</sup> This paper, therefore, seeks to assess the extent to which known differences in health need are reflected in patterns of contact in primary care. It does so by drawing on information from a survey representative of the workload of a regional general practice community.

### Methods

**Study site.** The data for this paper are drawn from a survey of general practice carried out over the period September 1991 to August 1992 in a region covering the territory of the previous Waikato Area Health Board. This area - now part of the Midland Regional Health Authority - was bounded by the Coromandel Peninsula to the north, Mount Ruapehu in the south, Waihi and Taupo to the east, and Raglan and Mokau to the west. The population of the region was 324 433 at the 1991 census, representing about 10% of the New Zealand total. In demographic

terms, the Waikato region can be said to provide a representative cross-section, but not a replica, of the country as a whole.<sup>2</sup>

**Data collection.** The data for this study are drawn from the survey of general practice encounters that formed its central component. The encounter report form was modelled on that used in the National Ambulatory Medical Care Survey in the United States.<sup>3</sup> Encounters were selected in a two-stage process designed to generate a one per cent sample of all weekday general practice consultations in the Waikato region (including weekday, after-hours consultations in accident and emergency practices). All 210 general practitioners and the three accident and emergency practices in the region were invited to administer the encounter report form for a representative sample of their patients. Each participating doctor was allocated a sampling interval set according to estimated workload to produce a sample of 25 patients in each of four data collection weeks spread over a year. Eighty per cent of all practitioners and all three accident and emergency practices took part in the first phase of data collection. A decline in compliance followed the first stage of data collection and, overall, data collections were successfully completed in 69% of all possible participating general practitioner/weeks and all accident and emergency doctor/weeks. Data in this study are presented for 194 general practitioners and 3 accident and emergency practices; this amounted to 12 833 encounter forms.

**Variables.** Each patient encounter record was completed by the general practitioner at the time of the contact. Items included age, sex, occupation, ethnic group, diagnosis, severity of condition and a full log of diagnostic, therapeutic and disposition activities. A full account of sampling and data collection details, including a copy of the encounter form and a description of variable definitions, have been outlined elsewhere.<sup>2</sup>

Practitioners were requested to classify ethnic group membership according to the patient's choice of affiliation. Of the total of 12 833 encounters, 2 047 were classified as Maori and 10 786 as non-Maori. Ethnic affiliation was missing for only 5.4% of all records.

Rates of medical contact are calculated using as the denominator the population usually resident and at home on census night 1991 and, as numerator, the one per cent sample of encounters inflated to represent all weekday encounters registered over the period of a year. Each encounter was weighted by the sampling interval of the practitioner, with further adjustments made for the overall response rate and for any "overflow" of cases recorded in the patient log. Annual rates are produced by applying a multiplier of 13 to the four weekly data collections.

The data have been age- and gender-adjusted using the age groupings 0-4, 5-14, 15-24, 25-44, 45-64, 65+, with the 1991 New Zealand census distribution as the standard population. It should be noted that these data represent encounters not patients and thus there is a chance that the same patient may appear more than once in this dataset. This possibility of duplication, together with the clustering of encounters by practitioner, violate the assumption of statistical independence that is fundamental to significance testing. Therefore, statistical tests and confidence intervals are not presented in this paper.

The statistics on mortality and public hospital usage deployed in Tables 2 and 3 are drawn from published sources.<sup>1</sup> Frequent use in all tables is made of ratio statistics to quantify ethnic differentials. It should be noted that the data from which these ratios are derived are also tabulated in each case.

### Results

**Medical contact.** Table 1 presents age- and gender-specific medical contact rates for Maori and non-Maori. Table 1 shows that, for both Maori and non-Maori, the

traditional U-shaped age distribution is evident; that is, there are higher rates of usage among the young and the old. Also, for both ethnic groups, females have higher rates of medical contact. Comparison across Maori/non-Maori indicates that population rates of general practitioner usage are very similar. In essence, Maori rates are about 90% those of non-Maori.

Table 1. Ethnic group levels of medical contact, rates and ratios: number of visits per year for Maori and non-Maori, by age, group and gender.

Age Group	Maori (Visits Per Year)		Non-Maori (Visits Per Year)		Ratio Maori:Non-Maori	
	Males	Females	Males	Females	Males	Females
0-4	7.7	6.2	8.0	8.4	1.0	0.7
5-14	2.3	2.6	3.4	3.5	0.7	0.7
15-24	2.7	4.8	3.4	4.8	0.8	1.0
25-44	2.9	4.2	3.0	4.7	1.0	0.9
45-64	3.1	4.3	3.4	4.5	0.9	1.0
65+	6.5	7.5	7.2	8.1	0.9	0.9
All Ages	3.5	4.3	4.0	5.2	0.9	0.8
Age-Adjusted	3.6	4.6	4.1	5.2	0.9	0.9
Total* (n=12 833)	4.1 (n=2 047)		4.6 (n=10 786)		0.9	

\*Adjusted by age and gender.

**Need and general practitioner usage.** A major issue concerns the relationship between medical contact and patterns of need. This is addressed in Table 2 where rates of general practitioner usage and patterns of expressed morbidity are compared to mortality rates for Maori and non-Maori. A Maori:non-Maori ratio is also calculated for both sets of rates.

Table 2. Ethnic group levels of mortality and general practitioner usage: rates and ratios for Maori and non-Maori, by degree of vulnerability.

ICD Chapter Headings	Mortality, 1987-91 (Rates per 10 000 population)			General practitioner usage, WaiMedCa sample (Rates per 1 000 population)*		
	Maori	Non-Maori	M:N-M	Maori	Non-Maori	M:N-M
<b>Diagnoses with high Maori vulnerability</b>						
Endocrine, etc.	4.2	1.0	4.2	253.8	167.2	1.5
Skin	0.2	0.1	2.7	668.5	628.2	1.1
Infectious/Parasitic	1.1	0.4	2.5	319.0	424.5	0.8
Symptoms	1.8	0.8	2.3	241.6	279.4	0.9
Genito-Urinary	1.5	0.7	2.1	129.4	199.3	0.6
Pregnancy, etc.	-	-	-	22.2	21.5	1.0
Subtotal	8.8	3.0	2.9	1 634.5	1 720.1	1.0
<b>Diagnoses with medium Maori vulnerability</b>						
Respiratory	8.0	5.1	1.6	799.4	885.9	0.9
Digestive	2.2	1.5	1.5	114.9	216.9	0.5
Circulatory	30.3	22.4	1.4	550.7	485.8	1.1
Neoplasms	16.8	14.6	1.2	43.1	116.9	0.4
Injury/Poisoning	5.5	5.1	1.1	740.8	832.5	0.9
Subtotal	62.8	48.7	1.3	2 248.9	2 538.0	0.9
<b>Diagnoses with low Maori vulnerability</b>						
Perinatal	0.7	0.7	1.0	1.3	0.6	2.2
Blood	0.1	0.1	0.9	28.6	36.8	0.8
Musculo-skeletal	0.2	0.3	0.9	294.3	335.9	0.9
Congenital	0.8	0.9	0.9	5.7	31.1	0.2
Mental	0.4	0.5	0.7	120.8	199.6	0.6
Nervous & Sense	0.6	1.0	0.5	435.6	578.7	0.8
Subtotal	2.8	3.5	0.8	886.3	1 182.7	0.8
Grand total	74.4	55.2	1.3	4 769.7	5 440.8	0.9

\*Age- and gender-adjusted. ICD: International classification of disease. WaiMedCa: Waikato medical care survey 1991-2.

The comparisons are grouped into three bands according to the degree of Maori vulnerability. For the purposes of this table, heightened Maori vulnerability is defined as any excess in the ratio of Maori to non-Maori mortality rates;

hence, in the upper panel of the table are grouped conditions for which Maori rates of death are between two and four times those for non-Maori; in the middle panel the discrepancy is less and in the bottom panel the ratio is one or less.

There is a degree of congruence between the mortality and usage figures. In the first place for both sets of data the weight of the distribution is centred on the middle panel of the table. Secondly, there is indeed a slight relationship between degree of vulnerability and the ratio of Maori to non-Maori rates of medical contact, which range from 1.0 to 0.8. Nevertheless, the range of variation in the ethnic ratio is much narrower in the case of general practitioner usage than it is for mortality.

**Public hospital usage and general practitioner workload.** Overall resource use is considered in Table 3 where rates of discharge from public hospitals are compared to general practitioner workload statistics in three bands of hospital usage. Three sets of Maori:non-Maori ratios are also considered: for hospital discharge, mortality and general practitioner usage rates respectively. In this Table the bands of usage are defined by rates of public hospital discharge for Maori, with hospitalisation rates ranging from over 150 per 10 000 in the upper panel to under 100 in the lower panel.

Table 3. Ethnic group levels of public hospital use and general practitioner workload: rates and ratios for Maori and non-Maori, by degree of public hospital usage.

ICD chapter headings	Public hospital discharges, 1992 (Rates per 10 000 population)		Ratio of mortality rates		Ratio of GP visit rates		GP workload rates
	Maori	Non-Maori	M:N-M	M:N-M	M:N-M	Percent	
<b>Conditions with high rates of public hospital usage</b>							
Pregnancy etc.	831.6	412.8	2.0	-	1.0	0.4%	
Respiratory	299.0	115.0	2.6	1.6	0.9	16.7%	
Injury/poisoning	298.2	181.5	1.6	1.1	0.9	15.3%	
Circulatory	180.6	105.0	1.7	1.4	1.1	8.6%	
Digestive	155.2	105.2	1.5	1.5	0.5	3.8%	
Subtotals	1 764.6	919.5	1.9	1.3	0.9	44.8%	
<b>Conditions with medium rates of public hospital usage</b>							
Nervous/sense	137.0	72.3	1.9	1.4	0.8	10.7%	
Genito-urinary	130.2	79.4	1.6	0.8	0.6	3.6%	
Symptoms	123.0	79.5	1.5	0.9	0.9	5.1%	
Neoplasms	121.7	84.8	1.4	0.5	0.4	2.0%	
Subtotals	511.9	316.0	1.6	1.2	0.7	21.4%	
<b>Conditions with low rates of public hospital usage</b>							
Perinatal	76.6	47.7	1.6	1.0	2.2	0.3%	
Musculo-skeletal	65.4	54.5	1.2	0.9	0.9	5.9%	
Endocrine etc.	54.9	15.8	3.5	4.2	1.5	3.2%	
Infectious/parasitic	50.2	29.3	1.7	2.5	0.8	7.8%	
Mental	48.4	25.8	1.9	0.7	0.6	3.4%	
Skin	46.3	20.8	2.2	2.7	1.1	12.0%	
Blood & congenital	49.9	33.7	1.5	0.9	0.5	1.1%	
Subtotals	391.7	227.6	1.7	1.9	0.9	33.7%	
Grand total	2 668.2	1 463.1	1.8	1.3	0.9	100.0%	

ICD: International classification of disease.

Conditions with the highest rates of discharge - in the upper panel - are also those with the sharpest ethnic differential, ranging from 1.5 to 2.0. These account for nearly two thirds of the total rate of discharge from public hospitals and the majority of all problems presented in general practice. However, for this group the ethnic differentials in mortality and general practitioner visits vary little from average. Another group of conditions are those that have low rates of public hospital usage but figure prominently in primary care; these are featured in the third panel of the table. These accounted for a third of all problems presented in last column of Table 3. For these, ethnic differentials were marked for public hospital discharge and mortality rates but were reversed for general practitioner usage.

## Discussion

Clearly there are potential shortcomings to the present study, not the least of which is the regional character of its geographical coverage. Yet, while the proportion of the population of Maori descent in the Waikato is higher than the national average, its age structure is closely comparable. Also, there is evidence both that the general practitioner community in the Waikato is not unrepresentative of the country as a whole<sup>4</sup> and that the overall level of medical contact recorded here is close to that estimated for the region in 1989/90.<sup>5</sup> Furthermore, this overall rate - of 4.5 contacts per capita per year - holds much the same relationship to that now recorded for the country as a whole after five years of extensive health restructuring.<sup>6</sup>

There are potential problems in the calculation of rates since the census definition of ethnic affiliation is one of self assignment while in this study practitioners classified their patients (albeit to reflect patient choice). If practitioners underestimated the number of Maori among their patients relative to the census, then this may have produced an underestimate of Maori rates.

Another issue in the calculation of usage rates derives from the assumptions that had to be made in inflating the sample figures to provide encounter statistics representative of all doctors for the whole year. Yet, the closeness of the rates to regional and national estimates of annual general practitioner usage should allay concerns on this score.<sup>5,6</sup>

Previous research has shown that Maori health status is significantly poorer than that of non-Maori and although Maori visit the general practitioner more than non-Maori, rates of contact are lower than might otherwise be predicted from this morbidity profile and are strongly influenced by the severity and longevity of symptoms.<sup>4,7</sup> It has been estimated that the Maori rate of general practitioner usage may at best be only 12% higher than that for non-Maori.<sup>8</sup>

Previous results of this kind, however, are not fully consistent with the near equivalence in rates of general practitioner contact between Maori and non-Maori reported in the current study. Nor does the evidence published here suggest any close correspondence between likely vulnerability to ill health, as judged by mortality rates, and levels of general practitioner usage. Those diagnoses for which there was a threefold ethnic differential in mortality had a Maori:non-Maori general practitioner usage ratio only a little higher than diagnoses for which the ethnic ratio ran in the reverse direction.

Finally, there seems to be little association between patterns of public hospital usage and general practitioner visiting. Certainly those conditions for which there are high rates of public hospital discharges are also those that make an important contribution to general practitioner workload. Yet the substantial ethnic differential in public hospital discharge rates for this group of conditions is not reflected in the general practitioner visit ratio. Conditions with low rates of public hospital usage are also a large part of general practitioner workload; again, however, the substantial

ethnic differential in both discharge rates and mortality is not reflected in the general practitioner visit ratio.

This mismatch between patterns of public hospital usage and general practitioner visits is not unexpected. Malcolm has argued that there is gross under utilisation of primary care resources among Maori.<sup>9</sup> A similar pattern has also been noted for racial differences in accident and emergency attendance and hospital admission for asthma,<sup>10,11</sup> particularly the high proportion of Maori patients with no regular general practitioner.<sup>12</sup> Furthermore, studies in the Waikato region have recorded high levels of public hospital usage for Maori.<sup>13,14</sup> Against this background, and taking into account also the possible under-reporting of Maori mortality statistics,<sup>15</sup> the relatively low levels of medical contact reported in this study are noteworthy.

While the literature suggests that physician supply and distribution appears to have little overall impact on hospital admission rates (even for conditions that are sensitive to ambulatory care), a greater supply of generalist physicians does seem to make a difference, as does improved doctor availability in populations that are particularly poorly served.<sup>16</sup> It is concluded that attention devoted to increasing access to general practitioner services among Maori may be necessary if important areas of ill health and hospital resource use are to be addressed.

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