Understanding the context of hospital transfers and away-from-home hospitalisations for Māori

Donna Cormack, Bridgette Masters-Awatere, Arier Lee, Arama Rata, Amohia Boulton

ABSTRACT

In Aotearoa New Zealand, people regularly travel away from their home to receive hospital care. While the role of whānau support for patients in hospital is critical for Māori, there is little information about away-from-home hospitalisations. This paper describes the frequency and patterning of away-from-home hospitalisations and inter-hospital transfers for Māori. Data from the National Minimum Dataset (NMDS), for the 6-year period of 1 January 2009–31 December 2014, were analysed. Basic frequencies, means and descriptive statistics were produced using SAS software. We found that more than 10% of all routine hospitalisations constituted an away-from-home hospitalisation for Māori; that is, a hospitalisation that was in a district health board (DHB) other than the DHB of usual residence for the patient. One quarter (25.19%) of transfer hospitalisations were to a DHB other than the patient's DHB of domicile. Away-from-home hospital admissions increase for Māori as deprivation increases for both routine and transfer admissions, with over half of Māori hospital admissions among people who live in areas of high deprivation. This analysis aids in understanding away-from-home hospitalisations for Māori whānau, the characteristics associated with these types of hospitalisations and supports the development and implementation of policies which better meet whānau Māori needs. The cumulative impact of the need to travel to hospital for care, levels of poverty and a primarily reimbursement-based travel assistance system all perpetuate an unequal cost burden placed upon Māori whānau.

The geography of Aotearoa New Zealand, and the way that services are configured across district health boards (DHBs), means that it is relatively common for people to travel away from their home to receive care, whether that travel is planned or is a result of acute situations.[1,2] Although the Ministry of Health has a strategic goal that more people will receive healthcare closer to where they live,[3] it is likely that patients will still be required to travel for more highly specialised services or in cases where treatment is regionalised.[4–6]

In circumstances where patients need to travel away from home for care, there is recognition of the importance of having family, whānau or other support people with them.[4–8] This is not a new phenomenon for Māori, who have long understood the critical role of whānau in the care and support of those who are unwell,[9–11] particularly when whānau members are required to travel for healthcare or are hospitalised away from their usual home. However, there are limited data available on away-from-home hospitalisations or hospital transfers for Māori. This paper describes the frequency and patterning of away-from-home hospitalisations and inter-hospital transfers for Māori. The analysis was undertaken as part of a broader *Hospital Transfers* project that sought to describe circumstances and experiences of whānau in the care of their whānau member when they require care away from their usual home base.

Away-from-home hospitalisations and inter-hospital transfers

The focus of this paper is on describing the patterning of hospitalisations away from a patient's home base. "Away-from-home" is a relative concept and is, therefore, somewhat difficult to define. For the purposes of the broader project, an away-from-home hospitalisation was understood as one that required the patient to travel away from the geographic area where they usually reside.[11] However, due to data limitations, for this paper "away-from-home" was defined as "*a hospital admission where the DHB of the hospital facility was different from the DHB of usual residence*". Inter-hospital transfers were also of interest, as transfers between different hospital facilities can also involve travelling some distance for patients and whānau.[11]

The Ministry of Health routinely publishes data on hospitalisations, based on the National Minimum Dataset (NMDS), a national collection that holds information on all hospital events.[12]

In the past, these publications included reporting of the proportion of hospital discharges that involved a transfer.[13] However, data on transfers (where a discharge was recorded as a transfer) have not been included in the routine reporting from the Ministry of Health since the 2004/2005 report. In this report, 6.1% of all hospital discharges were a transfer.[14] Transfer discharges were more common for medical, rather than surgical, discharges.[14]

While transfer data are no longer routinely publicly reported by the Ministry of Health, data continues to be collected. Inter-district flows, which represent the flow of money between DHBs to cover services provided by another DHB, are reported.[15] However, these data are generally not pubicly reported as numbers of individual patients, but rather as volume of events or costs. Reporting on inter-hospital transfers in terms of numbers of patients or events in Aotearoa New Zealand requires specific analysis of the routinely collected hospitalisations data in the National Minimum Dataset (NMDS).

Away-from-home hospitalisations and inter-hospital transfers for Māori

Information on away-from-home hospitalisations and inter-hospital transfers disaggregated by ethnicity is not currently routinely available. It is, therefore, difficult to estimate how common these events are for Māori, and the characteristics associated with them. The lack of ethnicity analysis, in turn, impacts on the health system's ability to plan services and provide appropriate levels of resourcing to support whānau who might be travelling with a whānau member to provide care and assistance. However, we know that the locations of public hospitals historically have reflected the needs of NZ European/Pākehā populations, rather than Māori communities.[16] We also know from research and monitoring that there are different patterns of hospitalisations for Māori relative to non-Māori;[13] for example, higher rates of hospitalisation for cardiovascular disease.[17,18] Additionally, because not all regions and facilities offer all services, the distribution of Māori populations by region and DHB may have an impact on away-from-home hospitalisation events for Māori. Despite the support offered through the National Tavel Assistance scheme (NTA), the inequitable distribution of deprivation, income, employment and insurance between Māori and NZ European/Pākehā peoples means that a different approach is essential to provide the additional resources required to achieve equity for Māori when travelling to support whānau in hospital.

Methods

Undertaken as part of a *Hospital Transfers* project, the activities associated with identifying the patterns of away-from-home care for Māori whānau were carried out within the description phase of the project (the other two phases were engagement and uptake) of the larger project. An initial scan of reporting data found that Ministry of Health[14] routinely reported hospital transfer numbers were 10+ years old. In the absence of up-to-date analysis, and if it was assumed that hospitalisation admissions for Māori had remained static, it is likely that that planning and resource allocations (such as the NTA budget) are underestimating the scale of need that exists.

Statistical analysis

To examine more recent patterns, secondary analysis of data collected as part of the National Minimum Dataset (NMDS) was undertaken for the 6-year period of 1 January 2009–31 December 2014 (this cut-off date was due to changes in reporting in the NMDS). Ethics approval was obtained from the University of Waikato Ethics Committee (HREC Health#2017–20) and ratified by the University of Auckland Human Participants Ethics Committee (UAHPEC). The NMDS contains data on hospital events, and records in the Confidentialised Unit Record File (CURF) represent a hospital event, rather than an individual patient. Statisical analysis for this paper was generated using SAS/STAT software, Version 9.4 of the SAS System for Windows. SAS Institute Inc., Cary, NC, USA.

Variables

We coded hospitalisations based on admission data, using the admission source code variable in the NMDS, whereby admissions are coded as "T" for "transfer from another facility" or "R" for "routine".[12] It is possible that the admission source code "T" could refer to a "statistical transfer", where the transfer is between two wards or departments within the same facility, rather than between facilities. To exclude statistical transfers from analysis, we intended to restrict transfer admissions to those admissions where the facility code for discharge and admission were different. However, given there was significant missing data for these variables, this strategy could not be carried out to distinguish

"statistical transfer" from "transfer between two different facilities". Hence "transfer" in this paper is defined based on admission code "T", which includes both "statistical transfer" and "transfer between two different facilities".

We categorised admissions as away-from-home hospitalisations where the DHB of domicile for the admission (i.e., the DHB where the person admitted resided) was different to the DHB of admission (i.e., the DHB where the facility they were admitted to was located).[19–20] To allow this analysis, we categorised all public hospital facilities to one of the 20 DHBs based on the Ministry of Health facility code table,[20] and excluded facilities where the facility type code was Null in the dataset, as well as where there was not a DHB domicile code or DHB facility code recorded (n=1,544 records). For away-from-hospitalisations, we restricted analysis to New Zealand residents.

Ethnicity was reported at Level 2 on the CURF dataset.[21] For analysis, and given our primary variable of interest was Māori ethnicity, ethnicity data were aggregated to the broad Level 1 ethnic groupings of Māori, Pasifika, Asian, Middle Eastern/Latin American/African, Other, and European.[22] A "total ethnicity" approach was used, whereby people who reported more than one ethnicity were counted once in each applicable Level 1 ethnic grouping.[23] The exception was 'European', which was the reference group, and only included those people who only reported a European ethnicity. Age was grouped into 10-year age bands for analysis for ages between 1 year and 90 years, with ages up to 1 year and 91 years and over grouped as separate categories. Sex was coded as male or female, with "indeterminate" or "unknown" codes grouped together as "other" (these labels and categories are the only ones available in the NMDS dataset, and do not reflect the range of ways people identify their gender).

Admission type described whether the admission was an "arranged admission", an "acute admission", an "elective admission of a privately funded patient", or an admission "from DHB booking system". Event type was coded according to the Ministry of Health codeset.[23]

Results

Transfer admissions

Table 1 below shows the demographic characteristics associated with transfer hospital admissions between 2009 and 2014 (inclusive), compared with routine admissions. Over the 6-year time period, there were 388,696 hospital admissions that were coded as a transfer (that is, where an admission was coded as a transfer to another facility), representing 6% of all hospitalisations. The proportion of transfer admissions is higher in women than in men (6.6% vs 5.3%). Furthermore, under-1-year-olds had highest % of transferred hospitalisations (15.4%), followed by over-91 years (12.1%) (although overall numbers in this age group are relatively smaller).

Māori made up a larger proportion of routine hospital admissions relative to transfer admissions, while Asian ethnic groups made up a slightly larger proportion of transfer admissions compared with routine admissions (Table 1). Overall, 5% of all hospital admissions for Māori were transfer admissions, compared to 6.1% for European ethnic groups. The proportion of hospital admissions that are transfers has remained around 6%, with a slight drop in 2014 to 5.5%.

When examined by region, Table 2 shows the proportion of routine and transfer admissions by DHB for the 6-year period. The variation in rates across the four DHBs likely represents those with major hospitals, including major trauma hospitals, as well as population size of DHBs (Table 2).

Māori away-from-home hospitalisations

During this period, there were a total of 121,145 hospitalisations that were categorised as away-from-home hospitalisations for Māori. Of these, 108,817 away-from-home admissions were routine, representing 10.4% of all routine admissions for Māori. A further 12,328 away-from-home hospitalisations were transfer admissions (25.2% of all 48,940 transfer admissions for Māori) (Table 3). While transfer admissions were more likely to be away-from-home than routine admissions (25.2% vs 11.3%), only one in 10 (10.2%) of all away-from-home hospitalisations were transfer admissions, with 89.9% of away-from-home hospitalisations being routine admissions. Away-from-home hospitalisations were more common for women, a pattern similar to total hospitalisations. Over a third of away-from-home hospitalisations were among infants, children and young people under 21 years (this is affected by the age structure of the population).

Similarly to hospitalisations, away-from-home hospital admissions increase for Māori as deprivation increases. Around 50% of all away-from-home hospitalisations are among Māori living in deciles 9 and 10 (Figure 1), which will reflect the distribution of deprivation for Māori.

Table 1: Characteristics of transfer hospital admissions compared with routine admissions, 2009–2014.

		Admission type				
		Routine		Transfer		Total
		N	Row %	N	Row %	N
Total		6,043,382	94.0	388,696	6.0	6,432,078
Sex	Female	3,337,304	93.4	237,102	6.6	3,574,406
	Male	2,706,034	94.7	151,592	5.3	2,857,626
	Other	44	95.7	–	–	46
Age at admission	Under 1	501,805	84.6	91,030	15.4	592,835
	1–10	459,365	98.5	7,224	1.5	466,589
	11–20	427,264	96.5	15,437	3.5	442,701
	21–30	678,412	93.3	48,534	6.7	726,946
	31–40	632,521	93.0	47,611	7.0	680,132
	41–50	576,487	97.1	16,939	2.9	593,426
	51–60	639,255	96.6	22,629	3.4	661,884
	61–70	736,179	95.8	32,192	4.2	768,371
	71–80	745,787	94.4	44,214	5.6	790,001
	81–90	552,636	91.7	49,973	8.3	602,609
	>=91	93,671	87.9	12,913	12.1	106,584
Ethnicity	Māori	993,950	95.0	52,250	5.0	1,046,200
	Pasifika	503,627	94.3	30,453	5.7	534,080
	Asian	413,574	92.4	33,871	7.6	447,445
	MELAA	71,415	94.0	4,548	6.0	75,963
	Other	9,592	94.1	596	5.9	10,188
	European only	4,290,721	93.9	279,001	6.1	4,569,722
Year	2009	950,210	93.8	62,955	6.2	1,013,165
	2010	975,430	93.7	65,491	6.3	1,040,921
	2011	992,002	93.8	65,601	6.2	1,057,603
	2012	1,022,606	93.9	66,749	6.1	1,089,355
	2013	1,034,536	94.0	65,586	6.0	1,100,122
	2014	1,068,598	94.5	62,314	5.5	1,130,912

Note: Ethnicity is categorised for analysis as total ethnicity (where everyone is counted once in each broad ethnic group they identify with), except for European only, which is the reference group.

Table 2: Transfer hospital admissions by DHB, compared with routine admissions, 2009–2014.

DHB of admission	Admission type				Total
	Routine		Transfer		
	N	Col %	N	Col %	N
Auckland	759,033	12.6	97,442	25.5	856,475
Bay of Plenty	303,814	5.0	6,925	1.8	310,739
Canterbury	655,370	10.9	65,568	17.2	720,938
Capital and Coast	389,204	6.5	24,646	6.5	413,850
Counties Manukau	662,403	11.0	43,053	11.3	705,456
Hawkes Bay	225,547	3.7	6,341	1.7	231,888
Hutt Valley	189,573	3.1	5,245	1.4	194,818
Lakes	150,639	2.5	5,289	1.4	155,928
Mid Central	222,697	3.7	8,498	2.2	231,195
Nelson Marlborough	171,329	2.8	5,964	1.6	177,293
Northland	294,489	4.9	10,439	2.7	304,928
South Canterbury	82,533	1.4	1,038	0.3	83,571
Southern	389,866	6.5	23,497	6.2	413,363
Tairāwhiti	65,158	1.1	1,014	0.3	66,172
Taranaki	167,432	2.8	4,602	1.2	172,034
Waikato	571,272	9.5	44,080	11.5	615,352
Wairarapa	960	0.0	574	0.2	1,534
Waitematā	595,575	9.9	24,047	6.3	619,622
West Coast	37,730	0.6	1,540	0.4	39,270
Whanganui	99,294	1.7	2,214	0.6	101,508
Total (n, row %)	6,033,918	94.0	382,016	16.0	6,415,934

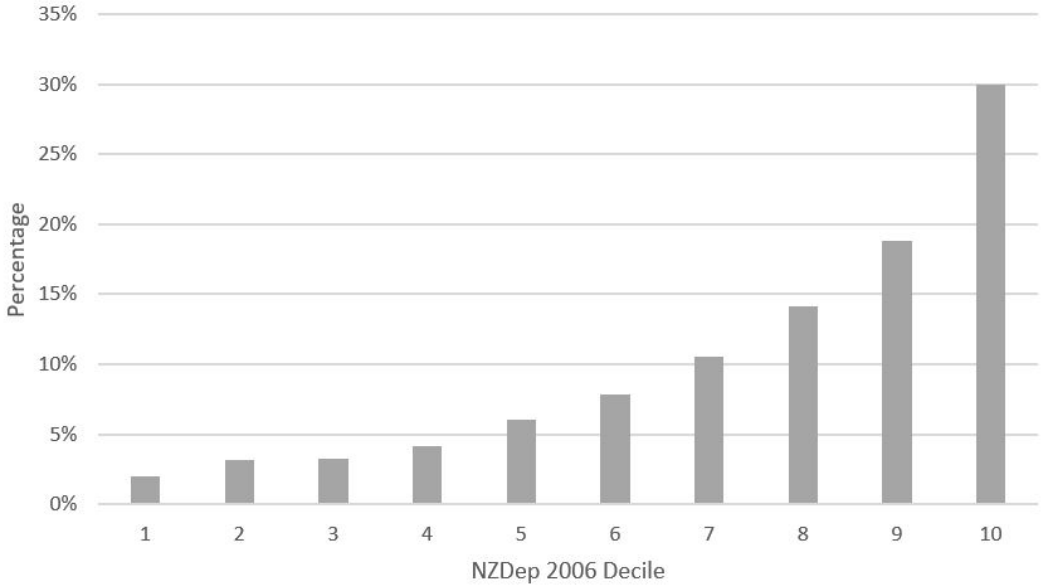
*Frequency missing = 16,144, i.e., 16,144 records with facility codes that do not link to any DHB; Null = 77,833.

Table 3: Māori "away-from-home" hospital admissions, 2009–2014.

		Admission type				
		Routine		Transfer		Total
		N	%	N	%	N
Total		108,817	89.8	12,328	10.2	121,145
Sex	Female	57,179	90.6	5,961	9.4	63,140
	Male	51,634	89.0	6,367	11.0	58,001
	Other	–	100.0	–	–	–
Age at admission	Under 1	8,002	82.1	1,745	17.9	9,747
	1–10	20,945	94.6	1,202	5.4	22,147
	11–20	16,201	92.3	1,356	7.7	17,557
	21–30	16,368	92.4	1,352	7.6	17,720
	31–40	11,060	91.4	1,036	8.6	12,096
	41–50	11,176	88.6	1,435	11.4	12,611
	51–60	11,558	86.2	1,851	13.8	13,409
	61–70	8,482	85.1	1,484	14.9	9,966
	71–80	4,126	85.1	720	14.9	4,846
	81–90	861	86.3	137	13.7	998
	>=91	38	79.2	10	20.8	48
Event type	Birth event	3,438	99.1	30	0.9	3,468
	Intended day case	22,745	98.1	443	1.9	23,188
	Psychiatric inpatient	1,878	88.6	241	11.4	2,119
	Non-psychiatric inpatient	80,756	87.4	11,614	12.6	92,370
Admission type	Arranged admission	29,982	86.8	4,546	13.2	34,528
	Acute admission	50,883	87.2	7,487	12.8	58,370
	Admitted from DHB booking system	27,950	99.0	295	1.0	28,245

* Frequency missing = 16,837, i.e., 16,837 records do not have either a DHB domicile code or a DHB facility code to determine if it was away from home.
** Numbers under 5 are suppressed.

Figure 1: Away-from-home hospitalisations for Māori, 2009–2014, by NZDep2006.*



* Includes routine and transfer admissions

Discussion

This study has identified that away-from-home and transfer hospitalisations are relatively common events for Māori. Transfer admissions represented around 5% of all hospital admissions for Māori during this time period. This finding appears to be broadly in line with the proportion of hospital discharges that were transfers reported earlier by the Ministry of Health.[14] However, transfer admissions were a lower proportion of Māori admissions (5.0%), compared with admissions for European ethnic groups (6.1%).

Nearly one quarter (23%) of all transfer admissions are under 1 year (babies and infants), with the transfer likely related to peri-natal and/or neo-natal complications or conditions. Stevenson and colleagues[24] recognised the likelihood of a transfer between these two groups, noting "*secondary and tertiary maternity care is required if there is a disruption to the hapūtanga and the health of the pregnant woman or her baby is at risk*."[24]

More than 10% of all routine hospitalisations constituted an away-from-home hospitalisation for Māori in this period. While routine admissions accounted for the vast majority of away-from-home hospitalisations, transfer hospitalisations are more likely to be away-from-home. This is likely to be an underestimate of actual away-from-hospitalisations, as we only included those transfers to a DHB other than the DHB of domicile. However, given the size of some DHBs in New Zealand, even a hospitalisation within the DHB of domicile could involve relatively long distances (e.g., approximately 100kms) and could be considered an away-from-home hospitalisation by whānau that will not be captured in our analysis, which is a limitation of the study.

An additional limitation is the way the admission source is coded on the NMDS, which means that we were unable to exclude statistical transfers from our categorisation of a hospital transfer admission. As a consequence, the inclusion of statistical transfers could result in overestimating actual inter-facility transfers as a number of included transfer events will be within the same facility. Similarly, the records code events rather than people. Because the data represent the number of events, a person may be counted multiple times if they had multiple admissions.

Some DHBs with a high Māori population that require large distances to be travelled between hospitals can mask the extent of financial burden impacts for whānau. A separate hospital study[25] reported the impacts for patients, and partners and family at home, on their wellbeing. Partners and family relied on the goodwill of an employer allowing for reduced work hours to ensure children were cared for and taken to school. Meanwhile, inadequate provision of food at hospitals (for parents staying in hospital with a sick child of 0–5 years) meant mothers often went without

food. Furthermore, the costs associated with hospital parking, car maintenance and petrol costs in addition to the preparation of additional meals for whānau at home and in hospital, negatively impacted the wellbeing of Māori whānau.

The characteristics associated with away-from-home hospitalisations are important for understanding the complexity of these for Māori whānau. Similarly, awareness of the characteristics associated with these types of hospitalisations has implications for planning and design that can better respond to the needs of whānau, and to assist in the development and implementation of policies at the national and local level, particularly in light of the current system reforms. One example where such awareness is important is the National Travel Assistance scheme (NTA), a reimbursement-based system centrally coordinated by the Ministry of Health. Services and resoures for whānau vary between DHBs.[16,26] With a reimbursement approach, the burden is placed on Māori whānau who must carry the costs while waiting for a decision about their application.[16] The likelihood of an away-from-home hospitalisation increases for Māori as deprivation increases, with many away-from-home hospitalisations for Māori living in NZDep 9 and 10, meaning that the reimbursement approach to support is unlikely to meet immediate assistance needs. In this analysis, we also found that over a third of Māori away-from-home hospitalisations (using our conservative catgorisation) were for infants, children and young people, meaning it is likely that they would have needed whānau to travel and stay with them during the hospitalisation.

Conclusion

For Māori, away-home-hospitalisations are not uncommon, especially among admissions involving a transfer. When considered in light of actual numbers, Māori as a proportion of the whole population (16.5%),[27] the negative experiences of Māori during hospital admissions[7,25,28] and a high proportion of Maōri living in areas of high deprivation, the impact of away-from-home hospitalisations on Māori needs to be considered in planning and policy development. The cumulative impact of the need to travel to hospital for care, levels of poverty and a primarily reimbursement-based NTA system all serve to perpetuate an unequal cost burden placed upon Māori whānau. Decisions regarding government health-related policies and service funding draw on reporting and analysis of large data sets, such as the NMDS. However, if the Ministry of Health is no longer routinely reporting the rates of hospital transfers, does not report on away-from-home hospitalisation, and continues to fail to report ethnicity data for all indicators, resource allocation will be poorly informed and inequitable, with significant implications for Māori patients and their whānau.

COMPETING INTERESTS
Nil.

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