Pathways to ambulatory sensitive hospitalisations for Māori in the Auckland and Waitemata regions

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ABSTRACT

AIM: Ambulatory Sensitive Hospitalisations (ASH) are a group of conditions potentially preventable through interventions delivered in the primary health care setting. ASH rates are consistently higher for Māori compared with non-Māori. This study aimed to establish Māori experience of factors driving the use of hospital services for ASH conditions, including barriers to accessing primary care.

METHOD: A telephone questionnaire exploring pathways to ASH was administered to Māori (n=150) admitted to Auckland and Waitemata District Health Board (DHB) hospitals with an ASH condition between January 1st – June 30th 2015.

RESULTS: A cohort of 1,013 participants were identified; 842 (83.1%) were unable to be contacted. Of the 171 people contactable, 150 agreed to participate, giving an overall response rate of 14.8% and response rate of contactable patients of 87.7%. Results demonstrated high rates of self-reported enrolment, utilisation and preference for primary care. Many participants demonstrated appropriate health seeking behaviour and accurate recall of diagnoses. While financial barriers to accessing primary care were reported, non-financial barriers including lack of after-hours provision (12.6% adults, 37.7% children), appointment availability (7.4% adults, 17.0% children) and lack of transport (13.7% adults, 20.8% children) also featured in participant responses.

CONCLUSIONS: Interventions to reduce Māori ASH include: timely access to primary care through electronic communications, increased appointment availability, extended opening hours, low cost after-hours care and consistent best management of ASH conditions in general practice through clinical pathways. Facilitated enrolment of ASH patients with no general practitioner could also reduce ASH. Research into transport barriers and enablers for Māori accessing primary care is required to support future interventions.

Ambulatory Sensitive Hospitalisations (ASH) is an academic construct of a group of conditions for which hospitalisation is potentially preventable through prophylactic or therapeutic interventions delivered in the primary health care setting. ASH are often categorised as vaccine-preventable, acute or chronic conditions. Key pathways to this categorisation of ASH include inadequate vaccination, lack of early detection and treatment of acute conditions, and inadequate control of chronic conditions.

ASH rates for 0–4 year olds have recently been employed as a measure of health care integration and whole system performance in the Ministry of Health's Integrated Performance and Incentives Framework. ASH rates are also employed as an indicator for Māori Health. The Ministry of Health have recently undertaken a review of the methodology and definition of ASH.

ASH rates are consistently higher for Māori, with rates 1.6 to 2.3 times higher for Māori than non-Māori. Multiple factors have been linked to ASH. Health care affordability, accessibility and availability have been shown to reduce ASH as has acceptability of care, quality of care and accommodation of patient preferences. Access to the socioeconomic determinants of health including income, education, transport, quality housing and social supports can also reduce ASH. Other factors that impact upon ASH include...
health-seeking behaviour and practitioner factors. While ASH are considered potentially preventable through interventions delivered in the primary health care setting, the impact of social determinants of health limit the use of ASH to determine preventability within primary care.

Overall primary care access with regard to use and availability of services is lower for Māori than non-Māori as demonstrated by gaps in enrolment for primary care, well child and oral health services. However, this is variable across age groups and geographical regions, and ethnicity misclassification is likely to account for some of the difference. Māori are more likely to face financial barriers for general practitioner (GP), after-hours and pharmacy services, to experience unmet need for health care due to lack of transport and are less likely to secure an available appointment within 24 hours of enquiry. There is also evidence of poorer quality of primary care for Māori, who may receive shorter consultations, fewer investigations, fewer prescriptions and lower secondary care referral rates than non-Māori. As an indicator of health system performance, within the context of known issues of primary care access and quality, high Māori ASH rates may represent an appropriate response of seeking necessary care from the most accessible source.

A number of interventions have been identified in the literature as beneficial in reducing ASH. These include condition specific, multidisciplinary, patient centric programmes; increased access to primary care, in particular for children and underserved populations; and managing patients out of hospital through community-based pharmacological and telemedicine interventions.

Methods

The study used descriptive methodology to report perceptions about health care experience, pathways to admission, attitudes and behaviours. The study was a telephone administered questionnaire (Appendix 1 and 2) developed utilising standard validated questions from the New Zealand Health Survey (NZHS) and Agency for Healthcare Research and Quality Clinician Survey. The population of interest were Māori aged 0–74 admitted to Waitemata DHB (North Shore Hospital or Waitakere Hospital), or Auckland DHB (Auckland City Hospital or Starship Hospital) with a primary diagnosis of an ASH condition from January 1st–June 30th 2015. The Ministry of Health ASH definition at the time of the study was used to determine which conditions were classified as ASH. Usual ASH filters were applied (eg deceased patients, babies <28 days and admissions lasting <3 hours were excluded).

Questionnaire surveys were conducted from April 8th–July 2nd 2015 by culturally appropriate, trained telephone interviewers using an agreed script. Verbal consent to participate was sought from participants or parents/guardians of children (less than 16 years). The survey included multiple choice questions with a number of free text options. Questions explored primary care enrolment and utilisation, history of the ASH condition, health seeking behaviours, health care journey in the week and year prior to admission, and barriers and enablers to accessing primary care. Interviews were between 15 minutes and one hour in duration.

Participant responses were matched with hospital data including: demographic data, National Health Index (NHI) number, admitting hospital, deprivation level and whether a named GP was recorded in the hospital records at admission. Ethnicity was prioritised according to standard ethnicity protocols. Deprivation was assigned using the New Zealand Index of Deprivation (NZDep), a small area measure of deprivation derived from census data. NZDep was categorised into quintiles (1 least deprived quintile, 5 most deprived quintile). At the time data were extracted, new domicile codes based on 2013 census area units were yet to be implemented, however, updated 2013 NZDep scores were available. Where a domicile code remained unchanged from 2006, its 2013 NZDep score was used. Where a domicile was no longer in use, the 2006 NZDep score was used as a proxy.

Descriptive statistics are presented and qualitative data were analysed using thematic analysis. Statistical analysis was undertaken in Stata 13.0 (StataCorp. 2013. Stata Statistical Software: Release 13. College Station, TX: StataCorp LP) and Microsoft Excel. Differences in characteristics between participants and non-participants were
assessed using two sample t-tests, Wilcoxon rank-sum test, Pearson’s chi-squared and Fisher’s Exact test.

The survey was considered low risk, not requiring formal approval from the Health and Disability Ethics Committee. DHB localities approval was granted. A $20 supermarket voucher koha was offered to survey participants. Systems were put in place to manage any possible disclosure of information, psychological distress or service complaints. Participants who raised any issues were offered follow up with hospital whānau support services (He Kamaka Waiora).

Results

A cohort of 1,013 eligible participants were identified from hospital records, 150 participants (97 adults, parents/guardians of 53 children) completed the telephone survey, giving an overall response rate of 14.8% (Figure 1). Of the eligible cohort, 802 (79.2%) were unable to be contacted despite up to three attempts at different times of the day/week, and 40 (3.9%) were found to have no such telephone number. Of the 171 people that were contactable, 150 agreed to participate (response rate of contactable patients of 87.7%).

Survey participants had similar demographic characteristics to non-participants (Table 1). Māori participants admitted with an ASH condition during the study period were more likely to live in the highest deprivation quintile compared with non-Māori admitted with an ASH condition (36.0% and 22.6% respectively). Participants were also more likely to live in areas of high deprivation compared with the total Māori population for Auckland and Waitemata DHBs, in which 27% and 14% of Māori live in the most deprived quintile.

Leading ASH conditions for adults surveyed were cellulitis, angina and chest pain, pneumonia and kidney/urinary infections. For children surveyed, leading ASH conditions included dental conditions, asthma and cellulitis (Table 1). Non-participants include persons who were non-contactable or who declined to participate.

Participants reported high levels of enrolment and utilisation of primary care services. Self-reported enrolment was higher than the percentage of participants who had a GP listed in the hospital data (95.9% versus 85.6% for adults, 100% versus 71.7% for children). Participants reported regular contact with primary care with 84.9% of adults and 90.2% of children being seen two or more times in the 12 months before admission (Table 2).

Participants reported a strong preference for seeing a GP first, rather than visiting a hospital or other health provider (74.7% adults and 94.2% children). Thematic analysis demonstrated preference for seeing a GP was due to ease of access and greater convenience of a GP compared with hospital

Figure 1: Flow diagram of participants eligible to participate in the pathways to ASH survey.
Participants valued the long established relationships and history they shared with their GP. Many participants reported that hospitals were for emergencies and that it was inappropriate to visit a hospital for non-urgent issues. One in four adults preferred to visit a hospital or specialist first if they were unwell, needed a check-up or health advice. Reasons given for this preference included better quality of care, lower costs and lack of available appointments in primary care.

High levels of continuity of carer (GP or practice nurse) were demonstrated with the majority of adults (75.3%) and children (70.6%) reporting they would usually see the same GP or practice nurse. Participants reported receiving comprehensible health instructions from primary care staff about taking care of their illness (adults 83.0%, children 96.1%). High levels of concordance were seen between self-identified reason for admission and ASH category coded at discharge. Concordance was particularly high for children (92.5%) (Table 2).

Despite high levels of self-reported enrolment, utilisation and preference for general practice, a significant number of participants reported never seeing a health professional for their current ASH condition (22.7% adults, 39.6% children) and had not seen a GP or practice nurse in the week prior to admission.

### Table 1: Comparison of characteristics for participants and non-participants.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Level</th>
<th>Participants (%)</th>
<th>Non-participants (%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td></td>
<td>150 (100)</td>
<td>863 (100)</td>
<td></td>
</tr>
<tr>
<td>Age, mean (SD)</td>
<td></td>
<td>33.4 (23.6)</td>
<td>33.1 (23.3)</td>
<td>0.89</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td></td>
<td>72 (48.0)</td>
<td>455 (52.7)</td>
<td>0.29</td>
</tr>
<tr>
<td>M</td>
<td></td>
<td>78 (52.0)</td>
<td>408 (47.3)</td>
<td></td>
</tr>
<tr>
<td>NZDep quintile</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>12 (8.0)</td>
<td>57 (6.7)</td>
<td>0.91</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>24 (16.0)</td>
<td>122 (14.2)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>27 (18.0)</td>
<td>169 (19.7)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>33 (22.0)</td>
<td>196 (22.9)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>54 (36.0)</td>
<td>313 (36.5)</td>
<td></td>
</tr>
<tr>
<td>GP recorded at admission</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td>29 (19.3)</td>
<td>194 (22.5)</td>
<td>0.39</td>
</tr>
<tr>
<td>Yes</td>
<td></td>
<td>121 (80.7)</td>
<td>669 (77.5)</td>
<td></td>
</tr>
<tr>
<td>LOS, median (IQR)</td>
<td></td>
<td>1 (0, 3)</td>
<td>1 (1, 3)</td>
<td>0.46</td>
</tr>
<tr>
<td>ASH category</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cellulitis</td>
<td></td>
<td>23 (15.3)</td>
<td>182 (21.1)</td>
<td>0.062</td>
</tr>
<tr>
<td>Dental conditions</td>
<td></td>
<td>21 (14.0)</td>
<td>112 (13.0)</td>
<td></td>
</tr>
<tr>
<td>Asthma</td>
<td></td>
<td>19 (12.7)</td>
<td>39 (4.5)</td>
<td></td>
</tr>
<tr>
<td>Angina and chest pain</td>
<td></td>
<td>12 (8.0)</td>
<td>95 (11.0)</td>
<td></td>
</tr>
<tr>
<td>Respiratory infections: pneumonia</td>
<td>11 (7.3)</td>
<td>45 (5.2)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
before admission (adults 41.1%, children 38.2%, excludes dental admissions). Many adults (47.4%) and children (41.5%) reported being unwell for less than one week before admission (Table 2).

There was evidence of barriers to timely access to a GP with 32% of adults reporting they were unable to see a GP within 24 hours. Lack of available appointments was the main reason given by adults (48.4%) for being unable to access a GP within 24 hours. Telephone and email communications were used less often to access GP advice (adults 27.8%, children 11.3%) (Table 2).

In the week prior to admission, 41.5% of children and 58.8% of adults reported seeing a GP or practice nurse. Adult readmissions for the ASH condition were seen across the spectrum of ASH conditions, whereas asthma accounted for 73.3% of paediatric ASH readmissions.

General practice not being open when needed or lack of after-hours provision were the main reasons given for children delaying or not seeing a GP before going to hospital. Other factors included lack of transport, no available appointment and financial barriers. For adults, financial barriers, including being unable to afford to see the GP, being unable to pay for prescriptions and pre-existing debts with the GP, were the main reason for delaying or not seeing a GP. Other reasons given were general practice not being open or not having after-hours provision, lack of transport and no available appointments. Key enablers, reported by caregivers that would make accessing a GP easier for children, were enhanced affordability and availability of after-hours care. Other facilitators included having transport and GPs being open after-hours (Table 3).

Table 2: Summary of findings.

<table>
<thead>
<tr>
<th>Findings</th>
<th>Adults (%)*</th>
<th>Children (%)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-reported enrolment with a GP</td>
<td>93/97 (95.9)</td>
<td>53/53 (100)</td>
</tr>
<tr>
<td>GP details recorded in hospital data</td>
<td>83/97 (85.6)</td>
<td>38/53 (71.7)</td>
</tr>
<tr>
<td>Two or more GP visits in the 12 months before admission†</td>
<td>79/93 (84.9)</td>
<td>46/51 (90.2)</td>
</tr>
<tr>
<td>Four or more GP visits in the 12 months before admission†</td>
<td>65/93 (69.9)</td>
<td>29/51 (56.9)</td>
</tr>
<tr>
<td>10 or more GP visits in the 12 months before admission†</td>
<td>34/93 (36.6)</td>
<td>3/51 (5.9)</td>
</tr>
<tr>
<td>Prefer GP as first health contact²</td>
<td>71/95 (74.7)</td>
<td>49/52 (94.2)</td>
</tr>
<tr>
<td>Continuity of carer when seen in primary care³</td>
<td>67/89 (75.3)</td>
<td>36/51 (70.6)</td>
</tr>
<tr>
<td>Received comprehensible health instructions in primary care in the 12 months before admission²</td>
<td>73/88 (83.0)</td>
<td>49/51 (96.1)</td>
</tr>
<tr>
<td>Concordance between ASH coding and self-reported reason for admission</td>
<td>67/97 (69.1)</td>
<td>49/53 (92.5)</td>
</tr>
<tr>
<td>Did not see a health professional for the ASH condition before admission</td>
<td>22/97 (22.7)</td>
<td>21/53 (39.6)</td>
</tr>
<tr>
<td>Did not see a GP or Practice nurse in the week before admission**</td>
<td>39/95 (41.1)</td>
<td>13/34 (38.2)</td>
</tr>
<tr>
<td>Unwell for less than one week before admission</td>
<td>46/97 (47.4)</td>
<td>22/53 (41.5)</td>
</tr>
<tr>
<td>Unable to see a GP within 24 hours of request in the 12 months before admission</td>
<td>31/97 (32.0)</td>
<td>5/53 (9.4)</td>
</tr>
<tr>
<td>Used telephone or email to access GP practice in the 12 months before admission</td>
<td>27/97 (27.8)</td>
<td>6/53 (11.3)</td>
</tr>
<tr>
<td>Readmitted for the same ASH condition</td>
<td>41/96 (42.7)</td>
<td>15/53 (28.3)</td>
</tr>
</tbody>
</table>

*Percentages presented use the total number of participants who provided a response to the question as the denominator.
†Includes visits to a GP and practice nurse.
‡Prefer to visit their GP first rather than visiting a hospital or other health provider if they are unwell, need a check-up or health advice.
§When seen in primary care, participants would usually see the same GP or GP nurse.
||Reported always or almost always being given easy-to-understand instructions from their GP or GP nurse about taking care of their illness/child’s illness.
**Excludes participants with dental conditions.
Māori patient and whānau experience presented in this study provides a counter narrative to the deficit focus often taken in reports on ASH. Many participants demonstrated appropriate health-seeking behaviour, pertinent use of secondary care services and accurate recall of diagnoses. Of interest in this survey was the high proportion of un-contactable patients. This raises concerns regarding the ability of hospital services to contact patients post-discharge and the accuracy of contact details included on discharge summaries.

Local work on diabetes clinic ‘Did Not Attend’ rates has also demonstrated a high proportion of un-contactable patients. The importance of accurate patient contact details has been recognised nationally with the Ministry of Health undertaking a National Enrolment Service (NES). The NES will allow primary care to update the NHI health identity data with contact details; hospital services will then be able to access more accurate data.27 Introduction of a DHB caller ID to identify incoming calls as being from the DHB could be investigated as a way of improving telephone call pick-up rates and contactability of patients post-discharge.

Table 3: Summary of barriers and enablers to accessing a GP.

<table>
<thead>
<tr>
<th>Barriers to accessing a GP</th>
<th>Adults N=95 (%)</th>
<th>Children N=53 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP not open or it was after-hours</td>
<td>12 (12.6)</td>
<td>20 (37.7)</td>
</tr>
<tr>
<td>Lack of transport</td>
<td>13 (13.7)</td>
<td>11 (20.8)</td>
</tr>
<tr>
<td>No appointments available</td>
<td>7 (7.4)</td>
<td>9 (17.0)</td>
</tr>
<tr>
<td>Unable to afford to see a GP</td>
<td>14 (14.7)</td>
<td>3 (5.7)</td>
</tr>
<tr>
<td>Unable to afford prescriptions†</td>
<td>7 (7.4)</td>
<td>1 (1.9)</td>
</tr>
<tr>
<td>Owe the GP money</td>
<td>3 (3.2)</td>
<td>4 (7.5)</td>
</tr>
<tr>
<td>Waiting times too long</td>
<td>3 (3.2)</td>
<td>2 (3.8)</td>
</tr>
<tr>
<td>Negative experience with a GP in the past</td>
<td>4 (4.2)</td>
<td>4 (7.5)</td>
</tr>
<tr>
<td>Could not get childcare</td>
<td>1 (1.1)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>Could not get in touch with the doctor</td>
<td>0 (0.0)</td>
<td>2 (3.8)</td>
</tr>
<tr>
<td>Thought I would not be respected</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>Thought the GP would not want to help me</td>
<td>0 (0.0)</td>
<td>1 (1.9)</td>
</tr>
<tr>
<td>Do not trust GPs</td>
<td>0 (0.0)</td>
<td>0 (0.0)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Enablers to accessing a GP</th>
<th>Adults N=94 (%)</th>
<th>Children N=52 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free or low cost after-hours†</td>
<td>31 (32.9)</td>
<td>43 (82.7)</td>
</tr>
<tr>
<td>GP practice open after-hours</td>
<td>27 (28.7)</td>
<td>42 (80.8)</td>
</tr>
<tr>
<td>Having transport to the GP</td>
<td>30 (31.3)</td>
<td>37 (71.2)</td>
</tr>
<tr>
<td>Free or low cost GP care‡</td>
<td>50 (53.1)</td>
<td>34 (65.4)</td>
</tr>
<tr>
<td>Feeling welcome at GP practice</td>
<td>3 (3.2)</td>
<td>1 (1.9)</td>
</tr>
<tr>
<td>Feeling that the GP respects me</td>
<td>2 (2.1)</td>
<td>1 (1.9)</td>
</tr>
<tr>
<td>More appointments</td>
<td>2 (2.1)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>Shorter waiting times</td>
<td>2 (2.1)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>Having childcare</td>
<td>1 (1.1)</td>
<td>0 (0.0)</td>
</tr>
</tbody>
</table>

*Percentages presented use the total number of participants who provided a response to the question as the denominator.
†Could not afford to pay for medication if the GP was to give them a prescription.
‡Sub-analysis of enablers to accessing primary care reported by caregivers demonstrated no significant differences in responses for children aged <6 or ≥6 reporting that free or low cost GP (<6 years: 18/27, ≥6 years 16/26, p=0.70) or free or low cost after-hours care (<6 years: 21/27, ≥6 years 22/26, p=0.53) would make it easier to see a GP.
The study demonstrates several key areas for intervention to reduce high Māori ASH rates. Inconsistencies between self-reported enrolment and presence of a GP recorded in hospital data may reflect incomplete recording of GP details or patients incorrectly assuming they are enrolled. However, the majority of participants had seen their GP in the last 12 months. These inconsistencies raise the possibility that discharge communications for some participants are not reaching their GP which may be contributing to ASH readmissions.

Lower rates of Primary Health Organisation (PHO) reported enrolment for Māori are compounded by known ethnicity misclassification, which underestimates PHO enrolment for Māori. Structured discharge planning has been shown to reduce ASH admission. Recommendations to improve this include steps to increase Māori enrolment through the Multi-Enrolment Project to enrol newborns into a range of services including primary care and oral health services. Multi-enrolment of newborns has been employed by the Porirua Social Sector Trial, successfully contributing to an increase in children enrolled in oral health services. Other recommended activities include ensuring GP details are checked and updated with each admission and active follow up and facilitated enrolment of ASH patients with no GP identified. Despite high levels of utilisation of primary care services in the previous year, many adults and children did not see a GP or practice nurse in the week before admission. Given that 47.4% of adults and 41.5% of children were unwell for less than one week, lack of GP contact in the week prior to admission represents a lost opportunity to prevent an admission. Timely access to a GP and lack of available appointments was a recurrent issue for many adults. Similar findings have been found nationally with 21% of Māori adults and 16% of Māori children being unable to get an appointment at their usual medical centre within 24 hours in the last 12 months. Given the potential to mitigate ASH with primary care interventions, improving timely access to primary care is an important step in reducing ASH.

Greater use of electronic communications between patients and primary care through services such as the Electronic Health Record and Patient Portal could improve timely access to GP advice and management for chronic conditions. Telemedicine including regular contact by telephone has been shown to reduce ASH for chronic conditions including heart failure and diabetes. Ensuring that these enhanced systems work for Māori and do not increase ethnic inequities is important.

Free or low cost GP care and after-hours care were identified by adults as key enablers for accessing a GP. Having GP practices open after-hours and low cost or free after-hours care were key enablers identified to improve children’s access to a GP. Given the acute nature of many paediatric ASH and the strong preference from caregivers to see a GP, steps to extend GP opening hours and free or low cost after-hours care could reduce ASH. At the time of the ASH survey coverage for free after-hours care for children under six years old was 98% and 96% for Auckland and Waitemata DHBs respectively. Extension of free after-hours care to include children aged under thirteen may further reduce financial barriers to after-hours care. While financial barriers to accessing primary care were reported by many participants, non-financial barriers including appointment availability, after-hours care and transport also featured in participant responses.

Comparisons between participants and non-participants indicate there were no significant differences with regard to age, gender, deprivation, record of a GP at admission, length of stay and ASH condition. However, the high number of un-contactable people and subsequent low response rate of eligible participants means the study is exploratory and limits generalisability of results.

Areas of further research

Lack of transport was identified as preventing or delaying adults and children from seeing a GP. Findings from the NZHS support the importance of transport as a barrier to accessing primary care for Māori. The NZHS reported Māori adults and children were more likely to experience unmet need for a GP due to lack of transport than non-Māori with rate ratios of two and
Lack of transport may be due to lack of access to a car, being unable to drive due to medical or licencing restraints, lack of access to public transport or inability to fund transport. Further research into the nature of transport barriers and enablers for Māori accessing primary care is required to support future interventions.

Despite high levels of contact with primary care, participants were still admitted with an ASH condition. This suggests steps to mitigate some ASH admissions were not being fully realised. Ensuring consistent, best practice management of ASH conditions in general practice through clinical pathways could prevent some of these ASH admissions. Admission with an ASH condition despite GP contact in the week prior may reflect referral being necessary at the point of presentation, limiting timely effective intervention in primary care. A more detailed case review would be needed to understand this further.

High rates of paediatric asthma readmissions suggest a recurrent failure to mitigate potentially preventable admissions, despite cases being seen repeatedly by primary and secondary care. The underlying cause of these readmissions is unclear and could relate to access and quality of GP services, quality of hospital management, discharge planning, health literacy and environmental factors such as crowded and poor quality housing.16,17,20 Again, a more detailed case review would be needed to understand this further. Further research to assess the impact on ASH following subsidised GP visits for children aged under six and more recently, children aged under thirteen would further clarify the influence of financial barriers on ASH.

**Strengths and limitations**

Strengths of this research include the focus on patient and whānau experience to inform relevant interventions for Māori. The survey was comprehensive in its enquiry across pathways to ASH with questions relating to social determinants of health, access to primary care and quality of care received. Quantitative and qualitative data allowed for both breadth and depth of enquiry. The use of validated questions previously included in the NZHS allowed regional findings to be compared with the national context.

Study limitations include the low response rate limiting generalisability of results and potential for selection bias as patients were not randomly selected. However, there were no significant differences between these two groups, suggesting the impact of selection bias is likely to have been low. Recall bias may have arisen due to delay between hospital admission and survey completion which was 2–17 weeks (average 10 weeks) following discharge. Questions relating to events 12 months before admission add to the potential for recall bias. Pathways to dental ASH, a leading ASH condition for children, are likely to be affected by utilisation, access and quality of oral health services which were not specifically covered in this survey.

**Conclusion**

This study demonstrated many positive findings including appropriate health-seeking behaviour, accurate recall of diagnoses and high rates of self-reported enrolment, utilisation and preference for primary care. Financial barriers to accessing primary care were reported, as well as non-financial barriers including appointment availability and lack of transport. Measures to reduce the high ASH rates for Māori include: timely access to primary care through electronic communications, increased appointment availability, extended opening hours and low cost or free after-hours care, consistent best management of ASH conditions through clinical pathways and addressing transportation barriers.
REFERENCES:


12. Ansari Z, Rowe S, Ansari H, et al. Small area analysis of


Appendices

Appendix 1: Pathways to Ambulatory Sensitive Hospitalisations: Adult Survey

Survey Instructions

Answer each question by marking the box to the left of your answer.

You are sometimes asked to skip over some questions in this survey. When this happens you will see an arrow with a note that tells you what question to answer next, like this:

☐ Yes \* If Yes, go to #1 on page 1
☐ No

Your child’s health

1. What illness did you come into hospital for?

2. How long have you had this illness?
   - 1 day–1 week (7 days)
   - Between 1 week and 1 month
   - Between 1 month and 3 months
   - Between 3 months and 12 months
   - More than 12 months
   - I don’t remember

3. Do you need or take medicine prescribed by a doctor for this illness?
   - Yes
   - No

4. Have you been admitted to hospital with this illness before?
   - Yes
   - No
   - I don’t know/remember

7. When was the last time you saw a health professional for the illness you were admitted to hospital with?
   - Never \* If Never, go to #21 on page 5
   - The day I went to hospital
   - Between 1 week and 1 month ago
   - Between 1 month and 3 months ago
   - Between 3 months and 12 months ago
   - More than 12 months ago
   - I don’t remember

8. What health professional/s did you see for this illness before you went to hospital?
   - None
   - GP
   - GP nurse
   - Other

9. Was this the health professional/s you usually see if you need a check-up, want advice about a health problem, or get sick or hurt?
   - Yes
   - No

10. What care did you receive from the health professional?
    - Referral to hospital
    - Advice or instructions
    - Pamphlet or written information
Your care from health professionals

5. Do you have a GP or a GP practice that you visit if you need a check-up, want advice about a health problem, or get sick or hurt?
   - Yes
   - No

6. Are you enrolled with a GP?
   - Yes
   - No
   - I don’t know

11. In the last 12 months, how many times did you visit a GP or GP nurse to get care for yourself?
   - 1 time
   - 2
   - 3
   - 4
   - 5 to 9
   - 10 or more times

12. When you went to see a GP or GP nurse, would the same GP or GP practice nurse usually see you?
   - Yes
   - No
   - I don’t know

13. In the last 12 months, how often did this GP or GP nurse give you easy to understand instructions about taking care of your illness?
   - Never
   - Almost never
   - Sometimes
   - Usually
   - Almost always
   - Always

16. The last time you couldn’t be seen by a GP within 24 hours, why was that?
   - There weren’t any appointments
   - The time offered didn’t suit me
   - The appointment was with a GP I didn’t want to see
   - I could have seen a nurse but I wanted to see a GP
   - I don’t know
   - Another reason:
14. In the past 12 months, has there been a time when you wanted to see a GP, within the next 24 hours, but they were unable to see you?

☐ Yes
☐ No
☐ I don’t know

15. How many times has this happened in the past 12 months?

☐ 1 time
☐ 2
☐ 3 or more times
☐ I don’t know

17. In the past 12 months, did you phone a GP practice with a medical question during regular office hours or email the practice with a medical question? A medical question includes test results.

☐ Yes
☐ No
☐ I don’t know/remember

18. In the past 12 months, when you phoned the GP practice during normal office hours or emailed the GP practice, how often did you get an answer to your medical question the same day?

☐ Always
☐ Usually
☐ Sometimes
☐ Never
☐ I don’t know/remember

19. In the last 7 days, how many times did you visit a GP or GP nurse to get care for yourself?

☐ Never → If Never, go to #21 on page 5
☐ 1 time
☐ 2
☐ 3 or more times

20. In the last 7 days, how often did this GP or GP nurse give you easy to understand instructions about taking care of your illness?

☐ Never
☐ Almost never
☐ Sometimes
☐ Usually

22. Did any of these reasons about accessing a GP make you choose not to see a GP before going to hospital, or delay you seeing a GP?

☐ My GP wasn’t open when I needed to see them, or it was after hours
☐ I couldn’t get in touch with the doctor
☐ There were no appointments available
21. Did any of these reasons about a GP’s or GP practice’s behaviour make you choose not to see a GP before going to hospital or delay you seeing a GP?
- Almost always
- Always
- I thought I would not be respected
- I thought the GP would not want to help me
- I do not trust GPs
- I have had a negative experience with a GP in the past
- Other
  • Please tell us more about this:

23. When you need a check-up, want advice about a health problem, or get sick or hurt, where would you prefer to go first? (Choose one only)
- GP
- Hospital
- Other
  • Please tell us more about this:

### About you
26. What is your age?
- 0–4
- 5–9
- 10–14
- 15–19
- 20–24
- 25–29
- 30–34
- 35–39
- 40–44
- 45–49
- 50–54
- 55–59
- 60–64
- 65–69
- 70–74
24. When you went to the hospital did you think you would be admitted to hospital?
- Yes
- No

25. What would make it easier for you to see a GP?
- Having transport to the GP
- Free or low cost GP care
- GP practice open after hours
- Free or low cost after hours care
- Feeling welcome at the GP practice
- Feeling that the GP respects me
- Other
  - Please tell us more about this:

27. Are you?
- Male
- Female

28. What is your highest level of education?
- Primary school / Kura kaupapa
- Secondary school / Kura kaupapa (High School/College)
- Tertiary / Wananga (University or Polytechnic)
- No formal education

29. What is your hospital number (NHI)?
(This might be on your hospital wrist band, or the kaiatawhai may be able to help you find it)
Appendix 2: Pathways to Ambulatory Sensitive Hospitalisations: Child (caregivers) Survey

Survey Instructions

Answer each question by marking the box to the left of your answer.

You are sometimes asked to skip over some questions in this survey. When this happens you will see an arrow with a note that tells you what question to answer next, like this:

- Yes → If Yes, go to #1 on page 1
- No

Your child’s health

1. What illness did your child come into hospital for?

2. How long has your child had this illness?
   - 1 day–1 week (7 days)
   - Between 1 week and 1 month
   - Between 1 month and 3 months
   - Between 3 months and 12 months
   - More than 12 months
   - I don’t remember

3. Does your child need or take medicine prescribed by a doctor for this illness?
   - Yes
   - No

4. Has your child been admitted to hospital with this illness before?
   - Yes
   - No
   - I don’t know/remember

7. When was the last time your child saw a health professional for the illness they were admitted to hospital with?
   - Never → If Never, go to #21 on page 5
   - The day I went to hospital
   - 2 days–1 week (7 days) ago
   - Between 1 week and 1 month ago
   - Between 1 month and 3 months ago
   - Between 3 months and 12 months ago
   - More than 12 months ago
   - I don’t remember

8. What health professional/s did your child see for this illness before they went to hospital?
   - None
   - GP
   - GP nurse
   - Other

9. Was this the health professional/s your child usually sees if they need a check-up, get sick or hurt or you want advice about a health problem?
   - Yes
   - No

10. What care did your child receive from the health professional?
    - Referral to hospital
    - Advice or instructions
    - Pamphlet or written information
<table>
<thead>
<tr>
<th>Your child’s care from health professionals</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Does your child have a GP or a GP practice that you visit if they need a check-up, get sick or hurt or you want advice about a health problem?</td>
<td>□ Yes □ No</td>
</tr>
<tr>
<td>6. Is your child enrolled with a GP?</td>
<td>□ Yes □ No □ I don’t know</td>
</tr>
</tbody>
</table>

| | □ Medication script □ Medication administered by a GP or nurse □ Wound care □ I don’t know □ Other |
| 11. In the last 12 months, how many times did your child visit a GP or GP nurse to get care? | □ 1 time □ 4 □ 2 □ 5 to 9 □ 3 □ 10 or more times |

| 12. When you went to see a GP or GP nurse, would the same GP or GP practice nurse usually see your child? | □ Yes □ No □ I don’t know |
| 13. In the last 12 months, how often did this GP or GP nurse give you easy to understand instructions about taking care of your child’s illness? | □ Never □ Almost never □ Sometimes □ Usually □ Almost always □ Always |

| 16. The last time your child couldn’t be seen by a GP within 24 hours, why was that? | □ There weren’t any appointments □ The time offered didn’t suit me □ The appointment was with a GP I didn’t want to see □ I could have seen a nurse but I wanted to see a GP □ I don’t know □ Another reason: |

...
14. In the past 12 months, has there been a time when you wanted your child to see a GP, within the next 24 hours, but the GP was unable to see them?
- Yes
- No
- I don’t know

15. How many times has this happened in the past 12 months?
- 1 time
- 2
- 3 or more times
- I don’t know

17. In the past 12 months, did you phone a GP practice with a medical question about your child during regular office hours, or email the practice with a medical question about your child? A medical question includes test results.
- Yes
- No
- I don’t know/remember

18. In the past 12 months, when you phoned the GP practice during normal office hours or emailed the GP practice, how often did you get an answer to your medical question about your child the same day?
- Always
- Usually
- Sometimes
- Never
- I don’t know/remember

19. In the last 7 days, how many times did your child visit a GP or GP nurse to get care?
- Never → If Never, go to #21 on page 5
- 1 time
- 2
- 3 or more times
<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>20. In the last 7 days, how often did this GP or GP nurse give you easy</td>
<td>= <strong>Never</strong>&lt;br&gt;□ Almost never&lt;br&gt;□ Sometimes&lt;br&gt;□ Usually&lt;br&gt;□ Almost always&lt;br&gt;□ Always</td>
</tr>
<tr>
<td>to understand instructions about taking care of your child's illness?</td>
<td></td>
</tr>
<tr>
<td>21. Did any of these reasons about a GP's or GP practice's behaviour</td>
<td>= □ I thought I would not be respected&lt;br&gt;□ I thought the GP would not want to help me&lt;br&gt;□ I do not trust GPs&lt;br&gt;□ I have had a negative experience with a GP in the past</td>
</tr>
<tr>
<td>make you choose not to take your child to a GP before going to hospital</td>
<td></td>
</tr>
<tr>
<td>or delay you in taking your child to see a GP?</td>
<td></td>
</tr>
<tr>
<td>22. Did any of these reasons about accessing a GP make you choose not</td>
<td>= □ My GP wasn't open when I needed to see them, or it was after hours&lt;br&gt;□ I couldn't get in touch with the doctor&lt;br&gt;□ There were no appointments available&lt;br&gt;□ I couldn't get transport to see the GP&lt;br&gt;□ I couldn't get childcare&lt;br&gt;□ I couldn't afford to see the GP&lt;br&gt;□ I couldn't afford to pay for medication if the GP was to give my child a prescription&lt;br&gt;□ I owe the GP money&lt;br&gt;□ Other&lt;br&gt;• Please tell us more about this</td>
</tr>
<tr>
<td>to take your child to a GP before going to hospital, or delay you in</td>
<td></td>
</tr>
<tr>
<td>taking your child to see a GP?</td>
<td></td>
</tr>
<tr>
<td>Question</td>
<td>Options</td>
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</tr>
<tr>
<td>23. When your child needs a check-up, gets sick or hurt or you want advice about a health problem, where would you prefer to take your child first? (Choose one only)</td>
<td>GP, Hospital, Other</td>
</tr>
<tr>
<td>24. When you went to the hospital did you think your child would be admitted to hospital?</td>
<td>Yes, No</td>
</tr>
<tr>
<td>25. What would make it easier for you to take your child to a GP?</td>
<td>Having transport to the GP, Free or low cost GP care, GP practice open after hours, Free or low cost after hours care, Feeling welcome at the GP practice, Feeling that the GP respects me, Other</td>
</tr>
<tr>
<td>26. What is your child’s age?</td>
<td>0–4, 5–9, 10–14, 15–19</td>
</tr>
<tr>
<td>27. Is your child?</td>
<td>Male, Female</td>
</tr>
<tr>
<td>28. What is your highest level of education? (parent or legal guardian)</td>
<td>Primary school/Kura kaupapa, Secondary school/Kura kaupapa (High School/College), Tertiary/Wananga (University or Polytechnic), No formal education</td>
</tr>
<tr>
<td>29. What is your child’s hospital number (NHI)? (This might be on your hospital wrist band, or the kaiatawhai may be able to help you find it)</td>
<td></td>
</tr>
</tbody>
</table>