Ngāti Porou Hauora Health Dashboard

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Prepared by Lee Tan
For Ngāti Porou Hauora
Background

Author: Lee Tan

Lee Tan was contracted by Ngāti Porou Hauora on the Dashboard and health outcome project. Lee has developed a set of indicators using data from several sources including the Ministry of Health, Tairāwhiti District Health Board (DHB), Primary Health Organisation and Statistics New Zealand to track trends and progress in selected health outcomes for the population served by Ngāti Porou Hauora.

Lee has been in the planning and funding team at Capital & Coast DHB for over 10 years, she has contributed extensive analysis of primary health care policy and implementation in NZ, with a particular focus on equity, including a secondment to the Ministry of Health as Advisor (epidemiology). Her experience also included nearly 3 years of policy analysis in Māori Development for Te Puni Kōkiri.
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ACKNOWLEDGEMENTS

The Ngāti Porou Hauora (NPH) Dashboard project was initiated by the NPH Board and senior management. The data analysis and writing of this report faced many challenges. In particular, there was no published information for the section on health outcomes for Ngāti Porou Hauora and the Dashboard indicators come from a variety of sources of customised data and analysis. Apart from the PHO performance indicators (PPP and IPIF) which are readily accessible to NPH, all other indicators had to be prepared through customised data requests and was limited by conflicting delivery timeframes due to other larger projects and/or the availability of affordable technical expertise.

In these challenging circumstances, the NPH Dashboard project was completed and this report is written as a result of the assistance of the professionals who were available for advice, technical analysis and peer review. Each of them shared a degree of professionalism, interest and commitment to the work that deserves profound gratitude, not only from me, but from the staff of NPH and the people of Ngāti Porou rohe as a whole.

I would like to particularly acknowledge Rose Kahaki, Chief Executive of NPH and senior managers Georgina Paerata, Agnes Walker, and Frances King who provided content advice, facilitated consultation with the Clinical Advisory Group, Clinical Governance Group and hospitality during my stay and work onsite in Gisborne and Te Puia Springs. Ripeka Atkins, as project manager, provided very helpful contract information and support throughout the project.

Dr Julia Carr provided ongoing guidance, overview of the project, peer review, and her particular contribution in stimulating suggestions and encouragement helped me to consolidate the focus for this project, especially in writing this report.

Bridget Robson, Associate Dean Māori, University of Otago and Te Rōpū Rangahau Hauora a Eru Pōmare, University of Otago Wellington, provided valuable technical advice, support for calculation of the health outcome indicators, and peer review. Special appreciation to Gordon Purdie, Biostatistician who has taken on this extra workload, while he worked under tight time constraints for most of 2015 with other significant projects.

Jane Wang, Monitoring DHB Performance, National Health Board provided the most up-to-date published version of the Ministry’s document on performance indicators and assisted with clarifying technical definitions for the Dashboard indicators.

Nikolai Minko, Health Quality and Safety Commission advised on data access and update on technical issues regarding the indicators.

Susan Iverson, Karo Data Management Ltd shared knowledge on data anomalies and provided customised PHO data over and above the contractual obligation.

Dr Akin Ojo, Dr Helen Gardyne, Dr Doug Lush, Cheryl Johnson, Hinemoa McLelland, Lisa Porter, Gina Chaffey-Aupouri, and colleagues provided valuable input on the indicators and discussion on local issues.

Thanks to Mark Cockburn, Land information team leader, GIS Mapping services for Gisborne District Council.

Denise Hovell, Cara Lawton, Ami Hokianga and administrative staff, have helped supply NPH data and answers to numerous questions.

Thanks to Huti Puketapu Watson (Deputy Chair, NPH Board) and Michelle Wanoa, (NPH community member) for taking time to share their perspectives on the Dashboard indicators.

Responsibility for all the analysis and interpretation in the report (including any errors or omissions) remains mine alone.

Lee Tan, Analyst and Author
**EXECUTIVE SUMMARY**

**INTRODUCTION**
This report documents a set of indicators for Ngāti Porou Hauora (NPH) to understand trends and progress in health outcomes at population level for the people served by NPH. The report consists of two elements: NPH Dashboard and background information on NPH Health Outcomes.

The set of indicators selected for the NPH Dashboard provides a snapshot and some trend analysis of the service coverage, utilization and the health profile of the local population. The Dashboard (page 8) will inform and strengthen reporting to NPH Board, funders and community, and contribute to Tairāwhiti DHB, Te Runanganui o Ngāti Porou and NPH accountability for better health and wellbeing of the population served by NPH.

The NPH Health Outcomes section provides brief interpretation of the performance results for a larger selection of indicators, and where appropriate, brief suggestions for future focus. However, the solutions for progress in the health of the population largely rely on addressing the wider social determinants, an effective mix of funder and stakeholder collaboration, locally designed, developed, delivered services and regular performance monitoring.

The Dashboard together with the suite of health outcome indicators gives an aggregated snapshot of indicators for NPH relative to the Tairāwhiti DHB, and Total New Zealand where available. This feature can help NPH to highlight where NPH is doing well, and where special attention and focus are required.

**KEY FACTS**
The NPH Dashboard highlights the following facts:

**SOCIAL DETERMINANTS OF HEALTH**

1. The Dashboard shows that 91% of Ngāti Porou rohe population lives in very deprived areas (NZDep deciles 9 and 10) compared to 52% of Tairāwhiti DHB, and 20% of NZ.
2. 100% of the coastal NPH population is classified as rural, the majority is classified as highly rural according to the definition of rurality (Statistics New Zealand), and 99% of these areas are very deprived in terms of socio-economic conditions
3. In Census 2013, Māori made up of 70% of the population in Ngāti Porou rohe.
4. NPH has one of the highest proportions of Māori in the Primary Health Organisations (PHO) enrolments in NZ (88% of NPH patients are Māori compared with 15% Māori in the total New Zealand PHO enrolment).
5. The households in the Ngāti Porou rohe receive a much lower average equivalised income ($38,700) at about two-thirds of the New Zealand average income level ($57,800).\(^1\)
6. Young people who are not in education, employment or training are at greater risk of a range of negative outcomes including poorer health, depression or early, unplanned parenthood. The Census 2013 figure for 20-24 year old youth at 3
7. 2% for Ngāti Porou rohe is more than twice as high as the New Zealand average (15%).

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\(^1\) Equivalised household income is total household income adjusted to enable comparison of income levels between households of differing size and composition, reflecting the requirement of a larger household to have a higher level of income to achieve the same standard of living as a smaller household.
ACCESS TO PRIMARY CARE

8. NPH has enrolled the bulk of the population in the East Coast areas (98%), but there is still room to increase enrolment for Māori in Wharekaka (630 Māori, 19% enrolled with NPH), Kaiti areas (NPH has 27% enrolled) and several other urban areas of Gisborne with high Māori population.

9. On average, NPH GPs and nurses have provided higher rates of consultation compared with Tairāwhiti and the national average. NPH high needs patients (mostly Māori and people from high deprivation areas) have visited 1.5 times every quarter compared with 1.3 times and 1.2 times respectively in Tairāwhiti and in NZ.

INTERMEDIATE PERFORMANCE OUTCOMES

10. A selection of key PHO performance measures shows that overall NPH PHO is performing on a par with Tairāwhiti’s results.

Some of NPH PHO performance achievements include:
- Above the 95% target in childhood immunisations for 2 year olds at around 96% in 2013 and 2015, which was higher than Tairāwhiti and New Zealand.
- Improvement in childhood immunisations for 8 months old from 84% in 2013 to 97% in 2015.
- Improvement in breast cancer screening from 61% in 2013 to 71% in 2015.
- Improvement in cardiovascular disease risk assessment from 78% in 2013 to 93% in 2015, which is above the 90% target and outperformed both Tairāwhiti and New Zealand.
- NPH PHO has outperformed both Tairāwhiti and New Zealand for the high needs population in breast cancer screening, childhood immunisations for 2 year olds, and cardiovascular disease risk assessment, and also achieved the programme goal for these indicators.

Overall, there were slightly better results for the high needs population except for infant breast feeding at 3 months, smoking rate, diabetes detection and occasional fluctuations in the 8-months old childhood immunisation.

HEALTH OUTCOMES

MORTALITY

11. Ngāti Porou rohe has the highest overall mortality rate in New Zealand (66% above the national rate and 17% above Tairāwhiti). The Māori mortality rate is 12% above national Māori rate and 18% lower than Tairāwhiti. This comparison needs to take into account the difference in the Māori density in Ngāti Porou rohe (70% Māori in NPH compared with 45% in Tairāwhiti and 14% in New Zealand) as well as the relative deprivation (91% NPH compared with 52% in Tairāwhiti and 20% in New Zealand).

12. It should be noted that the main objective in monitoring health status in recent years has been around benchmarking, and the desire to compare performance on key indicators across PHOs and DHBs with national results. Challenges abound when attempting to monitor in a robust manner that simultaneously takes into account differences in age, ethnic composition, geography, and socioeconomic deprivation. Where a PHO’s rates differ markedly from the DHB or the national average, we need to consider whether there are demographic factors such as deprivation or age structure of the local population that are the probable explanation or whether the difference may be a sign of a service performance issue.

2. Overall mortality rate is the probability of dying across all ages, based on national mortality data which collects numbers of deaths by place, time and cause. NZ mortality data reflect deaths registered by Births, Deaths and Marriages (Whānautanga, matenga, mārenatanga) systems of deaths, with the underlying cause of death coded by the Ministry of Health.

The Dashboard shows that the avoidable death rate in the Ngāti Porou rohe is slightly more than twice (107% higher) the rate in New Zealand as a whole, and about 10% more than Tairāwhiti. It has the highest rate of avoidable death in the country. The avoidable death rate for Māori is higher than the rate for total population in the rohe with 75 more deaths per 100,000 (1.3 times or 34% higher).

Amenable mortality rates in the Ngāti Porou rohe were more than two times (129% higher) the national rate, about 48% higher than Tairāwhiti, and it has the highest rate of amenable death in the country. The rate for Māori is about 37% higher than national rate and 15% higher than Tairāwhiti.

Ngāti Porou rohe’s injury mortality rates were nearly 2 times higher (90% higher) than the national rate with a substantial gender difference.

Injury mortality rates were 2.5 times higher for Māori males than for Māori females, whereas Tairāwhiti Māori males were 3.6 times more likely to die from injuries than their female counterparts. Furthermore, injury mortality for all males in Ngāti Porou rohe was 3.4 times higher than for females.

**HOSPITAL ADMISSIONS**

The rates of avoidable admission in the Ngāti Porou rohe were slightly higher (1.2 times or 21% higher) than New Zealand, and Tairāwhiti (1.1 times or 7% higher). However, the Māori avoidable admission rate was nearly the same as New Zealand (2% higher), and Tairāwhiti (4% higher).

All-cause admission rates for Ngāti Porou rohe Māori were the same as Tairāwhiti (1% lower), and slightly lower than New Zealand Māori (6% lower).

**AMBULATORY SENSITIVE HOSPITALISATIONS (ASH)**

The Dashboard shows that after adjusting for differences in population age structures, the rates for ASH for the total population of the Ngāti Porou rohe were slightly higher (1.1 times or 8% higher) than Tairāwhiti DHB. Both are significantly higher than the national ASH rate (NPH ASH rate was 1.5 times or 46% higher).

**BIRTHS**

Information on infants includes birth-weight and gestation. The Dashboard shows that overall, the prevalence of premature babies and low birthweight in the Ngāti Porou rohe was slightly higher (1.1 times higher) than Tairāwhiti and substantially higher (1.3 times or 31% higher) than national rates.

**CANCERS**

The most common cancers registered for Māori people in the Ngāti Porou rohe were cancers of the digestive organs and lung. The rates of these cancers were also substantially higher for Ngāti Porou rohe population in that the lung cancer rates were 1.4 times (or 42% higher) higher than Tairāwhiti and 2.3 times or 131% higher than the national rates.

Other population health outcome indicators with detailed rates and comparisons are listed from page 47 onwards.

These findings confirm that the health status of Māori in the Ngāti Porou rohe is significantly worse than that of the rest of the country.
**Ngāti Porou Hauora Dashboard: Summary of Results as at July 2015**

<table>
<thead>
<tr>
<th>Domain/Indicator</th>
<th>Indicator measure by:</th>
<th>Data period</th>
<th>NPH</th>
<th>Tairāwhiti</th>
<th>Total NZ</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social Determinants</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NZ Deprivation Income</td>
<td>1a Percentage of Mesblocks with high deprivation (9-10)</td>
<td>Census 2013</td>
<td>91%</td>
<td>52%</td>
<td>19%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1b Equivalised Household Income</td>
<td>Census 2013</td>
<td>10,700</td>
<td>47,500</td>
<td>57,800</td>
<td></td>
</tr>
<tr>
<td>Ethnicity</td>
<td>1c Proportion of Māori in population</td>
<td>Census 2013</td>
<td>70%</td>
<td>49%</td>
<td>16%</td>
<td></td>
</tr>
<tr>
<td>Housing</td>
<td>2a Children (Under 15 years) living in crowded households</td>
<td>Census 2013</td>
<td>5%</td>
<td>4%</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Education</td>
<td>3a Early childhood education (0-6 y)</td>
<td>Sep-14</td>
<td>94%</td>
<td>95%</td>
<td>93%</td>
<td>98%</td>
</tr>
<tr>
<td></td>
<td>3b 18 year olds with NCEA Level 2 or equivalent</td>
<td>2013</td>
<td>74%</td>
<td>66%</td>
<td>83%</td>
<td>85%</td>
</tr>
<tr>
<td>Employment</td>
<td>4a Unemployed people 15y and over</td>
<td>Census 2013</td>
<td>14%</td>
<td>9%</td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4b Youth not in education, employment or training 15-19 y</td>
<td>Census 2013</td>
<td>16%</td>
<td>14%</td>
<td>11%</td>
<td></td>
</tr>
<tr>
<td>Population Coverage and Service Access</td>
<td>4c Youth not in education, employment or training 20-24 y</td>
<td>Census 2013</td>
<td>32%</td>
<td>28%</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>Access to PHO</td>
<td>5a NPH PHO Enrolment in Tairāwhiti population</td>
<td>Jan-Mar 2015</td>
<td>19%</td>
<td>97%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5b PHO Coverage for the Coast Rural Areas (East Capte to Tolaga Bay)</td>
<td>Census 2013</td>
<td>98%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5c PHO Coverage for Urban Areas (Kaiti and Tamarau)</td>
<td>Census 2013</td>
<td>27%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5d PHO GP+Nrs consults High Need</td>
<td>Jan-Mar 2015</td>
<td>1.50</td>
<td>1.76</td>
<td>1.16</td>
<td></td>
</tr>
<tr>
<td><strong>Intermediate Performance Outcomes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prevention</td>
<td>6a Full or exclusive breastfeeding (6 wk)</td>
<td>Apr-Jun 2015</td>
<td>71%</td>
<td>74%</td>
<td>74%</td>
<td>75%</td>
</tr>
<tr>
<td></td>
<td>6b Full or exclusive breastfeeding (3 m)</td>
<td>Apr-Jun 2015</td>
<td>33%</td>
<td>60%</td>
<td>55%</td>
<td>60%</td>
</tr>
<tr>
<td></td>
<td>7a Proportion of smokers 15 - 75y</td>
<td>Jan-Mar 2015</td>
<td>43%</td>
<td>34%</td>
<td>18%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8a Childhood Immunisations 24 Month Olds Total Population</td>
<td>Jan-Mar 2015</td>
<td>100%</td>
<td>96%</td>
<td>93%</td>
<td>95%</td>
</tr>
<tr>
<td></td>
<td>8b Childhood Immunisations 24 Month Olds High Need</td>
<td>Jan-Mar 2015</td>
<td>98%</td>
<td>95%</td>
<td>94%</td>
<td>95%</td>
</tr>
<tr>
<td></td>
<td>8c Childhood Immunisations 8 Month Olds Total Population</td>
<td>Jan-Mar 2015</td>
<td>90%</td>
<td>94%</td>
<td>94%</td>
<td>95%</td>
</tr>
<tr>
<td></td>
<td>8d Childhood Immunisations 8 Month Olds High Need</td>
<td>Jan-Mar 2015</td>
<td>90%</td>
<td>92%</td>
<td>93%</td>
<td>95%</td>
</tr>
<tr>
<td></td>
<td>9a Cervical Screening All 25 - 69 y</td>
<td>Jan-Mar 2015</td>
<td>73%</td>
<td>76%</td>
<td>79%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9b Cervical Screening High Need 25 - 69 y</td>
<td>Jan-Mar 2015</td>
<td>74%</td>
<td>71%</td>
<td>72%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10a Breast Screening Coverage All 50-69 y</td>
<td>Jan-Mar 2015</td>
<td>71%</td>
<td>74%</td>
<td>74%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10b Breast Screening Coverage High Need 50-69 y</td>
<td>Jan-Mar 2015</td>
<td>71%</td>
<td>69%</td>
<td>69%</td>
<td></td>
</tr>
<tr>
<td>Primary Health</td>
<td>11a CVD Risk Assessment Total Population</td>
<td>Jan-Mar 2015</td>
<td>91%</td>
<td>88%</td>
<td>87%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11b CVD Risk Assessment High Need</td>
<td>Jan-Mar 2015</td>
<td>91%</td>
<td>87%</td>
<td>86%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12a Diabetes Detection Total Population</td>
<td>Jan-Mar 2015</td>
<td>92%</td>
<td>92%</td>
<td>119%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12b HbA1c &lt;64mmol/mol in the last year Total Population</td>
<td>Jan-Mar 2015</td>
<td>52%</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Health Outcomes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Births</td>
<td>14a Premature babies Total Population</td>
<td>2009-2013</td>
<td>8.4%</td>
<td>7.8%</td>
<td>7.5%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14b Premature babies Māori</td>
<td>2009-2013</td>
<td>8.5%</td>
<td>7.9%</td>
<td>8.0%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15a Low birth-weight Total Population</td>
<td>2009-2013</td>
<td>7.7%</td>
<td>7.6%</td>
<td>5.9%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15b Low birth-weight Māori (less than 2500g)</td>
<td>2009-2013</td>
<td>8.2%</td>
<td>8.5%</td>
<td>6.8%</td>
<td></td>
</tr>
<tr>
<td>Ambulatory Sensitive Hospitalisations (Age-standardised rate per 100,000)</td>
<td>16a ASH (0 - 74 y) Total Population</td>
<td>2011-2013</td>
<td>3,116</td>
<td>2,875</td>
<td>2,136</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16b ASH (0 - 74 y) Māori</td>
<td>2011-2013</td>
<td>3,487</td>
<td>3,552</td>
<td>3,134</td>
<td></td>
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<tr>
<td></td>
<td>16c ASH (0 - 4 y) Total Population</td>
<td>2011-2013</td>
<td>8,037</td>
<td>7,163</td>
<td>6,414</td>
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<tr>
<td></td>
<td>16d ASH (0 - 4 y) Māori</td>
<td>2011-2013</td>
<td>7,994</td>
<td>7,616</td>
<td>5,640</td>
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<tr>
<td></td>
<td>16e ASH (45 - 64 y) Total Population</td>
<td>2011-2013</td>
<td>3,321</td>
<td>3,077</td>
<td>2,674</td>
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</tr>
<tr>
<td></td>
<td>16f ASH (45 - 64 y) Māori</td>
<td>2011-2013</td>
<td>4,008</td>
<td>3,788</td>
<td>5,022</td>
<td></td>
</tr>
<tr>
<td>Cancers (Age-standardised rate per 100,000)</td>
<td>17a All cancers Total Population</td>
<td>2009-2012</td>
<td>206</td>
<td>200</td>
<td>192</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17b All cancers Māori</td>
<td>2009-2012</td>
<td>253</td>
<td>227</td>
<td>231</td>
<td></td>
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<tr>
<td></td>
<td>17c Lung cancers Total Population</td>
<td>2009-2012</td>
<td>33.7</td>
<td>23.7</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17d Lung cancers Māori</td>
<td>2009-2012</td>
<td>50.4</td>
<td>46.2</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17e Cancers of the Digestive organs in Total Population</td>
<td>2009-2012</td>
<td>42.4</td>
<td>33.1</td>
<td>35</td>
<td></td>
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<tr>
<td></td>
<td>17f Cancers of the Digestive organs in Māori</td>
<td>2009-2012</td>
<td>51.9</td>
<td>41.7</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>Hospital Admissions</td>
<td>18a Avoidable Admissions Total Population</td>
<td>2011-2013</td>
<td>5,089</td>
<td>4,738</td>
<td>4,195</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18b Avoidable Admissions Māori</td>
<td>2011-2013</td>
<td>5,681</td>
<td>5,480</td>
<td>5,571</td>
<td></td>
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<tr>
<td></td>
<td>19a Avoidable Deaths Total Population</td>
<td>2007-2011</td>
<td>219</td>
<td>194</td>
<td>106</td>
<td></td>
</tr>
<tr>
<td></td>
<td>19b Avoidable Deaths Māori</td>
<td>2007-2011</td>
<td>294</td>
<td>265</td>
<td>227</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20a Amenable Deaths Total Population</td>
<td>2007-2011</td>
<td>169</td>
<td>114</td>
<td>74</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20b Amenable Deaths Māori</td>
<td>2007-2011</td>
<td>222</td>
<td>194</td>
<td>162</td>
<td></td>
</tr>
</tbody>
</table>


RECOMMENDATIONS

The recommendations are high-level and strategic in nature. Solutions to individual issues, conditions, and outcomes are best addressed through collaborative dialogue by the various stakeholders who sponsored the NPH Dashboard Project and this report. Key recommendations arising from this report are as follows:

1. Communication Strategy
   a. Discussion of strategy and planning with key decision makers and stakeholders based on monitoring of local data, trends and priorities available from the Dashboard project and this report;
   b. Developing an infographics display for the local community, whānau and patients, so that they can also access an ‘outcome dashboard’ of indicators that, as a whole, can reflect important trends or progress.

2. Improve Productivity and Health Equity
   a. The results in this report can be used to quantify the degree of inequitable outcomes, but also the degree of equity and productivity attained by NPH. For example, the NPH population on the East Coast is spread out over a large area (see map on page 15, Figure 2), with more than half of people living in rural and remote areas, virtually no public transport options, and high rates of social deprivation. NPH recognises that access to health care is difficult, and has addressed this major problem by providing care through several clinics that are free at the point of care and are distributed along the Coast. NPH has achieved high enrolment coverage (at 98%, see Table 3). As a result, NPH nurses and GPs have provided higher rates of consultation compared with Tairāwhiti and the national average, particularly for the high needs patients.
   b. A range of service performance indicators such as access to primary care services and IPIF indicators show that NPH has delivered slightly better results for the high needs population. However, the current IPIF funding does not provide any monetary incentive for such attainment in health equity. The ASH rates in NPH population remain higher than Tairāwhiti and the national average. It is recommended that NPH investigates the range of additional support required to address the leading causes of ASH and develop interventions focusing on achieving health equity. This includes resourcing for and responding to the identified high health needs, and to engage hard to reach communities, whānau and patients.
   c. Improved capacity and resources for IT tools to support health improvement. For example, practice or patient level Dashboard. Patient Dashboard is a form that displays within the clinic’s practice management system (such as Medtech32) every time a GP or nurse brings up a patient record. Because of the near real-time data dashboards display, staff can visualise the patients’ health profiles: where they are going, and how fast they are headed there. This enables a quicker course of correction if needed and enables discussion towards improved partnership with patients in their health literacy and health care.
   d. Data at hapū and local community level is needed to support whānau and community-driven action. NPH hopes to source this data in future, dependent on data, resource and expertise availability.

3. Future updates: Updates can be scheduled according to three main sets of indicators as follows:
   a. Routinely reported indicators such as Access to PHO and Intermediate Performance Outcomes (Prevention and Primary Health indicators) that are based on the IPIF, Tamariki Ora and NPH data collection and analysis can be updated quarterly, provided there is adequate analytical support to carry out the update;
   b. All customised social determinants statistics will be subject to the Census data availability and updates. This means that the next update will likely be in 2019, when NZ Deprivation index 2018, customised data and analysis can be updated following the Census 2018;
   c. It will be more challenging to sustain and update the population health outcomes indicators due to the limited availability of a range of customised data such as public hospital discharges (NMDS), births and deaths registrations and cancer registrations. Most critical for the update is the availability of a consultant cum analyst together with a biostatistician with appropriate skills, experience and sufficient interest in Māori health to undertake this update and trend analysis.
NGĀTI POROU HAUORA DASHBOARD

BACKGROUND

Currently, information is collected and collated for reporting on particular contracts. There are no population health outcome measures designed explicitly to reflect progress in key areas of interest for the population served by NPH or NPH as a Māori provider. At a DHB level, data is reported for the whole of the DHB population, and disaggregated by age, ethnicity etc. However, with this data, the outcomes and trends relate to the whole population of Tairāwhiti DHB and there is no specificity for NPH population or rohe.

At a national level, data and reports on trends and outcomes are developed that relate to Māori in Tairāwhiti but not specifically for the NPH population. For Ngāti Porou Hauora to understand and monitor impact, plan and prioritise, NPH needs baseline and trend data for a range of health outcomes. This has been achieved through work with NPH management and staff, Tairāwhiti DHB, Eru Pōmare Māori Research Centre, Ministry of Health and other agencies towards establishing a suite of health outcome indicators.

Selecting key indicators to inform planning and monitoring requires decisions about which indicators to select, consultation with NPH on the options, knowledge of the data sources, and judgement on the validity and reliability of trend information. The provider and community need a ‘dashboard’ of indicators that, as a whole, can reflect important trends and progress.

There may also be a need to monitor customised data or undertake deeper analysis if the trend is of particular interest or concern. To this end, the selection of indicators for the NPH Dashboard is guided by a set of objective criteria with considerations that the indicators:

1. will have the ability to signal wider health concerns;
2. will focus attention on key health issues;
3. are relevant to priority outcomes;
4. are supported by strong logic or empirical evidence;
5. will be responsive to change, ie. population health outcomes amenable through NPH health services intervention; and
6. will be reliably and validly monitored.

Additional considerations are the existence, or ease, of developing supporting data sets; and that the indicators are:

7. sensitive to policy interventions and changes in policy settings; and
8. meaningful to stakeholders and principally to Ngāti Porou Hauora and Ngāti Porou rohe.

The first criterion focuses on overall indices of health such as mortality or amenable mortality. The second criterion notes the requirement to align indicators in the Dashboard with the leading causes of mortality or morbidity for the NPH population.

The third criterion puts emphasis on measurable outcomes (impacts on individuals or communities) rather than inputs (resources spent) or outputs (services provided). In some cases, where there is strong evidence that certain inputs or outputs are closely linked to an outcome, those inputs or outputs may be included as proxy indicators of that outcome (for example, access to primary health care and quality maternity care).

The next three criteria are closely related to measuring progress toward the priority outcomes. We are looking for indicators with a strong evidence base or underlying theory of causality that links improvement in a strategic service intervention to improvement in the NPH targets, and therefore progress toward the

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priority outcomes. For some indicators, despite limited evidence, persuasive logic and compelling feedback from consultations provide the link.\(^5\)

The seventh criterion recognises the practical need for relevant data to report against an indicator. In some cases, proxy measures will be reported and, in a few cases, important indicators are placeholders because data are not yet available or are not available at all. The eighth and ninth criteria are related to the impact of policy, programs and interventions, and to be meaningful and acceptable to NPH stakeholders and communities. The development of the NPH Dashboard has included involvement (eg. through face to face meetings and/or presentation) of stakeholders such as NPH Board members, clinicians, management, TRONPnui staff and community representatives. A brief methodology and milestones for this project is shown in Appendix 1.

**SELECTION OF INDICATORS**

The overarching priority outcome for Ngāti Porou Hauora Strategic Plan 2014-2018 is “Kia tu pakari, Kei tua o kapenga” (“the next generation living longer than the last”). It is challenging to achieve this vision, to be able to measure progress in its aspirational outcomes, and to hold NPH as a service provider accountable. Therefore, the framework includes various layers of quantifiable indicators such as the preliminary list shown in Appendix 2. The logic of the framework is that, over time, measurable improvement in these indicators will demonstrate progress toward the priority outcomes.

Indicators are divided into the following four domains and 9 themes:

- Social Determinants (NZ Deprivation index and associated social indicators)
- Access to Care (PHO enrolment and service utilisation)
- Intermediate Performance Outcomes (Prevention and Primary Health Care)
- Health Outcomes (Births, Hospitalisations, Mortality)

The aim of developing the NPH Dashboard is to ensure that NPH has its own barometer of progress so that NPH is able to look year to year and see that positive progress is being made. No single indicator gives that answer but a suite of indicators can show a general direction. The number of indicators needs to be enough to cover a spectrum of ages and issues but needs to be small enough number to fit on a one page summary of indicators for the ‘dashboard’.\(^6\)

The choice of indicators for the Dashboard depends on the criteria outlined in the previous section. A literature review which included published articles (see Pereira)\(^4\) and reports encompassing District Health Board (DHB) Māori Health Profiles, TDH Māori Health Plan, C&CDHB Māori Health Dashboard, Bay of Plenty Māori Health Dashboard, Tatau Kahukura: Māori Health Chart Book 2015, and discussion with Te Rōpū Rangahau Hauora a Eru Pōmare identified 52 possible indicators.

After consulting the NPH Board members, clinicians, managers and having negotiated customised data from official sources\(^7\), a proposed dashboard was created that includes 20 indicators grouped in four domains (social determinants, access to care, intermediate performance outcomes and health outcomes) and 9 themes. The proposed indicators are both scientifically valid and administratively feasible.

**INDICATOR PLACEHOLDERS**

Additional indicators identified as important but currently as placeholders are as follows (data strategy):

- Risks factors such as household insulation, obesity, alcohol and drugs, nutritional level etc

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6. Summary of the main points for the NPH Dashboard project, email communication from Dr Julia Carr. 24 October 2014.

- Sexual health (rates of STD/STI)
- Mental health status

Several clinicians and management expressed the need for a measure that focuses on the epidemic of obesity across the population in the Ngāti Porou rohe. This will depend on complete and reliable data availability across practices where BMI or height/weight are recorded. Obesity measurement that is both specific and measurable has the potential to drive discussion about trends and action for addressing variation in healthy weight or obesity with people enrolled in NPH PHO.
### HOW TO INTERPRET RESULTS: TABLES ON DASHBOARD INDICATORS

#### Table X. Social Determinants or socioeconomic indicators (Dashboard Indicators 1 – 4)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Indicator measure by:</th>
<th>NPH</th>
<th>Tairāwhiti</th>
<th>Total NZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>NZ Deprivation</td>
<td>Percentage of Meshblocks with high deprivation (9-10)</td>
<td>91%</td>
<td>52%</td>
<td>20%</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Proportion of Māori in Ngāti Porou rohe</td>
<td>70%</td>
<td>49%</td>
<td>16%</td>
</tr>
<tr>
<td>Housing</td>
<td>Children (Under 15 years) living in crowded households</td>
<td>5%</td>
<td>4%</td>
<td>5%</td>
</tr>
<tr>
<td>Employment</td>
<td>Unemployed people 15y and over</td>
<td>14%</td>
<td>9%</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>Youth not in education, employment or training 20-24y</td>
<td>32%</td>
<td>28%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Notes: The percentage is based on the Census 2013 population count as defined by Census Area Units (CAU) deemed to be most representative of Ngāti Porou rohe and the population served by Ngāti Porou Hauora. The CAUs include: East Cape, Ruatoria, Tokomaru Bay, Wharekaka, Tolaga Bay for the Coast; Outer Kaiti, Kaiti South and Tamarau in Gisborne.

The colour scheme highlights the results of comparison between NPH with Tairawhiti, and Tairawhiti with New Zealand according to the categories as follows:

#### Signals

<table>
<thead>
<tr>
<th>Legend</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urgent attention</td>
<td>NPH % is worse than Tairāwhiti by at least 10%</td>
</tr>
<tr>
<td>Warning</td>
<td>NPH % is worse than Tairāwhiti by at least 3% but less than or equal to 10%</td>
</tr>
<tr>
<td>Fair - could be better</td>
<td>NPH % is about the same as Tairāwhiti within +/- 3%</td>
</tr>
<tr>
<td>Keep up good performance</td>
<td>NPH % is better than Tairāwhiti by at least 3%</td>
</tr>
</tbody>
</table>

The report uses the following analytical approach:

- volume or actual number of events or people are an indication of demand on the service and are used to highlight capacity issues or put in perspective the relative scale of any problem;
- percentages to show the proportion of any given population accessing or utilising the services;
- rates as a proxy to the prevalence of a particular disease or to demonstrate the actual attendance for any given population; and
- age-specific rates to examine relationships between demand and service utilisation or uptake.

#### Confidence Intervals

Given that most data are from administrative data sources where statistical sampling is not involved, the main source of bias would be systematic errors which are not measured by confidence intervals. Hence, confidence intervals are not used in this section but caveats related to potential bias from systematic errors are discussed in the main paragraph.
It has long been established that health care is just one of a number of factors that influence health status. Other factors include individual characteristics through to wider socioeconomic, historic, cultural and environmental conditions.

Figure 1. The Main Determinants of Health.  

The World Health Organisation defines the social determinants of health (SDH) as:

“...the conditions, in which people are born, grow up, live, work and age, and the wider set of forces and systems shaping the conditions of daily life. These forces and systems include economic policies and systems, development agendas, social norms, social policies and political systems.”

People from more deprived circumstances, especially Māori, do not enjoy the same health status as other New Zealanders. However, this is the very inequality that NPH is, as part of Te Rūnanga o Ngāti Porou, striving to address. Some of the inequality will be affected by better health services and the NZ health system as a whole. Many factors such as employment, income, housing and education also need to be improved to make a real difference.

The following section provides an overview of the demographic profile of the Ngāti Porou rohe (rohe) population at the time of the 2013 Census by locality, ethnicity, NZ Deprivation Index quintile and age structure.

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**Profile of NPH Population**

At the 2013 Census, Table 1 shows the population in the Ngāti Porou rohe consisted of over 4,300 people in the coastal rural area and over 7,100 in the urban areas. Compared with the 2006 Census, there was about 9% decline in the coastal rural population and about 8% decline in the urban population in the Ngāti Porou rohe.

Table 1. Ngāti Porou rohe population distribution and deprivation

<table>
<thead>
<tr>
<th>Census Area Unit</th>
<th>Total People</th>
<th>Māori</th>
<th>% Most deprived (9-10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Cape</td>
<td>2415</td>
<td>2019</td>
<td>100%</td>
</tr>
<tr>
<td>Ruatoria</td>
<td>750</td>
<td>648</td>
<td>100%</td>
</tr>
<tr>
<td>Tokomaru Bay</td>
<td>390</td>
<td>309</td>
<td>100%</td>
</tr>
<tr>
<td>Tolaga Bay</td>
<td>765</td>
<td>567</td>
<td>89%</td>
</tr>
<tr>
<td>Wharekaka</td>
<td>1791</td>
<td>636</td>
<td>21%</td>
</tr>
<tr>
<td>Outer Kaiti</td>
<td>2247</td>
<td>1479</td>
<td>100%</td>
</tr>
<tr>
<td>Kaiti South</td>
<td>2655</td>
<td>1527</td>
<td>86%</td>
</tr>
<tr>
<td>Tamarau</td>
<td>2265</td>
<td>1524</td>
<td>92%</td>
</tr>
<tr>
<td>Coastal rural</td>
<td>4320</td>
<td>3543</td>
<td>99%</td>
</tr>
<tr>
<td>Urban</td>
<td>7167</td>
<td>4530</td>
<td>91%</td>
</tr>
<tr>
<td>Ngāti Porou rohe</td>
<td>11487</td>
<td>8073</td>
<td>91%</td>
</tr>
<tr>
<td>Tairāwhiti DHB total</td>
<td>43,653</td>
<td>19686</td>
<td>52%</td>
</tr>
</tbody>
</table>

Source: Statistics New Zealand.

Māori made up over 8,000 (or 70% of the population in the rohe with 82% in the coastal rural area and 64% in urban area respectively) of the population in the Ngāti Porou rohe. There were just over 12,000 Māori who live in the rest of the Tairāwhiti district and this makes up 38 percent of the population outside of the rohe. As a whole, the Tairāwhiti DHB’s (TDH) population was over 43,600 in the 2013 census (1% of New Zealand’s population). Based on the Census night population count, 45% of TDH’s population identified as Māori compared with 14% nationally.

Overall, the population in the Ngāti Porou rohe lives in very deprived areas compared with Tairāwhiti DHB, or NZ as a whole.

Figure 2 shows the Census 2013 boundary of Ngāti Porou rohe and the concentration of very deprived meshblocks within these boundaries. Census 2013 indicated that 96% of rohe population lives in very deprived areas (NZ Deprivation Decile 9-10) compared with 52% of Tairāwhiti DHB total population and 20% nationally. Of the total rohe, 99% lived in Decile 9-10 in the coastal rural areas followed by 91% in Deciles 9-10 in the urban Gisborne area.

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10. Coastal rural areas included East Cape through to Ruatoria, Tokomaru Bay and Tolaga Bay; while the urban areas included Outer Kaiti, Kaiti South and Tamarau in Gisborne. 100% of the East Coast population is classified as rural – the majority is classified as highly rural according to the Stats NZ definition of rurality (Statistics New Zealand). Wharekaka is an outlier in relation to the NPH population profile, 36% of population are Māori and 79% of the areas are not in high deprivation.

11. The population count in Table 1 is subject to undercount at Census night. The usual resident population based on population estimates gives a higher number of people in Tairāwhiti DHB (47,000) and a higher proportion of Māori (i.e. 49% rather than the 45% noted in Table 1). However, it was not technically feasible to have population estimates by ethnic group for Census Area Units.
The multiple effects of a high number of Māori living in very high deprivation areas as shown in Figure 2 and Table 1, constitute the most important determinant of health for the rohe and the continuing inequity of income and resource distribution poses the biggest challenge for NPH in improving health and reducing inequality.
Ngāti Porou rohe has a higher proportion of children and adolescents aged 0 to 19 than TDH and NZ. The coastal rural rohe also has a lower proportion of adults aged 20 to 44, while the urban rohe has almost the same proportion of this age group to TDH and NZ. The proportion of older adults (65+) is lower than NZ and TDH, reflecting the lower life expectancy.

**OTHER SOCIOECONOMIC INDICATORS**

As pointed out in the previous section, the unequal distribution of the social determinants of health is an important driver of health inequities between NPH, TDH and NZ. Data on the 2013 NZ Deprivation Index presented in this report combines eight dimensions of deprivation: including access to telecommunications and internet, income, employment, qualifications, home ownership, support, living space, and access to transport. Information on individual social determinants such as household income, household crowding, education and employment is summarised in Table 2.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Indicator measure by:</th>
<th>NPH</th>
<th>Tairāwhiti</th>
<th>Total NZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>NZ Deprivation index</td>
<td>Percentage of Meshblocks with high deprivation (9-10)</td>
<td>91%</td>
<td>52%</td>
<td>20%</td>
</tr>
<tr>
<td>Income</td>
<td>Annual Equivalised Household Income ($)</td>
<td>38,700</td>
<td>47,500</td>
<td>57,800</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Proportion of Māori in Ngāti Porou rohe</td>
<td>70%</td>
<td>49%</td>
<td>16%</td>
</tr>
<tr>
<td>Housing</td>
<td>Children (under 15 years) living in crowded households</td>
<td>5%</td>
<td>4%</td>
<td>5%</td>
</tr>
<tr>
<td>Education¹³</td>
<td>Early childhood education (0-6 y)</td>
<td>94%</td>
<td>95%</td>
<td>93%</td>
</tr>
<tr>
<td></td>
<td>18 year olds with NCEA Level 2 or equivalent</td>
<td>74%</td>
<td>66%</td>
<td>63%</td>
</tr>
<tr>
<td>Employment</td>
<td>Unemployed people 15y and over</td>
<td>14%</td>
<td>9%</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>Youth not in education, employment or training 15-19y</td>
<td>16%</td>
<td>14%</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>Youth not in education, employment or training 20-24y</td>
<td>32%</td>
<td>28%</td>
<td>15%</td>
</tr>
</tbody>
</table>

Sources: Ministry of Health (Deprivation index), Statistics New Zealand (Census 2013), Ministry of Education (Education Counts).

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¹² This work is based on/includes customised Statistics New Zealand’s data which are licensed by Statistics New Zealand for re-use under the Creative Commons Attribution 3.0 New Zealand licence.

¹³ The Total NZ proportions were shaded for the education indicators as they were compared with the Ministry of Education’s targets where the early childhood education (0-6 y) target is 98% and 18 year olds with NCEA Level 2 certificate has a target of 85% by 2017.
Compared to Tairāwhiti DHB, and the rest of New Zealand, Ngāti Porou rohe has:

- households with a much lower average equivalised income\(^{14}\), at about two-thirds of the New Zealand average income level;
- one of the highest Māori populations\(^{15}\) (70% of the people versus 49% TDH and 16% NZ);
- no measurable difference in children (under 15 years) living in overcrowded homes;
- about the same level of participation in early childhood education (0-6 years), and achieved higher level of 18 year olds with NCEA Level 2 qualification (74% compared with 66% TDH and 63% NZ);
- higher unemployment rates for people 15 years and over (14% compared with 9% TDH and 7% NZ);
- 32% of 20-24 year old youth who are not in education, employment or training (NEET), which is more than twice as high as the New Zealand average (15%). Young people are at a greater risk of a range of negative outcomes including poorer health, depression or early, unplanned parenthood.

These indicators profile a very deprived socio-economic picture compared with the rest of the country, with lower incomes, fair levels of education participation, very high unemployment rates, and very high needs in the population in the Ngāti Porou rohe. The Ngāti Porou Dashboard and this report will highlight the patterns of these needs, differences in access to health, and provide some insights into how NPH performance could contribute to improving the health outcomes. It is intended that the NPH dashboard helps spread a much-needed single source of information across the organisation. Everyone, from the board, management to frontline clinicians, support staff and community can look at the same data. When everyone has access to a consistent, reliable source of information, then everyone can speak the same language, spread a system-wide standard of care, and work together to implement improvement initiatives. For example, because a dashboard offers a single source of information, the dashboard can be used to maintain the definition of each specific goal. Is NPH’s goal a decrease in avoidable hospital admission by 10 percent or 20 percent? Having the objective defined in a consistent way across the system helps everyone to remain focused on an agreed target.

On the other hand, the results must always be considered in context – including the implications of high deprivation and low employment, concentrated high health need, and the level of resources prioritised by the DHB and other Government agencies to support this population and NPH as a provider in their aspirations.

\(^{14}\) Equivalised household income is total household income adjusted to enable comparison of income levels between households of differing size and composition, reflecting the requirement of a larger household to have a higher level of income to achieve the same standard of living as a smaller household.

\(^{15}\) The population count by ethnicity in Table 2 is based on population estimates using customised Statistics New Zealand’s data which are licensed by Statistics New Zealand for re-use under the Creative Commons Attribution 3.0 New Zealand licence. Note that population estimates by ethnicity are usually carried out up to DHB or regional council levels, but not at Census Area Units.
ACCESS TO CARE

In this report, the ability of the local population to enter and use the primary health system is measured by PHO enrolment coverage and the service utilisation of primary care.

Table 3. Population Coverage and Service Access (Dashboard Indicators 5)

<table>
<thead>
<tr>
<th>Indicator measure by:</th>
<th>NPH</th>
<th>Tairāwhiti</th>
<th>Total NZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHO Coverage for the Coast Rural Areas (East Cape to Tolaga Bay)</td>
<td>98%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHO Coverage for Urban Areas (Kaiti and Tamarau)</td>
<td>27%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPH PHO Enrolment in relation to total Tairāwhiti population</td>
<td>19%</td>
<td>97%</td>
<td></td>
</tr>
<tr>
<td>PHO GP+Nrs consults High Need¹⁶</td>
<td>1.50</td>
<td>1.26</td>
<td>1.16</td>
</tr>
</tbody>
</table>

Source: Statistics New Zealand (Census 2013), Karo Data Management (NPH PHO Quarterly Register).

NPH has enrolled the bulk of the population in the East Coast areas (98%), but there is still room to increase enrolment for Māori in rural Wharekaka (630 Māori; 19% enrolled with NPH), Kaiti (NPH has 27% enrolled) and several other urban areas of Gisborne with high Māori population such as Mangapapa, Te Hapara, Gisborne Airport and Gisborne Central. These four areas have high concentration of Māori with higher population growth rates. Based on Census 2013, NPH PHO has about 20% - 25% coverage with more than 300 patients in each of these areas. More detailed statistics on the population and NPH PHO enrolment are listed in Table 4.

Table 4. Ngāti Porou rohe population distribution and Enrolment.

<table>
<thead>
<tr>
<th>Census Area Unit</th>
<th>Census 2013 People</th>
<th>Māori</th>
<th>NPH Patients</th>
<th>% total</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Cape</td>
<td>2415</td>
<td>2019</td>
<td>2245</td>
<td>93%</td>
</tr>
<tr>
<td>Ruatoria</td>
<td>750</td>
<td>648</td>
<td>832</td>
<td>111%</td>
</tr>
<tr>
<td>Tokomaru Bay</td>
<td>390</td>
<td>309</td>
<td>377</td>
<td>97%</td>
</tr>
<tr>
<td>Tolaga Bay</td>
<td>765</td>
<td>567</td>
<td>768</td>
<td>100%</td>
</tr>
<tr>
<td>Wharekaka</td>
<td>1791</td>
<td>636</td>
<td>416</td>
<td>23%</td>
</tr>
<tr>
<td>Outer Kaiti</td>
<td>2247</td>
<td>1479</td>
<td>670</td>
<td>30%</td>
</tr>
<tr>
<td>Kaiti South</td>
<td>2655</td>
<td>1527</td>
<td>633</td>
<td>24%</td>
</tr>
<tr>
<td>Tamarau</td>
<td>2265</td>
<td>1524</td>
<td>617</td>
<td>27%</td>
</tr>
</tbody>
</table>

On average, NPH GPs and nurses have provided higher rates of consultation compared with Tairāwhiti and the national average. NPH high needs patients (mostly Māori and people from high deprivation areas) have visited 1.5 times every quarter compared with 1.3 times and 1.2 times respectively in Tairāwhiti and in NZ as a whole.

In contrast, according to the NZ Health Survey 2013-14, Māori are more likely than non-Māori to report being unable to see a GP when they needed to during the past 12 months. The higher rate of access suggests this may be less of a problem for NPH population, noting that the higher utilisation rate may be driven by the same high needs patients attending multiple visits to the clinics. On the other hand, feedback from the clinical staff also indicates that there are high needs patients not presenting for early diagnosis: hard to reach whānau not engaging with or declining some services etc.

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¹⁶. The high needs population is defined by the Ministry of Health as Māori and Pacific peoples and people living in New Zealand deprivation decile 9 or 10 socioeconomic areas (most deprived). These groups are defined as high-need because analyses of morbidity and mortality statistics show that they experience higher levels of illness (morbidity) and die at a younger age than the rest of the population.
ANALYSIS OF PHO ENROLMENT

The enrolment trends for Ngāti Porou Hauora from the following table and graphs show that:
- the July quarter 2015 registers have 8,854 people enrolled;
- the rural clinics have slightly more than half of the total enrolment (51% with 4480 people) compared with the urban clinic (49% with 4373 people);
- 88% of NPH patients are Māori compared with 15% Māori in the total New Zealand PHO enrolment;
- overall enrolment has dropped by about 2.4% since the Census 2013, but it has regained 0.5% over the last 12 months; and
- rural clinics have a steady decline in enrolment (1% in 2014, then 1.8% in 2015), while the urban clinic has a larger drop in 2013 (nearly 5%) followed by 3% increase in 2015.

Table 5  Enrolment Numbers and Trends by Clinics and Locality

<table>
<thead>
<tr>
<th>Clinics</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matakaoa Health Centre</td>
<td>859</td>
<td>871</td>
<td>844</td>
</tr>
<tr>
<td>Ruatoria Health Centre</td>
<td>1421</td>
<td>1427</td>
<td>1400</td>
</tr>
<tr>
<td>Tawhiti Health Centre</td>
<td>284</td>
<td>279</td>
<td>270</td>
</tr>
<tr>
<td>Tikitiki Health Centre</td>
<td>420</td>
<td>408</td>
<td>384</td>
</tr>
<tr>
<td>Tokomaru Health Centre</td>
<td>463</td>
<td>444</td>
<td>470</td>
</tr>
<tr>
<td>Uawa Health Centre</td>
<td>1161</td>
<td>1131</td>
<td>1112</td>
</tr>
<tr>
<td>Puhi Kaiti Health Centre</td>
<td>4460</td>
<td>4246</td>
<td>4374</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Locality</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>4608</td>
<td>4560</td>
<td>4480</td>
</tr>
<tr>
<td>Urban</td>
<td>4460</td>
<td>4246</td>
<td>4374</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NPH PHO Total</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9068</td>
<td>8806</td>
<td>8854</td>
</tr>
</tbody>
</table>

Source: NPH PHO Register Analysis, Karo Data Management.

Figure 4 Enrolment Numbers by Clinics, Locality and Ethnicity

Sources: NPH PHO Register Analysis, Karo Data Management and Ministry of Health PHO Enrolment Datamart.
While NPH provided high enrolment coverage (at 98%, see Table 3)\(^\text{17}\) of the rural area through free access clinics along the Coast, some declining enrolment trends warrant further investigation. This declining trend cannot be attributed to overall population decline alone, because Census 2013 indicated that there is an overall population decline of 807 people (or 1.8%) in the Tairāwhiti region since 2006, and the Māori population decreased by 75 people (or less than 1%).

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17. The completeness of Census coverage is not known due to some enrolment data not having a valid geocode and several transient families may not be counted in Census 2013.
**Intermediate Performance Outcomes**

Intermediate health outcomes include service delivery and interventions that require significant levels of collaboration among staff, with community groups and non-government organisations. Some of these indicators and targets are less amenable to direct health service influence and are dependent on the achievement of changes over which health sector organisations have less direct influence (e.g. nutrition, alcohol and drugs, smoking). For other targets (e.g. screening, immunisation) health workforce capacity issues are highly influential.

On the other hand, carefully selected performance indicators for the Dashboard show staff if they are holding their improvement gains for previous initiatives, or if they are slipping as a previously targeted project falls off the radar. More timely updates of intermediate performance indicators can help reinforce to staff that their work is making a difference. This boosts confidence in their ability to help individuals and whānau make positive changes. It also boosts job satisfaction because staff are able to maintain those gains and see the results of their efforts in the dashboard.

**Preventive Service Uptake**

The Dashboard as shown in Table 6 summarises a selection of key PHO performance measures. Overall NPH PHO is performing on a par with Tairāwhiti’s results and there were slightly better results for the high needs population. However, the current PHO performance improvement incentive programme, PHO Integrated Performance Incentive Framework (IPIF), only funded five selected indicators for the total population: cervical screening, more heart and diabetes checks, better help for smokers to quit, increased immunisation for 8 month-olds and increased immunisation for 2 year-olds. All other indicators and the measures for the high needs population are for information only. 18

Table 6. Selected preventive service uptake for the Dashboard

<table>
<thead>
<tr>
<th>Indicator measure by:</th>
<th>NPH</th>
<th>Tairāwhiti</th>
<th>Total NZ</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full or exclusive breastfeeding (6 wk)</td>
<td>71%</td>
<td>74%</td>
<td>74%</td>
<td>75%</td>
</tr>
<tr>
<td>Full or exclusive breastfeeding (3 m)</td>
<td>53%</td>
<td>60%</td>
<td>55%</td>
<td>60%</td>
</tr>
<tr>
<td>Proportion of smokers 15 - 75y</td>
<td>43%</td>
<td>34%</td>
<td>18%</td>
<td>n/a</td>
</tr>
<tr>
<td>Childhood Immunisations 24 Month Total Population</td>
<td>100%</td>
<td>96%</td>
<td>93%</td>
<td>95%</td>
</tr>
<tr>
<td>Childhood Immunisations 24 Month High Need</td>
<td>100%</td>
<td>95%</td>
<td>94%</td>
<td>95%</td>
</tr>
<tr>
<td>Childhood Immunisations 8 Month Total Population</td>
<td>90%</td>
<td>94%</td>
<td>94%</td>
<td>95%</td>
</tr>
<tr>
<td>Childhood Immunisations 8 Month Olds High Need</td>
<td>90%</td>
<td>92%</td>
<td>93%</td>
<td>95%</td>
</tr>
<tr>
<td>Cervical Screening All 25 - 69 y</td>
<td>73%</td>
<td>76%</td>
<td>79%</td>
<td>80%</td>
</tr>
<tr>
<td>Cervical Screening High Need 25 - 69 y</td>
<td>74%</td>
<td>71%</td>
<td>72%</td>
<td>80%</td>
</tr>
<tr>
<td>Breast Screening Coverage All 50-69 y</td>
<td>71%</td>
<td>74%</td>
<td>74%</td>
<td>70%</td>
</tr>
<tr>
<td>Breast Screening Coverage High Need 50-69 y</td>
<td>71%</td>
<td>69%</td>
<td>69%</td>
<td>70%</td>
</tr>
</tbody>
</table>

The following sections briefly discuss each indicator related to preventive service uptake. The Ministry of Health recommends breastfeeding until babies are ready for, and need extra food at around 6 months. Figure 7 shows that while a fair proportion (71%) of NPH babies has full or exclusive breastfeeding in the first 6 weeks, this rate dropped quite substantially to only one-in-three at three months (33%). The barriers identified by the NPH Tamariki Ora nurses include:

- difficulty establishing breastfeeding within the first six weeks;
- poor or insufficient professional support (NPH has the equivalent of 1 FTE midwife per 1,000 adult women 15-44 years compared with Tairāwhiti at 1 FTE midwife per 500 adult women);
- perception of inadequate milk supply; and
- returning to work.

The smoking rate provides an overall measure of the effectiveness of smoking cessation initiatives/programmes run from a range of providers in primary, DHB and NGO settings. Smoking during pregnancy can lead to low birth weight, pre-term births, and poor future health of children. Therefore, the Dashboard not only has a baseline that shows the proportion of NPH patients who are smokers (43% compared with averages of 34% at Tairāwhiti DHB and 18% for New Zealand), it also tracks a number of health outcome indicators that are strongly linked to tobacco smoking. In a later section of this report, the NPH Dashboard includes the baselines for monitoring population health outcomes from births (premature babies, low birth-weight), lung cancer, cardiovascular disease, respiratory disease, avoidable hospital admission, avoidable deaths and amenable deaths.

Immunisation continues to be an important focus and a key primary care activity across NPH clinics. The current immunisation health target is to achieve 95% of 8 month olds fully immunised by December 2015.\textsuperscript{19}

- In 2009/10, the target was that 85% of two-year-olds would be fully immunised by July 2010.
- In 2010/11, the target was that 90% of two-year olds would be fully immunised by July 2011.
- In 2011/12, the target was that 95% of two-year olds would be fully immunised by July 2012.
- In 2012/13, focus changed to eight-month-olds. The target was that 85% of eight-month-olds would have their primary course of immunisation at six weeks, three months and five months.
- In 2013/14, the target was increased to 90% of eight-month-olds would have their primary course of immunisation (six weeks, three months and five months immunisation events) by July 2014.
- In 2014/15, the target was increased to 95% of infants aged eight-months would have completed their primary course of immunisation (six weeks, three months and five months immunisation events) on time by December 2014.

In March 2015, the NPH PHO immunisation coverage for children at 24 months old was at 100%, which is higher than Tairāwhiti, the New Zealand rate and exceeded the national health target (at 95%). However, as shown in Figure 9 below, the rates can fluctuate every quarter and the coverage at 8 months was more variable, although rates increased at each milestone age.

A barrier identified in achieving and maintaining the childhood immunisation target is that several families with a large number of eligible children have consistently refused vaccinations. The table below shows the rates of ‘declined’ over recent quarters. The rates of refusal have significantly reduced the coverage rate for some clinics especially those in the rural coastal areas.

Table 7. Childhood Immunisation: declined rates

<table>
<thead>
<tr>
<th>Quarter</th>
<th>8 months</th>
<th>24 months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q4 2014-15 (May)</td>
<td>Q1 2015-16 (July)</td>
</tr>
<tr>
<td>TDH</td>
<td>3.9%</td>
<td>4.0%</td>
</tr>
<tr>
<td>NPH</td>
<td>5.3%</td>
<td>9.3%</td>
</tr>
<tr>
<td>Matakaoa Community Health Clinic</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Puhi Kaiti</td>
<td>4.5%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Ruatoria Community Health Clinic</td>
<td>25.0%</td>
<td>22.2%</td>
</tr>
<tr>
<td>Tiki Tiki Community Health Clinic</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Tokomaru Community Health Centre</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Uawa Community Health Centre</td>
<td>0.0%</td>
<td>14.3%</td>
</tr>
</tbody>
</table>

Source: National Immunisation Register Datamart figures for Tairāwhiti Region

**Cervical screening** is predominantly a primary care activity. PHO practices can improve the coverage rates of cervical smears by having a well-structured process for identifying and following up those women who have not attended for their smear. The cervical cancer screening coverage measures the count of PHO enrolled women 25-69 years (as a percentage) who have received a cervical smear during the past 3 years, against the count of all PHO enrolled women 25-69, adjusted for hysterectomies.
Figure 10. Cervical Cancer Screening: quarterly coverage, women 25-60 years

Figure 10 shows that cervical screening coverage in NPH for eligible women and for high needs women has yet to achieve the national target of 80%. In 2015, there is a slow increase detectable for total cervical screening uptake and high needs women. While the trends for NPH high needs women are higher than the national average and Tairāwhiti, the coverage for eligible women remains below the national average, indicating about 6% disparity in coverage between Māori, and low income women (high needs) compared to the total population coverage which has reached the 80% target, and this disparity remains quite constant.

Breast Screen Aotearoa is the agency charged with providing a systematic breast cancer screening programme for eligible women in New Zealand. Breast screening coverage is influenced by referrals from primary care, promotional activity that is centrally funded and driven, access to screening and the capacity of screening providers.

Figure 11: Breast Cancer Screening Quarterly trends of 2-yearly Coverage

The breast screening coverage consists of the count of PHO enrolled women 50-69 who have received a mammogram from a BSA provider in the past 2 years measured against the count of all PHO enrolled women 50-69 years (as a percentage). Although breast screening is now monitored for information only, the programme goal is to achieve 70% or more coverage. Figure 11 shows slow increases by NPH in 2014 to reach the 70% goal and maintaining total coverage at 71% thereafter. Similarly, the coverage for high needs women in NPH has reached the 70% goal and hovers around 70-71% in the recent six quarters over 2014-2015. NPH’s total coverage has yet to reach the Tairāwhiti and national averages but there are relatively small disparities (3%-4%) compared with the disparities between total population and high needs for Tairāwhiti and New Zealand.

A major barrier to improved coverage in NPH is the lack of a fixed screening site in the rural Coastal areas. In these NPH areas, breast screening services are totally dependent on the BreastScreen Coast to Coast Mobile Unit that schedules a visit once a year around February or March for eight days. Hauiti Hauora currently holds the Support Service Contract which includes transport for rural coastal women to attend breast screening sessions at Te Puia Springs and Gisborne. Increasing the breast screening coverage will require cooperative efforts by the NPH PHO, outreach nurses and community workers (kaiawhina) to contact and support women to attend either the mobile screening unit or fixed service sites in Gisborne, and responsive transport support from Hauiti Hauora.

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20. Note that the breast screening rate has included the Month of March 2015, when Cyclone Pam caused the Mobile Breast Screening Unit based at Te Puia Springs to close for several days.
Primary Health Care

Cardiovascular disease (CVD) and diabetes are the leading causes of potentially avoidable hospitalisation and mortality in New Zealand. NPH mortality statistics show that both CVD and diabetes were among the leading causes of death in both females and males in 2007-2011 and also key contributors to potentially avoidable hospital admissions. Many cardiovascular and diabetes related deaths are premature, preventable and contributed to amenable mortality (more detailed discussion to follow in the section on Mortality, page 29).

The main benefit of assessing and recording the CVD risk and diabetes follow up for patients is to enable healthy lifestyle choices and treatment options to be established early. The PHO Performance programme (PPP) first introduced the CVD and diabetes indicators in July 2008, with an 80% target for the enrolled eligible population to have their CVD risk assessed and recorded in their patient notes within the last five years. From 1 July 2015 onwards, IPIF renamed the CVD indicator “More heart and diabetes checks”. The current (2015-16) target for CVD risk assessment is for 90% of the eligible population to have their CVD risk assessed and recorded in their patient notes within the last five years. The CVD risk assessment for total population is funded if it meets the national target. The diabetes indicators are for information only and therefore there was no target set for them.

Table 8. Primary health service performance: More heart and diabetes checks

<table>
<thead>
<tr>
<th>Indicator measure by:</th>
<th>NPH</th>
<th>Tairāwhiti</th>
<th>Total NZ</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVD Risk Assessment Total Population</td>
<td>91%</td>
<td>88%</td>
<td>87%</td>
<td>95%</td>
</tr>
<tr>
<td>CVD Risk Assessment High Need</td>
<td>91%</td>
<td>87%</td>
<td>86%</td>
<td>95%</td>
</tr>
<tr>
<td>Diabetes Detection Total Population</td>
<td>92%</td>
<td>92%</td>
<td>119%</td>
<td>95%</td>
</tr>
<tr>
<td>HbA1c &lt;=64mmol/mol in the last year Total Population</td>
<td>52%</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Figure 12: CVD Risk Assessment Quarterly trends: Total NPH PHO Population and High Needs

Figure 12 shows that the proportion of CVD risk recorded in NPH for eligible people and for high needs population has achieved the national target of 90% since quarter 2 in 2015. NPH PHO also maintained this high level of performance and often out-performed Tairāwhiti and New Zealand from 2014 onwards. NPH PHO has consistently outperformed both Tairāwhiti and New Zealand for CVD risk assessment for the high needs population.

Diabetes Annual Reviews provide one measure of the level of detection of diabetes and access to systematic diabetes care in the PHO. The diabetes detection trends provide an indication of the uptake of the annual review of people who have already been diagnosed with diabetes. It is expressed as a percentage against the count of enrolled people in the PHO aged 15-74 with diabetes on the Ministry of Health Virtual Diabetes Register (VDR 2014, developed by the Ministry of Health, see Appendix 3 for detailed business rules and methodology). There is no evidence that annual checks, on their own, lead to better health outcomes but they represent a measure of access and quality at another level. Figure 13 shows that diabetes detection in NPH for enrolled people and high needs people with diabetes are below 100% and lower than both Tairāwhiti and national rates. There is a slow increase detectable from 2015.

Although the diabetes indicator is not funded in IPIF, it is important as an indicator of the responsiveness of a health service to the people in most need. By increasing the percentage of people being checked and improving the on-going management of their care, NPH will ensure primary health care is better able to contribute to improved health outcomes.

The VDR 2014 is currently the nationally consistent denominator in use for 2015-16 diabetes detection. There are ongoing issues for NPH including the viability of using denominators other than the Virtual Diabetes Registers. The highly transient nature of NPH enrolled population means that many of the people identified as diabetics in 2014 are no longer enrolled with NPH and it is not viable to carry out annual reviews for people who are no longer living in the NPH area.

It would greatly help NPH to improve on the diabetes detection and case management, if NPH PHO was provided with the VDR data every year to follow up on diabetics who are currently enrolled with NPH, who may not have been diagnosed in NPH. As an alternative, it is necessary to have alternative measures for diabetes detection based on the coded diabetes (covers all people with diabetes, not just those who have had annual reviews) in the PHO practice management system.

Further Analysis on Diabetes

According to the data extracted from NPH practice management system, there were a total of 396 NPH enrolled patients who completed the diabetes annual review in 2013-14, compared with 504 annual reviews in 2014-15. This represents about a 27% increase in the number of diabetic patients who completed the annual review. The following graphs in Figure 14 show the trend in glucose control, using the HbA1c level, for those who have had annual reviews in NPH, at the time of the annual check. The graph shows that nearly half of the people diagnosed with diabetes in NPH have poor glycaemic control (HbA1c level > 64mmol/mol). In the 2014-15 diabetes annual review, there were 239 patients (or 48%) with high glycaemic level (greater than 64mmol/mol). Of these 128 have poor to very poor glycaemic control (greater than 80mmol/mol).
The NZSSD Working Party, made up of members representing clinicians, academics, laboratory staff, general practitioners and population health experts, has recommended the following criteria.\textsuperscript{22}

Table 9. Reporting and interpreting HbA1c results

<table>
<thead>
<tr>
<th>HbA1c Range</th>
<th>Results</th>
<th>Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 50</td>
<td>Excellent control</td>
<td>Increased risk of hypoglycaemia if on insulin/ sulphonylureas</td>
</tr>
<tr>
<td>50-54</td>
<td>Very good control</td>
<td>some risk of hypoglycaemia if on insulin/ sulphonylureas</td>
</tr>
<tr>
<td>55-64</td>
<td>May be appropriate and acceptable in many individuals but higher than ideal from clinical trial evidence</td>
<td>Microvascular complication risk increase exponentially above around 55 mmol/mol</td>
</tr>
<tr>
<td>65-79</td>
<td>Suboptimal glycaemic control</td>
<td>Consider more intensive treatment. Microvascular complication risk increase exponentially above around 55 mmol/mol</td>
</tr>
<tr>
<td>80-99</td>
<td>Poor glycaemic control</td>
<td>More intensive treatment recommended. Microvascular complication risk increase exponentially above around 55 mmol/mol</td>
</tr>
<tr>
<td>100 or higher</td>
<td>Very poor glycaemic control</td>
<td>Warrants immediate action</td>
</tr>
</tbody>
</table>

The reasons why people with type 2 diabetes have poor glycaemic control, i.e. HbA1c > 64mmol/mol, are numerous and complex. For some patients, a glycaemic target higher than 64mmol/mol is considered acceptable, e.g. for an older patient living alone and not to be regarded as a failure by the patient or the health professional. However, poor glycaemic control is always a signal for intensification of management. For many patients, management to improve health outcomes will also involve intensive management of other risk factors such as obesity, hypertension, hyperlipidaemia and smoking.\textsuperscript{23}


HEALTH OUTCOMES (ALL AGES)

Having insights and understanding of the general health status of a population is important for ensuring the provision of adequate and effective health services. This section presents information about the health status for people living in the Ngāti Porou rohe, in comparison to Tairāwhiti DHB district and all New Zealanders.

HOW TO INTERPRET RESULTS: TABLES ON HEALTH OUTCOMES

Table Y: Potentially avoidable mortality, 0–74 years, Māori Population, 2007–2011

<table>
<thead>
<tr>
<th></th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Average per year</td>
<td>Average per year</td>
<td>Average per year</td>
</tr>
<tr>
<td>Female</td>
<td>19 (244)</td>
<td>32 (196)</td>
<td>187 (231)</td>
<td>48 (193)</td>
</tr>
<tr>
<td></td>
<td>197 (302)</td>
<td>216 (231)</td>
<td>216 (231)</td>
<td>48 (193)</td>
</tr>
<tr>
<td>Male</td>
<td>23 (344)</td>
<td>45 (333)</td>
<td>267 (382)</td>
<td>11 (257)</td>
</tr>
<tr>
<td></td>
<td>284 (417)</td>
<td>329 (382)</td>
<td>329 (382)</td>
<td>11 (257)</td>
</tr>
<tr>
<td>Total</td>
<td>42 (294)</td>
<td>77 (265)</td>
<td>227 (294)</td>
<td>29 (232)</td>
</tr>
<tr>
<td></td>
<td>255 (339)</td>
<td>238 (294)</td>
<td>238 (294)</td>
<td>29 (232)</td>
</tr>
</tbody>
</table>

Source: Mortality, Ministry of Health

Most of the indicators for health outcomes are reported as age-standardised rates and are expressed as a rate per 100,000. Age standardisation allows comparison between ethnic groups with different age structures. Direct age standardisation was used in this report, with most rates (unless noted otherwise) standardised to the total Māori population from the 2001 Census.

The use of the 2001 Māori population standard makes the age-standardised data in this report comparable to the District Health Board (DHB) Māori Health Profiles 2015 and Ministry of Health’s Māori health chartbooks, but not to other Ministry of Health documents which use the World Health Organisation’s world population.

Confidence intervals have been presented for the age-standardised rates in health outcome indicators. They are indicated in the tables for those interested as reference, but not inferred in the discussion. The key purpose of this document is for benchmarking the results between Ngāti Porou rohe, Tairāwhiti DHB and total New Zealand populations. It is to be noted that the Dashboard scheme of comparison is based on observed differences (measured by simple arithmetic differences), and the discussion on health outcomes does not imply statistical significance.

This decision is driven by two key factors. Firstly, the high rates of mortality and hospitalisations for NPH are cause for concern and any differences with Tairāwhiti DHB and total New Zealand populations warrant urgent attention. Secondly, this report obtained the statistics on health outcomes that were designed primarily for comparison between Māori and non-Māori (non-overlapping sub-populations) at the DHB levels in comparison with total New Zealand population. It is not feasible nor is it statistically robust for the NPH health outcome project to follow the same approach because of the extremely small number of non-Māori in the Ngāti Porou rohe. The NPH rohe has a population estimate of 11,487, but these numbers (for both Māori and more so with non-Māori) will be extremely small in terms of specific disease conditions and/or mortality

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24. Note that there are variation in the number of decimal places in some of the tables. Ideally the decimal places should follow a standard pattern which will require the SAS programme to include a rule of thumb for the table output format. This was not possible given the time constraint for this project.
statistics. Consequently, this report has presented analysis of health outcomes with confidence intervals for reference, but it has not emphasised statistical significance in the discussion.

The preferred approach for any future update would be to obtain customised comparison as follows:
- NPH Māori with TDH Māori outside of NPH areas;
- NPH Māori with NZ Māori; and
- NPH rohe with Total New Zealand

As a point of reference, 95% confidence intervals provide an indication of the margin of error associated with calculated rates. When the 95% confidence intervals of two rates do not overlap, the differences in these rates are statistically significant with 95% confidence. If two confidence intervals do overlap the difference may be due to chance and may not be statistically significant. Estimates for larger populations and more common conditions will usually have narrower confidence intervals. Confidence intervals for some indicators are wide because of the comparative rarity of the condition. Estimates for Tairāwhiti and national confidence intervals are narrower than those for NPH because of the difference in population size.

It is important to note that the health outcomes have included all people resident in the geographical areas of Ngāti Porou rohe, and some of them are not enrolled with NPH PHO. These factors, along with the wider and persistent influence of socioeconomic risk factors and high levels of deprivation need to be taken into account in the interpretation of health outcomes in this Dashboard.

Mortality

In the selection of indicators for the NPH Dashboard, the first criterion focuses on overall indices of health status such as mortality or amenable mortality. These indicators signal wider health concerns and assist with highlighting key health issues and determining priority areas for NPH.

Table 10. Avoidable Mortality and Amenable Mortality, 0–74 years, 2007–2011

<table>
<thead>
<tr>
<th>Indicator measure by:</th>
<th>NPH</th>
<th>Tairāwhiti</th>
<th>Total NZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoidable Deaths Total Population</td>
<td>219</td>
<td>194</td>
<td>106</td>
</tr>
<tr>
<td>Avoidable Deaths Māori</td>
<td>294</td>
<td>265</td>
<td>227</td>
</tr>
<tr>
<td>Amenable Deaths Total Population</td>
<td>169</td>
<td>114</td>
<td>74</td>
</tr>
<tr>
<td>Amenable Deaths Māori</td>
<td>222</td>
<td>194</td>
<td>162</td>
</tr>
</tbody>
</table>

The Dashboard as shown in Table 10 indicates that:
- the avoidable death rate in the Ngāti Porou rohe is more than twice the rate in New Zealand, and about 10% more than Tairāwhiti. The rate for avoidable death is higher than the total population in the rohe with 75 more deaths per 100,000.
- amenable mortality rates in the Ngāti Porou rohe were more than two times higher than New Zealand, and about 50% more than Tairāwhiti. The rate for Māori is about 40% higher than New Zealand, and 10% higher than Tairāwhiti.

Potentially Avoidable and Amenable Mortality

Avoidable mortality (death) captures risks of dying from conditions (diseases and injuries) that are either preventable or treatable. Avoidable mortality includes deaths occurring among those less than 75 years old that could potentially have been avoided through population-based interventions (including actions to address the social determinants of health) or through preventive and curative interventions at an individual level.

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25. This point is important because an earlier customised analysis of ASH based on a cohort of NPH enrolled population showed that the NPH Māori ASH rates increased significantly (compared with NZ ASH) up to 2004-05, followed by a decline in more recent years (2005-07). By 2006-07, NPH Māori ASH rate is not significantly different from NZ, while the Tairāwhiti DHB ASH rate is still significantly higher.

Amenable mortality is a subset of avoidable mortality and is restricted to deaths from conditions that are amenable to health care at all levels (Ministry of Health 1999):27,28

1) amenable to primary prevention
2) amenable to early detection and treatment
3) amenable to improved treatment and medical care

For example, amenable deaths include premature deaths from infections, cancers, birth complications, injuries and chronic illnesses. A detailed list of disease codes (ICD codes) for these classifications are provided in Appendix 6.

Figure 15. All-cause Deaths: Avoidable and Amenable Deaths, Yearly Average 0–74 years, 2007–2011

The diagram to the left above shows that people 0–74 years in Ngāti Porou rohe have an average of 67 deaths per year where a subset of 53 deaths (78%) is potentially avoidable. Of the 53 avoidable deaths, a smaller subset of 40 deaths (76%) is potentially amenable through prevention, or appropriate and timely intervention by the health systems. The diagram to the above right shows a similar pattern for Māori deaths in Ngāti Porou rohe. More detailed statistics are available in Appendix 7 with comparison of the potentially avoidable and amenable mortality between population subgroups in Ngāti Porou rohe with Tairāwhiti and New Zealand.

One rationale for measuring Amenable Mortality (as a system level measure) is to reduce the number of avoidable deaths over time through better access to health care. We learned in an earlier section that primary care health targets such as cardiovascular disease and diabetes are important contributory measures. However, other local measures and indicators have an equally important role to play in reducing Amenable Mortality, for example measures to address particular challenges such as primary-secondary (GP/hospital) integration, service re-design or addressing the unique needs of a regional or local population.29

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27. Ibid.
ALL-CAUSE MORTALITY

The following tables provide detailed analysis of mortality, comparing population subgroups of all ages in Ngāti Porou rohe with Tairāwhiti and New Zealand. In 2008 to 2012, Ngāti Porou rohe had an average of 72 Māori deaths out of a total of 104 deaths per year. The Māori mortality rate was 1.1 times (12% higher) as high as New Zealand Māori rate, or 44 more deaths per 100,000. However, the Māori deaths in Ngāti Porou rohe was 0.9 times lower (9% lower) than Tairāwhiti, or 40 fewer deaths per 100,000.

Table 11: All-cause deaths, all ages, Māori Population, 2008–2012

<table>
<thead>
<tr>
<th>Gender</th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
<td>Avg per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>37</td>
<td>390 (333 457)</td>
<td>71</td>
<td>369 (340 399)</td>
</tr>
<tr>
<td>Male</td>
<td>35</td>
<td>453 (386 531)</td>
<td>78</td>
<td>555 (516 597)</td>
</tr>
<tr>
<td>Total</td>
<td>72</td>
<td>422 (377 472)</td>
<td>148</td>
<td>462 (437 488)</td>
</tr>
</tbody>
</table>

Table 12: All-cause deaths, all ages, Total Population, 2008–2012

<table>
<thead>
<tr>
<th>Gender</th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
<td>Avg per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>49</td>
<td>296 (256 344)</td>
<td>192</td>
<td>230 (215 246)</td>
</tr>
<tr>
<td>Male</td>
<td>55</td>
<td>379 (330 434)</td>
<td>196</td>
<td>349 (329 369)</td>
</tr>
<tr>
<td>Total</td>
<td>104</td>
<td>338 (305 373)</td>
<td>388</td>
<td>289 (277 302)</td>
</tr>
</tbody>
</table>

Source: Mortality dataset, Ministry of Health.

The rohe’s mortality rate was 1.7 times as high (66% higher) as the New Zealand rate, or 48 more deaths per 100,000; and 1.2 times higher (17% higher) than Tairāwhiti, or 134 more deaths per 100,000.

Figure 16. All-cause Deaths: Avoidable and Amenable Deaths, 0–74 years, 2007–2011 Comparison of Māori mortality by area

Further comparison with eight DHBs indicates that the NPH population has the highest mortality rate as a whole and for the Māori female mortality rate. However, the NPH Māori male mortality rate is lower than Tairāwhiti DHB as well as the total NZ rate as shown in Table 13. In fact, it ranked 7th (in descending order) when compared with the eight DHBs’ mortality rates as shown in the table below.

30. The DHBs include those in the neighborhood and/or North Island with substantial rural Maori population such as Tairāwhiti, Whanganui, Northland, Lakes DHB, Bay of Plenty, Hawke’s Bay, Waikato and Taranaki.
Table 13: All-cause mortality, age-standardised rate, all ages, Māori Population, 2008-2012 Comparison with selected DHBs

<table>
<thead>
<tr>
<th></th>
<th>NZ</th>
<th>NPH</th>
<th>Tairāwhiti</th>
<th>Bay of Plenty</th>
<th>Hawke's Bay</th>
<th>Lakes DHB</th>
<th>Northland</th>
<th>Taranaki</th>
<th>Waikato</th>
<th>Whanganui</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>313</td>
<td>390</td>
<td>369</td>
<td>327</td>
<td>332</td>
<td>372</td>
<td>357</td>
<td>298</td>
<td>331</td>
<td>384</td>
</tr>
<tr>
<td>Male</td>
<td>443</td>
<td>453</td>
<td>555</td>
<td>492</td>
<td>486</td>
<td>509</td>
<td>540</td>
<td>425</td>
<td>483</td>
<td>528</td>
</tr>
<tr>
<td>Total</td>
<td>378</td>
<td>422</td>
<td>462</td>
<td>409</td>
<td>409</td>
<td>441</td>
<td>448</td>
<td>362</td>
<td>407</td>
<td>456</td>
</tr>
</tbody>
</table>

Rank order

7 1 5 6 4 3 9 8 2

The graph below shows the actual number of deaths from 2007-2011 as background statistics about the size of the problem with mortality in NPH. Note that there is a gradual increase in the mortality trends, followed by a substantial decrease in 2010, more noticeable for males in NPH rohe. It would be of interest to follow up the future trends to see whether the decline in 2011 continues or is due to chance.

Figure 17. All-cause Deaths in NPH rohe: 2007–2011 Comparison by population subgroups
LEADING CAUSES OF MORTALITY

During 2007 to 2011 the leading causes of death for Māori in Ngāti Porou rohe were ischaemic heart disease (IHD), lung cancer, diabetes and COPD (chronic obstructive pulmonary disease). Leading causes of death for Māori females were ischaemic heart disease (IHD), lung cancer, diabetes, and COPD. Leading causes of death for Māori males were IHD, lung cancer, accidents and diabetes. There were differences in the causes of death between Māori women and men; Māori and non-Māori; as well as between Ngāti Porou rohe, Tairāwhiti and New Zealand. These patterns are summarised in the charts as shown below:

Figure 18. Leading causes of deaths 2007-2011 in all ages, measured in age-standardised mortality rate: Comparison between Total Population and Māori in Ngāti Porou rohe, Tairāwhiti and New Zealand, as well as between Males and Females.

The four charts above and detailed tables in Appendix 8 show the following patterns:

• Mortality rates for the leading conditions such as IHD, lung cancer and diabetes were higher in Ngāti Porou rohe, except for COPD where the rate is about the same as the national rate and lower than Tairāwhiti.
• Mortality rates were higher for NPH Māori than for New Zealand for IHD (1.6 times as high), and diabetes (1.5 times as high).
• Mortality rates were higher for NPH females than for New Zealand females for IHD (1.7 times as high), and diabetes (2 times as high).
• Mortality rates were higher for Māori males than for New Zealand men for IHD (1.5 times as high), accidents, lung cancer and diabetes (1.2 times higher). However, the rate for lung cancer is lower than Tairāwhiti (0.8 times lower).
INJURY MORTALITY

In 2007 to 2011, there were an average of 9 deaths per year from injuries in Ngāti Porou rohe, and 6 were Māori men. Ngāti Porou rohe’s injury mortality rates were 2.5 times higher (ASR for male at 81.5 compared with 32.7 for female) for Māori males than for Māori females, whereas Tairāwhiti Māori males were 3.6 times more likely to die from injuries than their female counterparts (ASR for male at 90.9 compared with 25.4 for female). Furthermore, injury mortality for all males in Ngāti Porou rohe was 3.4 times higher than for females (ASR for males at 91.3 compared with 26.9 for females).

Table 14: Deaths from injury, all ages, Māori Population, 2007–2011

<table>
<thead>
<tr>
<th>Gender</th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>2</td>
<td>32.7 (16.4 65.0)</td>
<td>3</td>
<td>25.4 (15.3 42.3)</td>
</tr>
<tr>
<td>Male</td>
<td>4</td>
<td>81.5 (51.7 128.5)</td>
<td>10</td>
<td>90.9 (68.0 121.4)</td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>57.1 (39.1 83.5)</td>
<td>13</td>
<td>58.2 (45.2 74.8)</td>
</tr>
</tbody>
</table>

Table 15: Deaths from injury, all ages, Total Population, 2007–2011

<table>
<thead>
<tr>
<th>Gender</th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>2</td>
<td>26.9 (14.1 51.3)</td>
<td>8</td>
<td>19.0 (12.5 29.0)</td>
</tr>
<tr>
<td>Male</td>
<td>7</td>
<td>91.3 (63.5 131.3)</td>
<td>17</td>
<td>73.0 (57.5 92.6)</td>
</tr>
<tr>
<td>Total</td>
<td>9</td>
<td>59.1 (43.0 81.1)</td>
<td>25</td>
<td>46.0 (37.4 56.6)</td>
</tr>
</tbody>
</table>

Source: Mortality dataset, Ministry of Health.

As in Figure 17 previously, the graphs below show the actual number of deaths from injury from 2007-2011 as background statistics about the size of the problem with injury mortality in NPH. The graph below shows quite a lot of fluctuations in injury mortality in the NPH rohe for both females and males. It is noted that in 2009, all injury deaths were from Māori males, and from 2007 – 2011, most of the deaths from injury involved males. Furthermore from 2009 - 2011, all injury deaths among females were Māori females.

Figure 19. Deaths from injury in NPH rohe: 2007–2011 Comparison by population subgroups
HOSPITAL ADMISSIONS

On average, Māori from Ngāti Porou rohe made up 2,424 (44%) of the total 5,455 Māori hospital admissions per year in Tairāwhiti. All-cause admission rates for Ngāti Porou rohe Māori were the same as Tairāwhiti, but slightly lower than New Zealand Māori.

Table 16: All-cause hospitalisations, all ages, Māori Population, 2011–2013

<table>
<thead>
<tr>
<th>Gender</th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Avg per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
<td>Average per year</td>
</tr>
<tr>
<td>Female</td>
<td>1367 24220 (23446 25021)</td>
<td>3050 23849 (23340 24369)</td>
<td>26055 (25958 26152)</td>
</tr>
<tr>
<td>Male</td>
<td>1057 19122 (18423 19847)</td>
<td>2405 19780 (19307 20264)</td>
<td>19996 (19910 20082)</td>
</tr>
<tr>
<td>Total</td>
<td>2424 21671 (21147 22208)</td>
<td>5455 21815 (21466 22169)</td>
<td>23025 (22961 23090)</td>
</tr>
</tbody>
</table>

Table 17: All-cause hospitalisations, all ages, Total Population, 2011–2013

<table>
<thead>
<tr>
<th>Gender</th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Avg per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
<td>Average per year</td>
</tr>
<tr>
<td>Female</td>
<td>1842 22705 (22057 23373)</td>
<td>6102 22385 (22007 22770)</td>
<td>21497 (21458 21537)</td>
</tr>
<tr>
<td>Male</td>
<td>1527 17996 (17420 18592)</td>
<td>5269 18859 (18512 19213)</td>
<td>16931 (16896 16967)</td>
</tr>
<tr>
<td>Total</td>
<td>3369 20352 (19915 20796)</td>
<td>11371 20622 (20365 20883)</td>
<td>19213 (19188 19241)</td>
</tr>
</tbody>
</table>

Source: NMDS

LEADING CAUSES OF HOSPITAL ADMISSIONS

During 2011-2013, the top five reasons for hospitalisation for in Ngāti Porou rohe are for diagnosis, injuries, respiratory diseases, digestive system diseases and for circulatory system diseases. Overall, NPH has almost the same rate of hospital admissions as Tairāwhiti and slightly more admissions than New Zealand average. There were some variations for specific reasons where there were higher rates of admissions for NPH as shown in Table 18 below. More specific lists of primary diagnosis and associated statistics are available in Appendix 9.

Table 18: Leading causes of hospital admissions, Total Population, 2011–2013

<table>
<thead>
<tr>
<th>General reason for hospital admission</th>
<th>NPH Average per year</th>
<th>Age-Std rate per 100,000</th>
<th>Rate ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis</td>
<td>363</td>
<td>2,612 2,836 2814</td>
<td>0.9 0.9</td>
</tr>
<tr>
<td>Injuries</td>
<td>374</td>
<td>2,503 2,390 2205</td>
<td>1.0 1.1</td>
</tr>
<tr>
<td>Respiratory disease</td>
<td>322</td>
<td>2,069 2,046 1596</td>
<td>1.0 1.3</td>
</tr>
<tr>
<td>Digestive system disease</td>
<td>317</td>
<td>1,886 1,798 1562</td>
<td>1.0 1.2</td>
</tr>
<tr>
<td>Circulatory system diseases</td>
<td>252</td>
<td>883 762 618</td>
<td>1.2 1.4</td>
</tr>
<tr>
<td>Genitourinary system</td>
<td>170</td>
<td>875 859 885</td>
<td>1.0 1.0</td>
</tr>
<tr>
<td>Infections</td>
<td>117</td>
<td>838 865 730</td>
<td>1.0 1.1</td>
</tr>
<tr>
<td>Cancers</td>
<td>190</td>
<td>772 863 697</td>
<td>0.9 1.1</td>
</tr>
<tr>
<td>Skin disease</td>
<td>114</td>
<td>762 719 511</td>
<td>1.1 1.5</td>
</tr>
<tr>
<td>Mental disorders</td>
<td>87</td>
<td>656 726 427</td>
<td>0.9 1.5</td>
</tr>
<tr>
<td>Musculoskeletal diseases</td>
<td>130</td>
<td>599 619 736</td>
<td>1.0 0.8</td>
</tr>
<tr>
<td>All hospital admissions</td>
<td>3,369</td>
<td>20,352 20,624 19,216</td>
<td>1.0 1.1</td>
</tr>
</tbody>
</table>

Source: NMDS

Tables 19 and 20 show that Māori women and men in Ngāti Porou rohe have different reasons for hospital admission. Pregnancy and childbirth are the largest drivers for Māori women to be admitted to the hospital,
as are genitourinary diseases and cancers which contributed to a higher rate of hospital admissions compared to their male counterparts. In contrast, injuries are the leading cause for admission of Māori men followed by mental disorders and musculoskeletal diseases, which have higher hospital presentation in males.

Table 19: Leading causes of hospital admissions, Māori females, 2011–2013

<table>
<thead>
<tr>
<th>General reason for hospital admission</th>
<th>Age-Std rate per 100,000</th>
<th>Rate ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NPH</td>
<td>TDH</td>
</tr>
<tr>
<td>Pregnancy and childbirth</td>
<td>242</td>
<td>5,348</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>153</td>
<td>3,070</td>
</tr>
<tr>
<td>Respiratory disease</td>
<td>115</td>
<td>2,062</td>
</tr>
<tr>
<td>Digestive system disease</td>
<td>111</td>
<td>2,001</td>
</tr>
<tr>
<td>Circulatory system diseases</td>
<td>97</td>
<td>1,082</td>
</tr>
<tr>
<td>Injuries</td>
<td>94</td>
<td>1,646</td>
</tr>
<tr>
<td>Genitourinary system</td>
<td>87</td>
<td>1,400</td>
</tr>
<tr>
<td>Symptoms and signs (unknown causes)</td>
<td>86</td>
<td>1,327</td>
</tr>
<tr>
<td>Cancers</td>
<td>75</td>
<td>1,100</td>
</tr>
<tr>
<td>Infections</td>
<td>49</td>
<td>954</td>
</tr>
<tr>
<td>All hospital admissions</td>
<td>1,367</td>
<td>24,222</td>
</tr>
</tbody>
</table>

Table 20: Leading causes of hospital admissions, Māori males, 2011–2013

<table>
<thead>
<tr>
<th>General reason for hospital admission</th>
<th>Age-Std rate per 100,000</th>
<th>Rate ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NPH</td>
<td>TDH</td>
</tr>
<tr>
<td>Injuries</td>
<td>175</td>
<td>3716</td>
</tr>
<tr>
<td>Respiratory disease</td>
<td>140</td>
<td>2473</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>113</td>
<td>2220</td>
</tr>
<tr>
<td>Digestive system disease</td>
<td>108</td>
<td>2008</td>
</tr>
<tr>
<td>Symptoms and signs (unknown causes)</td>
<td>72</td>
<td>1233</td>
</tr>
<tr>
<td>Circulatory system diseases</td>
<td>85</td>
<td>1119</td>
</tr>
<tr>
<td>Mental disorders</td>
<td>39</td>
<td>957</td>
</tr>
<tr>
<td>Skin disease</td>
<td>40</td>
<td>785</td>
</tr>
<tr>
<td>Musculoskeletal diseases</td>
<td>47</td>
<td>774</td>
</tr>
<tr>
<td>Infections</td>
<td>39</td>
<td>759</td>
</tr>
<tr>
<td>All hospital admissions</td>
<td>1,057</td>
<td>19,121</td>
</tr>
</tbody>
</table>

While the major causes of deaths in Ngāti Porou rohe were IHD, lung cancer, diabetes and COPD, these diseases do not feature as a leading cause of hospital admissions, except for injury admission. This is because on the scale across all age groups, these causes are relatively further down the list of all hospital admissions. However, there will be further analysis and discussion of diseases such as IHD and lung cancer in the section on “Pakeke, Adults and Older People’s Health”.
Avoidable admissions are hospitalisations of people younger than 75 years, which fall into three subcategories:\(^{31}\):

- preventable admissions, resulting from diseases preventable through population-based health promotion strategies;
- ambulatory-sensitive hospitalisations, resulting from diseases sensitive to preventative or therapeutic interventions deliverable in a primary health care setting; and
- injury preventable admissions, avoidable through injury prevention.

Figure 20. Hospital Admissions: Avoidable and Ambulatory Sensitive Hospitalisations (ASH), Yearly Average 0–74 years, 2011–2013

The diagram above left shows that of all the hospital admissions for 0–74 years during 2011-2013, which average at about 3,000 per year, about 800 are considered to be potentially avoidable and over 500 of these are considered as ambulatory sensitive hospital admissions. Similarly, the diagram to the above right shows that out of over 2,200 Māori hospital admissions in Ngāti Porou rohe, about 630 events are considered potentially avoidable with 410 considered to be ambulatory sensitive hospital admissions.

The rates of avoidable admission in the Ngāti Porou rohe were almost the same as Tairāwhiti and New Zealand for the Māori population as shown in Table 21 and Table 22.\(^{32}\) The rates of avoidable admission in the Ngāti Porou rohe were slightly higher (1.1 times) than Tairāwhiti and quite a lot higher (1.2 times) than the national rates, with both NPH females and males showing higher rates than the national rates.

Table 21: Potentially avoidable hospitalisations, 0–74 years, Māori Population, 2011–2013

<table>
<thead>
<tr>
<th>Gender</th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>331</td>
<td>5799 (5431 6192)</td>
<td>705</td>
<td>5502 (5262 5754)</td>
</tr>
<tr>
<td>Male</td>
<td>301</td>
<td>5563 (5194 5958)</td>
<td>643</td>
<td>5458 (5211 5716)</td>
</tr>
<tr>
<td>Total</td>
<td>632</td>
<td>5681 (5418 5957)</td>
<td>1348</td>
<td>5480 (5307 5659)</td>
</tr>
</tbody>
</table>

Table 22: Potentially avoidable hospitalisations, 0–74 years, Total Population, 2011–2013

<table>
<thead>
<tr>
<th>Gender</th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>414</td>
<td>5161 (4858 5484)</td>
<td>1164</td>
<td>4658 (4486 4837)</td>
</tr>
<tr>
<td>Male</td>
<td>394</td>
<td>5017 (4713 5340)</td>
<td>1181</td>
<td>4818 (4642 5001)</td>
</tr>
<tr>
<td>Total</td>
<td>807</td>
<td>5089 (4873 5315)</td>
<td>2345</td>
<td>4738 (4614 4865)</td>
</tr>
</tbody>
</table>


32. Note that this difference does not imply statistically significant difference as the confidence intervals overlap, and due to the reasons stated earlier in the section “How to Interpret Results”.

---

38
AMBULATORY SENSITIVE HOSPITALISATIONS (ASH)

In New Zealand, ambulatory sensitive hospitalisations (ASH) measure unplanned admissions that are potentially preventable by appropriate health services delivered in community settings, including through primary care, and hospital ambulatory services such as outpatient and dental services.

ASH rates are complex measures reflecting the clustered effect of many levels of intervention and are expected to change slowly. Trends are helpful over 3-5 years in signalling progress but no single measure should be interpreted in isolation as a measure of the ‘productivity’ or effectiveness of primary health care or the DHB as a system.

Positive effects on access, health outcomes and avoidable hospitalisations would be expected to become apparent over the next five years, if stability of workforce, growth in infrastructure, population health and equity focus can be maintained. It is also recognised that while access to effective primary care is important in reducing ASH, addressing the factors which drive the underlying burden of disease such as poor quality housing, or second hand smoke exposures, is also important.33

The population groups in the Dashboard are: all people aged 0-74, and the sub-groups of children 0-4 years, and adults 45-64 years. These years were chosen in the adult population as they are critical years for interventions to address the early onset of non-communicable diseases (like diabetes, heart disease), and to reduce disparities in amenable mortality (preventable early deaths).

Table 23. Ambulatory Sensitive Hospitalisations (ASH), 0–74 years34, 2011–2013

<table>
<thead>
<tr>
<th>Indicator (Age-standardised rate per 100,000) measure by:</th>
<th>NPH</th>
<th>Tairāwhiti</th>
<th>Total NZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASH (0 - 74 y) Total Population</td>
<td>3,116</td>
<td>2,875</td>
<td>2,136</td>
</tr>
<tr>
<td>ASH (0 - 74 y) Māori</td>
<td>3,487</td>
<td>3,552</td>
<td>3,134</td>
</tr>
<tr>
<td>ASH (0 - 4 y) Total Population</td>
<td>8,037</td>
<td>7,163</td>
<td>4,641</td>
</tr>
<tr>
<td>ASH (0 - 4 y) Māori</td>
<td>7,994</td>
<td>7,616</td>
<td>5,640</td>
</tr>
<tr>
<td>ASH (45 - 64 y) Total Population</td>
<td>3,321</td>
<td>3,077</td>
<td>2,674</td>
</tr>
<tr>
<td>ASH (45 - 64 y) Māori</td>
<td>4,598</td>
<td>4,778</td>
<td>5,022</td>
</tr>
</tbody>
</table>

- The Dashboard shows that after adjusting for differences in population age structures, ASH rates for the total population of the Ngāti Porou rohe were slightly higher (1.1 times) than Tairāwhiti DHB, and both are significantly higher (1.5 times) than the national ASH rate.
- However, ASH rates among NPH Māori 0-74 years were slightly lower (0.98 times) compared with Tairāwhiti DHB, and slightly higher (1.1 times) than the national rate.
- ASH rates among children 0 – 4 years were 1.1 times higher than Tairāwhiti and 1.7 times higher than the national rate. Similarly, Māori children 0 – 4 years have slightly higher (1.1 times) ASH rates than Tairāwhiti and 1.4 times higher than the national ASH rate.
- In contrast, ASH rates among older Māori adults 45 – 64 years were slightly lower (0.98 times) than Tairāwhiti and the slightly lower than (0.92 times) the national ASH rate, although the rates for all population were still slightly higher than (1.1 times) Tairāwhiti and national rate (1.2 times).

The following eight tables show detailed information on the ASH rates among sub-groups at 0-4 years, 0-14 years, 45-64 years and 0-74 years for Māori and all people respectively. The tables display ASH rates and confidence intervals for Ngāti Porou rohe, compared with Tairāwhiti and the national rates, including gender comparison.

---


34. Mortality rates, hospitalisation, and cancer registration were age–sex-standardised to the 2001 Māori population. The use of the 2001 Māori population standard makes the age-standardised data in this report comparable to the District Health Board (DHB) Māori Health Profiles 2015 and Ministry of Health’s Māori health chartbooks, but not to other Ministry of Health documents which use the World Health Organisation’s world population.
### Table 24. ASH for children aged 1 month to 4 years, Māori Population, 2011–2013

<table>
<thead>
<tr>
<th></th>
<th>Ngāti Porou Hauora Area</th>
<th>Taírwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>42</td>
<td>7658 (6426–9125)</td>
<td>92</td>
<td>7208 (6404–8112)</td>
</tr>
<tr>
<td>Male</td>
<td>48</td>
<td>8331 (7080–9804)</td>
<td>106</td>
<td>8025 (7189–8957)</td>
</tr>
<tr>
<td>Total</td>
<td>90</td>
<td>7994 (7095–9008)</td>
<td>198</td>
<td>7616 (7027–8255)</td>
</tr>
</tbody>
</table>

### Table 25. ASH for children aged 1 month to 4 years, Total Population, 2011–2013

<table>
<thead>
<tr>
<th></th>
<th>Ngāti Porou Hauora Area</th>
<th>Taírwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>53</td>
<td>7568 (6482–8836)</td>
<td>128</td>
<td>6698 (6061–7403)</td>
</tr>
<tr>
<td>Male</td>
<td>61</td>
<td>8505 (7361–9828)</td>
<td>148</td>
<td>7627 (6950–8371)</td>
</tr>
<tr>
<td>Total</td>
<td>115</td>
<td>8037 (7231–8933)</td>
<td>276</td>
<td>7163 (6691–7668)</td>
</tr>
</tbody>
</table>

### Table 26: ASH for children aged 1 month to 14 years, Māori Population, 2011–2013

<table>
<thead>
<tr>
<th></th>
<th>Ngāti Porou Hauora Area</th>
<th>Taírwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>70</td>
<td>4316 (3771–4940)</td>
<td>167</td>
<td>4534 (4153–4949)</td>
</tr>
<tr>
<td>Male</td>
<td>83</td>
<td>4793 (4234–5428)</td>
<td>185</td>
<td>4795 (4412–5210)</td>
</tr>
<tr>
<td>Total</td>
<td>153</td>
<td>4555 (4157–4991)</td>
<td>352</td>
<td>4664 (4391–4954)</td>
</tr>
</tbody>
</table>

### Table 27: ASH for children aged 1 month to 14 years, Total Population, 2011–2013

<table>
<thead>
<tr>
<th></th>
<th>Ngāti Porou Hauora Area</th>
<th>Taírwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>88</td>
<td>4265 (3779–4812)</td>
<td>235</td>
<td>4184 (3886–4504)</td>
</tr>
<tr>
<td>Male</td>
<td>101</td>
<td>4708 (4206–5270)</td>
<td>257</td>
<td>4380 (4081–4701)</td>
</tr>
<tr>
<td>Total</td>
<td>188</td>
<td>4486 (4130–4872)</td>
<td>492</td>
<td>4282 (4069–4506)</td>
</tr>
</tbody>
</table>

### Table 28. ASH for adults aged 45–64 years, Māori Population, 2011–2013

<table>
<thead>
<tr>
<th></th>
<th>Ngāti Porou Hauora Area</th>
<th>Taírwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>55</td>
<td>4765 (4079–5566)</td>
<td>122</td>
<td>4850 (4373–5378)</td>
</tr>
<tr>
<td>Male</td>
<td>46</td>
<td>4431 (3734–5258)</td>
<td>106</td>
<td>4706 (4207–5264)</td>
</tr>
<tr>
<td>Total</td>
<td>101</td>
<td>4598 (4097–5159)</td>
<td>228</td>
<td>4778 (4428–5156)</td>
</tr>
</tbody>
</table>

### Table 29. ASH for adults aged 45–64 years, Total Population, 2011–2013

<table>
<thead>
<tr>
<th></th>
<th>Ngāti Porou Hauora Area</th>
<th>Taírwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>67</td>
<td>3476 (3014–4009)</td>
<td>189</td>
<td>2977 (2736–3239)</td>
</tr>
<tr>
<td>Male</td>
<td>57</td>
<td>3166 (2707–3702)</td>
<td>196</td>
<td>3177 (2922–3455)</td>
</tr>
<tr>
<td>Total</td>
<td>124</td>
<td>3321 (2988–3691)</td>
<td>385</td>
<td>3077 (2899–3266)</td>
</tr>
</tbody>
</table>

### Table 30. Ambulatory care sensitive hospitalisations, 0–74 years, Māori Population, 2011–2013

<table>
<thead>
<tr>
<th></th>
<th>Ngāti Porou Hauora Area</th>
<th>Taírwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>202</td>
<td>3649 (3356–3969)</td>
<td>456</td>
<td>3621 (3425–3827)</td>
</tr>
<tr>
<td>Male</td>
<td>178</td>
<td>3325 (3042–3633)</td>
<td>414</td>
<td>3498 (3302–3706)</td>
</tr>
<tr>
<td>Total</td>
<td>380</td>
<td>3487 (3281–3706)</td>
<td>870</td>
<td>3552 (3412–3697)</td>
</tr>
</tbody>
</table>
There were an average 471 ASH admissions (excluding newborns) for NPH people younger than 75 years during 2011-2013. Just over four out of five (81%) of these admissions were Māori. Table 24 through to Table 31 show that although the ASH admission rates for NPH Māori and total population were slightly higher than (1.1 times to 1.2 times higher) Tairāwhiti, there were also Māori of particular age groups that have the same or lower ASH rates than Tairāwhiti. They are as follows:

- On balance, Māori children 5 to 14 years would be expected to have lower ASH rates because the ASH rates in Table 26 show that Māori children 1 month to 14 years have slightly lower ASH rates compared with Tairāwhiti and we know from Table 24 that children 0-4 years have slightly higher ASH rates than Tairāwhiti. Table 28 shows that ASH rates for older Māori adult 45 – 64 years were slightly lower (0.98 times) than Tairāwhiti and also slightly lower than (0.92 times) the national ASH rate.
- Benchmarking with neighbouring DHBs indicated that the ASH rates among NPH Māori 0-74 years ranked about the middle among eight DHBs (lower than Tairāwhiti, Bay of Plenty, Hawke’s Bay and Whanganui, but higher than Taranaki, Waikato, Lakes and almost the same rate as Northland)
**HEALTH OUTCOMES OF POPULATION GROUP**

**PEPI, TAMARIKI – INFANTS AND CHILDREN (0-14 YEARS)**

This section provides information on infants and children. Indicators include birth-weight and gestation, oral health, skin infections, acute rheumatic fever, and potentially preventable hospitalisations. Several indicators such as immunisation and breastfeeding are discussed previously in the section on Intermediate Performance Outcomes. Infant mortality, including perinatal mortality and sudden unexpected death in infants (SUDI) are also important but the numbers are too small to enable robust indicators at PHO level.

The following sections follow a similar approach as the District Health Board (DHB) Māori Health Profiles 2015 recently published by Te Rōpū Rangahau Hauora a Eru Pōmare, Otago University. The indicators in this report align with most of the health outcomes indicators in the Māori Health Profiles, except that the small number of non-Māori population in Ngāti Porou rohe made comparison between Māori and non-Māori health outcomes quite meaningless. Therefore, the tables have been structured to benchmark the health profile in Ngāti Porou rohe with Tairāwhiti and the New Zealand national rates among Māori and for the total population. We aim to create a picture of the health status of Ngāti Porou rohe at a given time, to be the baseline for future monitoring of progress.

**BIRTHS**

During 2009-2013 there was an average of 231 Māori infants born per year, out of a total of 278 infants in the Ngāti Porou rohe. On average, 19 Māori babies per year were born with low birth-weight (at 8.5% of live births), 4 with high birth-weight (at 1% of live births), and 20 were born prematurely (8.5% of live births).

The results as shown in the table below indicate that the prevalence of premature babies among Ngāti Porou Māori was about the same as Tairāwhiti and the national rates. Similarly, the proportions of low birthweight and high birthweight were relatively close to Tairāwhiti and the national rates for Māori babies.

Among all the live births in NPH as shown in the table for total population, the results were mixed. For example, although the data on birthweights in NPH is similar to Tairāwhiti, the proportion of NPH babies with low birthweight was higher than the national rate. There was also a slightly higher proportion of premature babies in NPH than Tairāwhiti and in NZ as a whole.

**Table 32: Birth-weight and gestation, Māori Population, 2009–2013**

<table>
<thead>
<tr>
<th></th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>% of live births (95% CI)</td>
<td>Average per year</td>
<td>% of live births (95% CI)</td>
</tr>
<tr>
<td>Low birth-weight</td>
<td>19</td>
<td>8.2 (6.7 10.0)</td>
<td>45</td>
<td>8.5 (7.5 9.6)</td>
</tr>
<tr>
<td>High birth-weight</td>
<td>4</td>
<td>1.6 (1.0 2.6)</td>
<td>8</td>
<td>1.5 (1.1 2.0)</td>
</tr>
<tr>
<td>Preterm</td>
<td>20</td>
<td>8.5 (6.9 10.2)</td>
<td>42</td>
<td>7.9 (6.9 9.0)</td>
</tr>
</tbody>
</table>

**Table 33: Birth-weight and gestation, Total Population, 2009–2013**

<table>
<thead>
<tr>
<th></th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>% of live births (95% CI)</td>
</tr>
<tr>
<td>Low birth-weight</td>
<td>21</td>
<td>7.7 (6.3 9.2)</td>
<td>57</td>
<td>7.6 (6.8 8.5)</td>
</tr>
<tr>
<td>High birth-weight</td>
<td>6</td>
<td>2.1 (1.4 3.0)</td>
<td>17</td>
<td>2.2 (1.8 2.8)</td>
</tr>
<tr>
<td>Preterm</td>
<td>23</td>
<td>8.4 (7.0 10.0)</td>
<td>58</td>
<td>7.8 (6.9 8.7)</td>
</tr>
</tbody>
</table>

Source: Birth registrations, Ministry of Health.
Note: Low birth-weight less than 2500g, High birth-weight greater than 4500g, Preterm less than 37 weeks gestation
ORAL HEALTH

During 2011 to 2013, there were 46 hospital admissions per year on average for tooth and gum disease among NPH Māori children, out of an average of 52 admissions for NPH. The admission rate for Māori children at 1,360 per 100,000 was slightly higher (1.1 times) than Tairāwhiti and higher than (1.3 times) New Zealand national rate.

Table 34: Admissions for tooth and gum disease, children aged 0–14 years, Māori, 2011–2013

<table>
<thead>
<tr>
<th></th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>20</td>
<td>1214 (998 1477)</td>
<td>41</td>
<td>1126 (982 1290)</td>
</tr>
<tr>
<td>Male</td>
<td>26</td>
<td>1506 (1270 1787)</td>
<td>48</td>
<td>1245 (1097 1413)</td>
</tr>
<tr>
<td>Total</td>
<td>46</td>
<td>1360 (1196 1547)</td>
<td>89</td>
<td>1185 (1080 1301)</td>
</tr>
</tbody>
</table>

Table 35: Admissions for tooth and gum disease, children aged 0–14 years, Total Population 2011–2013

<table>
<thead>
<tr>
<th></th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>23</td>
<td>1107 (921 1330)</td>
<td>54</td>
<td>966 (857 1088)</td>
</tr>
<tr>
<td>Male</td>
<td>29</td>
<td>1351 (1149 1589)</td>
<td>59</td>
<td>996 (888 1116)</td>
</tr>
<tr>
<td>Total</td>
<td>52</td>
<td>1229 (1088 1388)</td>
<td>113</td>
<td>981 (903 1065)</td>
</tr>
</tbody>
</table>

Source: National Minimum Data Set (NMDS)

The graph below shows that there is a gradual decrease in the hospital admission trends, most noticeable for female in NPH rohe.

Figure 21. NPH Hospital admissions for tooth and gum disease: children 0-14 years, 2011-2013

HEALTHY SKIN

There was an average of 22 hospital admissions per year for serious skin infections and 19 were Māori children (86%). The admission rate for NPH Māori children at about 550 per 100,000 was slightly lower (0.9 times) than Tairāwhiti and about the same as the national rate.

Table 36. Admissions for serious skin infections, children aged 0–14 years, Māori Population, 2011–2013

<table>
<thead>
<tr>
<th></th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>9</td>
<td>524 (388 706)</td>
<td>21</td>
<td>565 (466 685)</td>
</tr>
<tr>
<td>Male</td>
<td>10</td>
<td>582 (442 765)</td>
<td>26</td>
<td>662 (556 787)</td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>553 (451 677)</td>
<td>46</td>
<td>613 (539 698)</td>
</tr>
</tbody>
</table>

35. The trends are the actual unadjusted number of admissions, giving the crude volume of hospitalisations.
Table 37. Admissions for serious skin infections, children aged 0–14 years, Total Population, 2011–2013

<table>
<thead>
<tr>
<th></th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>10</td>
<td>470 (355 622)</td>
<td>25</td>
<td>443 (372 528)</td>
</tr>
<tr>
<td>Male</td>
<td>12</td>
<td>554 (430 713)</td>
<td>33</td>
<td>548 (470 639)</td>
</tr>
<tr>
<td>Total</td>
<td>22</td>
<td>512 (424 617)</td>
<td>58</td>
<td>495 (441 556)</td>
</tr>
</tbody>
</table>

Source: NMDS

The graphs below show that hospital admission trends for skin infections in NPH rohe appear to fluctuate with a noticeable increase for males in 2013. The NPH female admission trends appear to fluctuate about the same level which is slightly lower than the males.

Figure 22. Hospital admissions for skin infections: children 0-14 years, Ngāti Porou rohe, 2009-2013

**ACUTE RHEUMATIC FEVER**

On average, 2 young Māori (0-24 years)\(^{36}\) were admitted to hospital per year for acute rheumatic fever. The results as shown in the tables below indicate that Māori have borne the burden of acute rheumatic fever with slightly higher rates (1.1 times or 13% higher) among Ngāti Porou rohe than Tairāwhiti, and higher than (1.4 times or 44% higher) the national rates for Māori. Furthermore:

- NPH Māori males are three times more likely (3.3 times or 229% higher) to be admitted for acute rheumatic fever compared with New Zealand males, and 1.6 times more (60%) than Tairāwhiti males.
- NPH Māori females are three times more likely (3.2 times or 224% higher) to be admitted for acute rheumatic fever compared with New Zealand females, and 2 times more (99%) than Tairāwhiti females.
- Overall, NPH rates for acute rheumatic fever hospital admissions were nearly 1.6 times higher (60% higher) than Tairāwhiti and nearly 3 times higher (229%) than national rate.

\(^{36}\) It was necessary to combine the admissions for 0-14 years with 15-24 years as well as extend the time period to 2009-2013 due to extremely small number of admissions for acute rheumatic fever in NPH. This approach means that this indicator is not comparable to the Māori Health Profile published results for Tairāwhiti.
Table 38. Individuals admitted to hospital for acute rheumatic fever, ages 0–24 years, Māori 2011–2013

<table>
<thead>
<tr>
<th></th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>1</td>
<td>31.8 (11.9 84.8)</td>
<td>1</td>
<td>25.5 (12.1 53.6)</td>
</tr>
<tr>
<td>Male</td>
<td>1</td>
<td>45.7 (20.5 101.6)</td>
<td>2</td>
<td>42.7 (24.3 75.2)</td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>38.7 (20.8 72.0)</td>
<td>4</td>
<td>34.1 (21.7 53.5)</td>
</tr>
</tbody>
</table>

Table 39. Individuals admitted for acute rheumatic fever, ages 0–24 years, Total Population, 2011–2013

<table>
<thead>
<tr>
<th></th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>1</td>
<td>25.5 (9.6 68.2)</td>
<td>1</td>
<td>16.0 (7.6 33.7)</td>
</tr>
<tr>
<td>Male</td>
<td>1</td>
<td>43.0 (20.5 90.3)</td>
<td>3</td>
<td>28.5 (16.5 49.0)</td>
</tr>
<tr>
<td>Total</td>
<td>2</td>
<td>34.3 (19.0 61.9)</td>
<td>4</td>
<td>22.2 (14.3 34.5)</td>
</tr>
</tbody>
</table>

Source: NMDS

During 2009 to 2013, there were a total of 11 individuals (0-24 years) with acute rheumatic fever admissions in NPH, 10 were Māori. The most recent data available for 2013 shows that among young people 0-24 years, there were 5 individual admissions in NPH with acute rheumatic fever, all of them are Māori, while no non-Māori were admitted. The yearly trends of individual admission with acute rheumatic fever are shown in the table as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>NPH total admissions</th>
<th>Māori admissions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>2009</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2010</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2011</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>2012</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2013</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Total 4 | 7 | 11 | 4 | 6 | 10

In particular, the increase in number of admissions in 2013 (as shown in the table above) compared with the previous four years from 2009-2012 is of particular concern and warrants further attention.
We have discussed the subject of potentially preventable hospitalisation in a previous Section (4.2.2) for all people younger than 75 years. Given that the ASH rates for children 0-4 years were significantly higher than Tairāwhiti and national rates, it is important to examine the indicators such as potentially preventable hospitalisations, which will help provide further insights into the health outcomes for NPH children. The DHB Māori Health Profile has described potentially avoidable hospitalisations as those resulting from diseases preventable through population-based health promotion strategies and those related to the social determinants of health. Addressing these can require actions beyond the health care system, including intersectoral actions.37

Table 40. Potentially avoidable hospitalisations for children aged 1 month to 14 years, Māori, 2011–2013

<table>
<thead>
<tr>
<th></th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Rate per 100,000 95% CI</td>
<td>Average per year</td>
<td>Rate per 100,000 95% CI</td>
</tr>
<tr>
<td>Female</td>
<td>100</td>
<td>6179 (5519 6918)</td>
<td>231</td>
<td>6265 (5815 6749)</td>
</tr>
<tr>
<td>Male</td>
<td>135</td>
<td>7813 (7087 8613)</td>
<td>308</td>
<td>7956 (7459 8486)</td>
</tr>
<tr>
<td>Total</td>
<td>235</td>
<td>6996 (6498 7532)</td>
<td>539</td>
<td>7110 (6772 7466)</td>
</tr>
</tbody>
</table>

Table 41. Potentially avoidable admissions children aged 1 month to 14 years, Total Population 2011–2013

<table>
<thead>
<tr>
<th></th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Rate per 100,000 95% CI</td>
<td>Average per year</td>
<td>Rate per 100,000 95% CI</td>
</tr>
<tr>
<td>Female</td>
<td>124</td>
<td>6008 (5427 6652)</td>
<td>338</td>
<td>6014 (5655 6396)</td>
</tr>
<tr>
<td>Male</td>
<td>163</td>
<td>7656 (7008 8365)</td>
<td>425</td>
<td>7307 (6916 7719)</td>
</tr>
<tr>
<td>Total</td>
<td>287</td>
<td>6832 (6391 7304)</td>
<td>763</td>
<td>6660 (6393 6939)</td>
</tr>
</tbody>
</table>

Source: NMDS

On average there were 235 potentially avoidable admissions per year among Māori children, at a rate which is almost the same (0.98 times) as the rate for Tairāwhiti children, but slightly higher (1.2 times) than the national rate. There were an average of 287 potentially avoidable admissions per year for NPH, and Māori made up of over 82% of these admissions. However, the actual yearly trends as shown in the graph below, indicate a drop in potentially avoidable admissions in 2013 compared with the previous two years.

Figure 23. Potentially avoidable admissions for children aged 1 month to 14 years, 2011–2013

Source: NMDS

37. Ibid
Pakeke: Adults and Older People’s Health (25 years and over)

This section shows the results on the key burden of diseases and drivers of premature death, particularly the long term conditions among adults such as heart diseases and cancers.

Key findings from Tables 42 to 49 are summarised below:

- Admissions for circulatory system diseases differed markedly for women in NPH compared with New Zealand women (1.8 times or 80% higher).
- NPH women are more than twice as likely (2.3 times or 135% higher) to be admitted for ischaemic heart disease compared with New Zealand women.
- Similarly, acute coronary syndrome admissions were substantially higher (more than three times or 233% higher) for NPH women, whereas this was lower among NPH men.
- Admissions for heart failure were substantially higher than New Zealand (more than twice or 140% higher) in NPH population both for men and women, whereas this was not as high among NPH Māori.
- Admissions for chronic rheumatic heart disease are substantially higher in NPH compared with both Tairāwhiti (2.2 times or 124% higher) and New Zealand (8.1 times or 712% higher).
- Women in NPH were twice as likely to be admitted for chronic rheumatic heart disease compared with their male counterparts (2.5 to 2.7 times or 150-170% higher).

### HEART DISEASES

#### Table 42: Admissions for circulatory system diseases, 25 years and over, Māori Population, 2011–2013

<table>
<thead>
<tr>
<th></th>
<th>Ngāti Porou Haurora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Age-standardised Rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Age-standardised Rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>94</td>
<td>2239 (1967, 2549)</td>
<td>173</td>
<td>1838 (1674, 2017)</td>
</tr>
<tr>
<td>Male</td>
<td>80</td>
<td>2222 (1936, 2550)</td>
<td>165</td>
<td>2181 (1987, 2394)</td>
</tr>
<tr>
<td>Total</td>
<td>174</td>
<td>2231 (2030, 2452)</td>
<td>338</td>
<td>2009 (1881, 2147)</td>
</tr>
</tbody>
</table>

#### Table 43: Admissions for circulatory system diseases, 25 years and over, Total Population, 2011–2013

<table>
<thead>
<tr>
<th></th>
<th>Ngāti Porou Haurora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Age-standardised Rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Age-standardised Rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>119</td>
<td>1697 (1507, 1911)</td>
<td>388</td>
<td>1230 (1142, 1325)</td>
</tr>
<tr>
<td>Male</td>
<td>124</td>
<td>1805 (1606, 2029)</td>
<td>427</td>
<td>1635 (1532, 1746)</td>
</tr>
<tr>
<td>Total</td>
<td>242</td>
<td>1751 (1611, 1903)</td>
<td>815</td>
<td>1433 (1364, 1505)</td>
</tr>
</tbody>
</table>

#### Table 44. Ischaemic heart disease indicators, 25 years and over, Māori Population, 2011–2013

<table>
<thead>
<tr>
<th></th>
<th>Ngāti Porou Haurora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Age-standardised Rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Ischaemic heart disease admissions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>29</td>
<td>634 (506, 796)</td>
<td>53</td>
<td>515 (438, 607)</td>
</tr>
<tr>
<td>Male</td>
<td>17</td>
<td>457 (343, 610)</td>
<td>46</td>
<td>616 (516, 735)</td>
</tr>
<tr>
<td>Total</td>
<td>46</td>
<td>546 (457, 653)</td>
<td>98</td>
<td>566 (501, 639)</td>
</tr>
<tr>
<td>Acute coronary syndrome admissions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>25</td>
<td>559 (438, 713)</td>
<td>45</td>
<td>438 (367, 523)</td>
</tr>
<tr>
<td>Male</td>
<td>12</td>
<td>319 (227, 449)</td>
<td>37</td>
<td>499 (410, 609)</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>439 (360, 536)</td>
<td>82</td>
<td>469 (410, 536)</td>
</tr>
</tbody>
</table>

#### Table 45. Ischaemic heart disease indicators, 25 years and over, Total Population, 2011–2013

<table>
<thead>
<tr>
<th></th>
<th>Ngāti Porou Haurora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Ischaemic heart disease admissions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>36</td>
<td>474 (385, 584)</td>
<td>117</td>
<td>328 (290, 372)</td>
</tr>
<tr>
<td>Male</td>
<td>34</td>
<td>464 (375, 574)</td>
<td>148</td>
<td>565 (507, 631)</td>
</tr>
<tr>
<td>Total</td>
<td>70</td>
<td>469 (404, 544)</td>
<td>265</td>
<td>447 (411, 485)</td>
</tr>
<tr>
<td>Acute coronary syndrome admissions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>32</td>
<td>427 (342, 534)</td>
<td>102</td>
<td>288 (251, 329)</td>
</tr>
<tr>
<td>Male</td>
<td>24</td>
<td>324 (252, 418)</td>
<td>119</td>
<td>466 (412, 527)</td>
</tr>
<tr>
<td>Total</td>
<td>56</td>
<td>376 (318, 444)</td>
<td>221</td>
<td>377 (344, 413)</td>
</tr>
</tbody>
</table>

Source: NMDS. Publicly funded admissions and procedures only.

47
Table 46. Admissions for heart failure, 25 years and over, Māori, 2011–2013

<table>
<thead>
<tr>
<th>Gender</th>
<th>Ngāti Porou Haora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Heart failure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>14</td>
<td>275.8 (197.0 386.0)</td>
<td>30</td>
<td>272.1 (217.6 340.3)</td>
</tr>
<tr>
<td>Male</td>
<td>22</td>
<td>522.4 (404.6 674.6)</td>
<td>40</td>
<td>488.2 (405.0 588.4)</td>
</tr>
<tr>
<td>Total</td>
<td>36</td>
<td>399.1 (325.5 489.2)</td>
<td>70</td>
<td>380.1 (329.1 439.1)</td>
</tr>
</tbody>
</table>

Table 47. Admissions for heart failure, 25 years and over, Total, 2011–2013

<table>
<thead>
<tr>
<th>Gender</th>
<th>Average per year</th>
<th>Age-standardised rate per 100,000 (95% CI)</th>
<th>Average per year</th>
<th>Age-standardised rate per 100,000 (95% CI)</th>
<th>Average per year</th>
<th>Age-standardised rate per 100,000 (95% CI)</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart failure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>16</td>
<td>187.1 (135.4 258.6)</td>
<td>53</td>
<td>119.6 (97.4 146.8)</td>
<td>76.5 (74.7 78.4)</td>
<td>1.6</td>
<td>2.4</td>
</tr>
<tr>
<td>Male</td>
<td>25</td>
<td>308.5 (240.7 395.4)</td>
<td>70</td>
<td>221.1 (188.3 259.5)</td>
<td>129.1 (126.5 131.7)</td>
<td>1.4</td>
<td>2.4</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>247.8 (203.5 301.7)</td>
<td>123</td>
<td>170.3 (150.1 193.3)</td>
<td>102.8 (101.2 104.4)</td>
<td>1.5</td>
<td>2.4</td>
</tr>
</tbody>
</table>

Table 48. Admissions for chronic rheumatic heart disease, 25 years and over, Māori, 2011–2013

<table>
<thead>
<tr>
<th>Gender</th>
<th>Ngāti Porou Haora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Chronic rheumatic heart disease</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>6</td>
<td>189.8 (131.4 274.1)</td>
<td>8</td>
<td>108.0 (78.6 148.5)</td>
</tr>
<tr>
<td>Male</td>
<td>2</td>
<td>75.9 (38.8 148.7)</td>
<td>4</td>
<td>61.2 (39.0 96.1)</td>
</tr>
<tr>
<td>Total</td>
<td>9</td>
<td>132.9 (96.0 183.9)</td>
<td>12</td>
<td>84.6 (65.2 109.8)</td>
</tr>
</tbody>
</table>

Table 49. Admissions for chronic rheumatic heart disease, 25 years and over, Total Population, 2011–2013

<table>
<thead>
<tr>
<th>Gender</th>
<th>Ngāti Porou Haora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Chronic rheumatic heart disease</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>8</td>
<td>132.8 (93.5 188.7)</td>
<td>11</td>
<td>54.3 (40.4 73.0)</td>
</tr>
<tr>
<td>Male</td>
<td>3</td>
<td>49.0 (25.4 94.5)</td>
<td>6</td>
<td>26.6 (17.3 40.9)</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>90.9 (66.6 124.1)</td>
<td>17</td>
<td>40.5 (31.7 51.6)</td>
</tr>
</tbody>
</table>

Source: NMDS.

CANCERS

On average, there were 42 cancer registrations per year among NPH Māori, at a rate slightly higher (1.1 times) than Tairāwhiti and national rates. However, the rate of all cancer among NPH Māori males was almost the same as Tairāwhiti and national rates.

The most common cancers registered for Māori people in the Ngāti Porou rohe were cancers of the digestive organs and lung. The rates of these cancers were also substantially higher for Ngāti Porou rohe population in that the lung cancer rates were 1.4 times (or 42% higher) than Tairāwhiti and national rates (2.3 times or 131% higher). The most common cancer for males was prostate cancer and, for females, breast cancer.

Table 50. Most Common registration, all ages, 2008–2012

<table>
<thead>
<tr>
<th>Indicator (Age-standardised rate per 100,000) measure by:</th>
<th>NPH</th>
<th>Tairāwhiti</th>
<th>Total NZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>All cancers Total Population</td>
<td>206</td>
<td>200</td>
<td>192</td>
</tr>
<tr>
<td>All cancers Māori</td>
<td>253</td>
<td>227</td>
<td>231</td>
</tr>
<tr>
<td>Lung cancers Total Population</td>
<td>33.7</td>
<td>23.7</td>
<td>15</td>
</tr>
<tr>
<td>Lung cancers Māori</td>
<td>50.4</td>
<td>46.2</td>
<td>42</td>
</tr>
<tr>
<td>Cancers of the Digestive organs in Total Population</td>
<td>42.4</td>
<td>33.1</td>
<td>35</td>
</tr>
<tr>
<td>Cancers of the Digestive organs in Māori</td>
<td>51.9</td>
<td>41.7</td>
<td>47</td>
</tr>
</tbody>
</table>
below show that more likely to have hospital due to asthma. The order is reversed for older people age 15–16.

On average from 2009 to 2013, there were 10 girls and 15 boys per year.

Table 51: Most common cancer registrations by site, all ages, Māori Population, 2008–2012

<table>
<thead>
<tr>
<th>Gender and site</th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All cancers</td>
<td>23</td>
<td>283.5 (233.6 344.1)</td>
<td>43</td>
<td>231.2 (201 266.0)</td>
</tr>
<tr>
<td>Breast</td>
<td>5</td>
<td>68.0 (45.9 100.8)</td>
<td>11</td>
<td>63.1 (48.0 82.8)</td>
</tr>
<tr>
<td>Lung</td>
<td>5</td>
<td>50.1 (33.4 75.2)</td>
<td>9</td>
<td>41.9 (31.0 56.7)</td>
</tr>
<tr>
<td>Digestive&lt;sup&gt;38&lt;/sup&gt;</td>
<td>5</td>
<td>63.0 (41.8 95.0)</td>
<td>10</td>
<td>48.4 (35.9– 65.2)</td>
</tr>
<tr>
<td><strong>Male</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All cancers</td>
<td>19</td>
<td>221.8 (180.2 273.2)</td>
<td>37</td>
<td>222.4 (191.2 258.7)</td>
</tr>
<tr>
<td>Prostate</td>
<td>6</td>
<td>66.0 (45.9 94.9)</td>
<td>12</td>
<td>66.0 (50.9 85.6)</td>
</tr>
<tr>
<td>Lung</td>
<td>5</td>
<td>50.7 (33.5 76.6)</td>
<td>9</td>
<td>50.5 (37.4 68.2)</td>
</tr>
<tr>
<td>Digestive</td>
<td>4</td>
<td>40.8 (25.3 65.5)</td>
<td>6</td>
<td>34.9 (24.0 50.7)</td>
</tr>
<tr>
<td><strong>Total Māori</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All cancers</td>
<td>42</td>
<td>252.7 (219.3 291.2)</td>
<td>80</td>
<td>226.8 (204.5 251.5)</td>
</tr>
<tr>
<td>Lung</td>
<td>10</td>
<td>50.4 (37.7 67.3)</td>
<td>18</td>
<td>46.2 (37.3 57.2)</td>
</tr>
<tr>
<td>Digestive</td>
<td>9</td>
<td>51.9 (38.0 70.8)</td>
<td>16</td>
<td>41.7 (33.0 52.6)</td>
</tr>
<tr>
<td>Colorectal</td>
<td>4</td>
<td>22.9 (14.4 36.5)</td>
<td>5</td>
<td>14.5 (9.8 21.5)</td>
</tr>
</tbody>
</table>

Table 52: Most common cancer registrations by site, all ages, Total Population, 2008–2012

<table>
<thead>
<tr>
<th>Gender and site</th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td><strong>Female</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All cancers</td>
<td>32</td>
<td>232.4 (195.9 275.7)</td>
<td>103</td>
<td>184.5 (166.2 204.9)</td>
</tr>
<tr>
<td>Breast</td>
<td>8</td>
<td>60.9 (44.2 84.1)</td>
<td>26</td>
<td>49.6 (40.9 60.2)</td>
</tr>
<tr>
<td>Lung</td>
<td>6</td>
<td>33.5 (22.9 48.9)</td>
<td>15</td>
<td>21.7 (16.8 28.1)</td>
</tr>
<tr>
<td>Digestive</td>
<td>7</td>
<td>46.8 (31.8 68.9)</td>
<td>22</td>
<td>31.6 (24.9 40.1)</td>
</tr>
<tr>
<td><strong>Male</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All cancers</td>
<td>30</td>
<td>180.0 (151.7 213.6)</td>
<td>123</td>
<td>216.0 (197.0 236.9)</td>
</tr>
<tr>
<td>Prostate</td>
<td>10</td>
<td>55.1 (41.3 73.4)</td>
<td>42</td>
<td>63.9 (55.4 73.6)</td>
</tr>
<tr>
<td>Lung</td>
<td>6</td>
<td>33.9 (23.7 48.5)</td>
<td>17</td>
<td>25.7 (20.4 32.4)</td>
</tr>
<tr>
<td>Digestive</td>
<td>6</td>
<td>37.9 (25.6 56.1)</td>
<td>22</td>
<td>34.7 (27.9 43.0)</td>
</tr>
<tr>
<td><strong>Total Population</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All cancers</td>
<td>62</td>
<td>206.2 (182.6 232.9)</td>
<td>226</td>
<td>200.3 (186.9 214.6)</td>
</tr>
<tr>
<td>Lung</td>
<td>12</td>
<td>33.7 (26.0 43.7)</td>
<td>31</td>
<td>23.7 (20.0 28.1)</td>
</tr>
<tr>
<td>Colorectal</td>
<td>6</td>
<td>42.4 (32.1 55.8)</td>
<td>44</td>
<td>33.1 (28.2 38.9)</td>
</tr>
</tbody>
</table>

Source: Cancer Registry, Ministry of Health; Table includes malignant cancers only.

**RESPIRATORY DISEASE**

On average from 2009 to 2013, there were 10 girls and 15 boys aged 0–14 years from NPH areas admitted to hospital due to asthma. The order is reversed for older people age 15–64 years, where women were more likely to be have an asthma admission (average of 9 women compared with 2 men). Tables 53 and 54 below show that:

- Hospital admissions for asthma in NPH Māori is lower than Tairāwhiti and national rates for both age groups 0–14 and 15–64 years, and both Māori male and female subgroups.
- However, NPH total population has similar or slightly higher (0.9 to 1.2 times higher) asthma admissions for both age groups, except for males 15–14 years (0.6 time lower)

---

38. Digestive organs include stomach, Colorectal, Colon, Pancreas etc.
### INJURIES

Injury risk factors in NPH population, particularly among Māori men are transportation, falls, surgical and medical complications, poisoning, fire, self-inflicted violence. Tables 55 to 58 show that:

- The rate of hospitalisation for assault and homicide in NPH population was twice as high (or 104% higher) as the national rate, and 1.2 times (or 25% higher) than Tairāwhiti.
- Males are nearly three times (2.7 times or 171% higher) as likely to be admitted for injury caused by assault than females.
- The ratio of Māori male to total population for assault and homicide was slightly higher in NPH (1.2 times or 18% higher), whereas this ratio was much higher in Tairāwhiti (1.3 times or 31% higher) and national rate (2 times or 103% higher).
- The rate of hospitalisation for self-harm in NPH population was slightly higher (1.1 times or 13% higher) than Tairāwhiti, but lower (0.6 times or 39% lower) than the national rate.
- Women are more likely (1.3 times or 34% higher) to be admitted for self-harm injury than males.

#### Table 53: Admissions for asthma, by age group, Māori Population, 2011–2013

<table>
<thead>
<tr>
<th>Gender and age group</th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>10</td>
<td>191.1 (143.3 254.9)</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>20</td>
<td>481.0 (393.8 587.5)</td>
<td>44</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>30</td>
<td>336.1 (285.0 396.3)</td>
<td>62</td>
</tr>
</tbody>
</table>

Source: NMDS.

#### Table 54: Admissions for asthma, by age group, Total Population, 2011–2013

<table>
<thead>
<tr>
<th>Gender and age group</th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>10</td>
<td>502 (383 659)</td>
<td>34</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>15</td>
<td>677 (538 852)</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>25</td>
<td>590 (495 703)</td>
<td>76</td>
</tr>
</tbody>
</table>

#### Table 55: Admissions for assault and homicide, all ages, Māori Population, 2011–2013

<table>
<thead>
<tr>
<th>Gender</th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>10</td>
<td>191.1 (143.3 254.9)</td>
<td>18</td>
<td>158.7 (128.7 195.6)</td>
</tr>
<tr>
<td>Male</td>
<td>20</td>
<td>481.0 (393.8 587.5)</td>
<td>44</td>
<td>449.4 (392.7 514.2)</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>336.1 (285.0 396.3)</td>
<td>62</td>
<td>304.0 (271.4 340.6)</td>
</tr>
</tbody>
</table>

#### Table 56: Admissions for assault and homicide, all ages, Total Population, 2011–2013

<table>
<thead>
<tr>
<th>Gender</th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>10</td>
<td>150 (113.5 198.2)</td>
<td>21</td>
<td>103 (84.5 125.5)</td>
</tr>
<tr>
<td>Male</td>
<td>25</td>
<td>406.3 (339.2 486.5)</td>
<td>65</td>
<td>342.7 (306.5 383.2)</td>
</tr>
<tr>
<td>Total</td>
<td>35</td>
<td>278.1 (239.0 323.7)</td>
<td>85</td>
<td>222.8 (202.2 245.6)</td>
</tr>
</tbody>
</table>
### Table 57: Self-harm admissions, 15–44 years, Māori Population, 2009–2013

<table>
<thead>
<tr>
<th></th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>4</td>
<td>174.4 (109.6 277.4)</td>
<td>8</td>
<td>161.6 (118.4 220.6)</td>
</tr>
<tr>
<td>Male</td>
<td>2</td>
<td>105.7 (56.2 199.0)</td>
<td>5</td>
<td>106.2 (70.3 160.6)</td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>140.1 (96.3 203.8)</td>
<td>13</td>
<td>133.9 (104.4 171.8)</td>
</tr>
</tbody>
</table>

**Source:** NMDS

### Table 58: Self-harm admissions, 15–44 years, Total Population, 2009–2013

<table>
<thead>
<tr>
<th></th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>5</td>
<td>181.8 (123.6 267.5)</td>
<td>15</td>
<td>178.2 (142.4 223.0)</td>
</tr>
<tr>
<td>Male</td>
<td>4</td>
<td>135.2 (84.8 215.6)</td>
<td>8</td>
<td>102.0 (75.0 138.8)</td>
</tr>
<tr>
<td>Total</td>
<td>9</td>
<td>158.5 (117.7 213.5)</td>
<td>24</td>
<td>140.1 (116.9 168.0)</td>
</tr>
</tbody>
</table>

**Source:** NMDS
BIBLIOGRAPHY AND REFERENCES


Statistics New Zealand (2015). Customised Statistics New Zealand’s data which are licensed by Statistics New Zealand for re-use under the Creative Commons Attribution 3.0 New Zealand licence.

Karo Data Management (2015). Customised NPH PHO Quarterly Register and Quarterly Service Utilisation Reports.


GLOSSARY OF TERMS AND CONCEPTS

Ambulatory Sensitive Hospitalisation (ASH)
ASH measures unplanned admissions that are potentially preventable by appropriate health services delivered in community settings, including through primary care, and hospital ambulatory services such as outpatient and dental services. ASH is defined as hospitalisations of people less than 75 years old resulting from diseases sensitive to prophylactic or therapeutic interventions that are deliverable in a primary health care setting. This specific focus on primary care and ambulatory services can be contrasted with amenable mortality which is a measure of whole of system performance in terms of coverage and quality of health care, and includes ASH.

Amenable mortality
The concept of ‘amenable mortality’ refers to deaths that ‘should not have occurred given available health care services’. In 2007, age-standardised amenable mortality rates ranged from 60 to 200 deaths per 100,000 people in OECD countries. New Zealand had 85 deaths per 100,000, which was slightly better than the OECD average of 95 deaths per 100,000. The main causes of amenable mortality were diseases of the circulatory system, cancer and diseases of the respiratory system.

Census Meshblock (MB)
A meshblock is the smallest geographic unit for which statistical data is collected by Statistics New Zealand. Meshblocks vary in size from part of a city block to large areas of rural land, and they aggregate to build larger geographic areas, such as area units and regional councils.

Census Area Unit (CAU)
Area units are aggregations of meshblocks. They are non-administrative areas that are in between meshblocks and territorial authorities in size. Area units must either define or aggregate to define: regional councils; territorial authorities; urban areas; and statistical areas. Area units within urban areas normally contain a population of 3,000–5,000. In rural areas, the straddling of some territorial authorities over regional boundaries has resulted in a number of area units having only two or three meshblocks and a very low population count.

Domicile Code
Statistics New Zealand domicile code representing the healthcare user’s usual residential address at the time of diagnosis.

Eru Pōmare Māori Research Centre and Māori Health Profile
Te Rōpū Rangahau Hauora a Eru Pōmare has been contracted by the Ministry of Health to produce Māori Health Profiles for each District Health Board region. They presented data on the health status of Māori compared to non-Māori across a range of health indicators. The Profiles can be a source of information to support DHBs and health organisations to develop their own Māori health needs assessments and identify local Māori health priorities.

High Needs
The high needs population is defined by the Ministry of Health as Māori and Pacific peoples and people living in New Zealand deprivation decile 9 or 10 socioeconomic areas (most deprived).

Indicators
The term ‘indicator’ refers to a broad statement of what outcome is to be measured. Indicators are usually described in general terms, to allow for developments in the evidence base and changing data sets over time.

Measures
The term ‘measure’ refers to how an indicator will be measured. Data limitations mean that, sometimes, proxy measures must be used to report against indicators, and multiple measures may be required to illustrate a single indicator. Information on the measures reported for each indicator is provided at the beginning of each indicator section.

APPENDIX 1  METHODOLOGY

PURPOSE
The project will inform and strengthen reporting to Board, funder and community, and contribute to DHB, TRONPnui and NPH accountability for better health and wellbeing of NPH population.

Project Output
The end result will be a set of indicators selected by the analyst and NPH management with a dashboard that includes baseline results where available, and a brief summary report to inform future updates.

Staff Involvement
Board and CEO approved the project and secured funding from the Ministry of Health.

Lee Tan is the consulting analyst who has developed a range of options for the indicators to form a dashboard for monitoring progress. Lee reports to Rose Kahaki, CEO and a delegated manager, Ripeka Atkins.

NPH managers and nominated personnel to:

- assist with orientation to East Coast and understanding of local context;
- help with access to NPH patient population data and office system;
- consider and discuss options for the dashboard; and
- provide peer review of the brief report on the initial dashboard and future updates.

Key Milestones
Nov 2014: Orientation, scope and discussion to develop approach
Nov 2014: Clarify objective and scope; and develop framework for the indicators
Dec 2014: Discussion of selection criteria, draft list of indicators with NPH managers, clinicians, and drafting data specification for customised data request and follow up; calculation of indicators and formatting the draft Dashboard
Jan 2015: Lee works from Wellington to contact Eru Pōmare Māori Research centre, Ministry of Health, Karo Data Management, Statistics NZ to source customised data for the draft Dashboard.
Mar 2015: Options for indicators, with baseline data, discussion and consultation on the choice of indicators with stakeholders including community representative, Board members and clinicians
Mar 2015: Further customised data request and follow up, calculation of indicators, design of dashboard
May 2015: Presentation of draft dashboard, discussion, revision and/ or refinement as needed; follow up on alternative sources for indicators that were promised but not delivered or unavailable in traditional sources. For example, social indicators and diabetes indicators
July 2015: Presentation of the NPH Dashboard with factsheet to the Ministry of Health
Sep 2015: Background report on the indicators and dashboard information, including some updates to the dashboard
Oct 2015: Presentation of dashboard to CAG and CGG
Nov 2015: Finalising the background report on the NPH Dashboard
### APPENDIX 2  PRELIMINARY LIST OF INDICATORS

#### Choice of indicators for Dashboard

<table>
<thead>
<tr>
<th>Domains</th>
<th>Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social Determinants</strong></td>
<td></td>
</tr>
<tr>
<td>Housing</td>
<td>Household crowding</td>
</tr>
<tr>
<td></td>
<td>Home heating</td>
</tr>
<tr>
<td></td>
<td>Living in rented home</td>
</tr>
<tr>
<td></td>
<td>Children living in rented home</td>
</tr>
<tr>
<td></td>
<td>Housing tenure</td>
</tr>
<tr>
<td>Social connection</td>
<td>Telecommunications access</td>
</tr>
<tr>
<td></td>
<td>No access to internet at home</td>
</tr>
<tr>
<td></td>
<td>No access to motor vehicle</td>
</tr>
<tr>
<td><strong>Employment status</strong></td>
<td></td>
</tr>
<tr>
<td>Education level</td>
<td></td>
</tr>
<tr>
<td>Occupation by industry</td>
<td>Participation in high risk industry</td>
</tr>
<tr>
<td>Equivalised household income</td>
<td>Income level</td>
</tr>
<tr>
<td>Deprivation distribution</td>
<td>High deprivation (deciles 9,10)</td>
</tr>
<tr>
<td>Receiving Benefit</td>
<td>Mean tested benefit</td>
</tr>
<tr>
<td>Sole parents</td>
<td></td>
</tr>
<tr>
<td>older people living alone</td>
<td></td>
</tr>
<tr>
<td>Smoking status</td>
<td></td>
</tr>
<tr>
<td><strong>Funding</strong></td>
<td></td>
</tr>
<tr>
<td>Funding patterns and trends</td>
<td>Annual funding $ by service</td>
</tr>
<tr>
<td>Expenditure patterns and trends</td>
<td>Annual Spent $ by service</td>
</tr>
<tr>
<td><strong>Workforce</strong></td>
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</tr>
<tr>
<td></td>
<td>Annual FTE registered health professional</td>
</tr>
<tr>
<td></td>
<td>Annual FTE community outreach staff</td>
</tr>
<tr>
<td><strong>Enrolled population</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Annual enrolment trends</td>
</tr>
<tr>
<td><strong>Prevention</strong></td>
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</tr>
<tr>
<td>Nutrition</td>
<td></td>
</tr>
<tr>
<td>Physical Activity</td>
<td></td>
</tr>
<tr>
<td>Immunisation</td>
<td></td>
</tr>
<tr>
<td>Smoking</td>
<td></td>
</tr>
<tr>
<td>Smoking in pregnancy</td>
<td>IPIF indicators</td>
</tr>
<tr>
<td>Breast feeding</td>
<td>IPIF indicators</td>
</tr>
<tr>
<td>Unplanned pregnancy</td>
<td></td>
</tr>
<tr>
<td>Dental Education</td>
<td></td>
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<tr>
<td>Accidents</td>
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<td><strong>Primary</strong></td>
<td></td>
</tr>
<tr>
<td>Access to service</td>
<td>NPH PHO Coverage by CAU</td>
</tr>
<tr>
<td></td>
<td>PHO practice churn</td>
</tr>
<tr>
<td></td>
<td>Service utilisation (GP and Nurse)</td>
</tr>
<tr>
<td>Wellchild/ Tamariki Ora</td>
<td>Selected indicators</td>
</tr>
<tr>
<td>CVD risk assessments</td>
<td>IPIF indicators</td>
</tr>
<tr>
<td>Breast screening</td>
<td></td>
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<tr>
<td>Cervical screening</td>
<td></td>
</tr>
<tr>
<td>Immunisation/ flu vaccination</td>
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<tr>
<td>Chronic disease management</td>
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</tr>
<tr>
<td>STI screening</td>
<td></td>
</tr>
<tr>
<td><strong>Health Outcomes</strong></td>
<td></td>
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<tr>
<td>Life Expectancy</td>
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<td>Amenable Mortality</td>
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<td>Avoidable Hospitalisations</td>
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<tr>
<td>Ambulatory Sensitive Hospitalisation</td>
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</tr>
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<td>Serious skin infections</td>
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<td>Oral health</td>
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<td>Mental Health</td>
<td></td>
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<tr>
<td>Cancers</td>
<td></td>
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<tr>
<td>Diabetes</td>
<td></td>
</tr>
<tr>
<td>CVD</td>
<td></td>
</tr>
<tr>
<td>Rheumatic fever incidence</td>
<td></td>
</tr>
<tr>
<td>Low &amp; high birth weight</td>
<td></td>
</tr>
<tr>
<td>Maternity</td>
<td></td>
</tr>
</tbody>
</table>

Some of these indicators are available in Excel spreadsheets format.
APPENDIX 3 MINISTRY OF HEALTH VIRTUAL DIABETES REGISTRY (VDR)

The VDR is now used to determine the official diagnosed diabetes prevalence in New Zealand; it is also used to determine the denominator of the health targets that the Ministry of Health should achieve for diabetes service indicators in New Zealand.

Background

The VDR is run at the end of March each year and is produced as at 31 Dec of the previous year. Five major national collections are used to create the VDR:

- Hospital admissions coded for DM
- Outpatient attendances for DM and DM retinal screening
- Prescriptions of specific anti-diabetic therapies
- Laboratory orders for HbA1c
- Primary health organisation enrolments.

The algorithm is progressively modified to improve sensitivity and specificity, and validated against primary care registers.

The most recent version is VDR December 2014 and there are historical datasets from 2005 to 2013. Emmanuel Jo (Ministry of Health) updated the VDR for the historical datasets each time there was methodological change so the methodology for the old datasets is relatively similar including only cosmetic differences between each year.
Methodology overview

The VDR counts individuals who had:

1. Diabetes coded in hospital admissions from July 1999 to Dec 2014. Note: Admissions with a code for gestational diabetes are not included.
   National Minimum Dataset (NMDS) diagnosis codes (ICD-10-AM version 1)
   - E10 - Type 1 DM
   - E11 - TYPE 2 DM
   - E13 - Other specified DM
   - E14 - Unspecified DM
   - O240 - Pre-existing diabetes mellitus, Type 1, in pregnancy
   - O241 - Pre-existing diabetes mellitus, Type 2, in pregnancy
   - O242 - Pre-existing diabetes mellitus, other specified type, in
   - O243 - Pre-existing diabetes mellitus, unspecified, in pregnancy

2. Diabetes “education and management” (NNPAC code: M20006) attendance Jul 2002 to Dec 2014 excluding 2003/04 data for Northland DHB (because of a data quality problem) (National Non-Admitted Patient Collection (NNPAC) and Personal Health Non Case Weight (PHNCW)).

3. Diabetes retinal (fundus) screening Jul 2002 to Dec 2014 (NNPAC and PHNCW). This includes NNPAC code M20007.

4. Insulin or oral hypoglycaemic agents dispensed on 2 or more occasions between Jan 2013 and Dec 2014 (excluding women aged 12-45 who may have only been dispensed Metformin AND do not meet any of the other criteria). Note: This is intended to exclude women age 12-45 whom may have polycystic ovary syndrome treated with metformin.
   Chemical IDs:
   - 1192 - Insulin lispro
   - 1570 - Glucagon hydrochloride
   - 1648 - Insulin Neutral
   - 1649 - Insulin isophane
   - 1655 - insulin zinc suspension
   - 3783 - Insulin aspart
   - 3857 - Insulin glargine
   - 6300 - Insulin isophane with insulin neutral
   - 1068 - Chlorpropamide
   - 1247 - Acarbose
   - 1567 - Glibenclamide
   - 1568 - Gliclazide
   - 1569 - Glipizide
   - 2276 - Tolazamide
   - 2277 - Tolbutamide
   - 3739 - Rosiglitazone
   - 3800 - Pioglitazone
   - 1794 - Metformin hydrochloride

5. Patients who attended diabetes specialist clinics / endocrinology clinics between Jul 2003 and Dec 2014 who also meet one of the other criteria. This includes NNPAC codes M20004 and M20005.

6. Patients who have 4 or more HBA1c lab tests (lab test code BG2) between Jan 2013 and Dec 2014. Note: People with multiple HBA1c tests are not counted unless they have had another ACR lab test (lab test code BP8) in the same time period or if they also meet another listed condition.
APPENDIX 4 DATA NOTES

Quantitative analysis presented in this report is collated from various sources and the most recently available data are used. Appendix 4 lists the data sources used in this report.

Data sources and key methods

The main data sources for this report are: the 2013 Census of Population and Dwellings, NPH PHO registers, public hospital discharges, mortality registrations, cancer registrations, the national immunisation register, data from the Well Child/Tamariki Ora Quality Improvement Framework indicators and PHO Performance Programme (PPP) quarterly reports and IPIF quarterly reports.

Most data are presented for NPH Māori, all residents of Tairāwhiti DHB (Total population) and the total New Zealand population. Excel tables are available on request, where they also include data for the non-Māori in NPH and Tairāwhiti DHB for mortality, cancer registrations, and hospital discharges. The NPH boundary was determined through consultation with Te Rōpū Rangahau Hauora a Eru Pōmare and Karo Data Management Ltd. The criteria used in deciding the most appropriate boundaries for the 2013 Census Area Units (CAU) are as follows:

- Enrolment with NPH to be 30% or more; or
- CAU has high number of Maori population and Maori enrolment with NPH to be 30% or more.

These criteria resulted in eight CAUs as follows:

- The east coast areas: East Cape, Ruatoria, Tokomaru Bay, Wharekaka and Tolaga Bay
- Gisborne urban areas: Outer Kaiti, Tamarau and Kaiti South

Having these boundaries would include a fair representation of NPH enrolled population, but they have the following limitations:

- miss out about 27% of the NPH population; and
- include some people not enrolled with NPH, and there are a substantial numbers of non-NPH people in Wharekaka and Gisborne urban areas.

Despite these limitations, this is the best possible approach to defining the NPH population so that we have consistent estimates for both the numerator and the denominator for the population health outcome indicators.

Social determinants of health and deprivation

The unequal distribution of the social determinants of health is an important driver of health inequities between Māori and non-Māori. Information from the 2013 Census on living conditions that influence health has been analysed by individual, household, and neighbourhood. A household was classified as Māori if there was at least one Māori resident. The 2013 NZ Deprivation Index was used for classifying neighbourhoods. The index combines eight dimensions of deprivation, including access to telecommunications and internet, income, employment, qualifications, home ownership, support, living space, and access to transport.

Ethnicity classification

Only prioritised ethnicity data are presented, where each respondent is allocated to a single ethnic group using the priority system (Māori > Pacific peoples > Asian > European/Other) to avoid undercounting of vulnerable populations. For example, if people listed more than one ethnicity, Māori is prioritised first, to be followed by Pacific and then Asian. European/Other ethnic group is strictly speaking, non-Māori, non-Pacific and is expressed as “Other” in this report. This output type is the one most frequently used in Ministry of Health statistics. It is widely used in the health sector for funding calculations as well as monitoring changes in the burden of disease and ethnic uptake of services.

Data confidentiality

The analysis in this report is based on coded data, all data was anonymised and health data security and confidentiality protocols were observed in accordance with the requirements of the New Zealand Privacy Act (1993) and the Health Information Privacy Code (1994).
**Appendix 5: Definition of Avoidable Conditions**

The International Classification of Diseases (ICD-10) codes used for the calculation of avoidable and ambulatory sensitive hospitalisation are presented in Table 59 below.

Table 59: Potentially avoidable hospitalisation ICD-10 codes for children aged 1 month to 14 years

<table>
<thead>
<tr>
<th>Condition</th>
<th>ICD-10-AM code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute bronchiolitis</td>
<td>J21</td>
</tr>
<tr>
<td>Acute rheumatic fever</td>
<td>J00–J02</td>
</tr>
<tr>
<td>Acute upper respiratory tract infection excluding croup</td>
<td>J00–J03, J06</td>
</tr>
<tr>
<td>Asthma</td>
<td>J45, J46</td>
</tr>
<tr>
<td>Bacterial meningitis*</td>
<td>G00, G01</td>
</tr>
<tr>
<td>Bacterial/Unspecified pneumonia</td>
<td>J13–J16, J18</td>
</tr>
<tr>
<td>Bronchiectasis</td>
<td>J47</td>
</tr>
<tr>
<td>Constipation</td>
<td>K59.0</td>
</tr>
<tr>
<td>Chronic rheumatic heart disease</td>
<td>J05–J09</td>
</tr>
<tr>
<td>Croup, acute laryngitis, tracheitis</td>
<td>J04, J05.0</td>
</tr>
<tr>
<td>Dental (dental caries, pulp, periodontal)</td>
<td>K02, K04, K05</td>
</tr>
<tr>
<td>Dermatitis/eczema</td>
<td>L20–L30</td>
</tr>
<tr>
<td>Febrile convulsions</td>
<td>R560</td>
</tr>
<tr>
<td>Gastroenteritis</td>
<td>A00–A09, K529, R11,</td>
</tr>
<tr>
<td>Gastro oesophageal reflux</td>
<td>K21</td>
</tr>
<tr>
<td>Meningococcal disease</td>
<td>A39</td>
</tr>
<tr>
<td>Nutritional deficiency</td>
<td>D50–D53, E40–E64,</td>
</tr>
<tr>
<td>Otitis media</td>
<td>H65–H67</td>
</tr>
<tr>
<td>Osteomyelitis</td>
<td>M86</td>
</tr>
<tr>
<td>Skin infection</td>
<td>H00.0, H01.0, J34.0, L00–L05, L08, L98.0</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>A15–A19</td>
</tr>
<tr>
<td>Urinary tract infection ≥ 5 years</td>
<td>N10, N12, N13.6, N30.0, N30.9, N39.0,</td>
</tr>
<tr>
<td>Vaccine preventable diseases: tetanus neonatorum congenital rubella</td>
<td>P350, A33, A34</td>
</tr>
<tr>
<td>tetanus, diphtheria, pertussis, polio, hepatitis B</td>
<td>A35, A36, A37, A80, B16, B18.0, B18.1</td>
</tr>
<tr>
<td>measles, rubella, mumps</td>
<td>B05, B06, B26, M01.4</td>
</tr>
<tr>
<td>Viral pneumonia</td>
<td>J12, J10.0, J11.0</td>
</tr>
<tr>
<td>Viral /other / unspecified meningitis</td>
<td>A87, G02, G03</td>
</tr>
<tr>
<td>Viral infection of unspecified site</td>
<td>B34</td>
</tr>
</tbody>
</table>

Source: Anderson et al (2012)

Notes:
- Includes all acute admissions and arranged admissions that were admitted within 7 days.
- Waiting list admissions were excluded, apart from dental admissions which were all included.
- Admissions were included for patients aged 29 days through to 14 years, at admission.

Table 60: Ambulatory care sensitive hospitalisation ICD-10 codes for children aged 1 month to 14 years

<table>
<thead>
<tr>
<th>Condition</th>
<th>ICD-10-AM code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute rheumatic fever</td>
<td>J00–J02</td>
</tr>
<tr>
<td>Acute upper respiratory tract infections excluding croup</td>
<td>J00–J03, J06</td>
</tr>
<tr>
<td>Asthma</td>
<td>J45, J46</td>
</tr>
<tr>
<td>Bacterial/Unspecified pneumonia</td>
<td>J13–J16, J18</td>
</tr>
<tr>
<td>Bronchiectasis</td>
<td>J47</td>
</tr>
<tr>
<td>Constipation</td>
<td>K59.0</td>
</tr>
<tr>
<td>Chronic rheumatic heart disease</td>
<td>J05–J09</td>
</tr>
<tr>
<td>Croup, acute laryngitis, tracheitis</td>
<td>J04, J05.0</td>
</tr>
<tr>
<td>Dental (dental caries, pulp, periodontal)</td>
<td>K02, K04, K05</td>
</tr>
<tr>
<td>Dermatitis/eczema</td>
<td>L20–L30</td>
</tr>
<tr>
<td>Gastroenteritis</td>
<td>A02–A09, K529, R11</td>
</tr>
<tr>
<td>Gastro oesophageal reflux</td>
<td>K21</td>
</tr>
<tr>
<td>Nutritional deficiency</td>
<td>D50–D53, E40–E64,</td>
</tr>
<tr>
<td>Otitis media</td>
<td>H65–H67</td>
</tr>
<tr>
<td>Osteomyelitis</td>
<td>M86</td>
</tr>
<tr>
<td>Skin infection</td>
<td>L00–L04, L08, L98.0, J34.0, H01.0, H00.0</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>A35, A36, A37, A80, B16, B18.0, B18.1</td>
</tr>
<tr>
<td>Viral preventable diseases: tetanus neonatorum congenital rubella</td>
<td>P350, A33, A34</td>
</tr>
<tr>
<td>&gt; 6 months: tetanus, diphtheria, pertussis, polio, hepatitis B</td>
<td>A35, A36, A37, A80, B16, B18.0, B18.1</td>
</tr>
<tr>
<td>&gt; 16 months: measles, rubella, mumps</td>
<td>B05, B06, B26, M01.4</td>
</tr>
</tbody>
</table>

Source: Anderson et al (2012)
<table>
<thead>
<tr>
<th>Condition</th>
<th>ICD-10 code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastroenteritis/dehydration</td>
<td>A02–A09, K52.9, R11</td>
</tr>
<tr>
<td>Vaccine preventable disease MMR</td>
<td>B05*, B06*, B26*, M01.4*, P35.0</td>
</tr>
<tr>
<td>Vaccine preventable disease Other ‡</td>
<td>A33–A37, A40.3, A80, B16, B18</td>
</tr>
<tr>
<td>Sexually transmitted infections §</td>
<td>A50–A59, A60, A63, A64, I98.0, M02.3, M03.1, M73.0, M73.1, N29.0, N34.1</td>
</tr>
<tr>
<td>Cervical cancer §</td>
<td>C53</td>
</tr>
<tr>
<td>Nutrition deficiency and anaemia</td>
<td>D50–D53, E40–E46, E50–E64, M83.3§</td>
</tr>
<tr>
<td>Diabetes §</td>
<td>E10–E14, E162</td>
</tr>
<tr>
<td>Epilepsy §</td>
<td>G40, G41, O15, R56.0, R56.8</td>
</tr>
<tr>
<td>Upper respiratory and ENT</td>
<td>H65, H66, H67, J00–J04, J06</td>
</tr>
<tr>
<td>Rheumatic fever/heart disease</td>
<td>I00, I01, I02, I05–I09</td>
</tr>
<tr>
<td>Hypertensive disease §</td>
<td>I10–I15, I67.4</td>
</tr>
<tr>
<td>Angina and chest pain † §</td>
<td>I20, R07.2–R07.4</td>
</tr>
<tr>
<td>Myocardial infarction † §</td>
<td>I21–I23, I24.1</td>
</tr>
<tr>
<td>Other ischaemic heart disease † §</td>
<td>I24.0, I24.8, I24.9, I25</td>
</tr>
<tr>
<td>Congestive heart failure §</td>
<td>I50, I81</td>
</tr>
<tr>
<td>Stroke † §</td>
<td>I61, I63–I66</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>J13–J16, J18</td>
</tr>
<tr>
<td>Asthma</td>
<td>J45, J46</td>
</tr>
<tr>
<td>Bronchiectasis</td>
<td></td>
</tr>
<tr>
<td>Dental conditions</td>
<td>K02, K04, K05</td>
</tr>
<tr>
<td>Gastro-oesophageal reflux disease</td>
<td>K21</td>
</tr>
<tr>
<td>Peptic ulcer §</td>
<td>K25–K28</td>
</tr>
<tr>
<td>Constipation</td>
<td>K590</td>
</tr>
<tr>
<td>Cellulitis</td>
<td>H00.0, H01.0, J34.0, L01–L04, L08, L98.0</td>
</tr>
<tr>
<td>Dermatitis and eczema</td>
<td>L20–L30</td>
</tr>
<tr>
<td>Kidney/urinary infection ¶</td>
<td>N10, N12, N13.6, N30.9, N39.0</td>
</tr>
</tbody>
</table>

Source: Ministry of Health

Notes:

Acute and arranged (occurring in less than 7 days of decision) admissions, except dental where elective admission are also included.

Excluding discharges from an emergency department with one day of stay or shorter.

* Aged 15 months to 14 years.
† Each admission counts as a half.
‡ Aged six months to 14 years.
§ Aged 15 years and over.
|| Aged more than 15 years.
¶ Aged 5 years and over.
## APPENDIX 6 DEFINITION OF AMENABLE CONDITIONS


Table 62: Interim consolidated list of amenable conditions

<table>
<thead>
<tr>
<th>Group</th>
<th>Condition</th>
<th>ICD-9</th>
<th>ICD-10</th>
<th>Intervention restrictions and comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infections</td>
<td>Pulmonary tuberculosis</td>
<td>11</td>
<td>A15-A16</td>
<td>Advances in DOTS Included despite insufficient deaths</td>
</tr>
<tr>
<td></td>
<td>Meningococcal disease</td>
<td>036</td>
<td>A39</td>
<td>Advances in antibiotics and intensive care</td>
</tr>
<tr>
<td></td>
<td>Pneumococcal disease</td>
<td>038.2, 320.1, 481</td>
<td>A40.3, G00.1, J13</td>
<td>Advances in antibiotics and intensive care</td>
</tr>
<tr>
<td></td>
<td>HIV/AIDS</td>
<td>042</td>
<td>B20–B24</td>
<td>Advances in HAART</td>
</tr>
<tr>
<td>Cancers</td>
<td>Stomach</td>
<td>151</td>
<td>C16</td>
<td>Advances in surgery and adjuvant therapy</td>
</tr>
<tr>
<td></td>
<td>Rectum</td>
<td>154</td>
<td>C19–C21</td>
<td>Rectum, rectosigmoid junction and anus; excludes colon</td>
</tr>
<tr>
<td></td>
<td>Bone and cartilage</td>
<td>170</td>
<td>C40–C41</td>
<td>Advances in adjuvant therapy</td>
</tr>
<tr>
<td></td>
<td>Melanoma</td>
<td>172</td>
<td>C43</td>
<td>Advances in early detection and adjuvant therapy</td>
</tr>
<tr>
<td></td>
<td>Female breast</td>
<td>174</td>
<td>C50</td>
<td>Advances in screening and adjuvant therapy</td>
</tr>
<tr>
<td></td>
<td>Cervix</td>
<td>180</td>
<td>C53</td>
<td>Advances in screening and advances in surgery and adjuvant therapy</td>
</tr>
<tr>
<td></td>
<td>Testis</td>
<td>186</td>
<td>C62</td>
<td>Advances in chemotherapy</td>
</tr>
<tr>
<td></td>
<td>Prostate</td>
<td>185</td>
<td>C61</td>
<td>Advances in adjuvant therapy (including anti-androgens)</td>
</tr>
<tr>
<td></td>
<td>Thyroid</td>
<td>193</td>
<td>C73</td>
<td>Advances in diagnosis and adjuvant therapy</td>
</tr>
<tr>
<td></td>
<td>Hodgkin’s</td>
<td>201</td>
<td>C81</td>
<td>Advances in chemotherapy</td>
</tr>
<tr>
<td></td>
<td>Acute lymphoblastic</td>
<td>204.0</td>
<td>C91.0</td>
<td>Under age 45 years only</td>
</tr>
<tr>
<td></td>
<td>leukaemia</td>
<td></td>
<td></td>
<td>Advances in chemotherapy</td>
</tr>
<tr>
<td>Maternal and infant</td>
<td>Complications of pregnancy</td>
<td>630–676</td>
<td>O00–O96, O98–O99</td>
<td>Advances in obstetric care Include despite insufficient deaths</td>
</tr>
<tr>
<td></td>
<td>Complications of the</td>
<td>761–762, 763.0–763.4, 763.6–763.9, 764–767, 768.2–768.9, 769–778, 779.0–779.4</td>
<td>P01–P03, P05–P94</td>
<td>Advances in neonatal intensive care</td>
</tr>
<tr>
<td></td>
<td>perinatal period</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cardiac septal defect</td>
<td>745.2, 745.4–745.6, 745.8–745.9</td>
<td>Q21</td>
<td>Advances in diagnosis, surgical procedures and paediatric intensive care</td>
</tr>
<tr>
<td>Chronic disorders</td>
<td>Diabetes</td>
<td>250</td>
<td>E10–E14*</td>
<td>Advances in insulins, oral hypoglycaemic agents, tight glucose and blood pressure control</td>
</tr>
<tr>
<td></td>
<td>Valvular heart disease</td>
<td>391, 394–398, 421.0, 424</td>
<td>I01, I05–I09, I33–I37</td>
<td>Includes both rheumatic and non-rheumatic</td>
</tr>
<tr>
<td></td>
<td>Hypertensive diseases</td>
<td>401–404</td>
<td>I10–I13</td>
<td>Recent advances in anti-hypertensive drugs</td>
</tr>
<tr>
<td></td>
<td>Coronary disease</td>
<td>410–414</td>
<td>I20–I25</td>
<td>Statins, thrombolysis, advances in reperfusion surgery</td>
</tr>
<tr>
<td></td>
<td>Heart failure</td>
<td>428</td>
<td>I50</td>
<td>Advances in diagnosis, and in combined therapy with diuretics, ACE</td>
</tr>
<tr>
<td></td>
<td>Cerebrovascular diseases</td>
<td>430–438</td>
<td>I60–I69</td>
<td>inhibitors and digoxin</td>
</tr>
<tr>
<td></td>
<td>Renal failure</td>
<td>584–586</td>
<td>N17–N19</td>
<td>Advances in imaging, anti-hypertensives, dedicated stroke units</td>
</tr>
<tr>
<td>Group</td>
<td>Condition</td>
<td>ICD-9</td>
<td>ICD-10</td>
<td>Intervention restrictions and comments</td>
</tr>
<tr>
<td>------------------------</td>
<td>--------------------------------</td>
<td>-------</td>
<td>--------</td>
<td>--------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Pulmonary embolism</td>
<td>415</td>
<td>I26</td>
<td></td>
<td>Advances in diagnosis and anticoagulation</td>
</tr>
<tr>
<td>COPD</td>
<td>490-492, 496</td>
<td>J40-J44**</td>
<td></td>
<td>Advances in antibiotics, bronchodilators, physiotherapy</td>
</tr>
<tr>
<td>Asthma</td>
<td>493</td>
<td>J45–J46</td>
<td></td>
<td>Advances in bronchodilators, steroids, intensive care</td>
</tr>
<tr>
<td>Peptic ulcer disease</td>
<td>531–533</td>
<td>K25–K27</td>
<td></td>
<td>Excludes gastrojejunal ulcer</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Advances in drug treatment (H2 receptor antagonists)</td>
</tr>
<tr>
<td>Cholelithiasis</td>
<td>574</td>
<td>K80</td>
<td></td>
<td>Advances in lithotripsy</td>
</tr>
<tr>
<td>Suicide</td>
<td>E950–E958</td>
<td>X60–X84</td>
<td></td>
<td>Advances in antidepressant therapy</td>
</tr>
<tr>
<td>Land transport accidents (excluding trains)</td>
<td>E811–E829, E846–E848</td>
<td>V01–V04, V06-V14, V16-V24, V26-V34, V36-V44, V46-V54, V56-V64, V66-V74, V76-V79, V80.0-V80.5, V80.7-V80.9, V82-V86, V87.0-V87.5, V87.7-V87.9, V88.0-V88.5, V88.7-V88.9, V89, V98-V99</td>
<td>Excludes railway accidents; advances in emergency transport and trauma care</td>
<td></td>
</tr>
<tr>
<td>Falls (accidental fall on same level)</td>
<td>E884.2, E884.4, E884.6, E884.7, E885-E886</td>
<td>W00-W08, W18</td>
<td></td>
<td>Advances in osteoporosis treatment and orthopaedic care</td>
</tr>
<tr>
<td>Fire, smoke or flames</td>
<td>E890-E899</td>
<td>X00–X09</td>
<td></td>
<td>Advances in early excision and skin grafting</td>
</tr>
<tr>
<td>Treatment injury</td>
<td>E870–E876</td>
<td>Y60–Y82</td>
<td></td>
<td>Advances in health care quality management</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>[Corresponds to ‘misadventure’ in ICD-9]</td>
</tr>
</tbody>
</table>

**E09 should be added if using ICD-10 AM version 3 or higher.**

**ICD-10 shifted chronic obstructive asthma (493.2) from the asthma group to COPD (J44.8 Other specified COPD). These deaths are still considered amenable, but now appear under COPD instead of asthma.**

Notes:
- Labels for conditions are shorthand and do not necessarily fully coincide with ICD descriptors
- DOTS = directly observed treatment
- HAART = highly active antiretroviral therapy

Notes:
- Labels for conditions are shorthand and do not necessarily fully coincide with ICD descriptors
- DOTS = directly observed treatment
- HAART = highly active antiretroviral therapy
### Appendix 7 Mortality Tables

#### Table 63: Potentially avoidable mortality, 0–74 years, Māori Population, 2007–2011

<table>
<thead>
<tr>
<th>Gender</th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
<td>Avg per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>19</td>
<td>244 (197, 302)</td>
<td>32</td>
<td>196 (167, 231)</td>
</tr>
<tr>
<td>Male</td>
<td>23</td>
<td>344 (284, 417)</td>
<td>45</td>
<td>333 (291, 382)</td>
</tr>
<tr>
<td>Total</td>
<td>42</td>
<td>294 (255, 339)</td>
<td>77</td>
<td>265 (238, 294)</td>
</tr>
</tbody>
</table>

Source: Mortality, Ministry of Health

#### Table 64: Potentially avoidable mortality, 0–74 years, Total Population, 2007–2011

<table>
<thead>
<tr>
<th>Gender</th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
<td>Avg per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>21</td>
<td>172 (140, 212)</td>
<td>24</td>
<td>153 (127, 185)</td>
</tr>
<tr>
<td>Male</td>
<td>31</td>
<td>265 (222, 317)</td>
<td>32</td>
<td>234 (199, 275)</td>
</tr>
<tr>
<td>Total</td>
<td>52</td>
<td>219 (191, 251)</td>
<td>56</td>
<td>194 (171, 219)</td>
</tr>
</tbody>
</table>

Source: Mortality, Ministry of Health

#### Table 65: Amenable mortality, 0–74 years, Māori Population, 2007–2011

<table>
<thead>
<tr>
<th>Gender</th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
<td>Avg per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>14</td>
<td>194 (152, 247)</td>
<td>24</td>
<td>153 (127, 185)</td>
</tr>
<tr>
<td>Male</td>
<td>17</td>
<td>250 (199, 313)</td>
<td>32</td>
<td>234 (199, 275)</td>
</tr>
<tr>
<td>Total</td>
<td>31</td>
<td>222 (188, 262)</td>
<td>56</td>
<td>194 (171, 219)</td>
</tr>
</tbody>
</table>

Source: Mortality, Ministry of Health

#### Table 66: Amenable mortality, 0–74 years, Total Population, 2007–2011

<table>
<thead>
<tr>
<th>Gender</th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
<td>Avg per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td>16</td>
<td>138 (109, 174)</td>
<td>34</td>
<td>83 (70, 99)</td>
</tr>
<tr>
<td>Male</td>
<td>23</td>
<td>201 (163, 246)</td>
<td>55</td>
<td>146 (127, 167)</td>
</tr>
<tr>
<td>Total</td>
<td>39</td>
<td>169 (145, 197)</td>
<td>89</td>
<td>114 (103, 128)</td>
</tr>
</tbody>
</table>

Source: Mortality, Ministry of Health
## APPENDIX 8  LEADING CAUSES OF DEATH

### Table 67: Leading causes of death for Māori, all ages, 2007–2011

<table>
<thead>
<tr>
<th>Gender</th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IHD</td>
<td>7</td>
<td>62.7 (44.3 88.8)</td>
<td>14</td>
<td>53.5 (41.5 68.9)</td>
</tr>
<tr>
<td>Lung cancer</td>
<td>4</td>
<td>36.6 (22.7 59.0)</td>
<td>7</td>
<td>32.0 (22.4 45.6)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>3</td>
<td>34.0 (20.8 55.7)</td>
<td>5</td>
<td>21.3 (14.1 32.2)</td>
</tr>
<tr>
<td>COPD</td>
<td>2</td>
<td>22.5 (12.5 40.4)</td>
<td>4</td>
<td>17.1 (10.8 27.0)</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IHD</td>
<td>9</td>
<td>114.7 (84.9 154.9)</td>
<td>15</td>
<td>95.5 (75.8 120.3)</td>
</tr>
<tr>
<td>Accidents</td>
<td>3</td>
<td>55.4 (32.1 95.6)</td>
<td>5</td>
<td>45.9 (30.7 68.6)</td>
</tr>
<tr>
<td>Lung cancer</td>
<td>3</td>
<td>39.6 (24.4 64.3)</td>
<td>8</td>
<td>47.8 (34.6 66.0)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>3</td>
<td>31.3 (18.2 53.7)</td>
<td>5</td>
<td>28.8 (19.3 42.8)</td>
</tr>
<tr>
<td>Total Māori</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IHD</td>
<td>16</td>
<td>88.7 (70.5 111.6)</td>
<td>29</td>
<td>74.5 (62.6 88.6)</td>
</tr>
<tr>
<td>Lung cancer</td>
<td>7</td>
<td>38.1 (27.1 53.6)</td>
<td>14</td>
<td>39.9 (31.4 50.7)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>6</td>
<td>32.7 (22.7 47.0)</td>
<td>10</td>
<td>25.0 (18.7 33.4)</td>
</tr>
<tr>
<td>COPD</td>
<td>4</td>
<td>20.4 (13.0 31.9)</td>
<td>14</td>
<td>39.9 (31.4 50.7)</td>
</tr>
</tbody>
</table>

### Table 68: Leading causes of death for Total Population, all ages, 2007–2011

<table>
<thead>
<tr>
<th>Gender and site</th>
<th>Ngāti Porou Hauora Area</th>
<th>Tairāwhiti DHB</th>
<th>Total New Zealand</th>
<th>Rate Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
<td>Average per year</td>
<td>Age-standardised rate per 100,000 (95% CI)</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IHD</td>
<td>8</td>
<td>40.0 (28.8 55.4)</td>
<td>33</td>
<td>25.0 (20.5 30.5)</td>
</tr>
<tr>
<td>Lung cancer</td>
<td>4</td>
<td>23.2 (14.8 36.6)</td>
<td>12</td>
<td>16.6 (12.4 22.3)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>4</td>
<td>20.7 (12.7 33.6)</td>
<td>7</td>
<td>8.0 (5.4 11.8)</td>
</tr>
<tr>
<td>COPD</td>
<td>3</td>
<td>13.8 (7.8 24.3)</td>
<td>9</td>
<td>7.7 (5.4 11.0)</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IHD</td>
<td>14</td>
<td>85.6 (66.5 110.2)</td>
<td>39</td>
<td>53.1 (45.2 62.3)</td>
</tr>
<tr>
<td>Lung cancer</td>
<td>5</td>
<td>26.1 (17.1 39.9)</td>
<td>15</td>
<td>22.5 (17.6 28.9)</td>
</tr>
<tr>
<td>Accidents</td>
<td>4</td>
<td>56.1 (35.5 88.7)</td>
<td>9</td>
<td>35.2 (25.0 49.6)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>4</td>
<td>20.0 (12.3 32.5)</td>
<td>8</td>
<td>10.9 (7.7 15.4)</td>
</tr>
<tr>
<td>Total People</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IHD</td>
<td>23</td>
<td>62.8 (51.4 76.8)</td>
<td>72</td>
<td>39.0 (34.4 44.3)</td>
</tr>
<tr>
<td>Lung cancer</td>
<td>9</td>
<td>24.7 (18.1 33.6)</td>
<td>27</td>
<td>19.6 (16.2 23.7)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>7</td>
<td>20.3 (14.4 28.7)</td>
<td>14</td>
<td>9.5 (7.3 12.2)</td>
</tr>
<tr>
<td>COPD</td>
<td>6</td>
<td>15.7 (10.7 23.0)</td>
<td>31</td>
<td>15.0 (12.0 18.8)</td>
</tr>
</tbody>
</table>

Source: Mortality dataset, Ministry of Health.
APPENDIX 9  LEADING CAUSES OF HOSPITAL ADMISSIONS

- Data Note: This is a condensed list of leading causes (original list has about 190 causes) based on the Ministry of Health’s National Minimum Dataset Collection. Complete list in Excel format is available on request.
- The list is compiled from all hospitalisations by principal diagnosis, all ages, 2011–2013. Diagnoses groups with five or less Māori hospitalisations are not included in table.
- ‘Average’ shows the average number of admissions per year that occurred among residents of the DHB during the period.
- ‘ASR’ is the number of admissions per 100,000 people per year, age-standardised to the 2001 Māori Census Population.

<table>
<thead>
<tr>
<th>Category (disease)</th>
<th>Specific Causes (Descending order by Age-Standardised Rates)</th>
<th>NPH Average</th>
<th>NPH ASR</th>
<th>TDH Average</th>
<th>TDH ASR</th>
<th>NZ Average</th>
<th>NZ ASR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis</td>
<td>Factors influencing health status and contact with health services</td>
<td>363</td>
<td>2,612</td>
<td>1,217</td>
<td>2,836</td>
<td>2,814</td>
<td></td>
</tr>
<tr>
<td>Diagnosis</td>
<td>— Persons encountering health services in circumstances related to reproduction</td>
<td>201</td>
<td>1,771</td>
<td>626</td>
<td>1,992</td>
<td>1,711</td>
<td></td>
</tr>
<tr>
<td>Diagnosis</td>
<td>— Persons encountering health services for specific procedures and health care</td>
<td>98</td>
<td>452</td>
<td>350</td>
<td>426</td>
<td>591</td>
<td></td>
</tr>
<tr>
<td>Injuries</td>
<td>Injury, poisoning &amp; certain other consequences of external causes</td>
<td>374</td>
<td>2,503</td>
<td>1,205</td>
<td>2,390</td>
<td>2,205</td>
<td></td>
</tr>
<tr>
<td>Injuries</td>
<td>— Other injuries</td>
<td>212</td>
<td>1,466</td>
<td>662</td>
<td>1,318</td>
<td>1,198</td>
<td></td>
</tr>
<tr>
<td>Injuries</td>
<td>— Injuries to the head</td>
<td>65</td>
<td>470</td>
<td>206</td>
<td>464</td>
<td>402</td>
<td></td>
</tr>
<tr>
<td>Injuries</td>
<td>— Complications of surgical and medical care</td>
<td>38</td>
<td>269</td>
<td>195</td>
<td>272</td>
<td>259</td>
<td></td>
</tr>
<tr>
<td>Respiratory</td>
<td>Diseases of the respiratory system</td>
<td>322</td>
<td>2,069</td>
<td>969</td>
<td>2,046</td>
<td>1,596</td>
<td></td>
</tr>
<tr>
<td>Respiratory</td>
<td>— Acute Bronchitis and bronchiolitis</td>
<td>74</td>
<td>585</td>
<td>189</td>
<td>520</td>
<td>365</td>
<td></td>
</tr>
<tr>
<td>Respiratory</td>
<td>— Acute upper respiratory infections</td>
<td>47</td>
<td>398</td>
<td>140</td>
<td>428</td>
<td>303</td>
<td></td>
</tr>
<tr>
<td>Respiratory</td>
<td>— Pneumonia</td>
<td>66</td>
<td>341</td>
<td>102</td>
<td>288</td>
<td>247</td>
<td></td>
</tr>
<tr>
<td>Respiratory</td>
<td>— Asthma</td>
<td>32</td>
<td>252</td>
<td>199</td>
<td>277</td>
<td>216</td>
<td></td>
</tr>
<tr>
<td>Respiratory</td>
<td>— Chronic obstructive respiratory disease</td>
<td>49</td>
<td>134</td>
<td>136</td>
<td>93</td>
<td>96</td>
<td></td>
</tr>
<tr>
<td>Digestive system</td>
<td>Diseases of the digestive system</td>
<td>317</td>
<td>1,886</td>
<td>1,055</td>
<td>1,798</td>
<td>1,562</td>
<td></td>
</tr>
<tr>
<td>Digestive system</td>
<td>— — — — Dental caries</td>
<td>51</td>
<td>443</td>
<td>106</td>
<td>331</td>
<td>276</td>
<td></td>
</tr>
<tr>
<td>Digestive system</td>
<td>— — — — Diseases of gallbladder, biliary tract and pancreas</td>
<td>55</td>
<td>316</td>
<td>147</td>
<td>223</td>
<td>188</td>
<td></td>
</tr>
<tr>
<td>Digestive system</td>
<td>— — — — Cholelithiasis</td>
<td>41</td>
<td>250</td>
<td>108</td>
<td>176</td>
<td>129</td>
<td></td>
</tr>
<tr>
<td>Digestive system</td>
<td>— — — — Diseases of oesophagus, stomach and duodenum</td>
<td>39</td>
<td>197</td>
<td>127</td>
<td>167</td>
<td>186</td>
<td></td>
</tr>
<tr>
<td>Symptoms and signs</td>
<td>Symptoms, signs and abnormal clinical and laboratory findings</td>
<td>238</td>
<td>1,235</td>
<td>909</td>
<td>1,357</td>
<td>1,634</td>
<td></td>
</tr>
<tr>
<td>Circulatory systems</td>
<td>Diseases of the circulatory system</td>
<td>252</td>
<td>883</td>
<td>841</td>
<td>761.8</td>
<td>617.7</td>
<td></td>
</tr>
<tr>
<td>Circulatory systems</td>
<td>— — — Ischemic heart disease</td>
<td>70</td>
<td>214</td>
<td>265</td>
<td>204.0</td>
<td>149.7</td>
<td></td>
</tr>
<tr>
<td>Circulatory systems</td>
<td>— — — Cerebrovascular diseases</td>
<td>27</td>
<td>87.4</td>
<td>96</td>
<td>71.6</td>
<td>58.1</td>
<td></td>
</tr>
<tr>
<td>Circulatory systems</td>
<td>— — — Chronic rheumatic heart diseases</td>
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<td>Circulatory systems</td>
<td>— — — Hypertensive diseases</td>
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<td>20.5</td>
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<td>Genitourinary system</td>
<td>Diseases of the genitourinary system</td>
<td>170</td>
<td>875</td>
<td>541</td>
<td>859</td>
<td>885</td>
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<tr>
<td>Infections</td>
<td>Certain infectious and parasitic diseases</td>
<td>117</td>
<td>838</td>
<td>377</td>
<td>865</td>
<td>730</td>
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<tr>
<td>Cancers</td>
<td>Neoplasms</td>
<td>190</td>
<td>772</td>
<td>833</td>
<td>863</td>
<td>697</td>
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<td>Cancers</td>
<td>— — — Benign neoplasms</td>
<td>39</td>
<td>216</td>
<td>138</td>
<td>237.8</td>
<td>164.1</td>
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<tr>
<td>Cancers</td>
<td>— — — Digestive organs</td>
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<td>75.3</td>
<td>76</td>
<td>64.9</td>
<td>55.3</td>
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<td>Cancers</td>
<td>— — — Skin</td>
<td>21</td>
<td>57.7</td>
<td>164</td>
<td>116.7</td>
<td>91.7</td>
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<tr>
<td>Cancers</td>
<td>— — — Respiratory and intrathoracic organs</td>
<td>16</td>
<td>48.8</td>
<td>50</td>
<td>39.8</td>
<td>24.3</td>
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<td>Skin</td>
<td>Diseases of the skin and subcutaneous tissue</td>
<td>114</td>
<td>762</td>
<td>367</td>
<td>719</td>
<td>511</td>
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<tr>
<td>Skin</td>
<td>— — — Cellulitis</td>
<td>80</td>
<td>524</td>
<td>236</td>
<td>466</td>
<td>355</td>
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<td>Mental disorders</td>
<td>Mental and behavioural disorders</td>
<td>87</td>
<td>656</td>
<td>341</td>
<td>726</td>
<td>427</td>
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<td>Mental disorders</td>
<td>— — — Schizophrenia, schizotypal and delusional disorders</td>
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<td>330</td>
<td>147</td>
<td>338</td>
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<td>Musculoskeletals</td>
<td>Diseases of the musculoskeletal system and connective tissue</td>
<td>130</td>
<td>599</td>
<td>455</td>
<td>619</td>
<td>736</td>
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<td>— — — Gout</td>
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<td>41</td>
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<td>Fetus and newborn</td>
<td>Certain conditions originating in the perinatal period</td>
<td>53</td>
<td>468</td>
<td>160</td>
<td>525</td>
<td>572</td>
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<td>Fetus and newborn</td>
<td>— — — Slow fetal growth and fetal malnutrition and premature</td>
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<td>189</td>
<td>68</td>
<td>221.6</td>
<td>217.5</td>
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<td>Endocrine, nutritional and metabolic diseases</td>
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<td>351</td>
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<td>Diabetes &amp; metabolics</td>
<td>— Diabetes mellitus</td>
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<td>267</td>
<td>180</td>
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<td>236</td>
<td>337</td>
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<td>Ears</td>
<td>Diseases of the ear and mastoid process</td>
<td>36</td>
<td>291</td>
<td>115</td>
<td>312</td>
<td>335</td>
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<td>Ears</td>
<td>— — — Diseases of middle ear and mastoid</td>
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<td>271</td>
<td>99</td>
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<td>284</td>
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<td>Congenital malformation</td>
<td>Congenital malformations, deformations, and chromosomal abnormalities</td>
<td>31</td>
<td>253</td>
<td>118</td>
<td>352</td>
<td>305</td>
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<td>All hospital admissions</td>
<td>3,369</td>
<td>20,352</td>
<td>11,371</td>
<td>20,624</td>
<td>19,216</td>
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