

# Measuring doctor appointment availability in Northland general practice

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## **Abstract:**

### **Introduction**

Access into primary care is associated with improved patient outcomes. One measure of access is the availability of appointments in general practice. Appointment availability may be constrained in Northland as indicated by a high ambulatory sensitive hospitalisation rate. Within this study the average availability of 'routine' appointments in Northland general practice was determined by using the time to third next available appointment (TNAA) metric.

### **Methods**

An automated electronic query was created, run through a third party software programme that interrogated Northland general practices. The TNAA was calculated for each general practitioner (GP) and a mean calculated for each practice and across the region. Regression analysis was used to determine the presence of any relationship between deprivation, patients per GP and the use of walk-in clinics

### **Results**

The mean TNAA was 2.5. There was a statistical relationship between TNAA and increasing number of walk-in clinics offered.

### **Conclusion**

The TNAA of 2.5 days indicates the possibility that constraints exist on routine appointments in Northland. However, TNAA may not give a reliable measure of urgent appointment availability and the measure needs to be interpreted by taking into account each practices characteristics. Walk-in clinics, although increasing the availability of urgent appointments, may lead to more pressure on routine appointments. Using an electronic query is a feasible way in which to measure routine GP appointment availability.

## **Introduction**

Highly accessible primary care is a marker of a quality health care system. Despite the universal acknowledgment of the importance of access there is no documented New Zealand literature outlining a robust and relatively easy process of measuring access into primary care. Within this article we describe a study that measured the availability of appointments in Northland general practices by the use of an electronic tool and suggest that the use of such a tool may assist in understanding an aspect of appointment making.

Timely access to primary care is associated with improved population health outcomes.<sup>1</sup> Primarily this is because highly accessible primary care is likely to diminish health disparities for vulnerable populations.<sup>2,3</sup> Starfield considered access to be one of the key indicators of a quality healthcare system, although the definition of quality is often contested.<sup>4</sup> Access, for most authors, is felt to consist of multiple elements. Penchansky and Thomas,<sup>5</sup> for example, viewed access as five separate elements that included the availability of health care. The lack of availability of appointment slots to see a general practitioner (GP) may lead to a delay in health care and possible adverse consequences. In a number of different surveys between 16.8% to 28% of New Zealanders were unable to see a doctor on the day that they needed to.<sup>6,7</sup> The availability of appointments in general practice may worsen in the near future as the New Zealand GP population ages and retires and as the burden of chronic disease increases.<sup>8</sup> In rural areas the workforce shortage may be even more pronounced.<sup>9</sup>

Appointment availability is likely more complex than simple demand and supply. Systemic or structural issues are likely to influence availability. For example appointment availability is worse for Māori and socioeconomically deprived people.<sup>7</sup> This inequity of appointment availability may be due to inflexible general practice opening hours and difficulty, for people in lower paid jobs, to take time off work to attend a medical appointment. The inequity experienced by Māori may also indicate bias and discrimination.<sup>10</sup> Appointment making, in general practice, follows what Gallagher<sup>11</sup> refers to as a series of repetitive and ritualistic steps. The rituals involved with making an appointment indicate that interpersonal factors may influence appointment availability.

The type of appointment making model used is also likely to influence availability of appointments. Appointment making models in general practice are typically one of two types.<sup>12</sup> The first is a 'traditional' model, in which patients are deemed to be either urgent or non-urgent, with urgent patients offered a same day appointment often by double booking appointments and routine need met some time in the future. The second model is a 'carve-out model' in which the general practice reserves urgent appointments in advance. Oldham<sup>13</sup> proposed a third model, advanced access, in which variation in appointment pressures are studied within a practice and resources shifted as a result, matching GP capacity with patient demand. A number of studies have shown that advanced access is associated with significant reductions in time for patients to wait to see a doctor.<sup>12,14-19</sup> However, caution must be applied as many practices in the studies found it difficult to maintain advanced access principles. In addition advanced access has not been linked to improved patient outcomes for chronic disease,<sup>20,21</sup> nor has it been shown to improve patient satisfaction.<sup>16</sup>

Northland has a large rural population, it is socioeconomically deprived, Māori make up a significant percentage of its population and it has high ambulatory sensitive hospitalisation rates<sup>22</sup>. These factors all indicate potential issues associated with access to available general practice appointments. In order to understand what pressure on appointments exists, the Northland District Health Board, Manaia PHO and Te Tai Tokerau PHO set up an Integrated Urgent Healthcare (IUHC) Project which included measurement of appointment availability in Northland general practice. This audit was part of a suite of measures aimed at assisting general practice to understand practice specific issues relating to access.

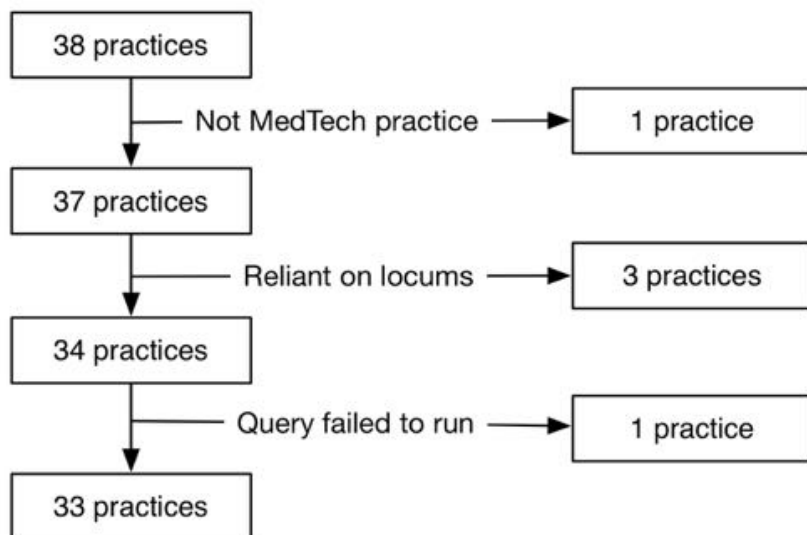
# Method

In order to measure appointment availability IUHC Project elected to measure the time to the third next available appointment (TNAA). The TNAA metric is a statistical measure that can be used as a proxy indicator of same day access.<sup>13</sup> Appointment availability in the Commonwealth Fund Survey and the Ministry of Health Survey were based on questionnaires and therefore a degree of subjectivity is involved. In contrast the TNAA measure is reliable and reproducible.<sup>13</sup> The TNAA is preferred over the time to the next available appointment as it is less subject to random variations such as appointment cancellations.<sup>13</sup> Traditionally the TNAA is measured manually by calculating the time difference at a fixed point. Within this study the TNAA was calculated in an automated fashion by the use of a third party application, Drinfo. Within Drinfo a query was created that remotely interrogated Northland general practice appointment books contained within the patient management system. This query was run once a week for five weeks at midday. Each week the query was run on a different day of the week. The query generated a list of doctors working at each practice and their associated TNAA. There was a considerable amount of communication required with practice managers to ensure that all unavailable appointments were blocked out during the query times for accuracy of the query.

As part of the audit, practices were also rung on each day of the audit by a research assistant who asked when the practice could accommodate a patient with urgent need, to be seen by a GP. The time to the appointment was recorded and the type of appointment, e.g. an available routine appointment, reserved urgent appointment, double booked appointment, a walk-in clinic, lunch break etc. Practice managers provided the full time equivalency (FTE) for each GP working in the practice and details on any locums covering annual leave during the period of the audit.

For reporting purposes practices were assigned to a peer group based on the average deprivation of the practice enrolled population. Practices were grouped into deprivation quartiles from least deprived to most deprived and assigned to either rural or urban with urban practices defined as those located within metropolitan Whangarei.

All 38 general practices within Northland DHB were eligible to participate in the audit. Exclusion criteria for the audit were practices that did not have MedTech 32 as their patient management system (PMS), practices that did not have a stable permanent general practice workforce (i.e. practices that were solely or mostly reliant on short term locums). Figure 1 indicates the practice numbers that were included in the final audit. Peripheral clinics were aggregated into their parent clinics. For each clinic a weighted average of TNAA was calculated as described by Oldham.<sup>13</sup> The weighted average factored FTE rates of GPs and removed weekends. Statistics, including regression analysis, were calculated with Stata version 11.



**Figure 1: Practice eligibility**

All general practices gave consent to be included in the audit. At the conclusion of the audit general practices were provided with a copy of their clinic’s results in the form of an A2 size poster, along with appendices including academic papers about booking systems , and an audit sheet, endorsed by the Royal New Zealand College of General Practitioners, that could be used by GPs to reflect on the results. CME sessions to discuss the process and findings were also scheduled.

Ethics approval was not required as this is counted as a minimal risk audit under New Zealand Health and Disability Ethics guidelines.

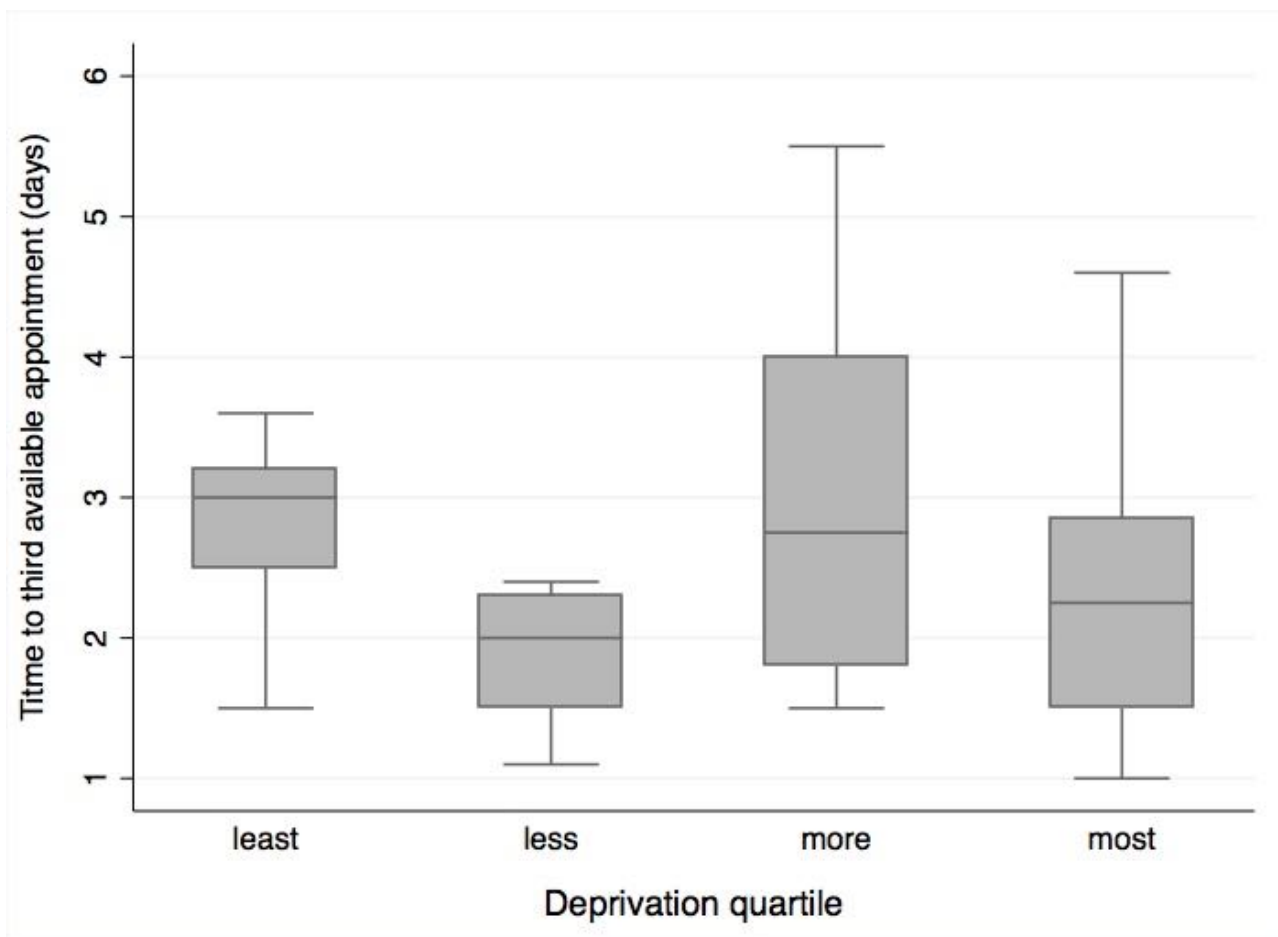
## Results

The TNAA per practice is shown in Table 1. In the table ‘Walk-in clinics’ indicates the number of days in which a walk-in clinic was offered in response to the telephone request for an urgent appointment over the five days of the audit. The mean TNAA in Northland, for the period of the audit, was 2.5 days (95% CI 2.1 – 2.8).

**Table 1: Summary of practice data**

Practice	TNAA	Deprivation	Rural/Urban	Patients/GP FTE	Walk-in clinics
Practice 1	2.4	least	rural	2400	0
Practice 2	2.5	least	urban	2258	0
Practice 3	2.9	least	rural	1744	0
Practice 4	2.5	least	urban	848	0
Practice 5	3.6	least	urban	1089	0
Practice 6	1.5	least	rural	1475	0
Practice 7	3.2	least	urban	1717	1
Practice 8	3.5	least	rural	1879	0
Practice 9	3.1	least	rural	1432	0
Practice 10	3.2	least	urban	1709	0
Practice 11	2.3	less	rural	1397	0
Practice 12	1.5	less	urban	1653	0
Practice 13	2.3	less	urban	1695	0
Practice 14	2.2	less	rural	1456	0
Practice 15	2.4	less	urban	2138	0
Practice 16	1.2	less	urban	1804	0
Practice 17	2	less	rural	849	0
Practice 18	1.6	less	urban	1326	0
Practice 19	2	less	urban	1918	0
Practice 20	5.5	more	rural	1108	4
Practice 21	1.8	more	rural	1366	0
Practice 22	3.7	more	urban	2019	0
Practice 23	1.5	more	urban	2007	0
Practice 24	1.8	more	urban	1856	0
Practice 25	4	more	urban	1540	0
Practice 26	2.9	most	rural	1428	0
Practice 27	2.2	most	rural	1856	0
Practice 28	2.8	most	rural	1919	0
Practice 29	4.6	most	rural	1467	1
Practice 30	1.8	most	rural	1540	0
Practice 31	2.3	most	rural	1266	2
Practice 32	1	most	rural	1233	0
Practice 33	1.2	most	rural	1369	0

Figure 2 shows a box and whisker plot of TNAA grouped by deprivation.



**Figure 2: TNAA per deprivation level**

When deprivation, rurality, number of patients per GP FTE and number of walk-in clinics were adjusted for a correlation between TNAA and the number of walk-in clinics ( $t = 3.30$ ,  $p = 0.003$ ) was found. In addition a small negative correlation was seen between TNAA and practices classified as 'less' deprived ( $t = -2.37$ ,  $p = 0.025$ ).

## Discussion

The primary intent of this audit was to determine whether there is pressure on general practice appointments in Northland. The average TNAA of 2.5 days indicates that a significant proportion of patients in Northland will struggle to get a timely routine appointment. Difficulties in getting an appointment may be one of the reasons why Northland has a high ambulatory sensitive hospitalisation rate. However, there is no data to determine whether appointment availability is constrained in other areas with high ambulatory sensitive hospitalisation rates or even whether the figure of 2.5 days for a routine appointment is high compared to the rest of the country.

Appointment availability was also more constrained in practices that operated walk-in clinics. It is unknown whether walk-in clinics are a causal factor of constrained appointment availability or arise as a response to constrained appointment availability. There is some evidence to suggest that patients attend walk-in clinics not only because of unavailability of urgent appointments on the day but also because they are convenient.<sup>23</sup> As walk-in clinics increase in popularity more pressure will be placed on practices to staff walk-in clinics, which will in turn reduce the resourcing of routine appointments.

Although the TNAA audit indicated that 50% of patients will wait up to 2.5 days before they attend general practice this does not indicate how long patients with urgent needs will need to wait. The TNAA metric indicates 'routine availability'. Practices accommodate patients with more urgent needs by carving out appointments, scheduling appointments in lunch breaks or operating walk-in clinics. For practices without a walk-in clinic negotiating an urgent appointment may prove difficult for some patients. There is some evidence to suggest that patients attending large clinics may find it more difficult negotiating a same day appointment.<sup>24</sup> Other studies have also suggested that patients may have poor experiences with receptionists that in turn lead to barriers in accessing care.<sup>25,26</sup> Additionally Māori may experience judgment by receptionists.<sup>10</sup> We therefore argue that the TNAA needs to be interpreted in the context of the characteristics of the clinic. A high TNAA may not necessarily indicate difficulty in gaining urgent care. High TNAA may, depending on context, indicate the presence of barriers to accessing primary care for some groups of people.

The TNAA metric indicates that there may be pressure on appointments in Northland. The use of an automated query is unique with no studies, to our knowledge, using an entirely automated process to capture TNAA. By automating the TNAA process PHOs and DHBs may easily measure one element of access into general practice and work with general practice in improving overall access.

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