

Measuring doctor appointment availability in Northland general practice

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ABSTRACT

INTRODUCTION: Primary care access is associated with improved patient outcomes. Availability of appointments in general practice is one measure of access. Northland's demographics and high ambulatory sensitive hospitalisation rates may indicate constrained appointment availability. Our study aims were to determine appointment availability and establish the feasibility of measuring appointment availability through an automated process.

METHODS: An automated electronic query was created, run through a third party software programme that interrogated Northland general practice patient management systems. The time to third next available appointment (TNAA) was calculated for each general practitioner (GP) and a mean calculated for each practice and across the region. A research assistant telephone request for an urgent GP appointment captured the time to the urgent appointment and type of urgent appointment used to fit patients in. Regression analysis was used to determine the relationships between deprivation, patients per GP, and the use of walk-in clinics.

RESULTS: The mean TNAA was 2.5 days. 12% of practices offered walk-in clinics. There was a significant relationship between TNAA and increasing number of walk-in clinics.

CONCLUSION: The TNAA of 2.5 days indicates the possibility that routine appointments are constrained 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 practice 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 to measure routine GP appointment availability.

KEYWORDS: Primary health care; Appointments and schedules; Health services accessibility; Health centers; Ambulatory

Introduction

Highly accessible primary care is a marker of a quality health care system. Despite 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. In this paper we describe a study measuring the availability of routine and urgent appointments in Northland general practices by the use of an electronic tool and manual telephone call to practices. We suggest the use of such a methodology may

assist in understanding an aspect of appointment making.

Timely access to primary care is associated with improved population health outcomes.¹ Primarily this is because highly accessible primary care is likely to diminish health disparities for vulnerable populations.^{2,3} Starfield considered access to be a key indicator of quality healthcare systems, although the definition of quality is often contested.⁴ Access, for most authors, consists of multiple elements. Penchansky and Thomas,⁵ for

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example, viewed access as five separate elements, including care availability.

Lack of available appointment slots to see a general practitioner (GP) may lead to delays in health care and possible adverse consequences. In several surveys, 17% to 28% of New Zealanders are reported unable to see a doctor on the day that they needed care.^{6,7} Same day access in New Zealand may be better than in other comparable health systems such as Australia and the UK, with 42% and 48% of patients in these countries (respectively) reporting inability to get appointments on their preferred day. Availability of general practice appointments may worsen in the near future as GPs age and retire, and as the burden of chronic disease increases.⁸ In rural areas the workforce shortage may be more pronounced.⁹

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.⁷ 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 medical appointments. The inequity experienced by Māori may also indicate bias and discrimination.¹⁰ Appointment making in general practice has been referred to as a series of repetitive and ritualistic steps.¹¹ The rituals involved with appointment making suggest that interpersonal factors may influence appointment availability.

The type of appointment making model used is also likely to influence appointment availability. Appointment making models in general practice are typically one of two types.¹² The first is a 'traditional' model, in which patients are deemed to be either urgent or non-urgent with urgent patients offered same day appointments, often by double booking appointments, and routine need met some time in the future. The second model is a 'carve-out model' in which general practices reserve urgent appointments in advance. A variation on the 'carve-out' model are walk-in clinics where no appointment is required. Walk-in clinics may improve patient satisfaction.¹³

WHAT GAP THIS FILLS

What is already known: The time to third next available appointment is an accepted means of estimating routine appointment availability.

What this study adds: Measuring routine appointment availability is possible by using an automated process. A time to third next available appointment of more than two days in Northland general practice indicates constraints on appointment availability.

Patients presenting to walk-in-clinics are more likely to attend because of convenience rather than difficulty in getting an appointment with their regular GP.¹⁴ Oldham¹⁵ proposed a third model, advanced access, in which variation in appointment pressures are studied within practices and resources subsequently shifted to match GP capacity with patient demand. Some studies have shown that advanced access is associated with significant reductions in waiting times for patients to see a doctor.^{12,16-21} However, many practices in these studies found it difficult to maintain advanced access principles. In addition, advanced access has not been linked to improved patient outcomes for chronic disease,^{22,23} nor has it been shown to improve patient satisfaction.¹⁸

Northland has a large rural population, it is socioeconomically deprived, Māori make up 22% of its population, and it has high ambulatory sensitive hospitalisation rates.²⁴ These factors suggest potential issues associated with access to available general practice appointments. To understand pressures on appointments and to test the practicalities of using an automated process for measuring appointment availability, the Northland District Health Board (DHB), Manaia Primary Health Organisation (PHO) and Te Tai Tokerau PHO set up an Integrated Urgent Healthcare (IUHC) Project that included measurement of appointment availability in Northland general practice. This project was part of a suite of measures aimed at assisting general practice to understand practice-specific issues relating to access.

Method

To measure appointment availability the IUHC Project measured 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 and has been used in the US, Canada, and Australia to measure primary care appointment availability.^{15,19,20,25} Appointment availability in the Commonwealth Fund Survey and the Ministry of Health Survey were based on questionnaires and therefore some subjectivity is involved. In contrast, the TNAA measure is reliable and reproducible.¹⁵ The TNAA is preferred over the time to the next available appointment as it is less subject to random variations such as appointment cancellations.¹⁵ Traditionally, the TNAA is measured manually by calculating the time to the TNAA from a fixed point – the standard time in the literature is midday. In this study the TNAA was calculated in an automated fashion by using the third party application, DrInfo.

In DrInfo a query was created that remotely interrogated the electronic appointment books of each Northland general practice. This query was run weekly for five weeks, at midday on a different day of the each week. The query generated a list of doctors working at study practices and their associated TNAA. Some communication with practice managers was required to ensure that all unavailable appointments were blocked out during the query times, for accuracy. Practice managers also provided the full time equivalency (FTE) for each GP working in their practice and details about locums covering annual leave during the study period.

As part of the audit, a research assistant also phoned practices on each study day, asking 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, eg an available routine appointment, reserved urgent appointment, double booked appointment, a walk-in clinic, lunch break, etc.

For reporting purposes practices were assigned to a peer group based on the average deprivation of each practice's enrolled population. Practices were grouped into deprivation quartiles from least deprived to most deprived and assigned to either rural or urban groups with urban practices

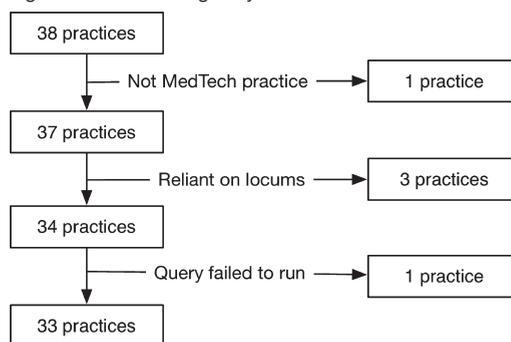
defined as those located within metropolitan Whangarei.

All 38 general practices in Northland DHB were eligible to participate in the project. Exclusion criteria were practices that did not have Med-Tech32 as their patient management system and practices without a stable permanent general practice workforce (ie practices that were solely or mostly reliant on short-term locums). Peripheral clinics were aggregated into their parent clinics. Figure 1 indicates the practice numbers that were included in the final audit.

For each clinic a weighted average of TNAA was calculated as described by Oldham.¹⁵ The weighted average factored FTE rates of GPs and removed weekends. A multiple linear regression analysis was carried out in Stata version 11. The outcome variable was the TNAA and exposure variables were the number of patients per GP FTE, number of walk-in clinics, rurality, and deprivation. The latter two variables were categorical.

All general practices consented to be included in the audit. At the project's conclusion general practices were provided with a copy of their clinic's results as an A2 sized 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 GPs could use to reflect on the results and receive reaccreditation (MOPS) points. CME (Continuing Medical Education) sessions to discuss the process and findings were also scheduled.

Figure 1. Practice eligibility



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

Results

The TNAA per practice is shown in Table 1. The mean TNAA in Northland, for the period of the audit, was 2.5 days (95% confidence interval 2.1–2.8).

When deprivation, rurality, number of patients per GP FTE and number of walk-in clinics were adjusted for, a positive correlation between TNAA and the number of walk-in clinics ($P = 0.003$) was found. In addition, a small negative correlation was seen between TNAA and practices classified as 'less' deprived ($P = 0.025$) (see Figure 2).

Discussion

This project aimed to determine whether there is pressure on general practice appointments in Northland. The average TNAA of 2.5 days indicates that some 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 are 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.

Areas with poor self-reported primary care availability have higher ambulatory sensitive hospitalisation rates,²⁶ but it is unknown whether poor 'routine' availability of primary care is associated with higher ambulatory sensitive hospitalisation rates. We recommend that research on ambulatory sensitive hospitalisation rates include calculations on TNAA to determine relationships between the measures.

Routine appointment availability was more constrained in practices operating walk-in clinics. It is unknown whether walk-in clinics cause constrained appointment availability or

arise as a response to constrained appointment availability. There is some evidence suggesting that patients attend walk-in clinics because of both unavailability of urgent appointments on the day and because they are convenient.²⁷ As walk-in clinics increase in popularity more pressure will be placed on practices to staff them, which will in turn reduce the resourcing of routine appointments.

Unknown from this study, is whether patients with urgent needs face difficulty getting appointments. The TNAA study 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

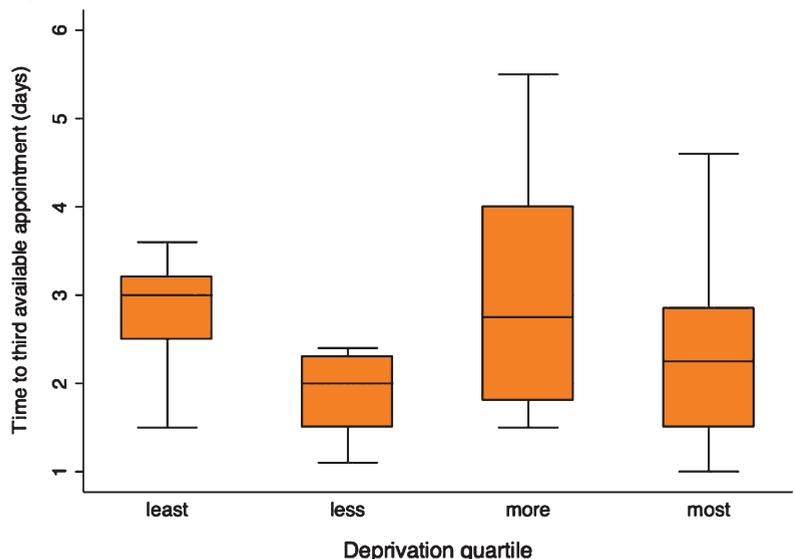
Table 1. Summary of practice data

Deprivation	N practices	Rural (%)	Patients/GP FTE mean (95% CI)	N walk-in clinics*	TNAA mean days (95% CI)
Least deprived	10	50%	1655 (1360, 1950)	1	2.8 (2.4, 3.2)
Less deprived	9	33%	1582 (1335, 1829)	0	1.9 (1.7, 2.2)
More deprived	6	33%	1649 (1352, 1947)	4	3.1 (1.8, 4.3)
Most deprived	8	100%	1510 (1334, 1686)	3	2.4 (1.6, 3.1)

* The number of days a walk-in clinic was offered in response to the telephone request for an urgent appointment over the five study days.

CI, Confidence interval.

Figure 2. TNAA per deprivation



as the TNAA metric measures average 'routine availability'. We also do not know if there is variation in TNAA between days of the week and consequently whether appointment constraints differ depending on the day of the week. Practices accommodate patients with more urgent needs by carving out appointments, scheduling appointments during 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 obtaining a same day appointment.²⁸ Other studies have also suggested that patients may have poor experiences with receptionists that lead to barriers in accessing care.^{29,30} Additionally, Māori may experience judgment by receptionists.¹⁰ Therefore, the TNAA needs to be interpreted in the context of clinic characteristics. A high TNAA may not necessarily indicate difficulty in gaining urgent care, but it may, depending on context, indicate barriers to accessing primary care for some groups of people.

The TNAA metric indicates that there may be pressure on appointments in Northland. Our use of the TNAA to understand appointment availability across general practices in a DHB region is unique in New Zealand. To our knowledge, no other research nationally or internationally has used an entirely automated process to measure 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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