Primary Care 24-hour Ambulatory Blood Pressure (ABP) Audit

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Introduction

Cardiovascular disease continues to be the leading cause of death in New Zealand. Taranaki has a higher than national average rate of cardiovascular disease, and cardiovascular disease is the leading cause of patients admitted through ED.

Accurate blood pressure diagnosis and management is a critical part of both prevention and treatment for cardiovascular disease. Ambulatory Blood Pressure monitoring is a far more informative investigation of a patient's risk of death, including cardiovascular death, compared to Clinic Blood Pressure Monitoring. (Staplin, N., et al, 2023) Ambulatory Blood Pressure Monitoring also reduces misdiagnosis of hypertension and is a more cost-effective tool in primary care. (Lovibond, K., et al. 2011)

In 2021, Fast Pace Solutions was successful in obtaining a Ministry of Health Telehealth Initiative funding to provide diagnostic testing directly to Primary Care. This led to high level diagnostic equipment being placed or made available at Opunake Medical Centre.

Ōpunake Medical Centre is Rural General Practice located in Ōpunake, 50 minutes south of New Plymouth. The practice has 3950 enrolled patients. Ōpunake Medical Centre is a Very Low Cost Access practice, which reflects the high need and complexity of its patients.

There are many barriers to the patients of Ōpunake having access to Ambulatory Blood Pressure Monitoring. Through the public health system, they need to travel 4 hours total over 2 days with a significant wait time to have the testing done. Privately, the testing is more timely but still requires the same travel time and with the added cost of the test.

Aim

This pilot was run to look at the outcomes when pre-emptive, high quality diagnostic testing was made readily available to a rural community.

Hypothesis

The hypothesis was that this will lead to more accurate diagnosis and ongoing management of Hypertension in a rural community. It will also prevent misdiagnosis of Hypertension, and therefore inappropriate interventions, as well as improved equity of access in this community.

Method

The patients were enrolled in Ōpunake Medical Centre. They required a GP referral with an appropriate indication which included an abnormal BP measurement, known hypertension with monitoring required, or a chronic medical condition at risk of, or risk increased by Hypertension. The patients need to identify as Māori or Pacific in ethnicity, and/or live in an area with a deprivation index of >6. Patients who could not tolerate the monitor were excluded.

Fast Pace Solutions supplied the training to the Ōpunake Healthcare team around fitting the device and educating the patients, and also the equipment which was placed in the Ōpunake Medical Centre. The Ōpunake Medical Centre rooms were used for patient contact. The patients wore the device for 24 hours and then returned this to the medical centre. The information from the device was then downloaded and sent to Fast Pace Solutions for reporting via a secure Cloud portal, this was reviewed by a cardiologist or Specialist Physician with recommendations for ongoing treatment/management. The information was sent back to the referring GP who continued the ongoing management.

Background information was retrieved from the patient's file on Medtech through the Ōpunake Medical Centre. The information regarding the Ambulatory Blood Pressure Monitors was sourced through Fast Pace Solutions.

Findings

The pilot started in September 2021 until March 2023. The pilot included 57 patients, with 31 Males and 26 Females. There were 14 patients who identified as Māori and 40 as New Zealand European. Almost 50% of patients were aged between 50-69 years. All patients were in a Deprivation index area >6.

Gender	Male	31 (54%)
	Female	26 (46%)
	Total	57 (100%)
Age	20 - 29 yrs	5 (9%)
	30 - 39 yrs	7 (12%)
	40 - 49 yrs	6 (11%)
	50 - 59 yrs	14 (25%)
	60 - 69 yrs	13 (23%)
	70 - 79 yrs	10 (17%)
	80 - 89 yrs	2 (3%)
	Total	57 (100%)
Ethnicity	Maori	14 (25%)
	NZ European	40 (70%)
	Samoan	1 (2%)
	Other European	0 (0%)
	Other Asian	2 (3%)
	Total	57 (100%)

Table 1. Patient Demographics

As outlined in Table 2, of the 57 ABPs completed, 27 patients were found to be hypertensive (47%) and 9 of those were new diagnoses of hypertension (16% of total ABPs, 33% of those found to be hypertensive). Of the 57 patients in this study, 36% had medication changes made and 35% avoided needing medication due to correct diagnosis of normotension.

Indication	High BP in Clinic	21 (37%)
	Known HTN - monitoring	30 (53%)
	Chronic conditions	6 (10%)
	Total	57 (100%)
Outcome of ABP	Hypertensive	27 (47%)
	Normotensive	29 (51%)
	Hypotensive	1 (2%)
	Total	57 (100%)
New Diagnosis of HTN made	Yes	9 (16%)
	No	48 (84%)
	Total	57 (100%)
Medication altered	Yes	21 (37%)
	No	36 (63%)
	Total	57 (100%)
Medication avoided	Yes	20 (35%)
	No	37 (65%)
	Total	57 (100%)

Table 2. Indications and outcomes of Ambulatory Blood Pressures.

Conclusions

This audit found that the introduction of Ambulatory Blood Pressure Monitors provided a more accurate diagnosis of hypertension with 9 new diagnoses of HTN made, and more significantly, avoided 19 patients starting medications incorrectly. The ABPs were completed in a timely manner with no travel requirement for the patient, greatly reducing the barriers to an accurate diagnosis.

During the pilot the Ambulatory Blood Pressures were carried out within the medical facility removing the requirement to travel to the Secondary Care Facility. Normally referral to the Secondary Service would require 2 return trips(49 km one way) which saved over 11,172 kilometres of travel which equates to 196 minutes (3 hours 27 minutes) of travel time per patient ; a total travel time of 11,172 minutes (186.2 hours).

Using a calculation for a medium petrol vehicle (1.4L – 2.0L) This would be expected to save in excess of 2098.66 $kgCO_2e$ *

This excludes any travel for Specialist follow up.

General Practitioner Comment; *" great to be funded - means you can keep the clinical inertia of the high BP reading in clinic etc going without the barriers of time delay/travel publicly. I'm not sure I've ever referred a patient for ABP privately*. "

References

A. Staplin, N et al. (2023). Relationship between clinic and ambulatory blood pressure and mortality: an observational cohort study in 59124 patients. *Lancet,* 401, 2041-50.
B. Lovibond, K., et al. (2011) Cost-effectiveness of options for the diagnosis of high blood pressure in primary care: a modelling study. *Lancet*, 378(9798), 1219-1230.
C. https://blocicarbon.com/vehicle-calculator/