



# Clinical pharmacist facilitators in primary care: a descriptive study of their roles and services provided in general practices of southern New Zealand

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## ABSTRACT

**INTRODUCTION:** Internationally, the inclusion of pharmacists into general practice as clinical pharmacy facilitators has improved patient outcomes. However, clinical pharmacists are relatively new to southern New Zealand general practices and their range of services has not been studied.

**AIMS:** To describe the implementation of clinical pharmacist services in general practices in the Southern region; to examine the tasks conducted by clinical pharmacy facilitators; and to determine the characteristics of patients who access this service.

**METHODS:** The establishment and development of the clinical pharmacy facilitator role was determined by documentation held within the local Primary Health Organisation. The activities performed by clinical pharmacy facilitators were collected from patient medical records for the period 31 March 2015 to 31 March 2018. To describe the characteristics of patients receiving these services, a retrospective case note review of patients seen by the facilitators was conducted.

**RESULTS:** The clinical pharmacy facilitator role was initiated with three pharmacists in three geographical locations across the region. Within 18 months, the number of facilitators was increased to eight. As a result of collaboration with the general practice team, 42% of referrals came from general practitioners directly. Overall, 2621 medicine-related problems were identified in 2195 patients. Dosage adjustment was the most common recommendation made by pharmacy facilitators. They consulted mostly older patients and patients taking five or more medicines.

**DISCUSSION:** With effective collaboration, clinical pharmacy facilitators can play a key role in optimisation of medicines therapy.

**KEYWORDS:** Pharmacists; primary health care; general practice; medication therapy management; health services (MeSH terms).

## Introduction

The integration of clinical pharmacists into primary care is a global trend.<sup>1,2</sup> This model of collaborative

care is growing rapidly due to the evidence that collaborative practices where patient care is shared by several health professionals may enhance patient

outcomes as well as clinical practice.<sup>3</sup> Including pharmacists in general practice teams, alongside prescribers, results in improvements in patient outcomes, reductions in preventable harm, health-care system savings and improvements in the prescribing practice of general practitioners (GPs).<sup>2,4–7</sup> Particular benefits have been seen for patients with chronic conditions.<sup>2,8</sup>

One measure of pharmacist impact has been reduction in ‘drug-related problems’. Although many research reports still use this term, we use ‘medicine-related problems’ in this paper to reflect the recent preference in wording.

A substantial Canadian demonstration project, the Integrating Family Medicine and Pharmacy to Advance Primary Care Therapeutics (IMPACT) study (2004) found that pharmacists in primary care can identify and resolve medicine-related problems, optimise the appropriateness of therapy and enhance the effective use of medicines.<sup>9</sup> This study led to the integration of pharmacists into family practices across Canada.<sup>10–12</sup> Research in Australia has demonstrated the broad range of activities performed by pharmacists in general practice and shown effectiveness in resolving medicine-related problems and improving adherence.<sup>13–16</sup> In the United States, patient-centred medical home models have been established to provide comprehensive and coordinated primary care with integrated health care teams, including pharmacists.<sup>17</sup> In 2015, with the identification of benefits to both patients and practices by including pharmacists in primary care teams<sup>5</sup> and to counter a GP workload crisis,<sup>18</sup> England’s National Health Service initiated the addition of pharmacists in general practice by recruiting 490 clinical pharmacists working across 650 GP practices. There are plans to add an extra 1500 clinical pharmacists to work in 3200 general practices by 2020–21.<sup>19</sup>

New Zealand (NZ) has also been an early adopter of advanced services provided by pharmacists, in collaboration with GPs aiming to use pharmacists’ medication-specific knowledge to improve patient outcomes, with a focus on medication reviews by community pharmacists.<sup>20,21</sup> Medicine use review services in NZ have been found effective in improving the appropriateness of therapy,

## WHAT GAP THIS FILLS

**What is already known:** Medication use review services provided by community pharmacists in New Zealand improve patients’ medication knowledge and adherence to therapy. Collaborative practice settings with multidisciplinary teams can enhance patient care.

**What this study adds:** An understanding of the development of the clinical pharmacist facilitators’ role in general practice in southern New Zealand. This study also provides a description of the range of services provided by clinical pharmacists in general practices.

patients’ adherence to medicines and identifying potential medicine-related problems.<sup>4,20,21</sup> Medication reviews conducted in primary care allow for better access to patient medical records and enhanced collaboration.<sup>20,22</sup> GPs in NZ have positive attitudes towards working with pharmacists on medication management and their co-location in primary care.<sup>23</sup>

The role of Clinical Pharmacist Facilitators (CPFs) is to carry out individual patient clinical medicine reviews and clinical audits (medication utilisation evaluations) around particular pharmaceuticals, classes of pharmaceuticals or laboratory tests where use has been shown to be inappropriate or less than optimal; implement best practice guidelines; and provide evidence-based information to primary care clinicians. This includes the objective assessment of a medicine’s use in therapy, assisting with queries about individual patients or researching wider topics. The most substantial level of review is comprehensive medicines management, which is a comprehensive clinical assessment of the safety and efficacy of medication treatment against therapeutic goals and in accordance with applicable guidelines and best practice.<sup>24</sup>

In NZ, the implementation of CPF services has been driven at a regional and local level (at District Health Board (DHB) level), rather than nationally. NZ has 20 DHBs covering discrete geographical areas. Limited NZ evidence exists as to the uptake of these roles and the level of service provision. Two surveys identified that the Southern DHB is among several regions that have progressed the furthest with implementation.<sup>25,26</sup> The WellSouth Primary Health Network is the primary health organisation

responsible for primary care in the Southern DHB and is hosting this research to advance understanding of the evolution of the CPF role and provide details of CPF services that can inform wider uptake.

The aim of this paper is to describe the implementation of CPF services in general practices in the Southern DHB; examine the tasks conducted by CPFs; and to determine the characteristics of patients who access this service.

## Methods

### Study design and setting

The Southern DHB, through the WellSouth Primary Health Network, provides primary care to a population of 319,200 people scattered over a geographic area of 62,356 km<sup>2</sup>. In 2015, WellSouth Primary Health Network established a CPF role to provide clinical pharmacy services in primary care practices across the region. Pharmacists with  $\geq 5$  years post registration experience or with a postgraduate diploma in clinical pharmacy were recruited for this role. Initially, three clinical pharmacists were employed for a total full-time equivalent (FTE) of 2.0 and were located in three geographical locations within the DHB.

### Data collection

The data were collected retrospectively from the initiation date of the CPF role on 31 March 2015 to 31 March 2018 (3 years).

#### *Part 1. Role implementation*

To describe the implementation of the CPF role in general practice, records were obtained from the WellSouth Primary Health Network regarding documented CPF employment, and the number and times that CPFs were available to general practice. Initially, general practices were chosen for this service by expressing an interest in taking part; then, priority was given to practices with the most high-needs patients enrolled in the practice, such as patients aged  $\geq 65$  years, Māori and Pacific Islands patients and high-deprivation patients. Reports prepared by CPFs every 3 months were scrutinised to understand the progression of services at

different practices. Summary reports were perused to comprehend timeframe of the establishment of services at individual practices over the 3-year period.

#### *Part 2. CPF services*

The clinical records kept by all CPFs over the time period were collated to determine the number and range of tasks and activities performed by the CPFs. All activities performed by the CPFs were recorded and linked to patient medical records in the general practice electronic patient management system (Medtech software, Medtech Global Limited, Auckland, New Zealand). Data extraction was conducted using a Medtech 'query builder' function, and queries were run to extract the different range of CPF services provided. The 'query builder' function uses specific codes for each category and service; these codes were used to extract the required information.

#### *Part 3. Patient characteristics*

The Medtech 'query builder' function was also used to determine the characteristics and conditions of patients who were referred to CPFs. Using specific codes, information was extracted regarding age, gender, ethnicity and number of medicines being taken.

### Data analysis

With fixed timelines, the data were extracted from records of CPFs' involvement with patients using the 'query builder' function, with specific codes for each category: sources of referrals; types of services; and recommendations. All discrete data were compiled into the respective categories. CPF recommendations were extracted after reviewing the medicine therapy. Medicine-related problems were identified and subsequent recommendations from CPFs were collated. These included therapy optimisation, deprescribing, drug initiation, switching to another medicine and dose adjustments. The rationale for each recommendation was also extracted where documented. The data were analysed to determine the number of patients who had polypharmacy, the underlying clinical conditions of the patients and the referral pathway to the CPF.

## Ethics

Ethics approval was obtained from the Human Research Ethics Committee, University of Otago (reference number HD17/026).

## Results

### Part 1. Role implementation

CPFs initiated services consecutively at different general practices across the region, and by the end of the first year, the CPFs were working with 15 practices. By October 2016, eight pharmacists (5.2 FTE) were employed and actively worked with a total of 20 of the 79 practices in the region. Depending on the practice size and number of enrolled patients, the CPFs had rotations into each practice that ranged from 2 days per week to once a month.

CPF FTE varied through the study time period. It was first proposed that there should be 15 CPF FTEs for the region, with initial recruitment of six FTE pharmacists over 3 years. However, recruitment of CPFs was challenging because of the need to employ pharmacists with an advanced skillset to provide adequate coverage of primary care practice. At the end of the study period, eight clinical pharmacists were working at 5.9 FTE in 26 general practices across the region.

### Part 2. CPF services

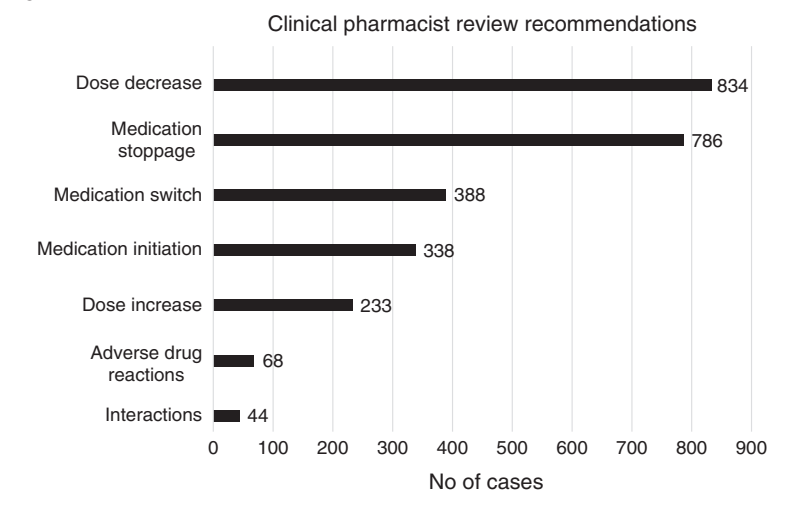
CPFs performed both pro-active and reactive activities. They received referrals from other health-care team members and also initiated consultations from quality-improvement audit activities. Over the study period, 826 of 1980 total referrals (41.7%) came from the GP team, 522 (26.4%) came from age-related residential care facilities, 488 (24.6%) were identified from internal audit (CPFs identified patients with complex medical therapy) and the remaining 144 (7.3%) were from a combination of community pharmacists, hospital discharge teams and self-referral by patients.

CPFs provided a wide range of services (Table 1). The most common CPF service was comprehensive medication management.

Table 1. Range of Clinical Pharmacist Facilitator (CPF) services

Range of CPF services	Number of cases
Comprehensive medication management	1355
Patient education and adherence support	450
Drug information queries	203
Medication reconciliation	190
Advanced care planning	63
Medical aids	44
Smoking cessation support	21

Figure 1. Clinical Pharmacist review recommendations.



In total, 63 adverse drug reactions and 44 interactions were identified by CPFs, and seven adverse drug reactions were reported to the national reporting centre (Centre for Adverse Reactions Monitoring). CPFs conducted 257 home visits to patients and had 133 telephone conversations to counsel patients.

Overall, 2621 medicine-related problems were identified in 2195 patients. Of these problems, 70.8% were related to inappropriateness of therapy and 29.2% related to finding a potential drug omission. After conducting medication review, CPFs identified different medicine-related problems and reported these to the GP team along with their recommendations (Figure 1) to address these problems. Their rationale for the different CPF recommendations was also given (Table 2).

Table 2. Rationale for Clinical Pharmacist Facilitator (CPF) recommendations

	Reasons for recommending dosage adjustment (n)	Reasons for recommending medicine switch	Reasons for recommending medicine stoppage
Side-effects/adverse reactions/interactions/contraindications	492	74	273
No identified indication	75	–	273
Regimen simplification	128	41	141
Inappropriate dose	492	–	–
Dosage time optimisation	72	–	–
Duplication	–	–	99
Best practice guidelines	–	155	–

–, Not applicable.

Table 3. Patient demographics

Patients' characteristics	Number of patients
Age categories	2195
<40	83 (3.8)
41–60	201 (9.1)
61–80	788 (35.9)
>80	1123 (51.2)
Gender	1734
Male	690 (39.8)
Female	1044 (60.2)
Ethnicity	1671
European descent	1545 (92.4)
Māori	81 (4.8)
Samoan	11 (0.6)
Cook Island Māori	10 (0.6)
Chinese	10 (0.6)
Asian (except Chinese)	9 (0.5)
Fijian	5 (0.3)
Tongan	3 (0.2)
Patients by number of medications	1750
<5	212 (12.1)
5–7	375 (21.4)
8–10	566 (32.4)
>11	597(34.1)

Note: The above figures are based on the available data. Data are presented as *n* (%). Over the time period, some categories were added to the Clinical Pharmacist Facilitators data recording sheet, which had not previously been used in an internal attempt to be more specific regarding the tasks performed. This led to variation in total number of patients.

### Part 3. Patients' characteristics

Table 3 shows that 60% of the patients were female, 87.1% were aged >60 years and 87.9% of patients had polypharmacy treatment (five or more medications). More than one-third (34.1%) of patients were taking >10 drugs and 32.4% were taking 8–10 drugs in their regimen. European (92.4%) was the major ethnic group in patients who were seen by clinical pharmacy services. Māori patients comprised 4.8% of the total patients seen.

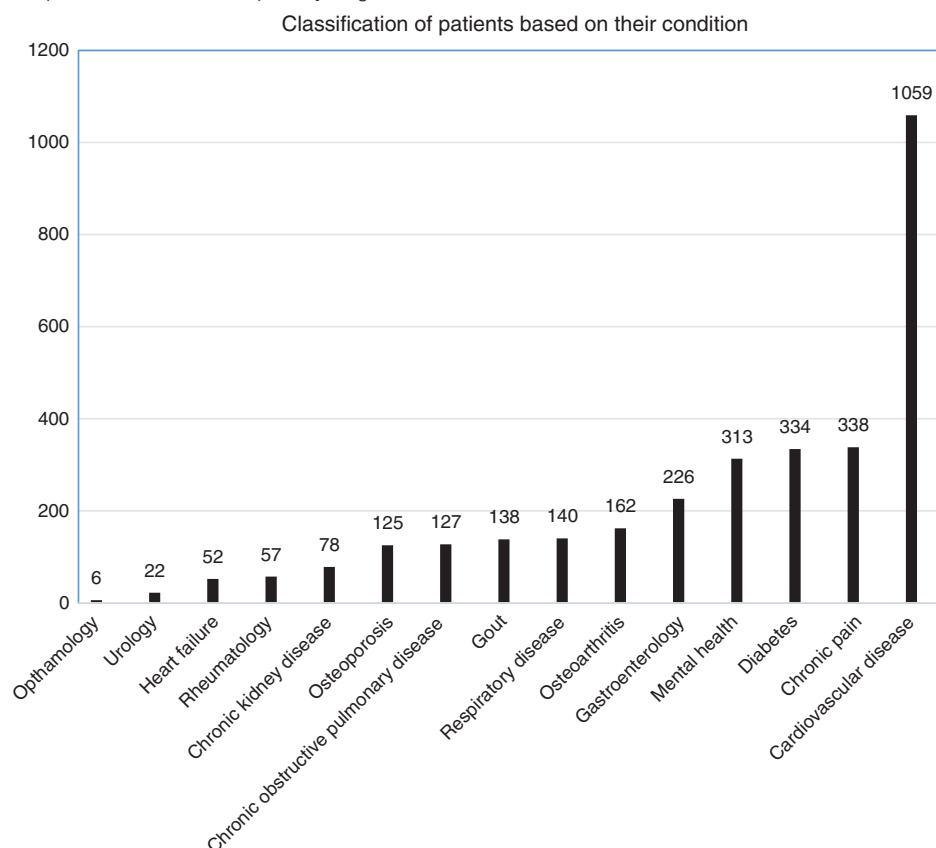
Figure 2 shows the classification of patients based on their primary long-term condition to which CPF services were addressed.

### Discussion

Our key findings are that the CPF role was initiated with three pharmacists in three different geographical locations across the region. Within 18 months, the number of CPFs was increased to eight. As a result of collaboration with the general practice team, 42% of referrals came from GPs directly. Overall, 2621 medicine-related problems were identified in 2195 patients.

Dosage adjustment was the most common recommendation made by CPFs. CPFs consulted mostly older patients and patients taking five or more medicines. CPFs received a significant proportion of referrals from rest homes where older patients with long-term conditions are predominant, and CPFs conducted medication reviews and educated patients on their medication therapy. The most

Figure 2. Classification of patients based on their primary long-term condition.



common conditions addressed by CPF services were cardiovascular disease, chronic pain, mental health and diabetes.

While most patients seen were of European ethnicity, only 4.8% of patients consulted were Māori, which is lower than the population ratio of 10% Māori in the Southern DHB. One reason for underserving the Māori population is that the median age of Māori in this region is 23.8 years, whereas the CPF services were more oriented to older patients.<sup>27</sup>

Polypharmacy has been a major concern in this particular region, compared to the rest of NZ,<sup>28</sup> and CPFs were focused on the care of patients with polypharmacy (87.9%). Their recommendations contributed to deprescribing and optimising drug therapy for the patients they saw. Identification of risk from side-effects, adverse drug reactions,

contraindications and inappropriate doses were the major problems reported by medication review, and recommendations were mostly aimed at improving the appropriateness of therapy.

Dose adjustment was the most common recommendation made by CPFs in this study, whereas in the previous studies in similar settings, initiation of new drugs was the major recommendation.<sup>16,29</sup> Building trust and relationships, and lack of orientation on the roles of the CPF are the challenges faced during initial integration into the primary care team. Evidence shows that a proactive approach is needed to overcome challenges and enhance collaboration to facilitate the process of integration.<sup>30–32</sup> A pilot study of similar services found that in the early phases of integration, the CPFs focused on administrative tasks, and that it took 6 months to shift their focus from administrative activities to clinical



review activities. Effective integration needs some time for trust to develop, roles to become clear and full engagement in quality improvement activities.<sup>33</sup>

The initial three CPFs were seen to add value, demonstrated by the increasing requests for their services from the study practices, and within 18 months of the service initiation, the number of CPFs was increased to eight. The CPFs' tasks depend on the combination of referrals received and their audits in the medical practice. This combination of proactive and reactive tasks means that they need to be flexible in the way they work and they need to be responsive to the needs of individual patients and practices.

The strength of this study is that the CPF services were reviewed in the real world without the involvement of researchers in their activities. A recent Australian study identified that pharmacists who were attached to a general practice spent a significant proportion of time conducting research-related work.<sup>33</sup> The 3 years of data on CPF activities gave sufficient information to understand how the CPF services were initiated, adapted and extended to different practices in the region. As this study is retrospective, it used data previously recorded by CPFs, which may lead to recording bias. However, the effect of this bias is expected to be minimal as the information was recorded for patient notes and it was not recorded to be part of the research. A potential limitation is that the data recording sheet for clinical pharmacy activities was updated as the service developed. However, as the recording tool became more detailed, it provided richer data of the tasks performed. The rate of implementing suggested activities was not recorded; only the recommendations made were reported.

CPFs have an important role in optimising drug therapy and improving patients' knowledge about their drug therapy. CPFs, as an integral part of general practice, can enhance the level of care received by patients. Further research should focus on clinical effectiveness and health outcomes of pharmacist services in primary care, and the study of interprofessional relationships between the CPF role and health-care team members.

## Conclusion

CPFs perform both pro-active (audits) and reactive (from referrals) reviews to enhance medication use. They work mainly with patients aged >65 years who have complex medication therapy. The tasks they perform are wide-ranging. Due to resource constraints and availability of CPFs in the region, not all practices have access to this support.

## Competing interests

The authors report no competing interests. The authors alone are responsible for the content and writing of this article.

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