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title **Integration of general practice pharmacists into primary healthcare settings for chronic disease management**

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Key messages

- Improving health outcomes for patients with chronic disease in primary healthcare settings is a challenge for the Australian healthcare system. Novel models of care are required to meet this challenge.
- General practice pharmacists (GPPs) are pharmacists who are integrated into primary healthcare teams to deliver clinical services to both patients and practitioners, including medication reviews, medication safety initiatives and education. Integration of GPPs into Australian primary healthcare services is in its infancy, and little data is available to understand the efficacy of this model of care in Australia.
- International evidence provides strong support that GPP integration into primary care improves quality use of medications, reduces preventable hospitalisations, improves health outcomes and chronic disease control, enhances patients' experience of their care and is widely accepted by general practitioners. Governments should support the uptake of similar models in Australia to improve care for patients with chronic disease and complex medication regimes.
- Primary Health Networks (PHNs) have conducted pilot programs of GPP integration into their general practices. Outcomes of these programs are promising, showing improved quality use of medications and prescribing practices, as well as improved patient satisfaction with their care. However, this data is limited. Further trials and data collection are required to better understand how this model of care would be implemented in Australian primary care settings.
- The following recommendations are made in order to utilise a GPP model of care in Australia to improve patient outcomes:
 1. A standard term for a general practice-based pharmacist is needed urgently and should be agreed upon by relevant stakeholders.
 2. A recognised position description framework and scope of practice for GPPs should be developed.
 3. Governments should support an integrated GPP model of care.
 4. Integrated GPP models should be underpinned by supportive policy frameworks and appropriate funding.
 5. Quality of care indicators should be consistently measured.
 6. Governments should support further integrated GPP trials and data collection.

Executive summary

Chronic disease management is a key responsibility for primary healthcare services in Australia, yet improving outcomes for patients with chronic disease is not always achieved. This is in part due to suboptimal prescribing practices, inadequate efforts to reduce medication-related harms and adverse drug events, and insufficient support for patients to optimise medication adherence. This is particularly significant in underserved populations, such as Aboriginal and Torres Strait Islander peoples and those living in rural and remote areas.

General practice pharmacists (GPPs) are pharmacists integrated into a primary care team who provide clinical services to improve quality use of medications for the practice population. Integration of GPPs within primary healthcare services is a model of care which could help address these gaps, yet GPPs currently have a very limited role in primary healthcare in Australia. Integration of GPPs should be more widely adopted across primary healthcare services. This model of care must be supported by national policy frameworks and appropriate funding structures, as well as a defined scope of practice for GPPs.

Where GPPs have been integrated into primary care services in Australia and internationally, improvements in patient care and quality use of medications have been made. However, patient health outcomes, as key indicators of health service effectiveness, are not well measured or monitored. Therefore, it is difficult to determine whether GPPs are making tangible differences to patient outcomes. A clearer understanding of the impact on patient outcomes is needed. This includes, but is not limited to, quality use of medications, markers of chronic disease control and patient-reported health outcomes.

Current data is insufficient to adequately understand the potential role of GPPs in improving medical management of chronic disease and health outcomes in the unique Australian healthcare context. Governments should support further data collection and research efforts trialling this model of care in Australian primary healthcare settings. Developing appropriate delivery and funding models of GPP integration in Aboriginal and Torres Strait Islander and rural and remote health services is also required to support the potential benefit of this service to underserved communities.

1. Primary healthcare services and chronic disease management

Primary healthcare services in Australia are at the forefront of chronic disease management. They represent the initial and often main form of contact for patients with the healthcare system. Primary healthcare providers, inclusive of general practitioners (GPs), nurses, allied health professionals and Aboriginal Health Workers, deliver services that are intended to empower patients to manage their chronic conditions in the community, avoid unnecessary hospitalisations, reduce healthcare expenditure and improve overall health and wellbeing (Department of Health 2018). This is a priority for Primary Health Networks (PHNs) across the states and territories (Department of Health 2018). Despite ongoing policy initiatives and significant government investment, recommended care and treatment outcomes for chronic disease are not always provided or achieved (Grattan Institute 2016). The reasons for this are complex, however suboptimal medication management within primary care settings is an important contributing factor (Laba et al. 2018).

The effective management of chronic disease is a significant responsibility and increasing challenge for the Australian healthcare system, especially in the context of an ageing population. Chronic disease is the leading cause of morbidity and mortality in Australia and accounts for 65% of the total disease burden (Australian Institute of Health and Welfare [AIHW] 2019). Almost one in two Australians (47%) have a chronic medical condition, and most (87%) are over the age of 65 (Australian Bureau of Statistics [ABS] 2018).¹ This is particularly problematic in underserved and vulnerable populations. Two thirds of Aboriginal and Torres Strait Islander peoples have a chronic disease. The Closing the Gap Report 2020 indicates that Indigenous Australians continue to have worse life expectancies than non-Indigenous Australians (Closing the Gap 2020)² and 80% of this mortality gap is due to chronic disease (AIHW 2011). Those living in rural and remote areas also experience poorer health outcomes, with lower life expectancies and a greater burden of disease than their metropolitan counterparts (AIHW 2019). These discrepancies are exacerbated by poorer access to and uptake of primary healthcare services.

1.1 *Optimal medication management is essential for chronic disease control*

In Australia, Quality Use of Medicines (QUM) implies safe and judicious use of medications and avoidance of misuse, overuse and underuse (Department of Health 2019), and is key for effective chronic disease management (Fernandez-Lazaro 2019). Medications are the most common form of treatment used in healthcare, and patients require more medications as they become older and their medical needs become more complex (Pharmaceutical Society of Australia [PSA] 2019).

¹ The most common chronic diseases in Australia are cardiovascular disease, diabetes, chronic obstructive pulmonary disease, cancer, arthritis, asthma, back problems and mental health disorders.

² The target to close the life expectancy gap within a generation (by 2031) is not on track. Life expectancy is 8.6 years and 7.8 years lower than non-Indigenous Australians for Indigenous males and females, respectively.

Medication-related problems are common³, especially during care transitions, and can be serious for patients who have multiple medications or chronic health conditions (Wheeler et al. 2018). Suboptimal prescribing practices, inadequate efforts to reduce medication-related harms and adverse drug events, and insufficient support to patients to optimise medication adherence hinders efforts to improve health outcomes.

Especially for patients with multimorbidity and/or polypharmacy, medication regimes can be unduly confusing, complex and costly, leading to treatment non-adherence in up to 50% of patients with chronic disease (Usherwood 2017). This directly impacts health outcomes, as well as increasing morbidity and mortality and health sector costs. For example, data shows that less than 30% of GP patients with hypertension have adequately controlled blood pressure and less than 20% of those with high cholesterol reach recommended cholesterol levels (Grattan Institute 2016). Medication-related problems cause 20-30% of hospitalisations for persons over 65 years and an estimated \$1.2 billion cost per year (Cutler et al. 2019). Importantly, 50% of medication-related harms are preventable (PSA 2019).

Even though progress has been made to improve primary care, health services continue to be fragmented, especially for patients with chronic disease and complex medication regimes (Primary Healthcare Advisory Group 2016). Medication management for patients with chronic disease requires ongoing and coordinated care, and traditional models of care based on episodic interactions with various healthcare providers may be inadequate to meet these needs (Grattan Institute 2016). Navigating multiple care providers, who are likely to be working across different parts of the health sectors and in different locations, can also be challenging for patients.

Monitoring and review of medications in primary care is an important step in minimising the risk of medication misadventure, which causes 230,000 hospitalisations per year (Australian Digital Health Agency 2018). Medication reviews conducted by pharmacists can identify problematic medications and reduce the number of prescribed medications (Zermansky et al. 2001). They can also reduce prescribing errors, inappropriate prescribing (overprescribing and underprescribing) and medication-related problems (Tan et al. 2014; Riordan et al. 2014).

1.2 Improving chronic disease management is a policy priority

Policies that champion integrated care for chronic disease are fundamental to improving healthcare access and patient outcomes, especially for underserved and vulnerable populations (Borgermans 2017). State government policy initiatives, such as the NSW Health Strategic Framework for Integrating Care, call for integrated value-based healthcare with a patient-centred approach to achieve better health outcomes for patients (NSW Ministry of Health 2018).

³ Australian research suggests that 10% of patients attending a GP appointment had experienced a medication-related problem in the prior six months, and that patients at risk of medication misadventure had on average 2.5-5 medication-related problems per person (Roughhead, Semple & Rosenfeld, 2013).

Nationally, Australia's Long Term National Health Plan announced in late 2019 emphasises the need for a proactive rather than reactive healthcare system, and highlights the opportunity to utilise the unique skill set of pharmacists in primary care. In particular, the Plan calls for greater support for the role of pharmacists in primary healthcare, as well as better use of pharmacists' scope of practice to be a focus of the 7th Community Pharmacy Agreement (to be released in 2020) (Department of Health 2019). The importance of 'integrated care and multi-disciplinary care within the primary care team, including Primary Health Network linkages, and pharmacists' scope of practice' has been recognised in discussions with multiple stakeholders regarding priorities of the new Agreement (Department of Health 2019). Innovative models of care, such as integrating pharmacists into primary healthcare teams, provides an opportunity for governments to utilise an existing workforce to improve outcomes for patients with chronic disease.

2 General practice pharmacists (GPPs) in primary care settings

2.1 *The role of the GPP in primary healthcare*

In Australia, pharmacists traditionally deliver services such as dispensing medications and providing clinical advice through community pharmacies that are independent from primary healthcare services. General practice pharmacists (GPPs)⁴ are pharmacists who are integrated into primary healthcare settings to 'deliver professional services...with a coordinated, collaborative and integrated approach with an overall goal to improve the quality use of medications of the practice population' (Freeman et al. 2014). This is distinct from a conventional community-based role, and has been increasingly recognised as a valuable model to provide effective primary care. Within an integrated healthcare team, GPPs deliver a number of services to both patients and other healthcare providers.

GPPs undertake medication reviews, deliver medical management services and promote medication safety initiatives. They can inform GPs about potential medication-related problems and improve health literacy to educate and empower patients to employ effective medication self-management (Freeman et al. 2016). Co-location of GPPs within general practice with access to the practice administrative services and patient records allows pharmacists and GPs to develop strong collaborative working relationships, and to conduct case conferences⁵ with the GP, pharmacist and patient simultaneously.

⁴ Multiple terms are used to describe this role, including general practice pharmacist, non-dispensing pharmacist, clinical pharmacist, practice pharmacist and general practice-based pharmacist. For the purpose of this review, the term general practice pharmacist will be used.

⁵ A case conference is a formal meeting between a patient and their healthcare providers to discuss, plan and agree upon the provision of health services for the patient.

Pharmacist-led medication reviews

A medication review is a consultation with a patient in which a health professional, usually a pharmacist, assesses the patient's current condition and medication regime. This allows for evaluation of treatment effectiveness, side effects, potentially harmful drug interactions and medication adherence, as well as an opportunity to discuss the patient's understanding of their medications and address concerns (Zermansky et al. 2001). A medication review can identify inappropriate prescribing and provide ways to improve prescribing quality. Medication reviews are beneficial for general practice patients, especially those who are elderly or have polypharmacy (Jokanovic et al. 2016).

Integrated GPPs are already commonplace in primary healthcare systems overseas, such as in the United States (US) and the United Kingdom (UK). Although this model of care has received widespread support from stakeholders in Australia, the adoption of integrated GPPs in Australian primary healthcare settings is in its infancy (Royal Australian College of General Practitioners [RACGP] 2019). Uptake of the integrated GPP model has been slow and there are no system-level policy or funding frameworks to support the practice (Benson et al. 2018).

Integration of pharmacists into primary healthcare settings – positions of Australian stakeholders

Australian Medical Association (AMA): General Practice Pharmacists – Improving Patient Care (2015)

In 2015, the AMA proposed a model of integrated non-dispensing pharmacists in general practice under a GP-led multidisciplinary team to improve patient care and reduce health system costs. The proposed pharmacist role focuses on medication management and additional activities responding to the needs of the practice and its patient population. The AMA proposed the Pharmacist in General Practice Incentive Program (PGPIP) as an adaptation of existing funding models to finance the scheme (Australian Medical Association [AMA] 2015).

Royal Australian College of General Practitioners (RACGP): General Practice Based Pharmacists – Position Statement (2019)

In a position statement released in 2019, the RACGP supported the inclusion of a GPP in a team-based model of care to reduce fragmentation of health service delivery, decrease preventable hospitalisations and improve patient care (RACGP 2019).

Pharmaceutical Society of Australia (PSA): Pharmacists in 2023 (2019)

This report outlines key actions the PSA believe are required to optimise the professional contribution of pharmacists to quality use of medications and patient care. Action 3, 'Embed pharmacists within healthcare teams to improve decision making for the safe and appropriate use of medicines,' outlines the need for pharmacists to be included in patient-centred collaborate care teams to improve medication management for Australians, especially vulnerable populations such as Aboriginal and Torres Strait Islander and rural and remote communities (PSA 2019).

The Pharmacy Guild of Australia: Position Statement – Pharmacists in General Practice (2019)

The Pharmacy Guild of Australia supports the integration of GPPs into primary teams in principle as a means to further professional collaboration between community pharmacy and general practice. To achieve this, the Guild has proposed an outreach model, in which a community pharmacist undertakes an additional non-dispensing role within a local general practice (The Pharmacy Guild of Australia 2019).

2.2 The role of GPPs in Australia needs to be clarified

In Australia, there is no standardised terminology used across the health sector to describe the role of a pharmacist who works within a care team based in general practice. While the definitions⁴ of the terms are roughly alike, inconsistent use in the literature complicates the understanding of the role and responsibilities of practice-based pharmacists. ‘Non-dispensing’ emphasises the clinical aspect of the role and the fact that a pharmacist is not able to dispense medications from the practice, and is a term gaining use in the international literature. However, this term is also avoided by some health services as pharmacists in some practices may be required to occasionally dispense due to geographical isolation and workforce challenges, for example in remote Aboriginal Community Controlled Health Organisations (ACCHOs).

Evidence suggests that there is confusion amongst both patients and providers about GPPs, and patients may struggle to see the benefits of a practice-based pharmacist if they are unfamiliar with their capacity in this role (Freeman 2012). Some patients perceive pharmacists as solely dispensers of medication and are unaware of their clinical skills such as resolving medication errors (Smith et al. 2014); or believe that the purpose of a medication review would be to discontinue medications against their will (Petty et al. 2003). Standardised terminology across Australia would allow for a clearer understanding of the role and the potential benefits a GPP can provide for both patients and practitioners.

While position descriptions for the GPP role have been proposed by some relevant professional organisations, such as the Pharmaceutical Society of Australia (PSA), there is no nationally recognised scope of practice for pharmacists who work within primary healthcare settings. A GPP as described by the PSA (2019), for example, performs key tasks such as:

- Patient-level activities (including medication reviews, medication counselling, patient education, preventative health activities including smoking cessation),
- Clinical governance activities (including leading medication safety initiatives and accreditation programs),
- Education and training for doctors, practice staff and health professional students, and
- Promotion of responsible and accountable practice (PSA 2019).

This emphasises the GPP’s ability to identify and resolve medication problems, provide preventative health initiatives, as well as case conference with the patient’s GP and regular community pharmacist to support collaborative care (PSA 2019). Based on international literature, seven subcategories of the GPP role have been proposed (Figure 1) (Benson et al. 2019).

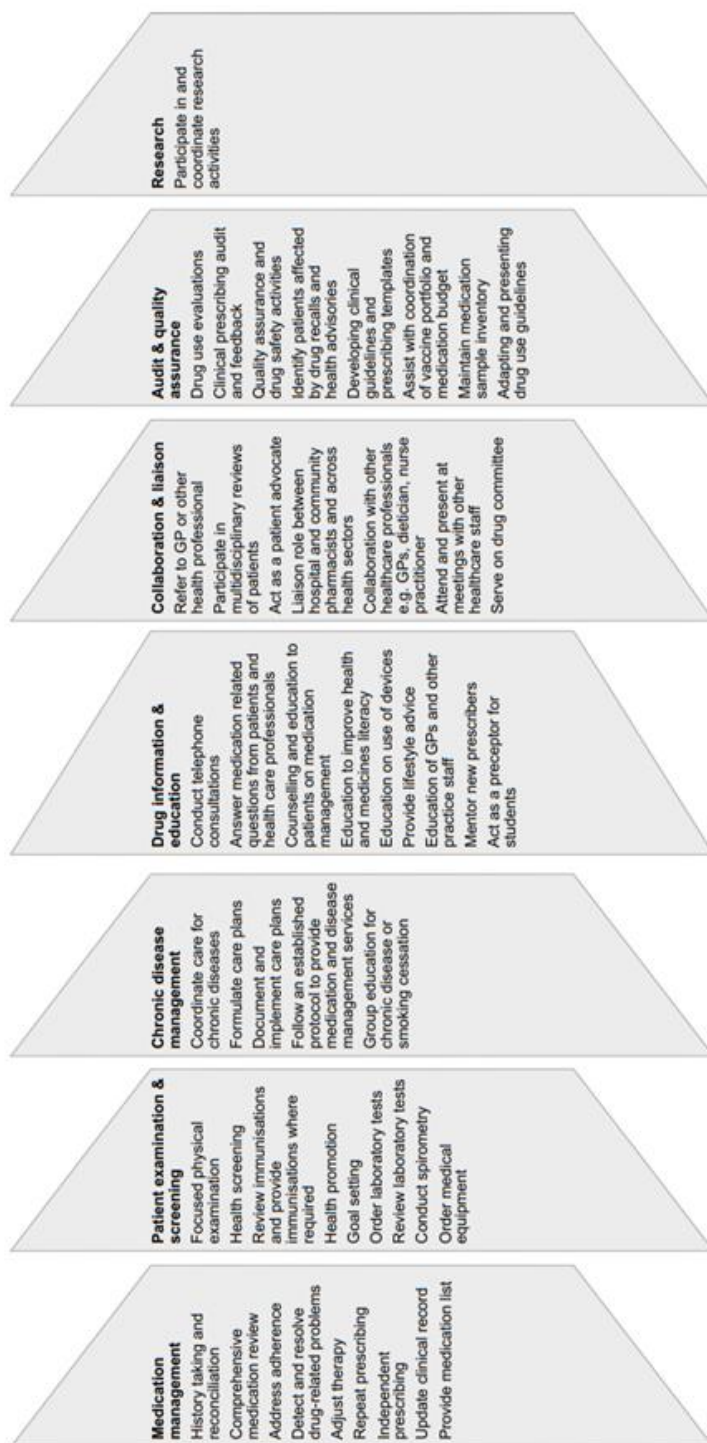


Figure 1: Activities of GPPs (Benson et al, 2019)

An Australian study underway at time of publication, the Integrating Pharmacists into Aboriginal Community Controlled Health Services (IPAC) Project, has also proposed similar categories of the GPP role. The 10 specified functions of the GPP fall into ‘patient-related’ and ‘patient level’ activities (Couzos et al. 2019).⁶

‘Repeat prescribing’ and ‘independent prescribing’ has been further outlined as part of the medication management role for GPPs. While this is within a pharmacist’s scope of practice in the US, the UK, Canada and New Zealand, it is not in Australia (Benson et al. 2019). This is a contentious issue, with competing interests among the Australian Medical Association (AMA), Royal Australian College of General Practitioners (RACGP), the PSA and the Pharmacy Guild of Australia. Pharmacists and other healthcare providers themselves are also divided on whether pharmacist prescribing constitutes best practice in the interest of their patients (Freeman 2012). While the Pharmacy Guild of Australia supports autonomous pharmacist prescribing (Pharmacy Guild of Australia 2019), the RACGP proposes that such a model would be inappropriate and unsustainable to meet the needs of Australian patients (RACGP 2019). The 2019 position statement from the Pharmacy Board of Australia indicated that allowing autonomous prescribing by pharmacists would not be pursued (Pharmacy Board of Australia 2019).

Other than general registration, there are currently no additional accreditation requirements for pharmacists to work within primary healthcare settings. Medicine management review accreditation is desirable, as is upwards of two years of pharmacist experience (PSA 2019). Formal training and recognition of skills is important to fill the gap between the skills and knowledge of generally registered pharmacists and those who choose to work in a general practice setting (Benson, Lucas & Williams 2020). The need for further education for pharmacists to enhance their ability to contribute to team-based care is becoming increasingly recognised (Benson, Lucas & Williams 2020).

For example, in 2020, the University of Technology Sydney Graduate School of Health launched a 12-month Graduate Certificate in Advanced Practice (General Practice Pharmacist) designed to enable registered pharmacists to gain skills in team-based care and medications management (University of Technology Sydney 2020).

The PSA has also developed an online module-based General Practice Pharmacist Foundation Training program designed to educate pharmacists who wish to work in a general practice setting (PSA 2020). Input from the government and the university sector could support the development of training programs for GPPs to formalise their knowledge and skills and to maximise the effectiveness of the integrated GPP workforce.

⁶ The 10 categories are: medication adherence and support, medication management review, use of the medication appropriateness index (MAI), team-based collaboration, preventive healthcare, education and training, provision of a medicines information service, stakeholder liaison, transitional care and undertaking drug utilisation reviews.

3 Integration of GPPs into primary care teams internationally

Internationally, GPPs are considered an integral member of collaborative primary care teams across several healthcare systems, including in the UK and the US (RACGP 2019). Improvements in the delivery of patient care has translated into policy initiatives to further the reach and scope of GPPs. For example, the National Health Service (NHS) in the UK has committed to funding a further 1500 GPPs in general practice over 2020-21 (in 2019 there were approximately 1000 GPPs employed in the UK) and plans to have a GPP in every primary care practice as an 'integral part of the core general practice model' by 2024 (NHS 2019). In Canada in 2018, the British Columbia Ministry of Health committed \$23 million over three years to include 50 GPPs in primary care teams with the aim to improve chronic disease management through optimising medication management and providing education (British Columbia News 2018). Investment by Australian governments in similar initiatives could provide high value care for patients with chronic disease.

3.1 GPPs improve quality use of medications

In the UK, a pilot program of GPPs undertaking medication reviews has shown that involving GPPs in patient care improved prescribing practices for common chronic conditions such as diabetes and asthma, as well as deprescribing of unnecessary medications (Icke 2018).

In the Netherlands, a 2019 study examining the impact of GPP-led medication reviews for elderly patients (over 65 years) with polypharmacy found on average five medication-related problems per patient, with pharmacist intervention resolving almost two-thirds (64%) of these issues (Hazen et al. 2019). The most common recommendation made by GPPs was deprescribing, of which almost 80% were accepted by treating GPs, reducing the medication burden and potentially harmful polypharmacy for elderly patients (Hazen et al. 2019).

A Canadian study examining GPP care for patients with complex needs found that the most frequently identified medication-related problems were medications indicated but not prescribed (19.3%) and medications used without indication (27.0%) (Samir Abdin et al. 2020).⁷ Most (87.7%) of the recommendations made by GPPs in relation to these problems were accepted by GPs, improving prescribing practices and patient care (Samir Abdin et al. 2020).

Similarly, a Slovenian study showed that GPP intervention reduced inappropriate prescribing. Medication errors can be identified and rectified by a GPP, reducing medication regime complexity and addressing medication adherence issues in patients with chronic disease (Stuhec et al. 2019).

⁷ 'Medications indicated but not prescribed' refers to medications that have a specific therapeutic benefit for a patient's condition but have not been prescribed; and 'medications used without indication' refers to medications that have been prescribed but do not have a specific therapeutic benefit for a patient's condition.

3.2 GPPs reduce preventable hospitalisations

Primary care-based pharmacy interventions can relieve pressure on hospitals and emergency departments. For example, in the UK, a statistically significant reduction in hospitalisations has been reported in patients whose anticoagulation medication was managed by GPPs (Hayhoe 2019). It was also found that GPP care significantly reduced emergency department visits by general practice patients (Hayhoe 2019). Another study has shown that integrated pharmacy care can reduce medication-related hospitalisations in high-risk patients who are over 65 years and are using five or more medications (Sloeserwij et al. 2019).

3.3 GPPs can improve health outcomes and chronic disease control

Integrated GPPs have been shown to improve chronic disease markers, such as blood pressure, HbA1c and cholesterol, which are essential to monitoring chronic disease control.⁸ These improvements have been made by reviewing the appropriateness of prescribed medications, providing education and adherence support and undertaking physical monitoring (for example measuring blood pressure) (Tan et al. 2014). A randomised trial conducted in the US found that a ‘collaborative pharmacist–physician team model’ in which a pharmacist provided additional management of patients with uncontrolled hypertension led to decreased blood pressure and patients achieving blood pressure goals (Hirsch et al. 2014). A Jordanian study found that patients who received GPP input had lower HbA1c measurements than those who did not (Hammad 2017). A number of systematic reviews have found similar positive results for reductions in blood pressure, HbA1c and cholesterol (Fish et al. 2002; Tan et al. 2013; Fazel et al. 2017; Hazen et al. 2018).

3.4 Patients experience better care with a GPP as part of their care team

The integration of a GPP in general practice can improve a patient’s experience of their treatment, and help them feel that health professionals are taking the time to provide more comprehensive and complete care. This is significant, as a strong therapeutic relationship between a patient and their healthcare provider is key to a patients’ willingness to follow medication advice (Kornhaber et al. 2016). A UK-based ‘patient-centred pharmacist-led polypharmacy medication review service’ found that 83% of patients found the service helpful, 80% felt that they better understood their medications and 94% had their medication concerns addressed (Snell et al. 2017). Feedback from patients emphasised that GPP consultations were valuable, and that they felt listened to and understood. Other UK studies have had similar findings, with one reporting that:

‘Patients provided the evaluation team with examples of the benefits of time spent with the pharmacist in the practice including greater understanding of their medicines, improved ability and willingness to take their medicines and a feeling of individual value’. (Icke, 2018).

⁸ High blood pressure (hypertension) and high cholesterol (hypercholesterolaemia) are important risk factors for ischaemic heart disease and stroke. HbA1c (glycosylated haemoglobin) is the gold standard for assessing glycaemic control in patients with diabetes.

A small study⁹ conducted in Australia investigated patients' views on integrating a pharmacist into their general practice clinic (Freeman et al. 2012). Patients saw pharmacist-led education services and medication reviews as a positive potential role. One respondent emphasised that patients can be apprehensive about their medication regime, and thorough explanation was reassuring (Freeman et al. 2012).

3.5 Evidence for GPP inclusion in primary care in Australia is missing

Integrated pharmacy care is in its infancy in Australia, and there are few studies that have explored this model of care in the Australian context. One study has explored a pharmaceutical care program in an outpatient high-risk diabetic clinic, not a general practice (Clifford et al. 2002). Another has shown that GPP recommendations are more readily accepted than recommendations made by pharmacists conducting home medications reviews, and that patients and practitioners are supportive of the GPP role (Freeman et al. 2012; Freeman, et al. 2013).

A number of Primary Health Networks (PHNs) in Australia have begun trialling the integration of an GPP within their general practice clinics, with early reports available or pilot programs currently underway. The experiences of PHNs provide a valuable insight into the ability and readiness of Australian primary healthcare services to develop state-based or national frameworks for GPP integration. Additionally, the IPAC project is trialling GPP integration within ACCHOs across Queensland, Victoria and the Northern Territory to assess whether GPP care will improve clinical outcomes, medication adherence, prescribing quality and healthcare service utilisation for Aboriginal and Torres Strait Islander patients (Couzos et al. 2019).

4 Primary Health Networks: successes and challenges of pilot programs

PHNs are tasked with improving coordination and reducing fragmentation of primary care based on the distinct needs of their local patient population, especially those with chronic disease or those at risk of poor health outcomes. Four PHNs (Capital Health Network, WentWest, COORDINARE, and WA Primary Health Alliance) have published reports of the results of their GPP pilot programs (see Figure 2 and Table 1), and one PHN (NT PHN) has released a framework to guide primary healthcare centres in integrating pharmacists into their services. The outcomes discussed in these reports are varied and detail is limited. Programs in another three PHNs (Country SA PHN, North West Melbourne PHN and Brisbane South/Brisbane North PHNs) are currently underway and, as of publication, results are not yet available.

⁹ 18 Healthcare consumers were included in the study. They ranged from 76-85 years of age and were predominately female (87%).

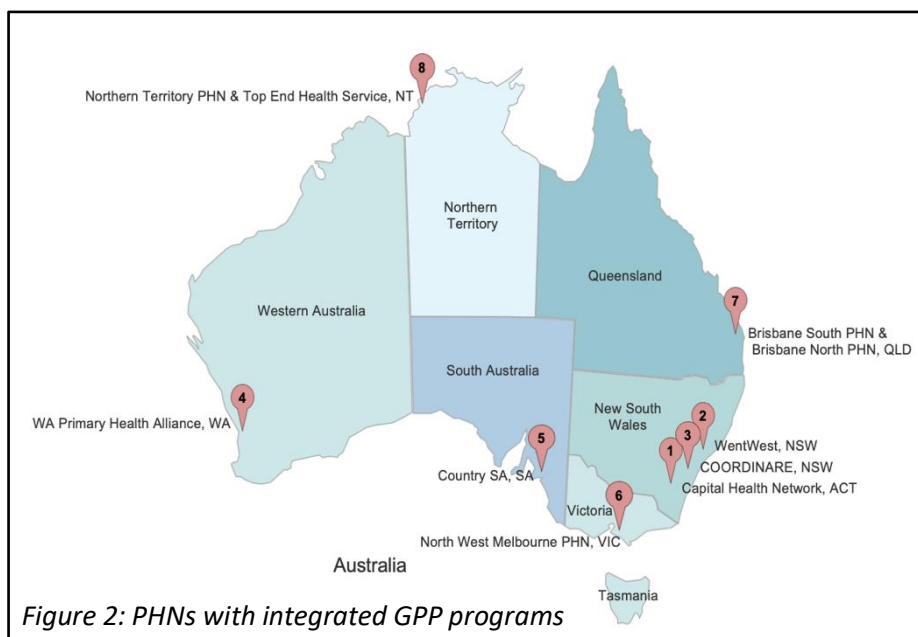


Table 1: Outcomes of PHN integrated GPP programs

PHN	Program	Date	Outcomes
Capital Health Network	GPPs in three GP practices in the ACT	2016-2018	Improved chronic disease and medication management Part-time GPP employed
WentWest	General Practice Pharmacist Project in NSW	2016-2017	Deprescribing and reduced medication burden Resolution of drug related problems
COORDINARE	Pharmacists in General Practice Project in NSW	2018	Identification of drug interactions Improved patient satisfaction with care Support for four practices to employ a GPP
WA Primary Health Alliance	GPPs in six GP practices in WA	2017-2019	Enhanced workforce capacity Improved patient care Continued employment of three GPPs

4.1 Capital Health Network, ACT

Capital Health Network, which services the ACT, completed a pilot study from 2016-18 across three general practices. During the two-year period each practice employed a part-time pharmacist for 15.2-16 hours per week. Their daily activities were determined by the local needs of the clinic and their professional skills, but were predominately conducting medication reviews and clinical audits, providing education to staff and patients, deprescribing, transition of care medication reconciliation (for example on hospital discharge) and providing advice to patients about asthma care and smoking cessation (Deeks et al. 2018). Two-thirds of the pharmacists' time was spent undertaking clinical tasks.

Overall, the pilot program found that GPPs positively impacted patient care. All patients and healthcare workers surveyed supported ongoing pharmacist employment. Over time, collaboration with practice GPs increased as pharmacists became more integrated and their particular role became clearer. GPs reported satisfaction with medication management provided by the GPPs. There was some improvement in disease management.¹⁰

Results also suggest that part-time GPPs can provide significant cost and time savings to the practice (Capital Health Network [CHN], 2019).¹¹ One GP involved in the pilot has found GPP involvement has significantly benefited her patients:

‘Our pharmacist...has been conducting clinical audits for patients with conditions such as diabetes, arthritis, Crohn’s disease and hypertension. His assistance in this area is unlimited and his advice has resulted in improved medication management. Our patients really like seeing (the pharmacist) as he provides them with extra time, value and ultimately improved patient care’. (CHN 2019).

This study did not collect patient-reported measures. Although outcomes suggest that patients supported the GPP role, it is difficult to determine whether GPP involvement has a measurable impact on patients’ experience of their care. Since completion of the pilot, two of the participating general practices have continued to employ a part-time GPP, and CHN has provided support to a further four general practices to employ a part-time pharmacist (CHN 2019).

4.2 *WentWest, NSW*

The 2016-17 ‘General Practice Pharmacist Project’ involved the integration of six pharmacists across 15 general practices with a target population of patients with multiple comorbidities and complex medication regimes. Patients were identified as likely to benefit from GPP consultation if they met one of 10 patient selection criteria,¹² and were recruited through one of four referral pathways:

- Identification through a clinical audit tool,
- Referral by a practice GP to the pharmacist,
- Identification by the pharmacist and booked for consultation, or
- Requested by the patient themselves (Benson et al 2018).

¹⁰ Six patients improved their Asthma Control Tests following pharmacist intervention; 40% of patients who received pharmacist smoking cessation counselling reduced the amount they smoked.

¹¹ A part-time GPP can save a GP four hours per week. One pharmacist conducted a clinical audit which led to an estimated \$125,700 healthcare system cost saving over three years (CHN, 2019).

¹² The patient selection criteria were: polypharmacy, diabetes, suspected adverse drug reaction, adherence issues, asthma/COPD, pain management, recent hospital discharge, patient request, hypertension management and inadequate response to therapy.

One pharmacist was employed full-time and the other three part-time, and each visited multiple practices throughout the week. Pharmacist activities mainly consisted of medication reviews, medication reconciliation, patient education, adherence counselling and lifestyle advice. The primary outcome measure from this pilot program was the impact of medication review on the detection and resolution of drug related problems, including inappropriate prescribing and adverse drug reactions.

Patients involved in the program had on average over five comorbidities and took over nine prescribed medications, and the majority (94%) were found to have at least one drug related problem. 70% of the medication recommendations made by GPPs were accepted and actioned by the patient's treating GP (Benson et al. 2018). Half of these drug related problems were overprescribing and use without indication. This outcome supports the GPP's ability to support deprescribing and a reduction in medication burden for patients with chronic disease, as well as identifying and resolving other drug related problems.

4.3 COORINDARE, South Eastern NSW

The 2018 'Pharmacists in General Practice' pilot program funded by COORDINARE saw one pharmacist employed over 26 weeks as part of the care team at a general practice in Wollongong (Market Street Medical Practice). The pharmacist predominately conducted medication reviews and provided advice to patients, particularly with older patients and those at risk of medical misadventure.

Reported outcomes suggested that an integrated pharmacist improved patient care by providing lifestyle counselling and medication assistance. Potential drug interactions were also identified in 96% of reviewed patients. Feedback from one of the practice GPs indicated that GPPs can improve care for their elderly patients with polypharmacy:

'Having pharmacist involvement improved patient outcomes at every level, and from the practice's perspective, it led to improved patient satisfaction. Patients feel like they are having personalised medicine, and really being cared for'. (COORDINARE 2018).

As a result, four practices in the area¹³ will be supported to employ a practice pharmacist to improve quality use of medications, reduce hospitalisations and improve patient outcomes (Haggan 2019).

4.4 WA Primary Health Alliance, WA

From 2017-19 pharmacists were integrated into six general practices in WA, consulting with 1,119 patients. Reported outcomes include enhanced workforce capacity, improved chronic disease management and health outcomes, and more efficient and effective care. Three of the six participating general practice clinics have continued employment of an GPP after completion of the program (WA Primary Health Alliance 2019).

¹³ Main Street Medical Centre, Wollongong; Queanbeyan GP Super Clinic, Queanbeyan; Queen Street Medical Centre, Moruya; Queen Street Medical Centre, Broulee.

4.5 Country SA, SA

The Country SA PHN 'PHN Core and Flexible Funding Activity Work Plan 2019-2021' outlines a 'non-dispensing pharmacist in general practice program' across the Far West, Barossa and South East with a focus on reducing medication-related hospitalisations, and improving medication use, adherence and reconciliation, medical record accuracy and patient outcomes (Country SA PHN 2019). Further funding is planned to extend the program to three additional general practices in the region. Early feedback has suggested contributions of pharmacists in preventative health initiatives, medication reviews and patient education (PSA 2020).

4.6 North West Melbourne Primary Health Network, VIC

The Pharmacists in General Practice program initiated in 2017 in North West Melbourne (Yarra, Brimbank and Melton) placed GPPs in general practice settings with the aim to improve QUM by clinicians and patients, optimise prescribing practices and reduce polypharmacy, and improve medication literacy and adherence (North West Melbourne Primary Health Network [NWMPHN] 2018). Available results indicate that pharmacists have contributed to improved prescribing practices (for example, by identifying cases of inappropriate medication use and adverse medication reactions) and improving patient health outcomes (for example, by taking blood pressure and blood sugar measurements) (NWMPHN 2018). This project is ongoing.

4.7 Brisbane South PHN and Brisbane North PHN, QLD

The Reducing Medical Admissions into Hospital through Optimising Medications (REMAIN HOME) study was proposed in 2017. It plans to incorporate a GPP into 14 medical centres across South East Queensland (inclusive of two Aboriginal Community Controlled Health Organisations) to determine whether integrated pharmacy care can reduce preventable hospitalisations in high-risk patients (Foot and Freeman 2017). Progress of this pilot program was not available at time of publication.

4.8 Northern Territory PHN and Top End Health Service, NT

Through collaboration with ACCHOs, Aboriginal Health Services, general practices and community members, Northern Territory PHN has developed the Integrating Models of Pharmacists Across Care Teams (IMPACT) Framework to guide primary healthcare settings to integrate pharmacists into their care teams. The framework outlines six interdependent domains that outline the key enablers to successful pharmacist integration (Volk et al. 2018).¹⁴

IMPACT also states that pharmacy technician and assistant roles and Aboriginal and Torres Strait Islander Medicine Worker roles should also be available in primary healthcare services. These roles are considered key to community capacity building and strengthening the local workforce,

¹⁴ The domains are: characteristics, skills and experience of the pharmacist, relationships, scopes of practice, connectivity, localisation and sustainability.

as well as providing opportunities to support culturally safe care (Volk et al. 2018). Formal pilot studies of these roles are required to assess their potential contribution to the healthcare team.

4.9 Primary Health Networks have delivered promising outcomes for patients

The combined experiences of the various PHNs trialling GPPs have shown positive results. GPPs are able to undertake a variety of clinical tasks, and evidence shows that most recommendations made by pharmacists are actioned by GPs. GPP intervention led to improved prescribing and a reduced medication burden for patients. One PHN has also demonstrated improved disease outcomes and time and cost savings. The model was well-received by patients, and both patients and practitioners largely supported it as an ongoing initiative in most practices involved. At least two of the PHNs have continued to employ GPPs within their practices. In line with more extensive evidence from overseas trials, these pilot programs demonstrate the value that GPPs can provide to effective and efficient management of chronic disease in Australian primary healthcare settings. Support from governments would allow PHNs to conduct further trials or provide ongoing employment for GPPs in their local communities.

4.10 Opportunities for improvement to maximise the benefits of integrated GPPs

Results from two of the programs indicate that patients and practitioners were confused and unsure about the role of the GPP. Uncertainty and resistance from both GPs and patients to pharmacist services were noted, with the suggestion that this may be due to a lack of understanding of the capabilities of the pharmacist, and how these can be applied to a general practice (Benson et al. 2018; Deeks et al. 2018).

Only one pilot program (WentWest) outlined how patients were identified and recruited for GPP consultation. Inadequate recruitment processes will mean that opportunities to provide care to eligible patients are missed. PHNs, in collaboration with pharmacists and other healthcare providers, can assist in identifying suitable patients who would benefit from GPP consultation. This is likely to vary across locations, as different populations have diverse needs, and PHNs are well-placed to understand the needs of their particular patient population.

The GPP pilot programs demonstrate the wide variety of tasks that can be undertaken by GPPs. Diverse activities conducted across the general practices within different PHNs reflect the ability of the GPP role to be flexible and adapt to local needs. However, the lack of reporting with standardised tools makes it difficult to determine whether this model is generating reproducible outcomes. Pilot programs' reporting on changes in patient health outcomes after pharmacist intervention was extremely limited and inconsistent across the different PHNs. It is important to understand whether GPP input can improve chronic disease markers (such as blood pressure, HbA1c and cholesterol), to make tangible changes to patient outcomes. These markers should be measured consistently across trial sites.

Reporting on the impact of GPP integration on patients' experience of their care was also limited and varied. Patient-reported measures are an increasingly important measure of health service

performance and healthcare consumer feedback can drive system improvement (AIHW 2018). Patient-reported experience measures (PREMs) and patient-reported outcome measures (PROMs) encompass a range of standardised and validated tools that can be used to understand a patient's experience of the healthcare they have received and their health-related quality of life, respectively (AIHW 2018). These can provide a meaningful and comparable set of data to inform changes to healthcare systems that are more likely to be acceptable to patients.

Patient-reported experience measures (PREMs) and patient-reported outcome measures (PROMs)

PREMs capture a consumer's experience of their health service. PREMs may indicate how patients feel about the quality of communication and support of their providers, how involved they feel in their treatment planning and their ability to access and navigate services.

PROMs capture a consumer's perception of their health and wellbeing. This may include measuring levels of distress, symptoms, pain or function. PROMs can indicate unmet needs for patients.

A number of validated tools are available to collect both PREMs and PROMs. Their purpose is to improve quality of care at the individual, service and system levels (Verma 2014).

While many PHNs expressed interest in ongoing GPP employment in their practices, or at least conducting further trials, they noted that appropriate funding and support to support these activities will be required.

5 Implications and recommendations

Finding new and effective ways for primary care to improve outcomes for patients with chronic disease is a policy priority for state, territory and Commonwealth health departments. Innovative models of care that deviate from traditional episodic care frameworks are required to meet the challenges of chronic disease medication management (Grattan Institute 2016).

This brief has outlined the potential benefit an integrated GPP can have on patient care, patient outcomes, and high-quality value-based primary healthcare more broadly. The experiences of PHNs piloting integrated GPP programs provide an indication of how this model of care could be applied in the unique Australian primary care context and benefit Australian patients with chronic disease.

Any policy initiative must provide a working, locally adapted model to allow services to respond to the needs of their particular patient population, and recognise the heterogeneity of Australian healthcare consumers, inclusive of Aboriginal and Torres Strait Islander patients, vulnerable patients and those living in rural and remote areas.

5.1 Terminology should be standardised

The use of multiple terms for a GPP can lead to confusion for patients, practitioners and researchers. A standardised title that describes the key attributes of the position would be beneficial in enabling a better understanding of the role for healthcare professionals and patients, and facilitating consistent outcome measurement and reporting. This term should be agreed upon by relevant stakeholders. The title 'general practice pharmacist' has been used in this brief and could be used as an appropriate standard term.

5.2 A recognised position description and scope of practice should be developed for GPPs

Governments should support key stakeholders such as the RACGP and the PSA to develop a standard position description and defined scope of practice for GPPs. This is required to foster collaborative working relationships between pharmacists and other health professionals. This should include further education and training requirements for general practice-based employment to ensure that integrated pharmacists are adequately skilled and clinically competent. This is particularly relevant for pharmacists who undertake GP-based roles in Aboriginal and Torres Strait Islander communities, to enable them to provide culturally safe care to their patients.

5.3 Integration of GPPs should be adopted as a model of care to improve outcomes

Integration of GPPs into primary healthcare services should be adopted more widely. Flexible, localised models that are adapted to the setting and the needs of the community are required. The role of the GPP must reflect the healthcare priorities of the patient population and the primary healthcare team in order to provide a meaningful service that is responsive to their unique community. PHNs can assist in identifying care priorities and recruitment of patients who are likely to benefit from this service.

5.4 GPP integration models require supportive policy frameworks and appropriate funding models

An adequate national policy framework is required to allow GPPs to provide high quality patient care across Australian primary healthcare services. Governments should develop policy initiatives in collaboration with local providers and relevant stakeholders to develop models of care that meet the needs of patients and providers.

Additionally, funding models sufficient to sustain GPPs within primary healthcare settings commensurate with the needs of the community should be investigated. Appropriate funding structures should be locally adapted and relevant to the primary healthcare service and their unique circumstances to ensure the GPP role is viable and ongoing.

5.5 Quality of care indicators should be measured consistently

Changes in patient health outcomes from GPP management, as key indicators of health service effectiveness, have not been consistently measured or monitored. Therefore, it is difficult to determine whether GPPs are making tangible differences to patient outcomes. A clearer understanding of the impact that the GPP model has on patient outcomes is needed. This includes but is not limited to quality use of medications, chronic disease control markers and patient-reported health outcomes (PROMs and PREMs).

5.6 Governments should support further data collection and integrated GPP pilot programs

Larger studies of Australian primary healthcare settings, with appropriate methodological design to support the translation of research findings, with standardised and consistent patient health outcomes are required. More pilot programs across additional PHNs would add to the understanding of the role of GPPs in the Australian primary care context.

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