

# Clinical Advisory Pharmacists and the Health Care Home

## A proposal for innovative model of care for collaborative pharmacotherapy services in a medical home, led by Well Health and Compass Health.

Building on smaller pilots elsewhere, this service will take the lead nationally for a structured introduction of the future model of clinical pharmacist services in health care homes.

### Introduction

The New Zealand health care home concept is an important foundation for the progress towards integrated health care services, improved access to services in primary care and reduced acute demand. This concept involve an enhanced general practice model that is comprehensive, proactive, and person and whanau centred.

Capacity and capability of primary care is increased as the health care home utilises an interprofessional team with people working to their top-of-scope and maximising the use of technologies to improve efficiencies and coordination in order to keep people as well in the community.

An important part of health care delivery is to ensure that patients can see the right person, at the right time, in the right place.

It is proposed that Clinical Advisory Pharmacists<sup>1</sup> are the right health care professionals, with the appropriate clinical knowledge and skills to be in the right place, which is the Health Care Home, to work collaboratively to reduce drug-related morbidity and mortality. The role of the Clinical Advisory Pharmacist is to take responsibility, and being accountable for, identifying and resolving drug therapy problems for individuals, and thereby optimising medicines-related health outcomes through the reduction of drug-related morbidity and mortality.

Drug-related morbidity and mortality is considered the third most costly disease<sup>2 3 4</sup> and is considered responsible for 5 to 15% of hospital admissions,<sup>5</sup> depending o the population being investigated.

### Why Clinical Advisory Pharmacists?

New Zealand is not alone in needing to rethink the role of pharmacists and the delivery of pharmacist services. Appendix 1 contains information on strategic direction from the United Kingdom and Australia. On March 17<sup>th</sup> 2015 the Royal Pharmaceutical Society (RPS) and the Royal College of General Practitioners (RCGP) of England announced a joint proposal that a clinical pharmacist should work in every GP practice in England to offer specialist medicines advice and support to patients.<sup>6</sup> The pharmacist would be part of the practice-based primary care team able to resolve medicines issues, especially for patients with long-term conditions. He or she would also be the practice's link to care homes. This proposal stated that this was not about having a pharmacy within a surgery, but about making the full use of the pharmacist's clinical skills to help patients. From this there has been £15 million invested over three years to recruit and employ

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<sup>1</sup> Clinical Advisory Pharmacists are pharmacists with postgraduate qualifications in clinical pharmacy.

<sup>2</sup> Johnson JA, Bootman JL. Drug-related morbidity and mortality. A cost-of-illness model. *Archives of Internal Medicine* 1995;155(18):1949-56.

<sup>3</sup> White TJ, Arakelian A, Rho JP. Counting the costs of drug-related adverse events. *Pharmacoeconomics* 1999;15(5):445-58.

<sup>4</sup> Ernst FR, Grizzle AJ. Drug-related morbidity and mortality: updating the cost-of-illness model. *Journal of the American Medical Association* 2001;41(2):192-9.

<sup>5</sup> Bryant L. Evaluation of the barrier to, and implementation of, comprehensive pharmaceutical care in New Zealand. A thesis for a Doctor of Philosophy in General Practice. University of Auckland. 2008

<sup>6</sup> The Pharmaceutical Journal, 21/28 March 2015, Vol 294, No 7854/5, online | URI: 20068147

<http://www.pharmaceutical-journal.com/news-and-analysis/news-in-brief/gp-and-pharmacy-leaders-call-for-pharmacists-to-work-within-general-practice/20068147.article>

clinical pharmacists into general practice. Scotland has followed suit. Many GP practices are already employing pharmacists in clinical pharmacist roles. The aim is to build on these successes and integrate pharmacists into the general practice team.

Examples of work that a clinical pharmacist may do in a GP practice could be as follows:<sup>7</sup>

- Providing clinical advice and expertise on treatments.
- Developing bespoke medicine plans for individual patients.
- Establishing ongoing professional relationships with individual patients
- Assisting with communication across a patient's care pathway, including with GPs, hospitals and social care.
- Monitoring patients with complex long term conditions such as hypertension or diabetes.
- Managing repeat prescription requests.
- Supporting innovation and clinical research where appropriate.
- Mentoring newer pharmacists.

The benefit of having a clinical pharmacist co-located in general practice clinics delivering a range of interventions is supported by a 2013 meta-analysis<sup>8</sup> which found favorable results in various areas of chronic disease management and quality use of medicines. Pharmacist interventions usually involved medication review (86.8%), with or without other activities delivered collaboratively with the general practitioner (family physician). Positive effects on primary outcomes related to medication use or clinical outcomes such as significant improvements in blood pressure, glycosylated haemoglobin, cholesterol and Framingham risk score in intervention patients compared to control patients, were reported in 19 of 29 studies.

Appendix 2 provides further evidence for the role of clinical pharmacists in general practice.

## The New Zealand Scene

### Strategies and Action Plans

#### The Health Strategy

Although being finalised, the Health Strategy promotes the concept of the integrated, collaborative service, with providers working to top-of-scope within an inter-professional team, and providing services closer to home. From the Speech of the Hon Dr Jonathon Coleman at the national Stakeholder Forum for Integrated Pharmacist Services in the Community, Wellington (March 3<sup>rd</sup> 2016) ... "These themes signal a focus on prevention and wellbeing, *more integrated services, support for innovation, better collaboration, new ways of working to reach our most vulnerable, giving every child a healthy start, and ensuring information and services are more accessible.*"

Having a clinical advisory and prescribing pharmacist in general practice falls within the concept of the Health Strategy.

#### The Pharmacy Action Plan

This document is also being finalised, but strongly recommends **the provision of clinical pharmacist services across a broader range of settings as part of an interdisciplinary team.** The evidence supports this being provided from a general practice, and there is a message that funding of clinical pharmacist services does not have to be, and most likely shouldn't be, funded through the CPSA. This will be particularly pertinent when the pharmacy ownership restrictions are removed.

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<sup>7</sup> New £15m scheme to give patients pharmacist support in GP surgeries. Pharmaceutical Journal. 7 July 2015

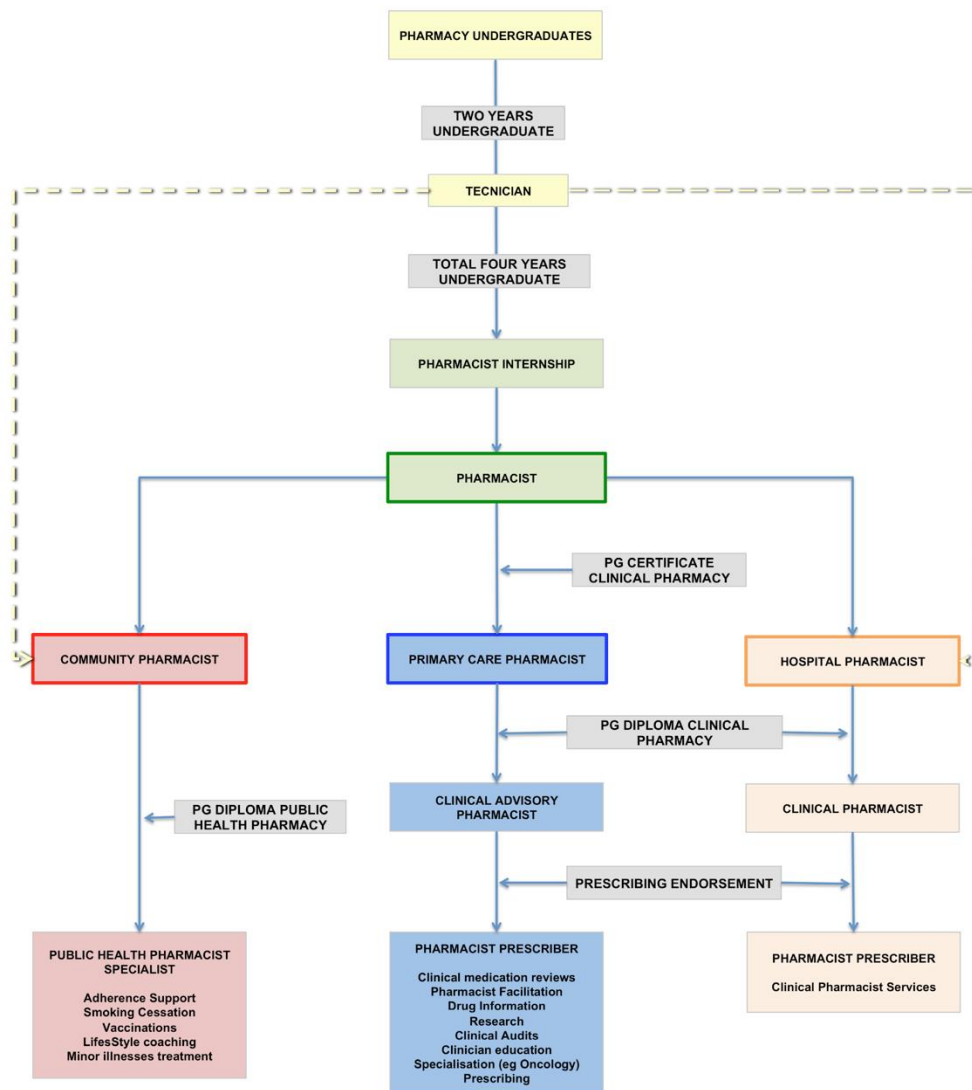
<sup>8</sup> [Tan EC<sup>1</sup>](#), [Stewart K](#), [Elliott RA](#), [George J](#). Pharmacist services provided in general practice clinics: A systematic review and meta-analysis. [Res Social Adm Pharm](#). 2013 Oct 22. pii: S1551-7411(13)00179-4. doi: 10.1016/j.sapharm.2013.08.006

There is also a focus on greater integration of prescribing pharmacists into a wide range of primary and secondary health care teams.

The Pharmacy Action plan does appear to encourage the separation of pharmacist services into three arms (figure 1), although it may be considered the=at the primary care and hospital pharmacist arms are merged into a single Clinical Advisory Pharmacist arm.

Also from the Hon Dr Jonathon Coleman’s speech in Wellington (march 3<sup>rd</sup> 2016), “We want pharmacists working collaboratively as part of an integrated team to deliver a range of medicines management services..... Prescribing pharmacists can contribute to better health outcomes by improving medicines management.”

**Figure 1. Possible future branches of pharmacy practice**



Model developed by: Dunlop J, Bryant L. 2010

The Medicines Strategy Implementation Plan

With the focus on access, optimal use and quality, safety and efficacy, the implementing Medicines New Zealand 2015 to 2020 supports shared care through integration, optimizing medicines use in people with long term conditions, having competent and responsive prescribers and removing barriers to medicines access.

Implementing the clinical advisory and prescribing pharmacist within general practice will enable this

## **New Zealand evidence and reports**

### **The Sapere report (Dec 2013)<sup>9</sup>**

The Pharmaceutical Society of New Zealand, with support from the Ministry of Health, commissioned Sapere to provide a report into the impact of Medicines Use Review (MUR) and what was termed (inaccurately) Medicines Therapy Assessment. PHO clinical advisory pharmacists provided the encrypted NHIs of people who had received a clinical medication review. These were data matched with comparable patients through the Ministry of Health data warehouse and a comparison made of the rates of hospitalisation. Patients over 60 years old who had had a clinical medication review, particularly thorough residential care, were significantly less likely to be admitted to hospital, with a cost-benefit of over \$500 per person. There were approximately 1800 people included in the analysis, but as only 170 of them were under 60 years old the study was inadequately powered to detect a difference for these younger people.

The important aspects of this study to note are:

- The clinical advisory pharmacists were working independent of any community pharmacy, for a PHO
- The clinical advisory pharmacists had, at a minimum, a postgraduate Diploma in Clinical Pharmacy, and a number had a Master of Clinical Pharmacy, and two a doctorate. Four were setting out as prescribing pharmacists
- The clinical advisory pharmacists were experienced in clinical work and it was a focus of their work (minimal distractions)
- There were other, unmeasured, outcomes for patient care.
- The study investigated admissions within one year and so the longer term benefits of optimal medicines use was not studied e.g. secondary prevention medicines

This result cannot be extrapolated back to a pharmacist working in a community pharmacy, even with a postgraduate certificate.

### **Hawke's Bay DHB – Clinical pharmacist facilitators in general practice<sup>10</sup> (Oct 2013)**

The introduction of a 1.5 FTE clinical pharmacist (0.5 FTE per three general practices) was initiated as a 12 to 18 month Proof of Concept. The three practices selected focused on older people, Age-Related Residential Care and High Needs people. The outcomes were based around the Triple Aim.

For the individual

- Safer transition between services.
- More appropriate medicine regimes / less polypharmacy.
- Fewer – falls, hospital admissions, emergency department presentations.
- Greater patient satisfaction.

For the population:

- Greater equity of access and outcomes for high needs population – nurse run (with pharmacological advice available) diabetes clinics.
- Lower – HbA1c, Blood pressure, Lipids.
- Greater adherence to medicines.

As value for money to the health system:

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<sup>9</sup> Love T, Wright C (Sapere) for Pharmaceutical Society of New Zealand. Impact of Medicines

<sup>10</sup> S & J Consultancy, Te Awanga, for Hawke's Bay DHB. Clinical pharmacist facilitators working in general practice: evaluation. HBDHB. October 2013

- Reduced cost of drugs.
- Fewer – acute events / hospitalisations, rest home admissions, drug related adverse effects.

The practice based clinical pharmacists have postgraduate qualifications – one a Master of Clinical Pharmacy, the other a PGDiploma of Clinical Pharmacy plus qualified as a prescribing pharmacist.

The clinical pharmacists undertook medicines therapy assessments for:

- Post-discharge patients
- People on complex medication regimens
- People who were frail and at risk of falls and / or admission to residential care or hospital
- People with poorly controlled medical conditions such as diabetes, blood pressure cholesterol

Outcomes included:

- Improved achievement of clinical targets for people with diabetes, high blood pressure, dyslipidaemia
- A reduction in falls, admissions to residential care (qualitative)
- Reduced pharmaceutical expenditure ... a reduction of 19.5% in the Proof of Concept practices, compared to an 8.7% reduction in other practices (Saving of over \$600,000 in pharmaceutical costs; excluding costs of admissions etc)

Hawke's Bay DHB is extending this general practice-based clinical pharmacist service with the contracting of eight clinical pharmacists.

### **Midlands Network review – Clinical pharmacist in general practice (2012)**

There is an excellent report from Midlands Health Network reviewing the first nine months of an independent clinical pharmacist working in three Hamilton general practices.<sup>11</sup>

The main impacts of the clinical pharmacist included that the clinical pharmacist:

- Became a highly valued member of the general practice team
- Improved the quality of the service from the general practices
- Saved general practitioner time by reviewing medicines post-hospital discharge
- Avoided potential emergency department presentations or hospital readmissions through timely identification of medication errors post-discharge
- Provided expert pharmaceutical advice to the practice staff and patients through researching and responding to medicine information enquiries.
- Provided patient education sessions
- Assisted with achieving health targets
- Proactively focused on people with high needs and long term conditions

This service has continued, and expanded to an Integrated Family Health Centre in Tokaroa with the appointment of another clinical pharmacist, and a role having been developed in New Plymouth.

Dr John Morgan from Midlands says that their model of the health care home has worked by expanding the general practice team. The three NorthCare locations employ full-time clinical pharmacist Penny Clark, providing clinicians with informal advice and seeing patients. "I can't think of one patient who hasn't got a phenomenal amount of value out of interactions with her," Dr Morgan says.<sup>12</sup>

### **Southland**

Early this year, through the PHO, Southland recruited three clinical advisory pharmacists to work in general practices based on positive results from a pilot study. They have found that the demand

<sup>11</sup> Midlands Health network. Clinical Pharmacy in General Practice: Review of the first nine months. (2012) <https://www.pinnacle.co.nz/uploads/clinical-pharmacy-in-general-practice-review-web.pdf>

<sup>12</sup> Home sweet Health Care Home. New Zealand Doctor. May 27<sup>th</sup> 2015. <http://www.nzdoctor.co.nz/in-print/2015/may-2015/27-may-2015/home-sweet-health-care-home---seeking-a-future-place-for-general-practice.aspx>

for the clinical advisory pharmacists from general practice is far higher than the number of pharmacists employed.<sup>13</sup>

### **Other clinical advisory pharmacist roles in general practice**

Although no evaluation has been published there are also clinical advisory pharmacists working in general practices, through the PHO in East Health Trust PHO, Whanganui Regional PHO, Ropata, Taupo. Rotorua, Tokaroa, Turangi

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<sup>13</sup> McKone, B. Clinical Governance Board, Personal communication

## Proposal

**Establishing an integrated, specialised, workforce of clinical advisory pharmacists who will work in a collaborative environment (health care home) and be responsible and accountable for identifying and resolving drug therapy problems for individuals, and thereby optimising medicines-related health outcomes and reducing of drug-related morbidity and mortality.**

**The strategic fit for the clinical advisory pharmacist service is:**

- To reduce drug related morbidity and mortality by optimising the use of medicines at through the use of independent clinical advisory pharmacists working collaboratively within general practice
- Integration of clinical advisory pharmacists into the health care team
- To introduce a new model of care for clinical pharmacist services in primary care that is in line with the overall strategy of health care in New Zealand – optimal use of the workforce using collaborative inter-professional teams providing proactive patient centred care that promotes self management

**The aims of the service are:**

- Overall improved health status across the region's population and for individuals through prescribing practices becoming more closely aligned to established best practice prescribing and management of long-term conditions.
- Improved health outcomes for people through acknowledgement and understanding of the factors in their lives which are barriers to effective health management
- Improved health outcomes for service users through improved adherence with medication regimens due to review of medication regimes and the provision of support and advice by pharmacists within general practice
- Reduction in the need for people to use secondary care services
- Improved collaboration between health care providers, particularly GPs, to improve patient care and reduce waste – both time and resources
- Provide a pathway for clinical advisory pharmacists to become pharmacist prescribers in a collaborative environment e.g. after 12 months providing clinical advisory pharmacist services, the medical team may agree that it would be beneficial for the pharmacist to undertake the 600 hour pharmacist prescriber course. [*Note: a pharmacist requires a minimum of a postgraduate Dipolma in clinical pharmacy plus at least two year's experience in a clinical environment to be able to apply for the prescribing course*]

### **The introductory service**

For the introductory phase of this service 1 FTE Clinical Advisory Pharmacist would work with 10,000 to 15,000 patients depending on population risk. Those health care homes with a higher needs population would require greater time allocation.

In the first 12 months 8 clinical advisory pharmacists would be employed / contracted, covering 80,000 to 120,000 patients. For the introductory phase there would be two to three senior, experienced clinical advisory pharmacists who had worked in general practice to assist with mentoring and supporting the introduction of the services, providing supervision and continuous quality improvement. While all clinical advisory pharmacists have postgraduate clinical pharmacy qualifications, it is the change in role and environment that will require this initial support.

### **The role**

- Clinical medication reviews for complex patients and the development of prescribing plans within the patient's overall plan of care

- For prescribing pharmacists this role will include implementation of prescribing plans, dose titration and managing the prescribing needs of people with long term conditions within the collaborative environment (See Appendix 3 for more specific detail on the role of the prescribing)
- Undertaking clinical audits to identify individuals who may, or may not, benefit from further optimisation of their medicines therapy
- Monitoring patients with complex long-term conditions such as hypertension or diabetes
- Undertaking clinical medication reviews
- Managing repeat prescriptions (a proactive method of identifying drug-related issues and proceeding to clinical medication reviews)
- Providing medicines information and clinical advice on treatments to other health care providers through specific enquiries and through medicines education sessions
- Assisting with self management support programmes by providing education sessions for patients and the public
- Assisting with communication across a patient's care pathway, including with GPs, hospitals and social care
- Supporting innovation and clinical research where appropriate
- Mentoring newer pharmacists

### The resources – Year 1

- Eight clinical advisory pharmacists, three in senior supportive roles
- One overseer and coordinator, including assistance with evaluation and research (may be non-practicing)
- Space in the health care home, including clinic space

### Outcomes and evaluation

#### Outputs (process)

The clinical advisory pharmacists will record their activities and interventions, with an example below of the type of recordings.

SERVICE COMPONENTS	DESCRIPTION	KEY PERFORMANCE INDICATOR
Primary care practice services	The activities of clinical advisory pharmacists are diverse and requiring adaptability and flexibility to meet the needs of the health care home. The best way to capture the variety of activities, rather than counting processes, is for the clinical advisory pharmacist to maintain an activity log for three days every six months, providing examples of activities and interventions	AN ACTIVITY LOG FOR THREE DAYS EVERY SIX MONTHS
Aged residential care (ARC) facilities	<p>Clinical Advisory Pharmacists will work with ARC facilities to identify the prescribers that regularly work in their facilities, and how medication information can best be collated to conduct population reviews.</p> <p>The Clinical Advisory Pharmacists will then work with the relevant prescribing staff, as well as staff at the arc facility, to optimise the medication of the individual patients. This may include participation in multi-disciplinary forums.</p> <p>This allows the use of medicines to align more closely with best practice, improving health outcomes for those patients. A key</p>	Number of arc population reviews undertaken



Best use of medicines projects	focus of this work should be reducing unnecessary medications.	
	<u>Clinical medication reviews</u> As for this service under primary care services	Number of arc comprehensive medication reviews undertaken.
	Where appropriate, and where resource is available, Clinical Advisory Pharmacists may undertake projects that optimise the use of medicines. These projects should focus on activities that both optimise medication use and reduce pharmaceutical use where possible.	

### *Evaluation*

Linking the outputs to outcomes is usually based on evidence from the literature and ongoing quality improvement processes, including peer review.

Activities and interventions will be reviewed in a peer environment and evaluated for potential outcomes in terms of reduced harm, and a check for improved clinical indicators, although this may be a result of the collaborative approach

### Outcomes

- Reduced drug-related morbidity and mortality
- Optimisation of the medicines utilisation with reduced waste
- Reduced variation in medicines prescribing and use
- Adherence to best practice medicines use

### *Evaluation*

For collaborative services it is difficult to attribute one specific activity or service to overall outcomes. The Sapere evaluation of clinical medication reviews, using a cohort design, is one of the first studies internationally to use this data-matching methodology. It is relatively specific for the impact of clinical medication reviews, although it is noted that potentially there is a hawthorn effect with the general practitioners exposed to the clinical advisory pharmacist service applying information gained from these reviews to their other patients (the potential control cohort). Despite this limitation it would be expected that the Sapere methodology would be repeated after 24 months of the introductory service.

### **Risk mitigation**

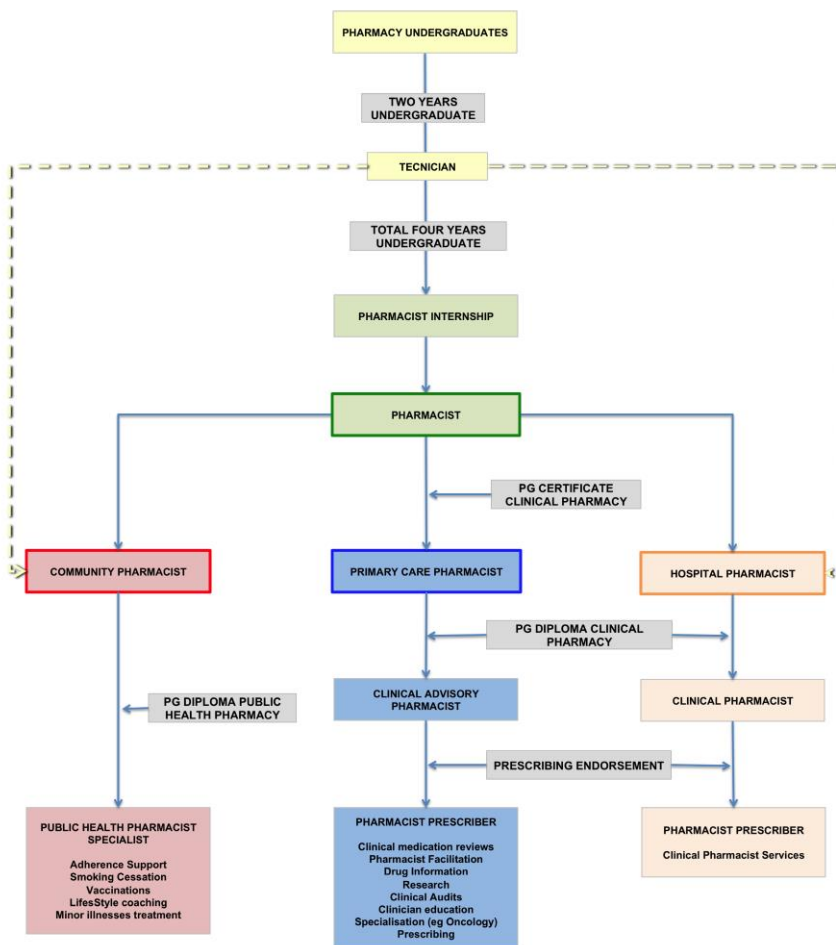
<b>Risk</b>	<b>Mitigation strategy</b>	<b>Likelihood of occurrence</b>	<b>Impact if occurs</b>
Capacity - Lack of clinical advisory pharmacists for the roles	The number of pharmacists with postgraduate qualifications is likely to be provide adequate capacity. Some specific training in a new environment involving mentoring and supervision will be provided	Low	High
Capability – the need to support pharmacists new to this environment	There are sufficient senior clinical advisory pharmacists available to support new pharmacists, and peer support groups	Low	High

## An innovative model of pharmacist care in the broader pharmacy environment

Below is the depiction of a new model of service delivery for pharmacist care. It is derived from the literature and supports the utilisation of clinical pharmacists in primary care (Primary Care Pharmacists) who can work to top-of-scope, independent of community pharmacy and integrated into the primary health care team within general practice.

Dispensing can be considered a low value transaction and with the imminent and inevitable change to the dispensing process to remote robotic dispensing and vending machines (already available), community pharmacy will change and take on a more public health approach while clinical pharmacists will move into the collaborative health care home environment, independent of potential conflicts of interest involved in a retail supply and distribution role. The Wellington region can be the leader in this new model.

This is an evolving model that requires a change of focus and a change of funding. It is estimated that there are only approximately 300 proprietors of community pharmacy, with the vast majority of pharmacists compelled to work in this environment because there are limited other options for funding of professional services. The new model will see independent clinical, primary care pharmacists being funded to provide pharmacist services from within a different four walls – e.g. a general practice. Because a fee-for-service basis is geared towards volume of turn over, it is considered that the funding will be on a sessional basis.



# Appendix 1.

## Reports on future pharmacy services from the United Kingdom and Australia

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### United Kingdom

In Britain, the NHS has continued to provide new opportunities for pharmacists to move into clinical roles through community pharmacy.<sup>1</sup> In England organisational setting of the pharmacy was an important factor in the uptake of the 'Medicines Use Review and Prescription Intervention Service' (MUR).<sup>14</sup> Chain pharmacies had a greater uptake than independent pharmacies, although there was concern expressed about the quality of the MUR by chain pharmacists because they were expected to work towards targets, suggesting that the reviews were perceived by management as an income generating resource.<sup>2</sup> Another study identified the barriers that included the lack of private consultations areas, lack of time and support staff, and concerns about the general practitioners' opinion of the service.<sup>3</sup>

Wilcock and Harding elicited perceptions and attitudes towards MUR from 52 of 58 general practitioners sent a questionnaire.<sup>4</sup> The majority of general practitioners considered that they had a good relationship with their community pharmacist but while 60% thought the pharmacists' recommendations in an MUR were generally useful, only 20% thought that they were a priority. More tellingly, when asked if the general practitioner thought their practice partners perceived the MUR service, 44% provided a negative response and only 10% gave a positive response. When asked how the MUR could be improved, the suggestion was to be to be very clear that the MUR was not a clinical review but related to compliance issues.

Conversely there are a growing number of practice-based pharmacists in the UK who have an expanded role including prescribing privileges.<sup>5</sup> Pharmacists working within the practice environment undertake the management of disease specific, multiple medication reviews with delegated rights to add remove or modify medication, providing a better utilisation of pharmacists in both primary and secondary health care environments.<sup>6</sup>

In September 2013 the Scottish Government released their "Prescription for Excellence: A vision and action plan for the right pharmaceutical care through integrated partnerships and innovation".<sup>15</sup> This report clearly identified the need for new and innovative models to facilitate professional independent clinical pharmacists, working in collaborative partnerships with other health and social care professional, including prescribing. The inclusion of the accredited clinical pharmacists into the primary care team is intended to increase the clinical capacity and assist in addressing the increasing demands and complexity of health care. It was recognised that these clinical pharmacists needed to be working in general practices, independent of community pharmacy. No longer could the government rely solely on community pharmacy to deliver services.

Similarly the Royal Pharmaceutical Society of Great Britain commissioned a report, "Now or Never: shaping pharmacy for the future"<sup>16</sup> made key points that include:

- The traditional model of community pharmacy will be challenged as economic austerity in the NHS , a crowded market of local pharmacies, increasing use of technicians and automated

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<sup>14</sup> *The service consists of accredited pharmacists undertaking structured adherence-centred reviews with patients on multiple medicines, particularly those receiving medicines for long term conditions. The MUR process attempts to establish a picture of the patient's use of their medicines - both prescribed and non-prescribed. The review will help patients understand their therapy and it will identify any problems they are experiencing along with possible solutions. A report of the review will be provided to the patient and to their GP where there is an issue for them to consider.*

<sup>15</sup> Scottish Government. Prescription for Excellence: A vision and action plan for the right pharmaceutical care through integrated partnerships and innovation. September 2013. [www.scotland.gov.uk/Resource/0043/00434053.pdf](http://www.scotland.gov.uk/Resource/0043/00434053.pdf)

<sup>16</sup> Smith J, Picton C, Dayan M. Now or Never: Shaping pharmacy for the future. Royal Pharmaceutical Society. Nov 2013.

technology to undertake dispensing, and the use of online and e-prescribing bear down on community pharmacies' income and drive change

- Pharmacists are working more closely with patients and healthcare colleagues in hospitals, outreach teams, patients' homes, residential care, hospices, and general practice, as well as in community pharmacies. They are helping patients to manage their own conditions, providing health checks, supporting best use of medicines, and detecting early deterioration in patients' conditions.
- Despite its potential, pharmacy – and particularly community pharmacy – is marginalised in the health and social care system at both local and national level. It is seen by others as a rather insular profession, busy with its own concerns and missing out on debates and decisions in other health and social care organisations and the wider world of health policy.
- To enable such a shift, there will be a need for a significant rethink of the models of care through which pharmacy is delivered, as a prerequisite to developing new approaches to contracting and funding that include the possibility of specific contracts with groups of pharmacists to deliver patient services; and population based contracts for new larger primary care organisations that include pharmacists in their membership along with GP s, nurses and others.

It is noted that the United Kingdom has a large and active number of primary care pharmacists, being pharmacists working in general practice, and their value was recognised in the British, Now or Never report. As in New Zealand, the problem is that these pharmacists are currently unable to claim funding from the 'pharmaceutical budget' as this is funnelled through a community pharmacy. This is expected to stop and funding be made available to clinical pharmacists independent of a community pharmacy shop.

## **Australia**

The Australian government encouraged the development of pharmacist provided medication management roles in their community Pharmacy Agreement.<sup>7</sup> Extra funding was provided which developed into a home medication review (HMR) service provided by clinical pharmacists who were contracted by the community pharmacies to review selected patients medication.<sup>8</sup> Doctors are paid for their involvement with the review. Community pharmacy has been very slow to adopt this service.

A 2008 report commissioned by the Department of Health and Ageing highlighted problems associated with community pharmacy being the only referrer for HMR services, and the potential benefit of having the consultant pharmacist not attached to a community pharmacy, and being referred to directly by the general practitioner.<sup>9</sup> The report found that even the general practitioners who described themselves as supporters of the programme were ambivalent, and this was reflected in the low numbers of referrals that they made to the service. Similarly, most community pharmacy owners and managers were ambivalent because they found the reviews time consuming and not profitable with no benefit from increasing customer loyalty. Current "business rules" were identified as a barrier to the service.

In response to this report there have been some major changes to the HMR service by targeting high risk patients, allowing direct referral to accredited pharmacists independent of a community pharmacy, and allowing accredited pharmacists to claim HMR fees directly from the Government funding pool for services. There are studies underway investigating the impact of independent clinical pharmacists working in general practices.

## Appendix 2.

### Why clinical pharmacists in general practice

Workforce predictions suggest there will be fewer general practitioners in primary care<sup>10</sup>, and an increased demand for health care services such as chronic care management and preventative medicine. This will require a redistribution of the workforce to increase efficiency and maximise the utilisation of healthcare workers skills.<sup>11</sup> Pharmacists are widely considered to be a group of health care providers who are underutilised,<sup>12 13</sup> It could be argued that the community pharmacy dispensing process does not require the current extent of education and training.

Pharmacists could become more active members of the primary health care team by optimising the use of their in-depth pharmacotherapy knowledge and skills to reduce drug-related morbidity and mortality. Since the advent of the Hepler-Strand model of Pharmaceutical Care<sup>17</sup> there has been a view that, using this model, clinical medication reviews should be incorporated into community pharmacy practice to replace the supply and distribution roles. While these comments may be encouraging, historically the clinical role of pharmacists has been led from the hospital setting, and has not yet been embraced by community pharmacists. As a result of their supply and distribution, and retail focus, it is suggested that community pharmacists have failed to capitalise on their unique social function focusing on medicines.<sup>14</sup>

Clinical pharmacists in a hospital environment have been shown to be effective. There are a number of individual studies confirming the cost effectiveness of hospital based clinical pharmacist services in terms of reduced drug costs and cost avoidance.<sup>15-20</sup> Bond et al.<sup>21 22</sup> found that, the only pharmacy variable that was associated with positive outcomes for mortality, drug costs, total costs and length of hospital stay was the number of clinical pharmacists per occupied beds.<sup>22</sup> As the number of hospital pharmacy administrators and clinical pharmacists increased the total cost of care significantly decreased. Conversely, as staffing increased for dispensing pharmacist services the total cost of care significantly increased.<sup>21</sup>

Similarly in Australia Dooley et al.<sup>23</sup> found that interventions by clinical pharmacists in eight tertiary Australian hospitals saved 2004\$A4,447,947 annually. The benefits of these clinical pharmacists' services should be transferable to primary care.

The concept of clinical medication reviews by community pharmacists appeared to fit the criteria for health care reform of: moving community pharmacists' role from a product focus (dispensing, retailing) to a patient focus; maximising utilisation of the skills of pharmacists; improving inter-professional teams through collaboration with general practitioners; and, overall, reducing drug related morbidity and mortality through the identification and resolution of drug therapy problems. Yet after 20 years the evidence suggests that this model of service delivery for clinical pharmacist medication reviews in primary care has not been embraced by community pharmacy.

### Meta-analysis

Tan et al. published a systematic review and meta-analysis of pharmacist services in general practice clinics.<sup>18</sup> This is an important systematic review because it is the first to focus on independent pharmacists working collaboratively with general practitioners. The conclusion was that there was a wide range of interventions provided by pharmacists in general practice and there was a favourable impact on clinical indicators of chronic medical conditions and the quality use of medicines. The studies with medication reviews and education, and pharmacist prescribing, had more positive outcomes.

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<sup>17</sup> *Comprehensive Pharmaceutical Care*® has been defined as "A patient-centred, outcomes oriented pharmacy practice, that requires a pharmacist to work in concert with the patient and the patient's other health care providers to promote health, to prevent disease and to assess, monitor, initiate and modify medication use to assure that drug therapy regimens are safe and effective" APhA.

<sup>18</sup> Tan E, Stewart K, Elliot R, George J. Pharmacist services provided in general practice clinics: a systematic review and meta-analysis. *Res Soc Admin Pharm.* 2013; Oct 22. pii: S1551-7411(13)00179-4. doi: 10.1016/j.sapharm.2013.08.006. [Epub ahead of print]

A more recent systematic review and meta-analysis of pharmacist fee-for-service medication reviews found pharmacist-led medication reviews had a positive benefit on patient outcomes, but those interventions including a *clinical* review had a significant impact on patient outcomes, including reduced hospitalisation.<sup>19</sup> Adherence support medicine reviews did not reduce hospitalisation.

This is similar to the Sapere report utilising New Zealand specific data.

Focusing on heart failure, Koshman et al.<sup>24</sup> found a significant reduction in all cause hospitalisation and hospitalisation for heart failure but no significant difference for mortality. A sub-analysis found that pharmacist collaborative care, in a multidisciplinary team, reduced heart failure hospitalisations more than pharmacist directed care.

## Specific studies

The USA IMPROVE randomised controlled trial<sup>25 26 27</sup> involved 78 ambulatory care clinical pharmacists from nine Veteran Affairs Medical Centres. The pharmacists were clinic-based and could alter therapy. The patients were 'at risk' of drug therapy problems, being on multiple medicines, and having multiple co-morbidities. There was a strong trend toward reduced health care costs ( $p = 0.06$ ) and in a subgroup of people with dyslipidaemia there were significant reductions in LDL-cholesterol.

At Kaiser Permanente Colorado, in the Clinical Pharmacy Cardiac Risk Service (CPCRS), clinical pharmacy specialists were involved in a pharmacist-managed, physician monitored service for over 8000 people with cardiovascular disease. Longitudinal results of dyslipidaemia,<sup>28</sup> blood pressure<sup>29</sup> and mortality<sup>30</sup> showed a significant reduction in LDL cholesterol<sup>26</sup> and blood pressure.<sup>27</sup> A significant reduction in mortality was found when comparing the 3324 people who had any exposure to the programme with the 1672 people who had no exposure. Also a significantly greater number of people were event free in the 'any exposure' group compared to 'no exposure'. Sub-group analysis undertaken on people who had early continuous exposure, delayed continuous exposure and intermittent exposure, indicating that early exposure was better than delayed exposure.

A UK controlled trial involving only one pharmacist,<sup>31</sup> was included as a landmark study because it was one of the first published studies of a practice-based pharmacist in the UK undertaking clinical medication reviews. The study was a one-off intervention of repeat prescribing for people over 65 years old. The mean cost of medicines increased in both groups, but significantly more in the control group. There was a smaller increase in the mean number of medicines in the intervention group and no significant difference in practice consultation rates. As the pharmacist initially didn't have prescribing privileges, there was an expected increase in general practitioner consultations immediately after the pharmacist consultation, but over the year of the study the total number was not significantly different between the groups. The difference in the number of hospitalisations was not statistically significant. There was a reduced death rate in the intervention group compared to the control group (1.5% and 4.1% respectively), but this was not a planned study outcome and so would require confirmation in a study designed to measure this.

## Pharmacist Prescribing

Shojania et al.<sup>32</sup> undertook a meta-regression analysis exploring quality improvement strategies for people with type 2 diabetes. There were significant reductions in HbA1c for team changes<sup>20</sup> and case management. In particular interventions in which either the pharmacist or nurse could adjust medication independently had a larger effect.

<sup>19</sup> Hatah E, Braund R, Tordoff J, Duffell S. A systematic review and meta-analysis of pharmacist-led fee-for-services medication review. *Br J Clin Pharmacol.* 2014; 77(1): 102-115

<sup>20</sup> *Team changes involved the use of multidisciplinary teams; the addition of a team member such as a pharmacist or shared care; or expansion or revision of professional roles such as pharmacists or nurses being more active in patient care and adjusting medication*

In the IMPROVE study (above) many of the pharmacists had prescribing privileges, which shows positive benefits.

A recent Canadian study<sup>21</sup> showed that a prescribing pharmacist had a positive impact on cardiovascular risk factors. This study involved 279 adults with recent minor ischaemic stroke or transient ischaemic attack whose systolic blood pressure or lipid levels exceeded guideline targets. Study participants were randomly assigned to active prescribing by clinical pharmacists or nurse-led screening and delegating to primary care physicians. Substantial improvements were observed in both groups after 6 months, with a clinically important and significantly greater improvement among patients in the pharmacist-led group than in the nurse-led group (43.4% of participants in the pharmacist case manager group achieved both systolic blood pressure and fasting LDL cholesterol control compared with 30.9% in the nurse-led group; number needed to treat 8;  $p=0.03$ ).

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<sup>21</sup> McAlister FA et al. Case management for blood pressure and lipid level control after minor stroke: PREVENTION randomized controlled trial. CMAJ 2014;186(8):577-84

## Appendix 3.

### The role of prescribing pharmacists in general practice

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The role of the prescribing pharmacist is evolving as the first eight primary care-based prescribing pharmacist develop and expand their roles. Six of the pharmacists are in general practice and two are liaising between primary and secondary care, following up the at risk vulnerable people discharged from hospital.

The role of the prescribing pharmacist in primary care includes:

#### 1. Implementation of an agreed prescribing plan

The opportunity for prescribing builds on the clinical medication reviews, particularly for older people and those with the morbidities and who are complex, high-risk individuals such as those who have been discharged from hospital or who are deteriorating and may be likely to be admitted to hospital. A comprehensive medication review aims at identifying and resolving drug therapy problems in order to optimize medicines therapy and reduce drug-related morbidity and mortality. Drug therapy problems could include:

- Dosage – too high or too low
- Drug/drug or drug/food interaction
- Adverse drug effect
- Compliance problems
- Drugs prescribed for a resolved medical condition
- Lack of medicine for a medical condition
- Unsuitable drug

The medicines therapy recommendations for these people will be reviewed by the patient's general practitioner and if agreed upon, will constitute a collaborative prescribing plan with monitoring (and education) that the prescribing pharmacist implements. This increases convenience for the patient and result in improved timeliness of agreed medication changes

#### 2. Dose titration and initiation for particular medical conditions

Optimization of standard pharmacotherapy practice involves undertaking a clinical notes review for patients with a particular medical condition such as heart failure, atrial fibrillation, gout, ischaemic heart disease, asthma and COPD, and noting if medicines therapy is optimized. If there is a potential gap in therapy (e.g. lack of a medicine or dose titration required) this is brought to the attention of the general practitioner. If it is considered appropriate that the medicines therapy be changed, then the pharmacist reviews the patient and implements the prescribing changes with appropriate assessment, monitoring and patient education.

#### 3. Repeat prescribing

Historically nurses have played an integral part in organising the repeat prescribing in general practice by generating the repeat prescriptions and forwarding them to the general practitioner for signing. This is time consuming for the practice nurse in her already busy day, and for the general practitioner who receives multiple prescriptions to sign. There is also duplication of effort as the prescriber needs to access the notes again to determine the accuracy and appropriateness of the nurse generated prescription before signing. There are also many instances when the long-term medicines may not be highlighted in blue or repeat prescriptions may be generated for medicines incorrectly marked as long-term or are no longer used or required by the patient.



The new role of clinical pharmacists as prescribers within the primary care environment, offers an opportunity for practices to include the management of the repeat prescription process as one of the clinical pharmacists duties. It is anticipated that having a prescribing pharmacist manage the repeat prescriptions could reduce the double handling, provide a pharmacological input to identify potential drug therapy problems (side effects, adherence, monitoring), and create cost savings within a pharmaceutical budget.

#### 4. Pharmacist clinics

The combination of a prescribing pharmacist and a nurse for rural clinics appears to be effective in the Whanganui area, proving access to care for rural communities. As Integrated Family Health Centres and Community Health Hubs increase there will also be a role for the prescribing pharmacist for specific medical problems such as pain in the older person.

## Appendix 4.

### A story from a Clinical Advisory Pharmacist service

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January 2016, and the clinical advisory pharmacists have implemented services for the elderly population and are extending services to people with long term conditions. This is the narrative of what is different for patients and clinicians with the establishment of the clinical advisory pharmacist role.

This role initially focused on the frail elderly, and the young elderly – those people who were over 65 years old but were still active and relatively healthy. It covers residential care, clinical advisory pharmacist (CAP) clinics in the practices or the community health hub, and some domiciliary visits. Up to December 2012 this has been a non-prescribing role, but from November 2014 prescribing pharmacists added further benefit for patients and for the health care system. The requirement for pharmacist prescribing is that it is in a collaborative environment (the general practice or medical home) and the CAP must work in conjunction with a medical practitioner.

The aim of the service is improved integration and collaboration between the CAP and the general practice team, better communication with medical specialists around medicines use and better medicines related health outcomes for patients.

The philosophy of the service is a patient-centric approach to reduce drug related morbidity and mortality through the identification and resolution of drug therapy problems, optimising medicines related health outcomes with minimum medicines. Self-management and early intervention is promoted.

#### **A brief summary of a day with the CAP identified this sample of scenarios.**

##### Residential care

While undertaking an annual clinical medication review of people at a local resthome, the CAP also reviewed a newly admitted resident. This review of newly admitted people was a routine requirement. Mrs A was 89 years old and had deteriorating Alzheimer's disease, necessitating a move into a local resthome to be closer to her children. She also had ischaemic heart disease, GORD and osteoporosis, plus she was a falls risk due to her frailty and medicines.

The CAP undertook a review of medicines, investigations and laboratory results, in conjunction with Mrs A's current condition and status. From this a prescribing plan was developed for approval by the general practitioner and then implementation by the prescribing pharmacist. This involved a staged reduction in medicines over the next six months, with monitoring, so that Mrs A's initial list of ten medicines would be reduced to four medicines. The focus was on symptom relief and reducing the risk of falls and cognitive impairment.

##### Clinic session at a practice

The CAP also reviewed patients at a general practice. Of these there was a particular focus on three patients, plus a clinical audit of people with atrial fibrillation. Two patients attended for the over 75 year old annual warrant of fitness, of which a clinical medication review was part. The other aspects such as falls risk, socialisation and nutrition were provided by the practice nurse as part of the ElderCare clinic. The other patient was a younger person referred for a review due to complexity.

Mr B was 84 years old and arrived for his annual review. He was very active and fit for his age but had a history of high blood pressure. This had resulted in him being on the standard cardio-

preventive therapy of a statin, aspirin and four blood pressure lowering medicines. At 84 years old aspirin should not be used for primary prevention, and blood pressure control needs to be less intense. These issues were identified by the CAP and discussed with the general practitioner with a prescribing plan developed to involve Mr B in the decision making processes to stop aspirin and reduce the blood pressure lowering medicines, therefore reducing the risk of a gastric bleed from aspirin and a fall from low blood pressure.

Conversely Mrs C was only 72 years old and it was noted that she had inadequate treatment for her heart failure. The up-titration of the ACE inhibitor and  $\beta$ -blocker dosages had stalled and so neither were at optimal dosage. As for Mr B, this was identified and discussed with the general practitioner, who agreed that dose escalation was necessary, and suggested that the CAP could do this through monthly patient visits, education and monitoring.

The complex patient referred, Mr D, was 76 years old, with cardiovascular disease and osteoarthritis. The pain of osteoarthritis was severely limiting his physical activity and therefore his fitness. The prescribing options were limited by adverse effects and drug interactions with his cardiovascular medicines. The CAP developed a risk mitigation strategy so that adequate analgesia would be provided and the information required so Mr D could make an informed choice. The general practitioner agreed to the prescribing plan, and asked that the CAP work through this with Mr D.

The clinical audit undertaken for the CAP identified people with atrial fibrillation who were not on optimal antithrombotic medicines. These people were discussed with the general practitioner and recalled for implementation of the prescribing plan.

## **So what's different ...**

### **For the system**

- A focus on the use of medicines – optimising prescribing and the patient's use of medicines to reduce drug related morbidity and mortality (Optimal benefit with minimum medicines)
- Working to achieve clinical indicators and implementing medicines-related guidelines, with a patient-centred focus i.e implementing risk mitigation strategies where necessary e.g. for long term conditions
- Reviewing patients on discharge from hospital, and those who are at high risk of hospital admission
- Expected reduced drug-related hospital admissions
- Transformational change with collaborative pharmacist prescribing.

### **For the patients**

- A patient-focused review of medicines and shared decision making to obtain an optimal medication regimen, thereby reducing the risks and optimising the benefits of medicines therapy
- Consistency of information as the CAP is working in collaboration and coordinating with general practitioners, practice nurses and community pharmacists
- Reduction of barriers to optimise medicines as closer monitoring and follow up is possible using the clinical advisory pharmacist, especially with the prescribing pharmacist
- Better care from the health team, more convenient and ready access to pharmacotherapy expertise

### **For the clinicians**

#### General Practitioners

- An active, focused clinical medication review as a supportive service to them and the patient
- Opportunities for reminder and updates relating to specific patients, but also through dissemination of educational material such as medicines information bulletins to inform all general practitioners
- Having a clinical resource available to refer patients to and a resource for medicines information

- An ability to improve medicines therapy for patients by having the clinical advisory pharmacist monitoring and follow up patients – confidence with optimising doses and improved efficiency
- With pharmacist prescribing, an ability to have a prescribing plan implemented within agreed boundaries and with oversight (through the patient management system patient records)
- A planned approach and implementation with the prescribing plan being part of the care plan

#### Practice nurses

- Having a resource available to provide information on medicines – both patient specific and general
- Expanding the health team that they have access to and who can work with collaboratively

#### Others

- A link between the practice and community pharmacy with referral of suitable patients for adherence support and input for long term conditions
- A resource for community pharmacists for clinical reviews