

# Community pharmacist perceptions of clinical medication reviews

Linda Bryant PhD; Gregor Coster PhD; Ross McCormick PhD

Department of General Practice and Primary Health Care, Faculty of Medicine and Health Science, The University of Auckland, Auckland, New Zealand

## ABSTRACT

**INTRODUCTION:** Changes in delivery of health care services has led to pressure for community pharmacists to extend their traditional role and become more involved with patient-focussed services such as medication reviews, in collaboration with general practitioners (GPs). This has not been generally implemented into routine practice, and many barriers have been suggested that inhibit community pharmacists extending their role. These have often focussed on physical or functional barriers. This study explores possible attitudinal factors that prevent increased participation of community pharmacists in medication reviews undertaken in collaboration with GPs.

**METHODS:** Twenty community pharmacist participants who participated in the General Practitioner–Pharmacist Collaboration (GPPC) study were interviewed. The GPPC study investigated the outcomes of community pharmacists undertaking a clinical medication review in collaboration with GPs, and the potential barriers. Semi-structured interviews were analysed using a general inductive thematic approach.

**FINDINGS:** Emerging themes were that community pharmacists perceived that they were not mandated to undertake this role, it was not a legitimate role, particularly from the business perspective, and pharmacists were concerned that they lacked the skills and confidence to provide this level of input.

**CONCLUSION:** While there is concern that community pharmacists' skills are underutilised, there are probable attitudinal barriers inhibiting pharmacists from increasing their role in clinical medication reviews. Perceived legitimacy of the service was a dominant theme, which appeared to be related to issues in the business model. Further investigation should consider the use of a clinical pharmacist working within a general practice independent of a community pharmacy.

**KEYWORDS:** Community pharmacy services; drug utilization review; primary healthcare; health plan implementation

## Introduction

Internationally there has been a drive for community pharmacists to extend their practice from a product focus towards more patient-focussed services, including involvement in medication reviews. The term 'medication review' encompasses a wide range of review types—from a review of the person's use of the medicine (adherence support, specific counselling or education) to clinical medication reviews involving collabora-

tion with the prescriber. These reviews have not been implemented from community pharmacy as universally as could be expected, and are not an integral part of community pharmacy services even though pharmacists appear enthusiastic. A number of published studies have indicated a lack of participation and high withdrawal rate, despite good intentions by the community pharmacists.<sup>1–5</sup> This is in contrast to clinical medication reviews that are undertaken by clinical pharmacists\*

J PRIMARY HEALTH CARE  
2010;2(3):234–242.

## CORRESPONDENCE TO: Linda Bryant

Department of General Practice and Primary Health Care, The University of Auckland, PB 92019 Auckland, New Zealand  
linda@cpsl.biz

\* In the literature, clinical pharmacists are generally those pharmacists who focus primarily on medication use by and for patients for the majority of their work, rather than supply and distribution (dispensing) roles. Previously the term was associated with hospital pharmacists working with medical teams and seeing patients on the wards. It now includes pharmacists in primary care who work closely with general practitioners, usually in general practice / physicians' offices or primary care clinics. These pharmacists usually have postgraduate qualifications.

within a general practice in the UK<sup>6</sup> or in primary care clinics / physicians' offices in the USA.<sup>7-10</sup>

The literature describes barriers to implementation of medicine management services, including adherence support or medicine use reviews. The barriers include:

- Time/funding;<sup>11-18</sup>
- Poor use of staff;<sup>13,14,19,20,21</sup>
- Lack of facilities, including space and privacy;<sup>11,12,14,19</sup>
- Lack of interprofessional relationships and collaboration with general practitioners,<sup>17,18,20,22,23</sup> although those pharmacists in a non-community pharmacy setting (clinics, family physician offices) were less likely to agree that this was a barrier;<sup>18</sup>
- Postgraduate training and skills enhancement;<sup>17,20,21</sup>
- The type of role or type of community pharmacy (e.g. managers versus staff pharmacists; chain store versus independent community pharmacy);<sup>17,20</sup>
- Concerns about the quality of the reviews, especially in chain store pharmacies;<sup>17</sup>
- The attitudes of community pharmacists;<sup>20</sup>
- Access to documentation, although this was not considered a barrier for non-community pharmacy pharmacists based within physician offices.<sup>18</sup>

Explorative work into why change is slow and how change could be managed raises diverse concepts. In a USA study,<sup>24</sup> four consistent factors emerged from four pharmacies that had successfully implemented innovative medication review programmes. These were:

- **Philosophy of practice**—defining values that guide professional behaviours and setting priorities when confronting challenging clinical decisions or ethical dilemmas
- **Patient care process**—assuming responsibility for all the patient's drug therapy needs; developing a long-term therapeutic relationship with the patient; collaborating with physicians and other care providers to enhance care
- **Management system**—including creating the physical environment of care areas

## WHAT GAP THIS FILLS

**What we already know:** Community pharmacists are being encouraged to increase their participation in patient-focussed services such as medication reviews. Implementation of these services into routine practice have been very limited because of perceived physical or functional barriers.

**What this study adds:** This study explored attitudes of community pharmacists who participated in a study of clinical medication reviews in collaboration with general practitioners. Barriers to this service were a perceived lack of mandate, a lack of perceived legitimacy of the service, and a perception that there was a lack of adequacy to provide the service.

and care rooms that are separate and distinct from the dispensing environment

- **Clinical knowledge**—access to up-to-date and reliable clinical information; a desire to learn and keep up with courses and continuing education.

Along a similar theme, Latif<sup>25</sup> argued that the paradigm shift from a product-focussed profession of dispensing to a more patient-focussed one with 'shared' responsibility for optimal drug therapy outcomes required the development of an ethical covenant between the pharmacist and patient. This was considered important, particularly in some organisational settings, e.g. chain drug stores, because there was an increased opportunity for ethical problems to arise where there could be an inherent conflict between professional values and organisational demands. For example, where the primary reimbursement is from dispensing prescriptions and selling retail products, a conflict may arise when more time is required for patient-focussed activities such as counselling.

Edmunds and Calnan<sup>26</sup> investigated issues evolving from health-related occupations attempting to re-professionalise, including community pharmacy, a group that the authors believed was developing strategies to enhance its professional status as a bid for survival, rather than trying to usurp the general practitioner's role per se. They recognised pharmacists were holding back changes to community pharmacy. They reasoned that this is because many community pharmacists still attribute ultimate authority to the general practitioner, and that there are internal divisions

between retail pharmacists and employee pharmacists, with profit-orientated versus health services conflicts. The pervasive view of pharmacy is described as marginal, incomplete, limited, with 'quasi' status due to reduced craftsman skills required to compound medicines, and with occupational or professional limitations due to lack of control over clinical autonomy with respect to involvement with prescription medicines usage, and consequently lack of economic autonomy beyond the retail role.

Edmunds and Calnan considered that pharmacy would remain viable only if full use of the pharmacists' skills and qualifications were utilised, yet identified a basic dilemma of a conflict between community pharmacists as traders or health professionals. Despite wishing to pursue more patient-focussed roles, many pharmacists did not want to encroach on the general practitioner's territory, generally seeing their role as reducing the general practitioner's workload (delegatory roles) and helping with adherence problems and patients' management of medicines rather than more clinical roles. They described conflicting views about the management of long-term medical conditions by pharmacists. Basically, as perceived by the pharmacists, there remained an entrenched division between general practitioners as prescribers and pharmacists as dispensers.<sup>26</sup>

The GPPC study was a multi-centred randomised, controlled study conducted between 2002 and 2004 comparing people older than 65 years and on five or more medicines who received a clinical medication review, with similar patients who did not receive a medication review. The trial used community pharmacists working collaboratively with general practitioners. The intervention required the pharmacist to meet with the patient, with access to patient medical records, and then meet with the general practitioner to discuss potential medication alterations. The pharmacists were funded NZ\$160 per medication review. General practitioners were reimbursed for enrolling the patient at NZ\$50 per patient.

The aim of the GPPC study was to determine the impact of community pharmacy-based clinical

medication reviews on medicines-related health outcomes, and to investigate the potential barriers to the implementation of this service. A poor completion rate in the study, with only 39% of pharmacists who agreed to participate providing usable data, indicated significant barriers to implementation of such a service. This paper explores the perceptions of New Zealand community pharmacists after working in this environment and to determine the barriers that limit community pharmacists and general practitioners working together clinically. The perceptions of general practitioners are discussed in the previous paper.<sup>27</sup>

## Methods

At the end of the GPPC study face-to-face semi-structured interviews of pharmacists were undertaken by the researcher to determine what they perceived as inhibitors to wider implementation of clinical medication reviews. The interviews were up to 30 minutes and were audiotaped with permission from the interviewee. The primary areas discussed with the pharmacists were:

- Aspects of the medication review service that went well.
- Barriers to the provision of the medication review service.
- Practicalities such as communication processes, general practitioner acceptance, patient response, implementation problems and location of the service.
- The future they envisaged for clinical medication reviews.

The interviews continued until no further information or concepts were forthcoming and were transcribed and analysed using QSR NVivo version 2.0. An analysis was undertaken by the researcher (LB) initially within six months of the interviews. The transcriptions were then re-analysed by the researcher using a general inductive thematic approach 18 months later to aid with consistency of interpretation. It was on the second analysis that the themes, beyond the basic responses to the questions, emerged.

Ethical approval for the study was obtained from the regional ethics committees (ref: 99/207).

## Findings

Twenty of the 26 pharmacists who started the GPPC study were interviewed. Of these 20, two pharmacists had withdrawn during the study, two provided no clinical data and one provided clinical data only for the intervention arm.<sup>†</sup> The six pharmacists who were not interviewed were unavailable for an interview at the time the researcher visited. The characteristics of the pharmacists are noted in Table 1.

## Overview

The themes that emerged from the interviews were whether the provision of clinical medication reviews was mandated, had legitimacy, was effective, and the adequacy of the pharmacist to provide the service. Views on government endorsement and the perceptions of others such as general practitioners and patients reflected concerns about a mandate. The concept of legitimacy was raised through comments relating to time requirements and funding, suggesting that medication reviews were not something that had priority over traditional pharmacy business matters. Comments on lack of confidence in clinical and personal skills, plus a need for peer support, indicated a perception of lack of adequacy.

The themes of mandate, legitimacy, effectiveness and adequacy are interrelated, with providers requiring adequacy in order to achieve effectiveness, which then gives legitimacy to the service, which should eventually become a role mandated by the profession and by others external to the profession. For the pharmacists the business perspective was important to the theme of legitimacy, which became the major theme.

## The good aspects of medication reviews

In response to the broad question about the good aspects of the reviews, the pharmacists found particular satisfaction in building a better rapport with customers, and making a difference or helping people.

Table 1. Characteristics of the pharmacists interviewed.

		Pharmacists (n=20)	
		%	(no.)
Age (in 2002)	<40 years old	40%	(8)
	40–50 years old	45%	(9)
	>50 years old	15%	(3)
		Range: 27–57 years	
Gender	Male	30%	(6)
	Female	70%	(14)
Ethnicity	European	100%	(20)
Location	Town	15%	(3)
	Peripheral city	60%	(12)
	City	25%	(5)
Role	Proprietor	35%	(7)
	Employee	45%	(9)
	Independent contractor	25%	(4)
Postgraduate study	Completed Masters or PG Diploma	30%	(6)
	Completing Masters or PG	35%	(7)
	No postgraduate study	35%	(7)

I think it builds a really good relationship with customers. [P1]

I have really enjoyed them because I have met different people and got to know them on a level that I wouldn't just in the shop. [P2]

## Legitimacy

There were some general comments about community pharmacy as a business and the challenge of incorporating an extra service into the normal dispensing or supply and distribution priorities, particularly in times of staff shortages through holidays, sickness, etc. The medication review service was not seen as a priority or a part of the business, but more a 'nice-to-do'. The majority of pharmacists commented that the medication reviews were generally not done in routine work time, but in the pharmacist's own time. The funding was paid to the pharmacy, not the pharmacist. This meant that it was not incorporated into the normal routine of the business and

<sup>†</sup> In the GPPC study only 26 of the 44 pharmacists who agreed to participate started the study (59%); of these, 21 completed the study (48%) and only 17 completed the study and provided useable data (39%).

other tasks, such as dispensing and retail, were considered a higher priority.

The time spent on each of the patient medication reviews was estimated by the pharmacists as four to six hours generally, with a few estimating as high as eight hours, and one about one-and-a-half to two hours.

Because you start off in the supply mode you get trapped into that because that's what, that's kind of the grind that you get into and it is really hard to break out and do something different, particularly when you are working for someone. [P3]

I can't do it. It needs a degree of dedicated time. I personally find it too hard to do an interview, come back to work, be a pharmacist dispensing then go home and write up the case studies, or try and find some time out, because I don't get space in the office... My head is in one place, and it has got to be in another because I have got a growing pharmacy. [P4]

It is down time in the pharmacies. [P5]

My impression from other community pharmacists trying to do it is that the pressures of community pharmacy impinge too much to allow them to do CPC®† [P6]

Sometimes the shop detracts from the work of pharmacy. [P2]

I mean that's the other thing to reduce a person's medicines, they are actually taking away their business. I talked to a pharmacist in [NZ region] who is my age who said, 'why would you do CPC® because you are basically reducing my income'. [P7]

### Mandate

The perception of whether there is a mandate for a new service is an important aspect of acceptance of a service. The pharmacists perceived that there was little mandate from general practitioners, although at times this seemed ambivalent and dependent on exposure. Despite government funding for the service at the time of the study,

the pharmacists did not think the government had given them a clear mandate to undertake this role.

The biggest problem is I am actually, like, hitting a brick wall. It is whether you get doctors to buy in to it. Whatever it takes to get them to buy in, once they are bought in I think they are okay. [P4]

There seems to be quite a demarcation line between medical things and pharmacy things and I think the Guild, the Doctors' Guild, see us as just counting tablets and selling makeup. [P8]

There needs to be clear guidance from the Ministry about the implications and the realisation of what CPC® can give the country. [P4]

### Adequacy

The pharmacists need to feel they have adequate clinical knowledge and skills to provide the clinical medication review service, or have the motivation to obtain the necessary skills. During the interviews there were a number of comments made regarding clinical skills, personal confidence and the desire for peer support, with an indication that a number of the pharmacists felt they were working in isolation. The issue of funding is also relevant to the concept of adequacy to provide clinical medication reviews. To do these efficiently for the funding provided, the pharmacists require adequate skills and knowledge to complete the review within the expected (funded) time frame.

I probably need to up-skill to be able to be more confident and say, 'okay this is the research that I am talking about', not just my gut feeling. [P9]

I don't have the confidence. [P10]

I think it needs to be done properly, but having said that, that is one of the reasons why there aren't enough people to actually do it now. [P6]

That is one thing I do struggle with, I would prefer to be able to discuss every care plan basically. It worries me not having any backup, any double checking. [P11]

† CPC® is Comprehensive Pharmaceutical Care, a structured model used for the clinical medication reviews.

## Effectiveness

To undertake a service there must be a perception that it is effective—for the patient, the general practitioner and the pharmacist. The pharmacist's focus on effectiveness also included an efficiency and business perspective. This came through in comments relating to communication, feedback, implementation of recommendations, and potential location of the service.

Feedback on the acceptability of recommendations was generally considered to be lacking, and so left the pharmacists not knowing whether their work had been useful. There were also some problems with implementation, despite apparent acceptance of the recommendation in some cases. This seemed to be related to communication, with the preferred communication method between the pharmacist and the general practitioner being face-to-face. It was recognised that this was more time consuming, but a written summary plus a discussion appeared to be more productive and assisted the pharmacist in understanding the general practitioner perspective.

You do the first few and you don't get any feedback. They are not good at giving feedback and how good they found it. Actually that is probably the biggest downer... if they don't refer other patients to you for a while you think, oh, did I do something wrong? Did they think it was a waste of time? [P12]

Opinion on the best location of the service was divided. Home visits had recognised advantages but became a significant time factor in the total service, and problems with being in the pharmacy...

I personally find it too hard to do an interview, come back to work, be a pharmacist dispensing then go home and write up the case studies or try and find some time out because I don't get space in the office. [P4]

If you are an independent person you can do it in the pharmacies, so long as you get yourself organised and, like, have a morning a week to book in patients and... I think it would be difficult to do it if you worked full-time in that pharmacy, and then once a week you were trying to do this because, when you go to write them up, if you are trying to do it in work time and if you are trying to do it on

the premises, it is very difficult to say to a member of the public why you are doing something in the dispensary one day and the next day you are ignoring them. [P13]

## Feasibility of clinical medication reviews in the future

Although the themes of mandate, legitimacy, effectiveness and adequacy emerged, a final question on whether the pharmacists believe there is a future for clinical medication reviews provided a summary of their overall view. All the pharmacists considered that these reviews should be part of the future for pharmacy, though two pharmacists felt that it was not something that they would pursue because of their perceived skill level and the stage they were at in their career. No pharmacist could see themselves providing the service full-time, but usually for one to two days a week. The reasons for this varied: fitting it around children; having interests in other parts of the business; finding difficulty fitting it into the business staff-wise for more than one day a week and finding the intensity difficult. This may also indicate a perceived lower priority of the service, and that it is merely an 'add-on' service. A number of pharmacists commented that the standard of the reviews needed to be maintained and the service needed to be done properly if there was to be a future for clinical medication reviews.

Twelve months after the GPPC study ended, 44 pharmacists who initially accepted the invitation to participate in the study were asked how many medication reviews they had done in the previous year. Thirty-eight pharmacists (86%) responded. Of the 25 pharmacists who had not undertaken any medication reviews in the previous 12 months, six no longer worked in community pharmacy (two had moved to hospital, two to a Primary Health Organisation (PHO) and two to a professional organisation), three had sold their pharmacy, and three were focussed on family commitments. Of the 13 pharmacists who had completed medication reviews in the previous 12 months, six were rest home-based completing three to 30 reviews over 12 months, and four had done minimal numbers for ambulatory patients (two to eight). Three pharmacists who had under-

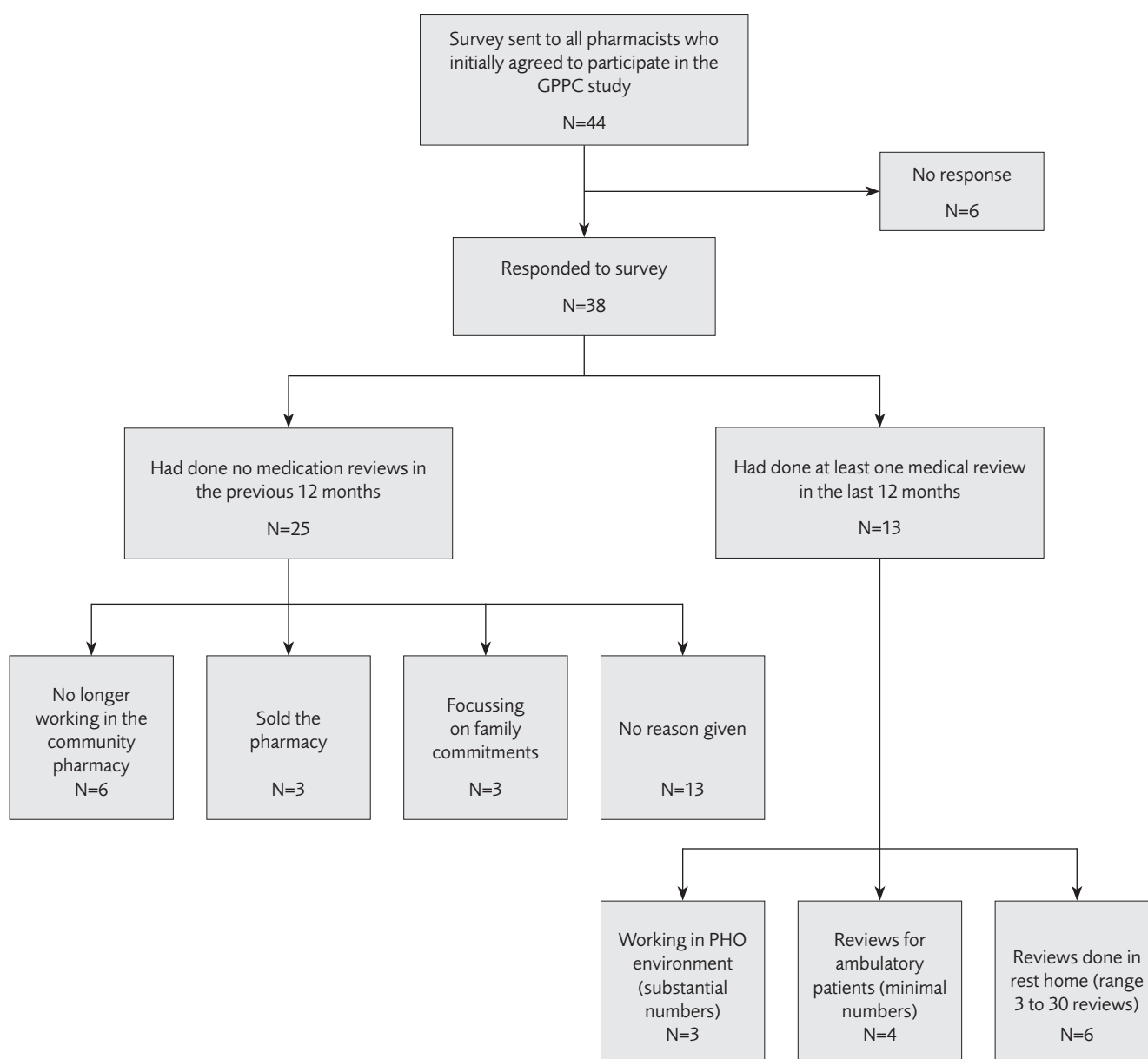


taken a substantial number of medication reviews for ambulatory patients had done so after moving into a PHO environment and no longer worked in community pharmacy. (Figure 1) This demonstrates the lack of incorporation of the clinical medication reviews service into routine community pharmacy services after the study, despite funding being available at the time.

## Discussion

Despite the funding provided by the government for clinical medication reviews, the community pharmacists did not perceive that they have a mandate to provide the service, that it was a legitimate service or that they had adequate skills and experience to provide the service, despite an apparent desire to undertake these services. If the

Figure 1. Ongoing involvement in clinical medication reviews of the pharmacists who agreed to participate in the GPPC study



reviews were perceived as a legitimate service, then they should receive reasonable priority in terms of time.

While other researchers identified a number of physical or system barriers, this study supports the findings that pharmacist attitudes contribute additional barriers,<sup>20</sup> particularly the concept of whether this is a legitimate service from a community pharmacy.

The work of Edmunds and Calnan<sup>26</sup> suggest some reasons for this, including that, despite a view that their skills were underutilised and their desire for an extended role in patient health care, community pharmacists find it difficult to manage the conflict between being a trader and being a health professional. They believe that pharmacists see themselves as dispensers of the general practitioner's prescriptions and wish to avoid conflict with general practitioners over clinical decisions. They feel unworthy to challenge the status quo, despite a perception that they are knowledgeable about drug therapy.

In contrast, clinical pharmacists working within general practice or primary care clinics appear to be more integrated into the health care team and experience fewer barriers to providing clinical medication reviews and other medicine management services independent of dispensing and supply.<sup>6-10</sup> A further area of research should involve the perceptions and acceptance of clinical pharmacists working within PHOs and general practices, independent of a community pharmacy, as well as the influence this has on patient medication-related health outcomes.

The limitations of this study are that the pharmacists generally already had a relationship with the general practitioners in the study, therefore reducing one barrier identified in previous research.<sup>17,18,20,22,23</sup> The nature of these medication reviews were clinical rather than just focussing on adherence support, which is the current funded service in New Zealand and likely to generate less hesitancy about adequacy. These findings also relate to pharmacists who were motivated, having undertaken extra training to provide the clinical medication reviews. It would be of academic interest to assess the views of less motivated

pharmacists. Presumably they would be even less accepting of their role in clinical medication reviews. Conversely exploring the perceptions of clinical pharmacists working in PHOs may find that these pharmacists perceive a legitimate role in clinical medication reviews and believe they have adequate knowledge and skills.

## Conclusion

While the skills of community pharmacists appear to be underutilised, there are barriers to increasing the role of community pharmacists in medicines management services. One of the main problems that needs to be addressed is the perception of community pharmacists and their attitude towards the new services, particularly the need to see these services as a priority and a legitimate service. It may be preferable to provide clinical medication reviews from within a PHO or general practice by a clinical pharmacist, independent of a community pharmacy.

## References

1. Chrischilles E, Carter BL, Lund B, Rubenstein LZ, Chen-hardee S, Voelker M, et al. Evaluation of the Iowa Medicaid Pharmaceutical Case Management Program. *J Am Pharm Assoc.* 2004;44:337-49.
2. Becker C, Bjornson DC, Kuhle J. Pharmacist care plans and documentation of follow-up before the Iowa Pharmaceutical Case Management Program. *J Am Pharm Assoc.* 2004;44:350-7.
3. Weinberger M, Murray MD, Marrero DG, Brewer N, Lykens M, Harris LE, et al. Effectiveness of pharmacist care for patients with reactive airways disease: a randomized controlled trial. *JAMA.* 2002;288(13):1594-602.
4. The Community Pharmacy Medicines Management Project Evaluation Team. The MEDMAN study: a randomised controlled trial of community pharmacy-led medicines management for patients with coronary heart disease. *Family Practice.* 2007;24:189-200.
5. Stergachis A, Gardner JS, Anderson MT, Sullivan SD. Improving pediatric asthma outcomes in the community setting: does pharmaceutical care make a difference? *J Am Pharm Assoc.* 2002;42(5):743-52.
6. Zermansky AG, Petty DR, Raynor DK, Freemantle N, Vail A, Lowe CJ. Randomised controlled trial of clinical medication review by a pharmacist of elderly patients receiving repeat prescriptions in general practice. *BMJ.* 2001;323(7325):1340-3.
7. Ellis SL, Carter BL, Malone DC, Billups SJ, Okano GJ, Valuck RJ, et al. Clinical and economic impact of ambulatory care clinical pharmacists in management of dyslipidemia in older adults: the IMPROVE study. Impact of Managed Pharmaceutical Care on Resource Utilization and Outcomes in Veterans Affairs Medical Centers. *Pharmacotherapy.* 2000;20(12):1508-16.
8. Malone DC, Carter BL, Billups SJ, Valuck RJ, Barnette DJ, Sintek CD, et al. An economic analysis of a randomized, controlled, multicenter study of clinical pharmacist interventions for high-risk veterans: the IMPROVE study. Impact of Managed Pharmaceutical Care Resource Utilization and Outcomes in Veterans Affairs Medical Centers. *Pharmacotherapy.* 2000;20(10):1149-58.



9. Rothman RL, Malone R, Bryant B, Shintani AK, Crigler B, Dewalt DA, et al. A randomized trial of a primary care-based disease management program to improve cardiovascular risk factors and glycosylated hemoglobin levels in patients with diabetes. *Am J Med.* 2005;118(3):276–84.
10. Shojania KG, Ranji SR, McDonald KM, Grimshaw JM, Sundaram V, Rushakoff RJ, et al. Effects of quality improvement strategies for type 2 diabetes on glycemic control: a meta-regression analysis. *JAMA.* 2006;296:427–40.
11. Amsler MR, Murray MD, Tierney WM, Brewer N, Harris LE, Marrero DG, et al. Pharmaceutical care in chain pharmacies: beliefs and attitudes of pharmacists and patients. *J Am Pharm Assoc.* 2001;41(6):850–5.
12. Dunlop JA, Shaw J. Community pharmacists' perspectives on pharmaceutical care implementation in New Zealand. *Pharm World Sci.* 2002;24:224–30.
13. Rutter PR, Hunt AJ, Jones IF. Exploring the gap: Community pharmacists' perceptions of their current role compared with their aspirations. *Int J Pharm Pract.* 2000;8(3):204–208.
14. Krska J, Veitch GBA. Perceived factors influencing the development of primary care-based pharmaceutical care in Scotland. *Int J Pharm Pract.* 2001;9(4):243–252.
15. van Mil F, de Boer W, Tromp T. European barriers to implementation of pharmaceutical care. *Int J Pharm Pract.* 2001;9:163–8.
16. Lee E, Braund R, Tordoff J. Examining the first year of Medicines Use Review services provided by pharmacists in New Zealand: 2008. *NZMJ.* 2009;122(1293):26–35.
17. Bradley F, Wagner A, Elvey R, Noyce P, Ashcroft DM. Determinants of the uptake of medicines use reviews (MURs) by community pharmacies in England: A multi-method study. *Health Policy.* 2008;88:258–68.
18. Lounsbury J, Green CF, Bennett MS, Pedersen CA. Evaluation of pharmacists' barriers to the implementation of medication therapy management services. *J Am Pharm Assoc.* 2009;49(1):51–8.
19. Brown CM, Barner JC, Shepherd MD. Issues and barriers related to the provision of pharmaceutical care in community health centers and migrant health centers. *J Am Pharm Assoc.* 2003;43(1):75–7.
20. Muijers PE, Knottnerus JA, Sijbrandij J, Janknegt R, Grol RP. Pharmacists in primary care. Determinants of the care-providing function of Dutch community pharmacists in primary care. *Pharm World Sci.* 2004;26(5):256–62.
21. Rossing C, Hansen E, Krass I, Traulsen J. Pharmaceutical Care in Denmark: perceived importance of medicine-related problems and participation in postgraduate training. *Pharm World Sci.* 2003(25):73–78.
22. Rossing CH, E. Traulsen, J. Krass, I. Actual and perceived provision of pharmaceutical care in Danish community pharmacies: the pharmacists' opinion. *Pharm World Sci.* 2005;27:175–81.
23. Wilcock M, Harding G. General practitioner's perceptions of medicines use reviews by pharmacists. *Pharm J* 2007;279:501–03.
24. Willink DP, Isetts BJ. Becoming 'indispensable': developing innovative community pharmacy practices. *J Am Pharm Assoc.* 2005;45(3):376–86.
25. Latif DA. The relationship between pharmacists' tenure in the community setting and moral reasoning. *J Bus Ethics.* 2001;31(2):131–41.
26. Edmunds J, Calnan MW. The reprofessionalisation of community pharmacy? An exploration of attitudes to extended roles for community pharmacists amongst pharmacists and General Practitioners in the United Kingdom. *Soc Sci Med.* 2001;53(7):943–55.
27. Bryant L, Coster G, McCormick R. General practitioner perceptions of clinical medication reviews undertaken by community pharmacists. *J Primary Health Care.* 2010;2(3):225–33.

## ACKNOWLEDGEMENTS

We wish to thank the dedicated pharmacists who participated in the GPPC study, and showed a true pioneering spirit and a keen desire to improve patient medicine-related health outcomes.

## FUNDING

Funding for the GPPC study was originally provided through the Transitional Health Authority (reimbursement of general practitioners) and the Pharmaceutical Society Education and Research Fund (printing and postage costs). These funding bodies had no influence on the study design or any publication.

## COMPETING INTERESTS

None declared.