Original Research

General practitioners’ and pharmacists’ perceptions of the role of community pharmacists in delivering clinical services

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Abstract

Background: Because community pharmacists are encouraged to provide clinical services, there is a need to determine the role perceptions of both community pharmacists and general practitioners (primary care physicians). Differing role perceptions are likely to result in barriers to pharmacists expanding their roles in health care.

Objectives: The purpose of this study was to investigate whether community pharmacists’ and general practitioner’s perceptions of the role of community pharmacists may be a barrier to pharmacists increasing their role in medication management. Other potential barriers were also explored that could provide a framework for future research.

Methods: A postal survey to 900 and 1000 randomly selected community pharmacists and general practitioners, respectively, elicited the perceptions of these groups toward the role of community pharmacists. Likert scales were used to quantify the results.

Results: The results revealed a gap in perceptions regarding the role of the community pharmacist, with general acceptance of the technical roles but less acceptance of clinical roles by general practitioners. Barriers to increased involvement of community pharmacists in clinical services included a perceived lack of mandate, legitimacy, adequacy, and effectiveness by both groups. Also observed was a lack of readiness to change by community pharmacists.

Conclusions: This study suggests that there are significant barriers to community pharmacists increasing clinical services, both from the community pharmacists themselves and from the general practitioners. Attention to change management in a complex environment will be necessary if community pharmacists are to change their role toward more clinical services.

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Keywords: Medicines management; Community pharmacists; General practitioners; Perceptions; Roles; Barriers; Survey; Clinical pharmacy; Pharmaceutical care

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RESEARCH IN SOCIAL & ADMINISTRATIVE PHARMACY

Available online at www.sciencedirect.com
Background

There are an increasing number of initiatives designed to enhance community pharmacists’ role in medication management through improved collaboration between community pharmacists and general practitioners. A potential inhibitor of this increased collaboration may be the differing perceptions of the role of the community pharmacist and also the acceptance of community pharmacists’ increased role in medicines management generally.

In this survey, the term medicines management was used to describe the concept of pharmaceutical care. The definition was:

Medicines management focuses on the use of the medicine by the patient, identifying potential and actual medicines therapy problems including non-compliance, adverse effects and monitoring for effectiveness. The aim is to optimise the use and benefit of medicines for an individual patient by pharmacists and general practitioners working together using a structured, documented process and regular meetings.

This term was used as it was considered “neutral” at the time of the survey because in New Zealand there had been some exposure to “clinical medication reviews” under different names such as “comprehensive pharmaceutical care” and “pharmaceutical review service.” This had led to confusion about what these services actually involve. However, the definition of medicines management used in the survey is commensurate with the concept of pharmaceutical care as originally defined by Hepler and Strand.1

There is little published work regarding pharmacist’s and general practitioner’s perceptions of the roles of a community pharmacist or of the potential barriers to pharmacists increasing their involvement in medicines management. A focus group study of community pharmacists’ perceptions of their roles indicated that they wished to be an integral part of the patient’s health care, be active in health screening and minor illness, and move away from performing technical duties; however, there was not unanimous agreement on all roles.2 A study from the UK found that general practitioners generally agreed that community pharmacists should be involved in installment dispensing (a single prescription endorsed for monthly dispensing), provide compliance aids, be a first point of contact for health education, have involvement in “brown bag” medication checks, formally report adverse drug reactions, and advise on cost-effective prescribing. They did not agree overall with community pharmacists screening for chronic conditions (high blood pressure, high blood glucose), selecting medicines or dosages according to agreed protocols after a general practitioner diagnosis, or running anticoagulant or lithium clinics.3

In the United States, there was a similar agreement by physicians that community pharmacists should be involved in assisting patient compliance with medicines4; report adverse drug reactions to the physician5, advise on cost-effectiveness of medicines5,6; provide accurate medicines information on the medicine’s use, risk, and benefits5,6; and aid a physician in selecting a medicine to be prescribed.5 As with the UK studies, there was less support for screening for chronic conditions,5,4 suggesting alterations to medicine regimens, and selecting medicines according to a physician-developed protocol.4 Allowing greater access to over-the-counter (OTC) medicines had a variable response depending on the medicines, but generally there was little support for this from the physicians.5 A study by Smith et al6 found that physicians had different perceptions of the roles of hospital-based pharmacists compared with community pharmacists. For example, there was an agreement by 51% of respondents that hospital pharmacists should assist with designing treatment plans, but only 17% for community pharmacists to do this. Table 1 provides details of the support from general practitioners and physicians for community pharmacists’ roles.

Studies into the perceived barriers to community pharmacists increasing their involvement in medicines management have also been limited. From the community pharmacist’s perspective, environmental issues such as time,2,7-10 space,7-9 privacy,7-9 and staff7 have been reported as barriers to increased pharmacist activity in medicines management. Pharmacist-related factors include the view that clinical knowledge is inadequate,7,9 although Sutters and Nathan10 found only 27% of community pharmacists thought that they had inadequate clinical knowledge. General practitioner relationships were considered a barrier,7,8 as were the perceived normative beliefs about patients’ approval or disapproval2,7,9 and employers’ approval or disapproval.2,11 Farris and Schopflocher12 also found that perceived lack of control over care behaviors in the practice environment was a barrier. Other pharmacist-related barriers included the perception that there was insufficient evidence of benefit of the activities.7,9
and a varied view that doctors and others would not support this increased role in medicines management.\textsuperscript{9,10} There was also a perception that the public and other health professionals lacked awareness of the role of the community pharmacist.\textsuperscript{2}

Despite the need for a closer understanding of role expectations to improve collaboration and teamwork, there is a paucity of studies of general practitioner’s perceptions of barriers to increased involvement of community pharmacist in medicines management.

The aims of this study were to examine whether the perception of the roles of community pharmacists may be a barrier to greater involvement in medicines management and to explore other potential barriers that may provide a framework for further study.

### Methods

This study used a survey to determine the role of community pharmacists as perceived by community pharmacists and general practitioners and the potential inhibitors to community pharmacists increasing their role in medicines management, which was the term used to cover the concept of pharmaceutical care.

A survey was developed through an informal discussion group with postgraduate pharmacy students to generate views on the current and future roles of community pharmacists and the potential barriers to increasing participation in the “clinical” aspects of community pharmacy. This formed the basis of a semistructured interview conducted with 5 community pharmacists and 4 general practitioners selected on the basis of

### Table 1

Summary of the support, from general practitioners, for community pharmacist’s roles

<table>
<thead>
<tr>
<th>Role</th>
<th>General description of statement</th>
<th>Level of support</th>
<th>% Agree or strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical</td>
<td>Be mainly involved in dispensing&lt;br&gt;Maintain patient profiles of over-the-counter medicines&lt;br&gt;Maintain patient profiles of prescription medicines</td>
<td>Minimal, Strong, Marginal</td>
<td>19 and 43\textsuperscript{13,21}, 89\textsuperscript{19}, 72\textsuperscript{20}</td>
</tr>
<tr>
<td>Counseling</td>
<td>Counsel on the safe, appropriate use of medicines, risks, and benefits&lt;br&gt;Provide health education</td>
<td>Strong</td>
<td>82 and 86\textsuperscript{19,20}</td>
</tr>
<tr>
<td>Monitoring</td>
<td>Compliance&lt;br&gt;Patient response&lt;br&gt;Reporting adverse effects</td>
<td>Strong, Ambivalent</td>
<td>84\textsuperscript{13}, 43\textsuperscript{20}</td>
</tr>
<tr>
<td>Advice to prescribers</td>
<td>Cost-effectiveness&lt;br&gt;Patient-specific clinical advice</td>
<td>Marginal, Variable depending on situation</td>
<td>59-78\textsuperscript{13,20}, 17-89\textsuperscript{19,21}</td>
</tr>
<tr>
<td>Dependent prescribing</td>
<td>Medication use reviews (&quot;brown bag&quot; concept)&lt;br&gt;Supervision of repeat prescriptions&lt;br&gt;Therapeutic substitution&lt;br&gt;Pharmacist clinics&lt;br&gt;Prescribing after diagnosis</td>
<td>Marginal, Variable according to the level of independence, Strong, Minimal, Minimal, except 1 marginal</td>
<td>65\textsuperscript{13}, 12-64\textsuperscript{13,21}, 76\textsuperscript{21}, 14 and 19, depending on clinic type\textsuperscript{13}, 17-54\textsuperscript{13,19,20}</td>
</tr>
</tbody>
</table>

Strong (\(>75\%\) agree/strongly agree or mean in top 25\% of Likert scale).<br>Marginal (50-75\% agree/strongly agree or mean of 50-75\% on Likert scale).<br>Ambivalent (40-50\% agree/strongly agree or mean of 40-50\% on Likert scale).<br>Minimal (almost none or not supportive).
convenience. From these interviews, a postal survey was developed and piloted on 25 randomly selected community pharmacists and 36 randomly selected general practitioners. The survey was refined to clarify ambiguous questions. The survey was used in 1998 as part of a larger study and repeated in 2002. The 2002 results are reported here.

To assess the perceived role of community pharmacists, the question in the survey was “Please circle whether you think a community pharmacist should perform the following roles as part of their standard practice.” The Likert scale ranking ranged from 1 for definitely yes to 5 for definitely no.

Although randomly ordered in the surveys, questions regarding the pharmacist’s roles in community health care could be grouped into the categories: technical (dispensing functions), checking (dosage, interactions, contraindications), counseling (benefits, adverse drug reactions), monitoring (compliance, adverse drug reactions, effectiveness), advise to the general practitioner, and prescribing roles (clinical medication review, continuation of initial prescriptions, dosage adjustments, partnership prescribing). Barriers were investigated in part 2 of the survey.

Power calculations suggested that the expected differences between pharmacists and general practitioners were sufficiently large that only a small sample (less than 70) would be required. However, to explore possible differences in subgroups, such as age and gender, the final sample size was increased to 900 community pharmacists and 1000 general practitioners according to funding available. The pharmacists were randomly selected by computer randomization from the Pharmaceutical Society of New Zealand register, and the general practitioners were randomly selected from a list from MultiMedia, a publishing company that maintains a list of medical practitioners in New Zealand.

The surveys were coded against a master list of names and this list was sent to an independent person to whom the surveys were returned. This person matched the code from the returned survey against a master list and forwarded the anonymous surveys to the researcher. When a follow-up mailing was required, the list of current non-respondents was sent to the researcher. A total of 3 follow-up mailings were posted over a 3-month period.

Two people entered the data independently into a Microsoft Excel® database (Office 2000), and the duplicate entries were compared for discrepancies with any differences corrected. The data were then transferred, and all analyses were performed using the procedures of SAS (ver. 9.1®; SAS Institute Inc, Cary, NC, USA). The Likert scale was assumed to be a normally distributed continuous variable. Validation of this assumption was made by plotting the frequency distribution of each response and testing the normality hypothesis using the Shapiro-Wilks statistic. Significant main and interaction effects were further explored using the method of Tukey to preserve an overall 5% significance level. Multiple linear regression was used to compare the 1998 and 2002 results.

A factor analysis was undertaken to categorize the questions relating to barriers. Because there could be a debate about the categorization by factor analysis, a check was made by having the researcher (LJMB), a professor in general practice (RNM), and a pharmacist with a master of pharmacy independently categorize the questions under these headings, without being familiar with the factor analysis groupings.

The survey was approved by the University of Auckland Human Subjects Ethics Committee (Ref: 2002/Q/028).

Results

Response rates
Pharmacists
Of the 900 pharmacist surveys posted, 654 (72.7%) were returned. There were 74 unusable surveys returned, of which 67 were from ineligible pharmacists (no longer working in New Zealand community pharmacy). This reduced the denominator for responses to 833. With 580 usable responses, the final usable response rate was 69.6%, equating to 23.5% of the full community pharmacist database.

General practitioners
There were 603 surveys returned from the 970 general practitioners. Of the 603 surveys returned, 13 surveys had been sent to general practitioners who were not eligible. This reduced the denominator to 957 general practitioners and the number of responses to 580. A further 25 responses were received from general practitioners who declined to participate, leaving a total of 565 usable responses. The stated reasons for declining were time, policy, and funding. This resulted in a final usable response rate of 59.0%, equating to 22.0%
of the full general practitioner database. Table 2 provides the demographics of the survey respondents.

**Perceived role of community pharmacists**

The results are presented in Table 3, comparing the pharmacist responses with the general practitioner responses.

**Comparison of pharmacist and general practitioner responses**

Overall, there was a statistical difference between general practitioners and the community pharmacists in almost all perceived roles of community pharmacists. However, because the sample size was relatively large, these statistical differences are not necessarily important in practice.

**Technical roles.** There was an agreement by general practitioners and pharmacists that “Maintain patient records” and “Provide technical prescribing information such as funding and availability of medicines to general practitioners” were acceptable roles for a community pharmacist and that community pharmacists should not be “behind closed doors” with medicines being couriered to patients. However, almost 60% of general practitioners indicated that the community pharmacist’s role should “Be mostly involved in the technical component of dispensing (counting tablets and labelling).” Comparatively, only 34% of pharmacists agreed with this statement.

**Checking roles.** There was a clear agreement by both groups that community pharmacists have a role checking drug dosage, drug interactions, and drug contraindications.

**Counseling roles.** Although there was greater than 85% agreement for both groups that community pharmacists should counsel patients about adverse effects of medicines, 92% of pharmacists believed that they should also counsel on the expected benefits of medicines compared with only 59% of general practitioners agreeing that this should be community pharmacist’s role.

**Monitoring roles.** Beyond technical, checking, and counseling functions, agreement between general practitioners and pharmacists began to diverge. Pharmacists strongly agreed that they should monitor for noncompliance (93%) and adverse medicine reactions (92%), but the general practitioners were less positive with only 78% and 74% agreeing, respectively. Pharmacists were less supportive of monitoring effectiveness of medicines by monitoring the patient’s progress (58% agreement). On average, general practitioners were opposed to this role with less than 20% agreement.

**Prescriber advice roles.** Both groups accepted that community pharmacists should “Be a source of clinical medicines information to general practitioners such as adverse effects of medicines.” Neither group thought that providing advice on monitoring serum drug concentrations was an acceptable role, with only about 30% of both groups agreeing to this statement. Both groups were ambivalent about the role of community pharmacists in providing advice on medicine cost-effectiveness.

Although 78% of pharmacists agreed that a community pharmacist should “Be a source of clinical advice to general practitioners, such as selection of a medicine for a particular disease state,” general practitioners opposed this role with only 46% agreement.

**Dependent prescribing.** Community pharmacists were only in moderate agreement about the
Table 3
Pharmacists’ and general practitioners’ perceptions of the role of community pharmacists

<table>
<thead>
<tr>
<th>Statement: Pharmacists should…</th>
<th>Pharmacists (%)</th>
<th>General practitioners (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 and 2 (yes)</td>
<td>4 and 5 (no)</td>
</tr>
<tr>
<td>Technical roles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintain patient’s records</td>
<td>96</td>
<td>2</td>
</tr>
<tr>
<td>Provide technical prescribing information such as funding and availability of medicines to general practitioners</td>
<td>78</td>
<td>15</td>
</tr>
<tr>
<td>Be mostly involved in the technical component of dispensing (counting tablets and labeling)</td>
<td>34</td>
<td>55</td>
</tr>
<tr>
<td>Provide a “closed shop” service that just receives prescriptions from the general practitioner and couriers the medicine to the patient</td>
<td>4</td>
<td>84</td>
</tr>
<tr>
<td>Checking functions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check prescriptions are the correct dose for the patient</td>
<td>99</td>
<td>0</td>
</tr>
<tr>
<td>Check prescriptions do not have drug-drug interactions</td>
<td>98</td>
<td>0</td>
</tr>
<tr>
<td>Check a prescription is not contraindicated for the patient</td>
<td>93</td>
<td>2</td>
</tr>
<tr>
<td>Counseling functions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counsel patients about relevant adverse reactions to their medicines</td>
<td>98</td>
<td>0</td>
</tr>
<tr>
<td>Counsel patients on the expected benefits of the medicine</td>
<td>92</td>
<td>3</td>
</tr>
<tr>
<td>Monitoring functions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monitor for adverse medicines reactions</td>
<td>92</td>
<td>3</td>
</tr>
<tr>
<td>Monitor patients for medication noncompliance</td>
<td>93</td>
<td>2</td>
</tr>
<tr>
<td>Monitor the effectiveness of medicines by monitoring the patient’s progress</td>
<td>58</td>
<td>18</td>
</tr>
<tr>
<td>Advice to prescribers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Be a source of clinical medicines information to general practitioners such as adverse effects of medicines</td>
<td>88</td>
<td>5</td>
</tr>
<tr>
<td>Be a source of clinical advice to general practitioners, such as selection of a medicine for a particular disease state</td>
<td>79</td>
<td>8</td>
</tr>
<tr>
<td>Advise general practitioners on the monitoring of serum drug concentrations</td>
<td>27</td>
<td>37</td>
</tr>
<tr>
<td>Advise on the cost-effectiveness of medicines for disease states</td>
<td>63</td>
<td>19</td>
</tr>
<tr>
<td>Dependent prescribing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formally review patient’s medicines and discuss possible alterations to medicines therapy with the general practitioner</td>
<td>62</td>
<td>16</td>
</tr>
<tr>
<td>Supervise repeat prescriptions for a patient, according to agreed protocols, for up to 12 mo, contacting the general practitioner if a problem arises (continuation prescribing)</td>
<td>71</td>
<td>11</td>
</tr>
<tr>
<td>Make dose adjustments to a patient’s medicine using protocols established with prescribers (eg, inhaled steroids in asthma)</td>
<td>71</td>
<td>11</td>
</tr>
<tr>
<td>Prescribe a medicine for a patient after the general practitioner has made the diagnosis, decided on the category of medicine required and given the pharmacist relevant clinical details (partnership prescribing)</td>
<td>46</td>
<td>22</td>
</tr>
</tbody>
</table>

Scores 1 and 2 = definitely or probably yes.
Scores 4 and 5 = definitely or probably no.
The difference between the professional groups was statistically significant ($P < .01$) unless $P$ value stated.
prescribing-type roles, which were formally reviewing a patient’s medicines and discussing possible alterations to medicines therapy with the general practitioner (62% agreement); supervising repeat prescriptions for up to 12 months (71% agreement); making dosage adjustments using protocols (71% agreement); and prescribing a medicine after diagnosis by a general practitioner (46% agreement). General practitioners opposed all these roles with the most agreement being with formally reviewing a patient’s medicines and discussing possible alterations to medicines therapy with the general practitioner (38% agreement).

Barriers to providing ‘medicines management’ services

The factor analysis found 5 well-grouped categories. From the experience of one of the authors (RNIM) in alcohol research, these categories appeared to fit the concepts of role legitimacy, adequacy, and effectiveness. These concepts have been used for research in problematic alcohol use and have been discussed as a possible framework for clarifying psychiatric nursing roles. A fourth category related to mandate and the fifth related to change. Using these categorizations, consensus agreement was obtained from the panel for all but 6 questions, 3 of which were asked only of the general practitioners. The category each question falls into is grouped in Table 4, along with the responses to individual questions.

Comparison of responses for each category

The total scores for each category derived from the factor analysis procedures were converted to a scale of 1 (agreement) to 5 (disagreement). There was a statistically significant difference between the pharmacists and the general practitioners for each category except for adequacy and change, although the absolute difference was small. There was not a strong belief by either group that community pharmacists have a mandate to undertake medicines management, that this is a legitimate role for community pharmacists, and that they have adequacy to undertake the role, with the mean falling around 2.4-3.2 for all categories. Unlike the general practitioners, the pharmacists were more likely to consider that medicines management would be effective (Table 5).

Pharmacists who had completed or were completing postgraduate study were significantly more likely than pharmacists not involved in postgraduate study to consider that community pharmacists were mandated to do medicines management, that it was a legitimate role, that they had adequacy, and that the role would be effective (Table 6), although there was a large number of pharmacists clustered around the “neutral” response and most of the difference was in the percentage disagreeing with the concepts. Proprietors were significantly more likely to perceive that community pharmacists had adequacy to provide medicines management, although again the absolute differences were small.

Female general practitioners were more likely to consider that community pharmacists had a mandate to provide medicines management ($P < .001$) and had adequacy to provide the service ($P < .05$) and that it would be effective ($P < .05$), although the differences were small and mainly related to the percentage disagreeing with the concept rather than agreeing with it (ie, male general practitioners were more negative and female general practitioners were more neutral). Twenty-five percent of female general practitioners disagreed with the concept that community pharmacists had a mandate to provide medicines management compared with 40% of male general practitioners, 18% of female general practitioners disagreed that pharmacists had adequacy compared with 29% for male general practitioners, and 19% of female general practitioners disagreed that the service would be effective compared with 27% of male general practitioners.

Comparison of pharmacist and general practitioner responses over time

The survey had been undertaken in 1998, although not detailed here. A comparison of responses indicated that although general practitioners had changed significantly in their perceptions for 12 of the 23 roles that community pharmacists should perform, the perceptions of community pharmacists had generally not altered over the 4 years between the surveys. Table 7, derived from multiple linear regression, summarizes the community pharmacist roles for which the general practitioners’ perceptions changed significantly ($P < .01$), highlighting those roles for which there was a change in agreement by at least 10%.

Similarly, the community pharmacists showed little change in their perceptions of the barriers.
<table>
<thead>
<tr>
<th>Statement</th>
<th>Pharmacistsa (%)</th>
<th>General practitionersa (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 and 2 (agree)</td>
<td>4 and 5 (disagree)</td>
</tr>
<tr>
<td>Do you think pharmacists should increase their involvement in medicines management?</td>
<td>80</td>
<td>6</td>
</tr>
</tbody>
</table>

**Questions categorized as referring to mandate**

- The funding stream currently does not support pharmacists and general practitioners collaborating on medication management
  - Pharmacists: 91, General practitioners: 76
- Government policy now gives sufficient recognition to this approach to patient care
  - Pharmacists: 12, General practitioners: 15
- Other than to dispense prescriptions, pharmacists are on the periphery of the core health care team
  - Pharmacists: 66, General practitioners: 25
- My local general practitioner would not want me to provide this service
  - Pharmacists: 25, General practitioners: 26
- Patients would find this unacceptable
  - Pharmacists: 11, General practitioners: 63

**Questions categorized as referring to legitimacy**

- By providing this service, I would not be calling the general practitioner’s judgment into question. (A pharmacist providing this service would not be calling my judgment into question)
  - Pharmacists: 60, General practitioners: 40
- I would be challenging the general practitioner’s authority. (This service by a pharmacist would be challenging my authority)
  - Pharmacists: 23, General practitioners: 21
- This is not duplication of the general practitioner’s work
  - Pharmacists: 59, General practitioners: 25
- I don’t feel comfortable with the autonomy pharmacists have when dealing with patients
  - Pharmacists: 43, General practitioners: 41

**Questions categorized as referring to adequacy**

- I feel inadequate dealing with general practitioners on clinical medicine-related issues on behalf of the patient (A community pharmacist’s knowledge of pharmacology and clinical use of medicines is inadequate to intervene on the patient’s behalf)
  - Pharmacists: 32, General practitioners: 27
- I have sufficient confidence in my clinical knowledge to provide this service. (I have sufficient confidence in the clinical knowledge of my local pharmacists for them to provide this service)
  - Pharmacists: 32, General practitioners: 36
- I feel I am sufficiently trained to provide this service. (Pharmacists are sufficiently trained to provide this service)
  - Pharmacists: 42, General practitioners: 35

**Questions categorized as referring to effectiveness**

- The patient may get conflicting information regarding medicines use
  - Pharmacists: 52, General practitioners: 79
- This would enhance my current relationship with my general practitioners/local pharmacists
  - Pharmacists: 70, General practitioners: 56
- This service would improve patients’ medicine-related health outcomes
  - Pharmacists: 85, General practitioners: 35

**Questions categorized as referring to change**

- The current health environment provides a good opportunity to change and redefine the roles of health care providers
  - Pharmacists: 51, General practitioners: 28

*(continued)*
to increasing their involvement in medicines management, but the general practitioners showed significant increased agreement with the statements:

- "This service by a pharmacist would not be challenging my authority." (Agree or strongly agree, 36% [1998] and 45% [2002], \( P < .01 \))
- "I have sufficient confidence in the clinical knowledge of my local pharmacists for them to provide this service." (Agree or strongly agree, 20% [1998] and 36% [2002], \( P < .001 \))
- "This would enhance my current relationship with my local pharmacists." (Agree or strongly agree, 46% [1998] and 56% [2002], \( P < .01 \))
- "This service would improve patient medicine-related health outcomes." (Agree or strongly agree, 29% [1998] and 35% [2002], \( P < .01 \))

### Discussion

**Perceived roles of community pharmacists**

The results from this survey do not differ greatly from those of other surveys on general practitioner’s perceptions of the role of community pharmacists, particularly the traditional roles of supply and distribution, counseling, and monitoring for compliance. Our survey found only marginal support from general practitioners for counseling about the benefits of medicines, a role not specified in other surveys. This may be considered to be encroaching on the general practitioner’s territory.

There was less agreement with respect to monitoring therapy. Community pharmacists considered that they had a role in monitoring for noncompliance, adverse drug reactions, and the effectiveness of medicines, but only around 26% (agree) and 47% (disagree) agreed with the statement: "There are enough changes in health systems without having to cope with adapting to new roles."
three-quarters of general practitioners supported the monitoring of noncompliance and monitoring for adverse drug reactions, and they were opposed to community pharmacists monitoring for the effectiveness of medicines (11% acceptance). Two other studies found similar general practitioner support for monitoring for compliance but not for monitoring medicines’ effectiveness.6

Both groups in this study did not consider monitoring drug serum concentrations to be a community pharmacist’s role and were ambivalent about community pharmacists advising on cost-effectiveness. Although both professional groups agreed that community pharmacists should be a source of clinical medicines information to general practitioners, such as information on the adverse effects of medicines, the general practitioners did not agree that community pharmacists should provide clinical advice to the general practitioner, such as the selection of a medicine for a particular disease state. The provision of proactive, patient-specific advice before prescribing was an agreed role for community pharmacists in most other surveys,4,10,16 although one study found approximately 50% support for hospital pharmacists assisting physicians to design drug therapy treatment plans, but only 17% support for community pharmacists to do this role.6

As with this study, other studies found that community pharmacist’s roles that could be considered to encroach on a general practitioner’s clinical role were less acceptable, such as prescribing roles.3,4,6,18 Almost three-quarters of community pharmacists agreed with the roles of supervising repeat prescriptions for up to 12 months and making dosage adjustments to a patient’s medicines according to the protocol, compared with less than one-third and less than 15% of general practitioners agreeing with these roles, respectively. The concept of community pharmacist clinical medication reviews was marginally more acceptable to general practitioners. Interestingly, not quite two-thirds of community pharmacists agreed with this collaborative role, although almost three-quarters thought they should supervise repeat prescriptions and make protocol-driven dosage adjustments to medicines.

What is of added interest is that there was a significant and positive change in the perceptions of the general practitioners between 1998 and 2002, suggesting a growing acceptance of a more cognitive role of community pharmacists. Although the majority may still not accept the more clinical or direct patient care roles, these changes in attitudes are important.

From the pharmacists’ perspective, there was strong agreement on the role of community pharmacists in functions related to dispensing (checking, counseling, and some monitoring). There was less agreement with the more clinical services such as medication reviews and prescribing functions that are being promoted by government and the pharmacy professional bodies. This inconsistency will create challenges for the pharmacy profession.

<table>
<thead>
<tr>
<th>Category</th>
<th>Pharmacists</th>
<th>General practitioners</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Likert ± SD</td>
<td>Agree (%)</td>
</tr>
<tr>
<td>Mandate</td>
<td>3.4 ± 0.5</td>
<td>4</td>
</tr>
<tr>
<td>Legitimacy</td>
<td>2.7 ± 0.7</td>
<td>50</td>
</tr>
<tr>
<td>Effectiveness</td>
<td>2.4 ± 0.6</td>
<td>59</td>
</tr>
<tr>
<td>Adequacy</td>
<td>2.9 ± 0.7</td>
<td>34</td>
</tr>
<tr>
<td>Change</td>
<td>2.8 ± 0.5</td>
<td>46</td>
</tr>
</tbody>
</table>

SD, standard deviation.

The figures are adjusted for the significant difference in age between the pharmacists and the general practitioners.

a The results are standardized to a Likert scale of 1-5, with 1 indicating strong agreement that community pharmacists have the stated criteria for medicines management, or for change, are amendable to changing toward a medicines management role.

b Comparison between community pharmacist and general practitioner response.
other health care providers, and the funders, and will likely lead to some confusion for patients. Working in a complex system such as primary care, with its many competing factions and influences, will impose difficulties for managing the changes both from within and outside the profession.

Potential barriers to pharmacists’ involvement in medicines management

Factor analysis, supported by intuitive categorization, allowed the potential barriers to be grouped according to whether community pharmacists perceived that they were mandated to provide medicines management services, whether they thought it was a legitimate role, whether they perceived they had adequate to provide the services, and whether the services would be effective.

Mandate

The term mandate is considered to be a practice that is required to be done through official command or instruction from authority. It signifies authority bestowed by “higher powers” (government, professional councils, public demand).

Although both groups perceived a lack of mandate for pharmacists to undertake medicines management, general practitioners perceived a stronger mandate for community pharmacists to undertake this role than pharmacists. Using this concept of mandate, other studies found a similar perceived lack of mandate from general practitioners9 and patients.12,19 Because New Zealand pharmacy had, at the time of the surveys, a requirement that a pharmacist must own 75% of the shares in a pharmacy, we did not pursue the question of whether pharmacists felt they had a mandate from “head office” to provide medicine management services. From a US survey11 and a UK survey,2 a lack of mandate from head office was perceived by community pharmacists. This may have related to the 2 streams of pharmacy business—retailing and professionally focused health care provision.20 Although one is an

Table 6

<table>
<thead>
<tr>
<th>Category</th>
<th>Pharmacists with postgraduate study (n = 77)</th>
<th>Pharmacists without postgraduate study (n = 503)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Likert ± SD</td>
<td>Agree (%)</td>
</tr>
<tr>
<td>Mandate</td>
<td>3.0 ± 0.5</td>
<td>4</td>
</tr>
<tr>
<td>Legitimacy</td>
<td>2.4 ± 0.6</td>
<td>63</td>
</tr>
<tr>
<td>Effectiveness</td>
<td>2.2 ± 0.5</td>
<td>76</td>
</tr>
<tr>
<td>Adequacy</td>
<td>2.6 ± 0.9</td>
<td>53</td>
</tr>
<tr>
<td>Change</td>
<td>2.4 ± 0.7</td>
<td>67</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>Proprietor pharmacists (n = 233)</th>
<th>Non-proprietor pharmacists (n = 347)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Likert ± SD</td>
<td>Agree (%)</td>
</tr>
<tr>
<td>Mandate</td>
<td>3.5 ± 0.5</td>
<td>5</td>
</tr>
<tr>
<td>Legitimacy</td>
<td>2.7 ± 0.7</td>
<td>51</td>
</tr>
<tr>
<td>Effectiveness</td>
<td>2.4 ± 0.6</td>
<td>58</td>
</tr>
<tr>
<td>Adequacy</td>
<td>2.8 ± 0.8</td>
<td>38</td>
</tr>
<tr>
<td>Change</td>
<td>2.8 ± 0.7</td>
<td>44</td>
</tr>
</tbody>
</table>

SD, standard deviation.
* 1 is strong agreement and 5 is strong disagreement with the concept (category). For the category of change the lower value indicates a positive response to change.
activity that involves the laws of commerce, the
other is the “health care provider” role of phar-
macists, which has different priorities and profes-
sional codes of ethics and conduct. There are
different balances to be reached depending on
the type of business and the major source of in-
come for community pharmacy.

In New Zealand, a government mandate could
be signified through reimbursement for nonsupply
and distribution-related services. There is a discrep-
ancy in the perception of a lack of governmental
mandate as there was a $160 reimbursement for
a Pharmaceutical Review Service (medication
review) at the time of the survey.

**Legitimacy**

The term legitimacy indicates a practice that
should be done and has some priority over other
tasks. It is an appropriate practice area within the
scope of professional practice.

Both groups had an approximately 40% agree-
ment with the statement that they did not have
time to discuss patient-related medicine issues
with each other, perhaps an indication of low
priority or value compared with other services.
The concept of lack of time as an inhibitor to
providing cognitive services is well reported.\(^2\),\(^7\)-\(^9\),\(^21\)
By extension, this suggests that medicines man-
agement-type services are not considered a legiti-
mate use of time deserving priority status. In
2003, Rossing et al\(^22\) found that community phar-
macists still thought the technical aspects of dis-
pensing were the priority. This was endorsed by
our survey of community pharmacist’s roles. The
perceptions indicate that the technical aspects of
pharmacy practice are the priority and that the
role of the pharmacist within the business nega-
tively influences the perceived legitimacy of medi-
cines management-type services. Odedina et al\(^19\)
in the United States and Bell et al\(^23\) in Northern
Ireland determined that if the business orientation
of the pharmacy did not perceive pharmaceutical
care services as a priority, it was unlikely to occur.
This therefore becomes a barrier to the perceived
legitimacy of the service.

The findings in this study are supported by an
earlier New Zealand survey showing that only
55% of community pharmacists were fully

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**Table 7**

Significant changes in general practitioner response over time\(^a\)

<table>
<thead>
<tr>
<th>Role</th>
<th>% Responses probably or definitely agree (1998)</th>
<th>% Responses probably or definitely agree (2002)</th>
<th>(P) value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check a prescription is not contraindicated for the patient</td>
<td>80</td>
<td>87</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Counsel patients on the expected benefits of the medicine</td>
<td>51</td>
<td>59</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Monitor for adverse medicines reactions</td>
<td>65</td>
<td>74</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Monitor patients for medication noncompliance</td>
<td>70</td>
<td>78</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Monitor the effectiveness of medicines by monitoring the patient’s progress</td>
<td>5</td>
<td>11</td>
<td>.001</td>
</tr>
<tr>
<td>Be a source of clinical advice to general practitioners, such as selection of a medicine for a particular disease state</td>
<td>31</td>
<td>46</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Be a source of clinical medicines information to general practitioners such as adverse effects of medicines</td>
<td>68</td>
<td>75</td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Advise general practitioners on the monitoring of serum drug concentations</td>
<td>20</td>
<td>31</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Advise on the cost-effectiveness of medicines for disease states</td>
<td>53</td>
<td>57</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Formally review patient’s medicines and discuss possible alterations to medicines therapy with the general practitioner</td>
<td>25</td>
<td>38</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Prescribe a medicine for a patient after the general practitioner has made the diagnosis, decided on the category of medicine required, and given the pharmacist relevant clinical details (partnership prescribing)</td>
<td>5</td>
<td>9</td>
<td>.001</td>
</tr>
<tr>
<td>Prescribe for minor illnesses such as hay fever</td>
<td>63</td>
<td>71</td>
<td>&lt;.01</td>
</tr>
</tbody>
</table>

\(^a\) These results were developed from multiple linear regression comparing the 1998 survey and the 2002 survey for
community pharmacists and general practitioners. There was no significant difference in the demographic variables of
gender, work hours, and location for the general practitioners, although age was significantly different (mean 44.6 yr in 1998 vs 46.4 yr in 2002) \((P = .002)\). Age was adjusted for in the comparative analysis.

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supportive of the concept of pharmaceutical care, and 15% believed that this was the general practitioner’s role.\textsuperscript{9}

**Adequacy**

The perception of inadequacy by community pharmacists appears to be a major barrier, with less than 50% feeling adequate dealing with general practitioners on clinical medicine-related issues, having sufficient confidence in their clinical knowledge and feeling sufficiently trained. The study results corroborate those of Dunlop and Shaw,\textsuperscript{9} which indicated that 75% of community pharmacists believed that they needed up-skilling in clinical knowledge, with 56% believing they had inadequate therapeutic knowledge. This makes advocacy and promotion of a new service, such as pharmaceutical care, difficult, despite community pharmacists being promoted as the “experts in medicines.”

The results from this survey are of concern, because implementation of medicines management services will be strongly inhibited by the lack of perceived adequacy not only by general practitioners but also by pharmacists themselves. Clinical medication reviews require the pharmacist to be responsible and accountable for a patient’s drug therapy. Less than half of community pharmacists agreeing that they felt comfortable with the accountability required for medicine-related decisions may also reflect the pharmacist’s lack of confidence in their adequacy to provide the service, and be another important inhibitor to the implementation of the full philosophical intent of Hepler and Strand’s model of pharmaceutical care.

This does not appear to be only a New Zealand issue, as international studies have reached similar conclusions of pharmacists feeling inadequate to provide cognitive services.\textsuperscript{3,7,10,19,21,24} Providing pharmacist training programs in an attempt to overcome the barrier of inadequate clinical knowledge and skills occurred in a number of studies. Some of this training was extensive,\textsuperscript{25-32} and some studies included a number of pharmacists with postgraduate qualifications,\textsuperscript{33,34} but this extra training did not necessarily result in good completion rates in the studies\textsuperscript{26,30-32} or positive outcomes.\textsuperscript{33,34} Although extra training is necessary for the provision of pharmaceutical care,\textsuperscript{35-37} it is not the only barrier to change.

If the perception of inadequacy is a reality, and yet these services are implemented, then this will further reduce the perceived legitimacy of the service by others, such as general practitioners.

**Change**

Structured change usually requires a vision, a plan, and appropriate management. van Mil et al\textsuperscript{21} identified a lack of vision by pharmacists as a factor to be considered if a change toward pharmaceutical care was to progress. Taking the concept of providing care functions to patients beyond just the provision of drugs, a Dutch study survey of 379 community pharmacists, with 71% respondents, found that the factors significantly and positively correlated with a care-providing function were the attitude of the pharmacists, the pharmacists having a relationship with the general practitioner, the presence of specialized technicians, the frequency of postgraduate training, and the type of role (e.g., managers scored lower than staff pharmacists). The researchers’ conclusion was that the programs need to be developed that focus on optimizing pharmacist attitudes and cooperation between pharmacists and general practitioners if change was to occur.\textsuperscript{35}

In this study, approximately half the pharmacists agreed that the current health environment provided a good opportunity to change and redefine the roles of health care providers, 26% agreed that there are enough changes in the health system without having to cope with adapting to new roles, and 14% thought that changing from their established role in pharmacy would involve too great a risk. Forty percent agreed with the statement that “I am comfortable with traditional dispensing as my primary role.” There is a need to be fully cognizant of these barriers to change, rather than accepting the more tangible reasons such as time, physical facilities, and reimbursement. Studies such as that by Amsler et al\textsuperscript{8} investigated the barriers to change and implementation of a medication review service. Even when these barriers were overcome, there was still a failure of the pharmacists to change their work habits and provide the required level of service.\textsuperscript{38,39} Changes to establish new therapeutic roles must not only include the physical environmental factors and access to resources but also encompass issues of work prioritization, focus, and philosophical mind-set.

It is recognized that most people are hesitant to move out of their comfort zone, particularly when they lack confidence in their knowledge and skills, and have concerns about new roles being mandated or being a legitimate priority for community pharmacies. The community pharmacy environment itself may not be conducive to new services.
Study limitations

This study was undertaken in New Zealand, but the system of community pharmacy services is similar to the United Kingdom, Australia, and to some extent the United States. All countries are trying to move from a predominantly supply and distribution role for community pharmacy to one of the increased medicines management services within a retail environment. This study is, however, only a preliminary study that attempts to look beyond the environmental and practical barriers to the provision of medicines management. The beliefs and attitudes of community pharmacists and general practitioners, with whom community pharmacists are trying to work more collaboratively, need to be investigated further. The concepts of pharmacists believing that they have a mandate to provide medicines management services, that these services are a legitimate use of their time, and that they have adequacy and will be effective need to be explored further to consider how to increase their motivation to provide pharmacy services beyond supply and distribution.

With the seeming distinction between hospital-based clinical pharmacists and community pharmacists investigating the difference between these 2 groups of pharmacists in terms of the proposed concepts may start to provide reasons why hospital-based pharmacists appear to have a greater clinical role. The other comparative group could be those pharmacists who work in general practice (United Kingdom) and in primary care clinics (United States). This may help separate attitudinal differences from environmental differences.

Summary

A common thread as to why there is a low implementation rate of medicines management in community pharmacy includes an understanding of the “mind-set” of the community pharmacists.

van Mil et al identified the attitude and opinions of pharmacists, and a lack of vision, as factors to be considered if change was to occur and pharmaceutical care was to progress. Muijrers et al found that along with the need to have a collegial relationship with the prescriber and postgraduate training, the type of role (staff pharmacist vs manager) and attitude of the pharmacist were significant factors that correlated positively with care-providing functions.

In the seminal article by Hepler and Strand, the need for pharmacists to adopt a philosophical change from product-focused to patient-focused practice was stressed. The need to take responsibility and be accountable for patients’ medicine-related health outcomes was also described. Strand, almost 15 years later, reiterated this need for a philosophical change in attitude if pharmaceutical care was to progress successfully, a concept endorsed by others. Strand et al raised strong doubts about the feasibility of her concept of pharmaceutical care occurring in a community pharmacy at all. In addition, the traditional community pharmacy work environment may lead to ethical problems with increased opportunity for conflict between answering to professional values and addressing business demands, as described by Latif.

With these conflicts and ambivalence, there is also a need to look at psychological readiness to change. In a study of New Zealand community pharmacists, general practitioners, general surgeons, and general physicians, community pharmacists were rated the most stressed and dissatisfied, overwhelmed by paperwork, and more likely to be contemplating giving up their job because of work stress. With this level of dissatisfaction and psychological stress, it is not surprising that community pharmacists are not particularly amenable to, or capable of, change.

Conclusion

There is a significant difference in the perceptions of community pharmacists and general practitioners regarding the role of community pharmacists. Although the more traditional roles of supply and distribution are acceptable to both groups, general practitioners did not agree with the more “clinical” roles of medicines management. When responding to the potential barriers to the implementation of medicines management, there was a relatively poor perception from both professional groups regarding community pharmacists having a mandate to undertake the service, that the role was legitimate for community pharmacists, that they had adequate knowledge or skills, and that the service would be effective. Both groups were ambivalent about the opportunity to change. The requirement to apply change management principles in a complex (primary care) environment has likely been underestimated.

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