

Medicines information in New Zealand: current services and future potential

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ABSTRACT

AIM: To determine the current availability and role of medicines information services in New Zealand.

METHOD: A 36-question online survey was used to collect quantitative data about four areas of medicines information service provision: structure, availability, users and governance. The pharmacy service leader of each of the 29 public hospitals was invited by e-mail to participate. If considered appropriate, another member of the pharmacy staff could be nominated to complete the survey on their behalf.

RESULTS: The response rate was 93% (n=27). All respondents accept medicines information questions from health professionals within their local hospital, with a large proportion (85%) also accepting questions from health professionals from primary care. However, active promotion of medicines information services is rare, and health professionals within local hospitals are the most frequent service users. Although six hospitals have a formal service with dedicated staff, medicines information provision by hospital pharmacists in New Zealand is predominantly informal.

CONCLUSION: The full potential of formal medicines information services is yet to be realised in New Zealand. Greater national co-ordination could enhance access to medicines information support and contribute positively to the safe and effective use of medicines across the health system.

Clinicians routinely make decisions to optimise outcomes from the use of medicines. Given the rate at which new information is produced, sustaining a current knowledge base for this decision-making is a challenging, if not impossible, endeavour.¹ The potential risks of medicines-related knowledge gaps range from sub-optimal therapeutic outcomes to the occurrence of preventable harm to patients, with a corresponding financial burden to health systems.

The optimal use of medicines is one of the core outcome goals of the 2007 government strategy *Medicines New Zealand*² and remains a government priority with a refreshed action plan (*Implementing Medicines New Zealand*) released last year.³ Reducing medication-related harm is also a government imperative, with medication safety comprising one of the major work streams for the Health Quality and Safety Commission.

Despite increasing ease of access to a seeming abundance of information via the

internet, a recent review found that there has been little change in the proportion of unmet information needs in clinical practice over the last three decades.⁴ It seems that improvements afforded by technology may have been off-set by more complex patients (aging population, multi-morbidity) and the increasing volume and complexity of medical knowledge.^{1,4}

In studies of information needs, treatment and pharmacology consistently rank as areas of high need,^{5,6} but lack of time for searching, inadequate access to appropriate resources and limited searching skills present major challenges to clinicians in practice.^{4,7}

Providing information about medicines is a core component of the professional role of pharmacists and an area of specialty practice that emerged in 1962 with the establishment of the first formal medicines information service in the US.⁸ Medicines information services, usually located in a hospital setting, are primarily designed to provide independent, unbiased infor-

mation in response to questions from health professionals. Trained staff integrate pharmacological and pharmaceutical knowledge, information retrieval and critical appraisal with clinical experience and individual patient context to help solve medication-related problems and optimise medicine therapy.⁹

Medicines information services have been shown to have a positive economic impact^{8,10,11} and to contribute positively to patient care, clinical outcomes and medicines safety.^{9,12-14} Answers provided by medicines information services are used in care of the current patient, but the information is also often applied in the care of future patients and shared with colleagues or trainees.^{9,12}

Although four medicines information centres were established in New Zealand hospitals in the early 1980s,¹⁵ information about the services they provide and to whom is lacking. This currently consists of a description of a single centre published in 2001¹⁶ and a national overview presented in a 2005 conference poster.¹⁷ The aim of this study was therefore to determine the current availability and role of medicines information services in New Zealand.

Methods

A questionnaire was developed to explore four broad areas: structure of service, service availability, service users and governance. Question development was informed by international standards for medicines information provision¹⁸⁻²⁰ and a previous survey.¹⁷ The questionnaire was piloted on two pharmacists with extensive hospital pharmacy experience. They

provided comments on clarity, layout, ease of completion and time to complete. Some items were slightly reworded as a result. The pharmacy service leader at each of the 29 public hospitals in New Zealand with an onsite pharmacy service was invited by e-mail to complete the final 36-question electronic survey.²¹ Invitees were given the option of delegating completion of the survey to another pharmacist with greater knowledge of medicines information provision in their hospital if they deemed this to be appropriate. The survey remained open for a total of eight weeks, with a reminder e-mail sent to non-responders after two weeks. A follow-up phone call was made to any remaining non-responders after four weeks. Ethical approval for this study was obtained via the University of Otago (reference number D14/300).

Results

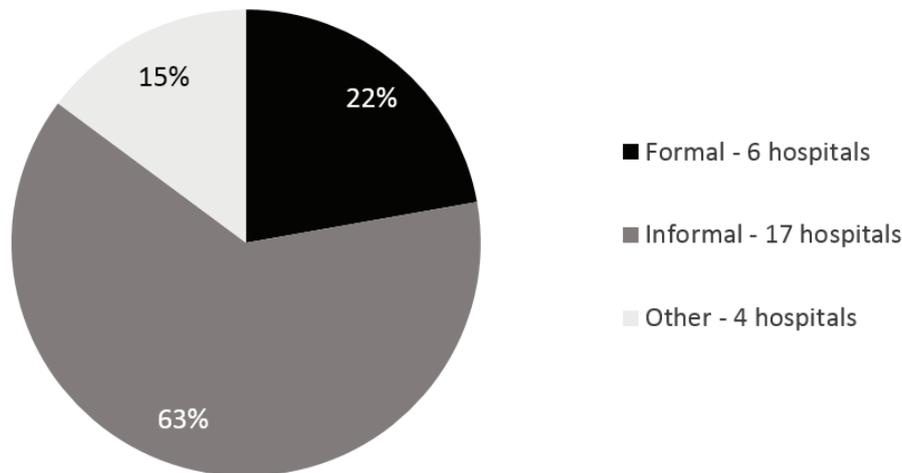
The final response rate was 93% (27/29). Two hospital pharmacy service leaders were unable to be contacted prior to closure of the survey. Based on the New Zealand Formulary listing of medicines information centres and personal knowledge that the non-responders were based in very small hospitals, it can be reasonably concluded they do not have formal medicines information services. All percentages quoted hereafter are based on a denominator of the 27 responding hospitals.

Service structure

A formal medicines information service is provided in six New Zealand public hospitals (22%) and an informal service in 17 (63%) (Figure 1 and Table 1). Four hospitals (15%) classified their approach to medicines information provision as 'other'.

Table 1: Definition of formal and informal medicines information provision.

Formal	Medicines information service with dedicated staffing of at least one full-time equivalent pharmacist, a dedicated phone line, documentation of questions received and the answers provided.
Informal	Medicines information service provided by pharmacists responding ad hoc to questions as part of ward duties or responding to phone calls to the pharmacy department.

Figure 1: Structure of medicines information provision in New Zealand hospitals.

The average staffing allocation for formal services was 1.6 pharmacist full-time equivalents (FTE), and the range 1–3 pharmacist FTE. The ‘other’ approaches that did not fit either the ‘formal’ or ‘informal’ categories were: two smaller hospitals with access to a formal medicines information service via a larger hospital within the same district health board (DHB); one hospital with a small dedicated staffing allocation for medicines information provision (0.3 pharmacist FTE) and one with a mobile phone specifically for receiving medicines information calls carried by clinical pharmacists on a roster basis.

Service availability

All respondents accept medicines information questions from health professionals within their own hospital, with 85% (n=23) accepting questions from their wider DHB catchment area. Just under half (41%, n=11) accept any medicines information questions. For others, the ability to respond is subject to workload (n=11), staffing (n=9), legal issues (n=7) or type of enquiry (n=12). Three of the six formal services accept questions from outside their DHB catchment area.

Promotion of medicines information services is very limited with just two of 27 respondents actively advertising the service; both were formal services. The advertising channels employed were: local intranet site (n=2), orientation sessions for new staff (n=2), internet site (n=1), regular newsletters or bulletins (n=1) and Grand Round or other teaching sessions (n=1).

Service users

Respondents rated the frequency with which questions were received from different professional groups on a five-point Likert scale ranging from ‘never’ to ‘very often’. Figures 2 and 3 illustrate that hospital-based health professionals are the most frequent users of the medicines information services provided by New Zealand hospital pharmacists; yet different patterns of use are observed between formal and informal/other services.

Figure 2 shows that consultants and hospital pharmacists are the most frequent users of formal medicines information services with all rating them as using the service ‘often’ or ‘very often’. They were followed by house surgeons (83%) and hospital nurses (83%), and then registrars (67%). In contrast, Figure 3 shows that the most frequent users of informal and ‘other’ medicines information services are house surgeons and hospital nurses with 71% and 62% of services, respectively, rating them as using the service ‘often’ or ‘very often’.

Service governance

All formal medicines information services have guidelines or standard operating procedures for responding to medicines information questions (100%, 6/6) and most make use of peer review to assure answer quality (67%, 4/6). Peer review is virtually absent in informal and ‘other’ services (5%, 1/21) but one third (33%, 7/21) have guidelines or standard operating procedures for answering medicines information questions.

Figure 2: Proportion of ‘formal’ medicines information services rating user group as ‘often’ and ‘very often’ users.

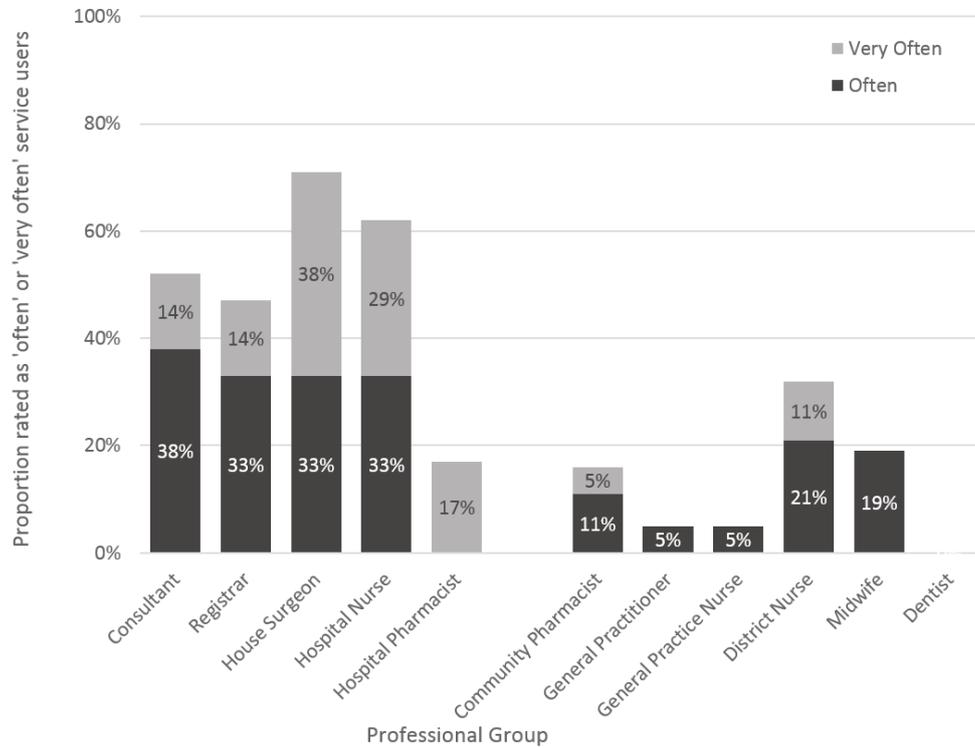
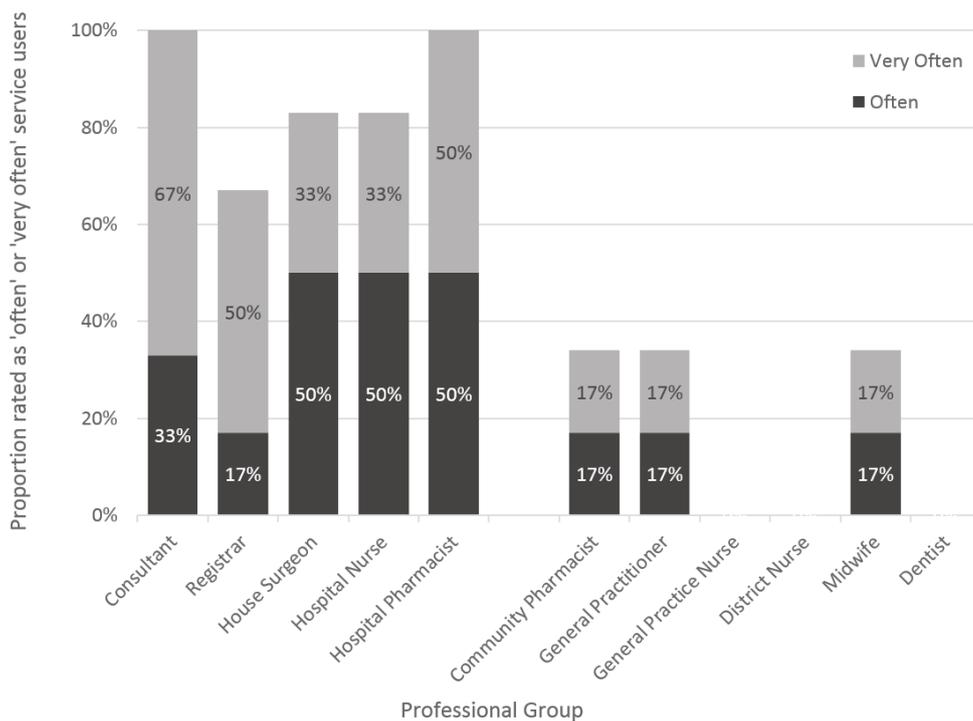


Figure 3: Proportion of ‘informal’ or ‘other’ medicines information services rating user group as ‘often’ and ‘very often’ users.



A survey to assess service user satisfaction is employed by half of formal services (50%, 3/6) and one of the other services (5%, 1/21).

A quarter of respondents (26%, 7/27) document the details of all medicines information questions received. This includes five of the six formal services. A quarter of respondents (26%, 7/27) do not document medicines information questions at all. A larger group (41%, 11/27) document only selected questions, such as those that are more complicated. Two services (7%, 2/27) document questions only when providing a written answer.

Formal medicines information services have specific training for their staff using either an in-house training package (n=3) or the New Zealand Medicines Information Training Workbook developed through the New Zealand Hospital Pharmacists' Association (n=3). Medicines information training for staff in hospitals where the approach is informal is much more variable.

Discussion

This study provides the first national overview of the availability and role of hospital-based medicines information services in New Zealand. There are six hospitals with a formal medicines information service provided for health professionals. The majority of hospitals have informal medicines information support provided by pharmacists as part of their day-to-day workload. The formal medicines information services in this study demonstrated features consistent with international standards for medicines information services such as specialist training for staff providing the service, documentation of questions and answers for future use, and quality assurance practices.^{18–20} These features contribute to provision of a robust and reliable service and are consistent with the working practices of other international services reported in the literature.²²

A variety of health professionals within and beyond the hospital setting use hospital-based medicines information support, although the most frequent users are hospital staff. House surgeons and hospital nurses are the professional groups showing the most frequent use

across all hospitals. Since junior doctors undertake a substantial proportion of all hospital prescribing and the early career years are a time of intense knowledge development, their high use of medicines information support services is not unexpected. Despite being identified as frequent users, it is possible that some junior doctors may be unaware of the support available from pharmacy teams as highlighted in a recent UK based analysis of the causes of prescribing errors.²³ The low advertising of medicines information services evident in these results could certainly contribute to sub-optimal awareness.

There is a paucity of research about nurses' need for information about medicines at the point of care.²⁴ The high level of use by hospital nurses in this study confirms the need for information and advice about medicines is not limited to prescribers.

A distinct pattern of use is evident in formal services where consultants and hospital pharmacists stand out as the most frequent users. This is consistent with the findings of Alkhaldi et al in their description of a medicines information service in a large UK teaching hospital²⁵ and likely reflects the specialist skills and resources accessible within such services. Questions from consultants tend to be more complex and take longer to answer.²⁵ The average time spent working on complex questions has been reported at nearly three hours in two recent international studies (157 minutes²⁵ and 178 minutes²⁶). This illustrates the real challenge for health professionals to find time for such research within their clinical duties, and emphasizes the time-saving role that medicines information services can play. Experienced medicines information professionals consume less time when answering medicines-related questions,²⁶ and the international trend of increasing question complexity suggests that time-saving considerations may become increasingly relevant.^{25,27} The documentation of questions and answers in a database by formal services in the present study may provide additional efficiencies due to ready retrieval of previous research in the event of a similar question.²⁸

Notwithstanding potential time-savings, Innes et al report that UK medicines information pharmacists often identify and

advise on aspects of medicines management not originally considered by an enquirer, and this is associated with improved medicines safety, patient care and outcomes.¹³ Thus, medicines information services offer a method to provide greater access to pharmacists' unique skills and knowledge, and promote collaborative patient care.

Health professionals in primary care are low users of hospital-based medicines information support services in New Zealand. This overall usage pattern is at odds with the pattern reported by an individual service in Christchurch fifteen years ago, where general practitioners (GPs) and community pharmacists accounted for 17% and 18% of questions respectively.¹⁶ The very low level of advertising identified in this study is a likely contributor to the low primary care use. Certainly, the Christchurch service reported a disproportionate increase in primary care enquiries as awareness of the service increased¹⁶ and the proportion of primary care questions to the Christchurch service remains high. In 2012, GPs accounted for 27% of questions and community pharmacists 16%.²⁹ Advertising is not the sole issue; the limited staffing allocation to medicines information services evident in the present study indicates that capacity for increased service to primary care in New Zealand is unlikely within present arrangements. This is an important consideration as GP enquiries have been previously found to be on a par with consultant enquiries in the UK in terms of time and complexity.²⁵

Given the potential benefits of medicines information services to clinical outcomes and medication safety, and the volume of prescribing that takes place, the concept of a medicines information service for primary care is attractive.^{9,12-14} A previous investigation in New Zealand highlighted medicines information as an important need of GPs.⁵ A coordinated approach where formal services provide medicines information support to clinicians (including pharmacists) in primary care and smaller hospitals may be a pragmatic solution. Examples of this type of approach can be found in the Scandinavian and the UK health care systems. In Scandinavia there is a network

of publicly funded, independent medicines information centres staffed by pharmacists and clinical pharmacologists, and attached to clinical pharmacology departments.²⁶ In the UK, a network of 220 medicines information centres based in hospital pharmacy departments and 14 regional centres work together to provide a 'virtual' national service.³⁰ Strategic coordination and collaboration between formal services, as well as the optimisation of natural links with clinical pharmacology and library services, would help ensure efficient use of scarce health resources. As pharmacists' roles within primary care are evolving, an ideal solution would retain and value existing local skills, knowledge and relationships, but provide support where needed. This may be in the form of access to resources, training or peer review. There is also potential to fill gaps in access and ensure that high quality medicines information support is available to health professionals all around the country. Information technology solutions that facilitate knowledge sharing could also play an important part—a shared online question and answer database has operated successfully in Scandinavia for decades.²⁸ Documenting questions and answers in a database provides additional benefits such as enabling more proactive work. For example, a cluster of similar enquiries may highlight an area warranting further education of health professionals, or tracking questions where limited evidence is available may provide impetus for future research.³¹

A strength of this study is the high response rate which provides an accurate picture of the New Zealand situation. One limitation was that user frequencies are based on best estimates for informal services due to variation in question documentation practices. The focus on hospital-based services could mean that other medicines information services available in primary care have been missed, although there appears to be no formal medicines information services based in New Zealand primary care. Areas for future research include the nature of medicines information needs in New Zealand primary care, including the medicines information needs of patients.

Conclusions

Formal medicines information services are available in six hospitals, but the full potential of such services is yet to be realised in New Zealand. Capacity is an issue due to limited staffing, but there are solutions available that would embody current health strategy goals—patient driven, whole

team integration and the use of smart systems. A nationally coordinated medicines information service could provide efficient, effective support across the health system for clinical problem-solving, continuing education and knowledge translation activities, contributing positively to the safe and effective use of medicines.

Competing interests:

Chloë Campbell was involved in development of a database application for recording medicines information enquiries that is currently in use in six New Zealand hospitals.

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