Identifying e-learning opportunities for a pharmacist led healthcare service: The Medication Use Review (MUR)

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Abstract

The aim of this research was to identify how e-learning delivery methods could be used by community pharmacists. The Medicine Use Review service, a state funded medication adherence intervention, was used as a case study. The study design split a nationwide survey about the MUR service and the MUR training into two questionnaires; one with dispensary business questions and the other with MUR training questions. Seventy pharmacists from across New Zealand responded to this survey. From the results, a model of the healthcare environment was formed, with the intention that opportunities for e-learning be identified that would support the successful delivery of a service.

Key points from the case study analysis include: e-learning for pharmacists has the potential to support value added service; e-learning courses need input from the stakeholders in a healthcare service environment, so evaluation of effectiveness to practise can be made; however successful training is, successful implementation of a service can rest with factors outside the pharmacy control; taking a macro view of a healthcare service environment is needed for planning training.

1. Introduction

Planning training for healthcare workers, in theory should follow processes which understand and identify factors in the environment the service is to operate in. For pharmacists, international trends such as the move to more cognitive services [1] impact on strategic decisions for business income, and professional development support for staff. It is important for the pharmacy management to differentiate between core services and value added services [2]. One example of such a service is the Medication Use Review (MUR). In this research the MUR was used as a case study to suggest that e-learning for future training could provide not only specific course content but allow the content to be delivered so it is more convenient and cost-effective for pharmacist as student and as employer. By looking to the wider service environment, factors in the decision to use e-learning tools could become clearer. A glossary is included in Appendix A to support the next section.

2. Background

The Medication Use Review is a pharmacy based service which aims to improve adherence to a medication regime by 'reviewing a patient's medications, identifying any practical or medication-related problems, and educating the patient about their medicines.' [3, p. 27]. There is general agreement [4-7] in the value of the service. If the service, or similar medication adherence interventions, is to achieve wider public access, on-going support via Continuing Professional Development (CPD), needs to offer courses with content both relevant and based on evidence from practise. The initial MUR training course for registered pharmacists covered four areas: communication skills, understanding the context and goals of the service, documentation and the need for CPD. While there was some negative feedback about this course, the service was successfully launched in several regions in New Zealand. However, skill transfer to practise, was undermined by factors external to the service. Funding for the service was through the District Health Boards (DHB) and some did not fund it. The uncertainty this made, meant the decision by pharmacists to offer the MUR service was more reactive than strategic. Value added services need to be more than focused customer service or product advice. Four categories which identify the type of strategy a pharmacy manager could apply to a establish a role within the primary healthcare sector, can be found in Appendix B [1].

Vocational training for pharmacists, as for many professions, is a requirement for registration and it is 'increasingly recognized that within this fast-changing workplace there is increased pressure to identify the most constructive and

cost-effective ways of using communication technology as a resource for learning (Guile, 1998) coupled with an increasing emphasis on self-directed and lifelong learning (Delors, 1996; Diamantopoulou, 2001).' [9, p. 370].

In the case of the MUR service, funding as a factor external to the content of the service became a barrier to the goals set [5]. Training becomes another factor contributing to the time delay in getting service operational. If funding ceases to be an issue, e-learning options for delivery of on-going training may be used in an attempt minimise this delay. E-learning is not a soft option though and pedagogical standards should be the same as those for traditional teaching [8].

The body of literature and online resources for guiding the design and implementation of e-learning is growing rapidly. Within this there are clear messages about the need for: technical support in the planning stage through instructional design, flexibility in learning access, robust assessment, facilitated opportunities for learner interaction, and appealing and appropriate on-line presentation of content [10].

E-learning is becoming a part of undergraduate learning as part of hybrid learning [11] for pharmacy students and for pharmacology content in other healthcare professionals' training. E-learning maybe more conducive to adult learners though, because of their assumed higher levels of motivation and capability for self directed learning [12]. Specific pharmacy post-graduate level courses [13] and inter professional online collaboration in learning and practise for healthcare professionals is also evident [14, 15]. A repeated message from studies, where the development process for e-learning programme were described, was not to ignore the potentially high setup costs and ongoing time commitments needed to maintain quality during the courses. Evaluation is vital so on-going improvements can be made, whether the course is fully online or hybrid [16].

E-learning can be a set of tasks completed alone or it can be activities completed as a group. Wall [17] referred to Romiszowski's classification of e-tools which is in Figure 1.

Specific mapping of e-tools to teaching methods for pharmacy related content have been:

- On-line or virtual simulation used for learning content and for the potential for learner interaction [18-20].
- On-line discussions and group activities [21-24].

Features of the simulated patient method focus on behaviour change [18, p.147]. Developed for online use, the need for immediate performance and corrective feedback is still vital but would be achieved differently. There needs to be a clear link to theory in how this interaction is structured; in many cases socio-constructive theory provides a starting point [25-27].

The New Zealand College of Pharmacists (NZCP) offers a range of delivery methods for their courses, including audio conference, workshops and online course. How much dialogue and feedback there is in establishing the effectiveness of these is unknown. On-going training is still being provided; professional development for adherence content is likely to continue with an agreement on Medications Treatment Assessment standards in 2010 [28].

Training for any adherence interventions by pharmacists would be through a Continuing Education (CE) or more likely Continuing Professional Development (CPD) framework and is a mentioned in *Focus on the Future*: *Ten Year Vision for Pharmacists in New Zealand* [29]. Scahill [5] identified from feedback on this document, that a majority of pharmacists agreed the MUR service was considered important as a value added service for pharmacists and that a pharmacist needed to be accredited to do the service. Personal learning needs in the CPD stages of reflection, planning, action, and evaluation [30] perhaps are better suited to the flexibility and learning centred nature of e-learning. On IT Health Board website is the National Health IT plan (2010). This document includes continued development of ICT skills in the workplace, as one of the priorities of training within Health IT. The challenge for pharmacy's management would be to find ways to effectively support their employees in gaining these skills, and for individual pharmacists to be strategic in their decisions about how this becomes a part of their professional development.

	Individual self study: computer based instruction/learning/ teaching (CBI/L/T)	Group collaborative: computer mediated communication (CMC)
Online study: synchronous communication ("real-time")	Surfing the internet, accessing websites to obtain information or to learn (knowledge or skill)	Chat rooms with(out) video audio/video conferencing
Offline study: asynchronous communication ("flexi-time")	Using stand-alone courseware/downloading material from the internet for later local study	Asynchronous communication by email, discussion lists or a Learning Management System

Figure 1 - Classification of e-tools. Source: Romiszowski (2004, p. 6)

3. Research Question and Methods

A survey was designed to not only answer the question 'How can e-learning be included in ongoing MUR course development**?'** but also to gather opinions and decision factors about the MUR service and course. This included both pharmacists who had completed the MUR course and obtained accreditation and pharmacists in charge of dispensaries (PICD). This person could be the owner or manager of the pharmacy

The study design split a nationwide survey into two questionnaires; one with dispensary business questions and the other with MUR training questions. These were available via Qualtrics, an on-line survey tool, from September 2010 to January 2011. Respondents were anonymous and answered questions for data for three areas:

- Demographic variables: gender, age range, and DHB region.
- Attitudinal statements which covered three main areas of: barriers to offering the service, the content of the course and attitude to delivery modes for the course.
- Professional development of on-going skills pharmacists and how this was supported by pharmacy as employer, comments about the referral process.

Paper drafts of the questionnaires were pre-trialled by pharmacists before being put on-line. Ethics approval was gained through University of Canterbury ethics community in October 2010. Invitations for PICD participation was faxed to over 640 in 11 DHB's. These DHB's had 26 or more pharmacies in their region. The April 2010 Directory of Community Pharmacies in New Zealand, was used for this information. This was purchased from the New Zealand Pharmacy Guild.

Invitations to pharmacists who had completed the MUR course to contact the researcher were included in the original PICD's invitation. In November 2010 the on-line course questionnaire was trialled by the Hawkes Bay Pharmacy Network and then invitations were sent to people in 8 DHBs with coordinating roles with regional pharmacy networks. This email was forwarded to each network by the DHB employee and also included a reminder to complete the earlier Service Questionnaire. No access to the NZCP database was obtained but the overall project was endorsed by Canterbury Pharmacy Guild. Respondents needed a computer and access to the internet to participate in the research.

4. Results

Table 1 shows a summary of responses to the questionnaires.

4.1. MUR service as a part of Pharmacy Business

From the 59 completed questionnaires over 300 free text comments were gathered. These are presented provisionally in three emergent themes supported by quantitative data also collected.

Table 1 Summary of Responses Received

Invitation to complete:	Received	Note
the Service Questionnaire. Faxed in batches on 15th - 17th October 2010	51 responses with 45 completed. These were from 12 DHB, which shows the potential viral nature of this invitation process.	Considered a nationwide survey because the invitation could have been referred on to any pharmacist.
the Course Questionnaire. Emailed in late November 2010	19 responses of which 14 were deemed to be completed. This included 3 from a network which had not been contacted	2 responses within the 14 completed ones were from pharmacists who worked in a DHB that did not fund the MUR service

Table 2 Dispensary Services in the Pharmacies

Provides MUR service Respondents (N=45)		Yes (N=19)	No (N=26)
Dispensary service as part of Pharmacy business	>50% of income generate by dispensary activity	19 (100%)	21 (77%)
Size of activity from dispensary.	>75,000 prescriptions dispensed by annum	14 (74%)	6 (23%)

As seen on Table 2 all pharmacies which provided the MUR service also made 50% of their turnover from dispensary activity and 74% dispensed more than 75,000 prescriptions per annum but 50% of these claimed income from the MUR service was either not important or barely noticeable. PICD from eight of the seventeen not offering the service mentioned funding as an issue. Examples of actual comments were:

> *'Declined to undertake service in this pharmacy because of small return in fees for providing service vs lenghthy process of accreditation, I own another pharmacy where my partner has undertaken accreditation and ROI is v. small at moment. Funding is an issue in what DHB only has small amount allocated for servise. Perception of provider unfriendly?'*

> *'Funding is a big issue. If there is no financial benefit in providing MUR, then few pharmacies will take it up.'*

4.2. MUR Service Details

There was no standard payment for an MUR, with figures quoted ranging from $25 to $800 and while it is funded per transaction, this may not be how the actual remuneration fitted in to the business model of individual pharmacies. Asked to define a 'completed MUR' the fourteen responses can be summarized into four groups:

- Claiming for payment (as against receiving it).
- Completing follow-ups.
- Communication with primary healthcare team (ie MUR client's GP).
- Improvement in how the patient felt.

There was single template structure for the MUR service in the nine[1] DHB regions that funded the service; funding also could be through a PHO. Even so different permutations of structure all included:

- On-site and/or Home visits to patients.
- Staffing arrangements so time to do MURs by accredited pharmacist could be found.
- Source of referrals for patients.
- Follow-ups to the initial MUR interview.

Comments on successful outcome and usefulness of the MUR service, while including practical revenue factors, often referred to the service as helpful to their patients as customers; there was a blurring in the results between the value of what was in the service and how the service added value to their business.

Actual comments about how the PICD saw the value of the service to the business included:

- 'relationship with other primary healthcare providers'
- 'getting to know paitents and adherence problems'
- 'caring perception of pharmacy by public'
- 'target undispensed prescriptions'

[1] This includes only MUR service and adherence services under a different name.

4.2.1. Professional Development

In the questions about professional development the PICD as employer, cited the support they offered pharmacists in the employment including:

- Time away from dispensary.
- Information access.
- Payment of course fees.
- Mentoring.

While there were some comments about keeping the service 'real' and patient focused, the majority of pharmacies wanted support from outside the business, either from the NZCP or from their DHB. The opportunity to share knowledge within a database of cases, discussion of cases in a multidisciplinary team and regular peer group meetings, were the most frequent methods of how this support could be provided. Cohesiveness within the work team varied and although no causal factors can be identified, the smaller or sole pharmacist operations claimed less opportunity to provide the service.

4.3. Preferences for learning methods and course content

To the course questionnaire there were eighteen respondents, 7 males and 11 females. Twelve of these were between the ages of 36 to 55, with 3 respondents below and 3 above this range. Fifteen had received accreditation but of the eighteen respondents, only fourteen chose to answer the questions about learning preferences. Over 50% of these pharmacists either agreed or strongly agreed that directing their own learning and having flexible course delivery was preferred. On-line simulation of case study should were useful for training but also face to face seminars were considered important for networking.

Comments about specific ICT initiatives included: use of the internet, accessing overseas resources to supplement compulsory MUR training and electronic sharing of patient notes.

On-line discussion groups have been used both for peer support and for general information. Some pharmacists found there was ample opportunity to contribute to blogs and links to social networks (eg FaceBook) from industry websites such as '*Pharmacy Today*'.

Although no questions were asked about the details of original MUR course content, the fourteen pharmacists indicated future content could include:

- how to develop support networks
- training on administrative aspects of the service (ie HealthPac)
- how to use follow-ups more effectively
- courses promoting collaboration with other healthcare professional.

5. Discussion

Key to providers being able plan and develop training and for users of those courses to identify the most suitable for their learning needs, is to be able to conceptualise the service environment they work in. The results of this study were used to develop a model to show the MUR service within the New Zealand healthcare context. This is displayed in Figure 2. While it focuses on e-learning for the pharmacy sector, it has the potential to be applied to any healthcare service.

Further explanation of Figure 2 as applied to the MUR case:

1. The pharmacy operates in a dynamic business *environment* where the decision to offer the service is based on many factors, including the financial feasibility. This may include decisions on what additional training and external support is needed to reduce service operating costs. E-learning courses from other providers could be used to support skills and training in the MUR service.
2. A pharmacist is a *stakeholder* both as an employer and employee but it is the management of a pharmacy(s) which bids for contract to provide service and then needs to employ a MUR accredited pharmacist and provide the necessary resources to deliver the service.

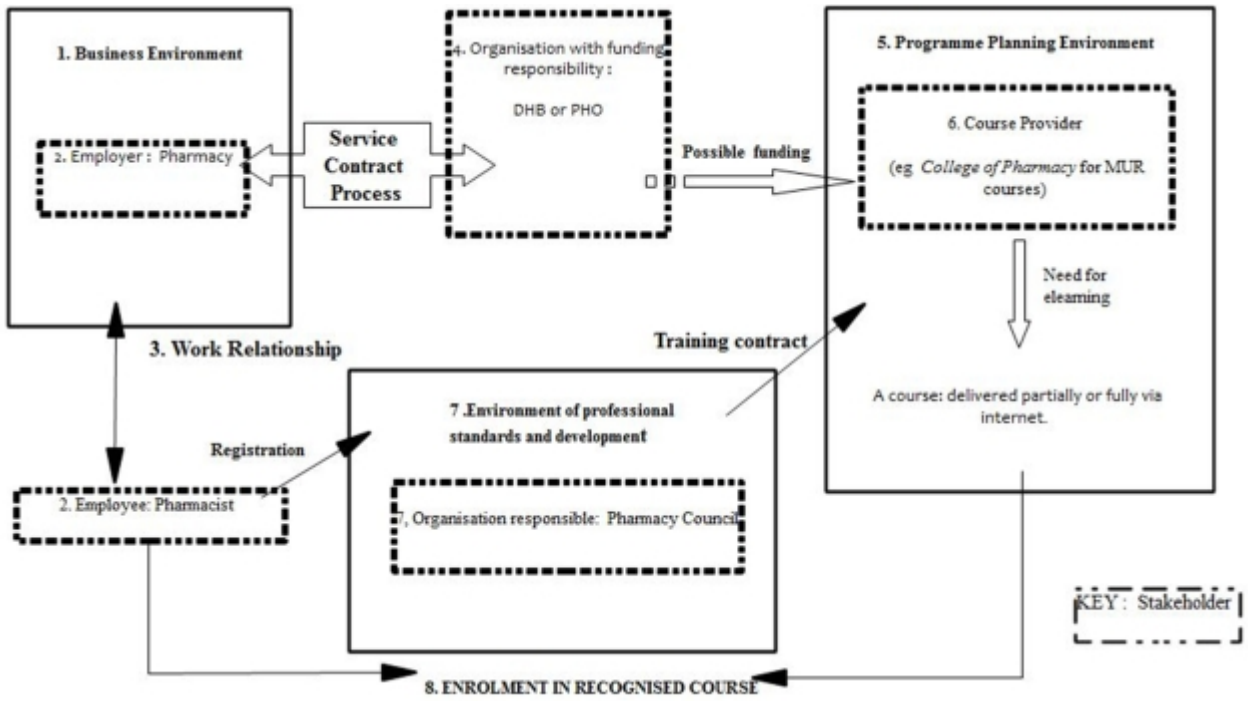

Figure 2 - Stakeholders and influences in the decision to use e-learning within a publicly funded healthcare system

3. The work *relationship* within a pharmacy, while having a lot of commonalities, is unique to each organisation, with a differing mix of input from managers and employees in developing business and career directions.
4. In the MUR case the DHB or PHO are *stakeholders* which translate national outcomes for healthcare service to a local priority. They maintain a relationship with the pharmacy through negotiating, monitoring and evaluating outcomes of the contract. It also provides funding for training.
5. The training organisation works in a programme planning *environment* and it is in this environment that the pressures to move to an on-line format affect decisions on mode of course delivery.
6. A training organisation(s) which has been awarded the contract to put together a course which will build on knowledge, skills and behaviours of registered pharmacists by introducing content based on a set of competencies. In the MUR case the NZCP is this *stakeholder*.
7. The competencies for the course are set by a professional governing council, the PCNZ. This organisation works in an *environment* managing complex international and domestic pressures on the professional and translating these into standards for training.
8. The official MUR course provider and a pharmacist are brought together with the enrolment in MUR course with an e-learning component

5.1. Model Application and Issues

When used to provide potential sources for course content, this model could:

- Reveal the benefits of delivery of the course either full or partial online
- Provide a clear picture of the pharmacy's strategy in providing a service and how staff training fits into the existing support for professional development.

Whether having distributed funding to the regions was a deliberate strategy to allow for outcomes of the service to be set for regional needs, is presumed. What the outcome is known; that regional funding meant that no one structure for the service was dictated. A national funding scheme, may impact on the existing successful schemes if there are expectations of a universal model. Further training could reflect this diversity of service models.

Supporting a staff member to complete an e-learning course may lead to the service at pharmacy level being better targeted, with less need to divert other resources in maintaining service quality. Completing an online module may allow both interactions with peers online or free up time for pharmacist as a student, to participate in more targeted face to face (f2f) networking opportunities.

Another example from using the model is if external courses emerged from outside the environment of *professional standards* by organisations such as Pharmacy Brand or the Pharmacy Guild; courses developing specific skills such as interview skills for a particular demographic within the local community or a workplace need, such as training on new software for MUR related administration. Course content could also come from aspects of the service, such as improving physical layout of premises, better use of follow-ups interviews for maintaining improved adherence, and marketing of the service.

5.2. E-learning methods

The more flexible and self-paced the course delivery is the more likely pharmacists will be able to fit it into their work schedules. Delivery methods for skills based training rather than knowledge such as virtual simulation for interviewing skills need to be chosen based on evidence that the specific learning object has proven usefulness to pharmacy practise. With interaction and discussion on-line, respondents suggested that this was different to f2f opportunities meetings and discussion. However both were seen as having uses; it was not so much the delivery method but the opportunities of interaction with peers that were important. This maybe because those in the 35 age group, which most of the responders were, have a different experience of the quality of face to face interaction. Pharmacists in younger demographics, who may have been using social networking (ie Face Book) for several years, may place different expectations on f2f encounters.

6. Conclusion and Recommendations

In conclusion, finding e-learning methods to make training more responsive may only go a little way to improving overall outcomes of a healthcare service such as the MUR. The frustration for a pharmacist successfully completing the MUR training but being unable to offer the service to support patients struggling with medication adherence, would not have been solved by the training being on line. E-delivery of courses has a place and by taking a macro view opportunities for courses can be identified by programme planners and courses selected by users which best fit the needs of service providers. What needs to be recognised though is the benefits of e-learning can only be achieved if these methods are not seen as traditional teaching methods repackaged.

It is recommended for the Pharmacy Guild and networks:

- A survey should be made of pharmacies on their e-learning skills capability and technical support needs. This could be tied into other ICT initiatives as the adoption of e-pharmacy may lead to synergies in the application of technology.
- Guidelines are developed so learner evaluation of e-learning experiences by individual pharmacists in their professional development cycles can identify how and why e-tools work for them
- For a wider audience of healthcare funders and training providers it is recommended
- Support for e-learning development with recognition of the need for adequate resources and access to instructional design expertise and the use of tried and tested relevant Reusable Learning Objects (RLO)
- Processes are developed to evaluate both course and transfer of skills, which do not take resources away from providing the training

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Appendix A Glossary

Term	Explanation
Medication Use Review	'MURs are a face to face conversation between patients and pharmacists and are designed to identify any problems a person is experiencing with their mediations.' Retrieved from http://www.qi4pd.org.uk/index.php/Why-undertake-an-MUR.html
Medication Adherence	How accurate a person is in maintaining the regime of a medication strategy for a medical condition. Adherence is used in this paper, although the concepts of Concordance and Compliance could also have been used, although there are differences in meaning, mainly in terms of where the perceived responsibility for the pill taking is.
Medication Intervention	A deliberate set of interactions or behaviours by a healthcare with the purpose of improving health or altering the course of disease.
District Health Board	Regional organisations in New Zealand that provide or fund other organisations to provide healthcare. There are 20 DHBs in New Zealand.
Primary Healthcare	Primary health care is being used in the paper to mean the first tier of access through General Practitioners (GPs), through medical centres and other allied healthcare professionals.
Pharmacist in Charge of Dispensary (PICD)	The Registered Pharmacist who is responsible for operations and standards of work in a pharmacy dispensary, including staffing adequately. They are likely to have input into service decisions that the manager /owner of the site makes.
Value Added Service	Where a service is additional to the core service and gives the customer more than what they had expected from a service.
Self-directed learning (SDL)	A person takes as much responsibility within their learning to assess their learning needs and selects content and support to meet this need.
Pedagogical	Relating to the functions or activities of learning and teaching.
Skills transfer to practise	Transfer of training is effectively and continuing applying the skills, knowledge, and/or attitudes that were learned in a learning environment to the job environment.

Hybrid course and blended learning.	Where traditional teaching methods and on-line activities are used in delivering a course.
Instructional Design	Within the e-learning context this is the process of putting the instructions for teaching into the design of the webpage or software that is supporting the teaching. It is influenced by learning needs but also is dictated by giving the end user enough direction to effectively engage in learning.
Social-constructivism theory	'Refers to an individual's making meaning of knowledge within a social context (Vygotsky 1978).'

Appendix B

Table 3 Organisational flexibility in community pharmacy

Type of flexibility	Manifestations in community pharmacy
Steady-state	Pharmacies existing in "steady state" have not changed their practices significantly to incorporate services or alter their existing business model in any other way. This type of pharmacy is characterised by its complacency to the external environment and uncertainty in regards to the future. The business model for this type of flexibility is *classic community pharmacy*
Operational flexibility	Pharmacies with operational flexibility can be characterised by an emphasis on providing products and services to customers quickly and efficiently. As a *networked pharmacy*, they form part of an informal network of pharmacies in a close geographical area and cater to various target markets. As a *retail destination pharmacy*, they increase their physical capacity and product range to draw customers based on their retail offering
Structural flexibility	Pharmacies exhibiting structural flexibility have extended the conventional pharmacy product/service offering by developing services in a few key areas and making the necessary structural changes to implement these services, for example including introducing new facilities for services. This type of pharmacy is characterised by structural changes but this is often in the absence of any link to overall business strategy. Some *health care solution pharmacies* use this type of flexibility
Strategic flexibility	The owners of pharmacies exhibiting strategic flexibility take a proactive approach to managing their business. They use the support functions to free the pharmacist time for the provision of services, but they maintain a high level of involvement in all facets of the pharmacy's operations. This type of pharmacy is characterised by its focus on integrating its product/service offering with the overall image of the pharmacy and supporting this through effective internal practices. This type of flexibility was manifested in both the *health care solution pharmacy and networked pharmacy*

Feletto E, Wilson L, Roberts A, Benrimoj S. Flexibility in community pharmacy: a qualitative study of business models and cognitive services. PHARM WORLD SCI. 2010 Mar;32(2):130-138.