



Final Report
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We are grateful to all of the community pharmacists and academics who have participated in the various surveys, focus groups, videos and workshops conducted on behalf of the CPRSC.

The CPRSC would also like to acknowledge the contributions of the members, points of contact, and mentors at each of the nine associated Schools of Pharmacy.

Executive Summary

Overview of the CPRSC

The Community Pharmacy Research Support Centre is a national consortium of nine academic pharmacy units in Australia, which was founded for the purpose of developing and supporting community pharmacy practice research expertise and capacity. The initial aims of the Centre were to promote community pharmacy practice research, to equip community pharmacists to undertake research and to strengthen links within Australian community pharmacy research and between Australian and international community pharmacy research.

These aims were developed into the five objectives of the Centre:

- 1) Develop and maintain a Register of national and international literature and resources related to the remuneration or economics of professional pharmacy services (remunerated by consumers, government or third party payers).
- 2) Develop and maintain an international database of community pharmacy practice research.
- 3) Establish an international pharmacy practice research collaboration, (including the seven PharmInterCom countries) to progress collaborative and comparable research on the value of pharmacy professional services.
- 4) Generate reports on issues of interest to The Pharmacy Guild of Australia and the Commonwealth Department of Health and Aging.
- 5) Facilitate the involvement of, and increase the number of, community pharmacists participating in pharmacy practice research by:
 - a. Conducting a workshop to ascertain the interest of pharmacists participating in research and the education and support they require.
 - b. Developing a website containing a searchable database of upcoming and ongoing research projects and a searchable database of pharmacists interested in research.

- c. Conducting a nation-wide survey of randomly selected Australian community pharmacists to determine their attitudes towards and involvement in pharmacy practice research, including the canvassing of perceived barriers and potential solutions to promote research activity in community pharmacy practice.
- d. Designating a mentor responsible for facilitating the involvement of community pharmacists in research at each of the nine CPRSC member Schools of Pharmacy.
- e. Developing a document outlining strategies to increase and retain pharmacists in research, incorporating the results of the survey, reports from mentors, and the report on the workshop.

Results and Conclusions

Objectives 1 and 2

The database has been developed and is available at www.communitypharmacyresearch.org. It is a searchable database of Australian and international literature resources published since 1990, relating to community pharmacy practice research and the economics of professional pharmacist services. At May 2005, there were 176 summarised articles included in the database and over 100 subscribers to the database with community pharmacists representing a significant proportion of these subscribers. The database will be maintained until October 2005.

Objective 3

An international and collaborative network of pharmacy researchers and policy-makers has been established (the Pharmaceutical International Network (PIN)). PIN provides an electronic infrastructure to enhance communication within the PharmIntercom community. The PIN software enables network members to share data and discuss ideas, and provides a file storage feature that supports the development of a library database of current and unpublished international material. An independent working group of the four most active participants from the PharmIntercom community has

recently been established to identify areas of common interest or common goals. Once common goals have been established, shared purposeful projects will be negotiated. At present the network has been granted extended funding until September 2005.

Objective 4

Five reports were commissioned and have produced a number of significant outcomes and recommendations.

Report 1: Third update of the Value of Pharmacist Professional Services report. This report provides a review of Australian and international literature on professional pharmacist services (randomised controlled trials only) in the community published between October 2002 and March 2005.

Recommendations include: 1) In reviewing Pharmacy literature, there should be an emphasis on Australian studies and not only randomised controlled trials should be considered; 2) Multidisciplinary interventions are likely to be important to the future of Pharmacy

Report 2: Tools, mechanisms, strategies to engage and retain pharmacists in research. This report consists of a review of the literature on pharmacist attitudes towards research and the provision of extended services as well as a survey of pharmacists' attitudes towards research. Differences between those pharmacists who had previously participated in research, and those who had not, are identified and the barriers and facilitators to research involvement are clarified. Recommendations: 1) There is a need to further develop a research culture in community pharmacy; 2) The goals of research should be clear and meaningful; 3) The time constraints that pharmacists face should be considered in designing research projects; 4) Involve practitioners in the design of research protocols.

Report 3: Tools, mechanisms, strategies to engage and retain clients/ consumers in pharmacy practice research. This report comprises a review of the relevant literature and the outcomes of focus groups held with community

pharmacists, a pharmacy assistant, and pharmacy practice researchers. Recommendations: 1) Utilise active recruitment strategies when appropriate; 2) Documentation should be simple and kept to a minimum; 3) The relevance of the research should be clearly explained; 4) Have realistic expectations of timelines and return rates; 5) Recruitment strategies should be reviewed and revised if needed.

Report 4: Health promotion and screening activities by community pharmacists. Unfortunately this report was received just before the final deadline and we were therefore unable to abstract recommendations and have them reviewed by the CPRSC consortium.

Report 5: Primary health professional education (GP's, pharmacists, community nurses) current models and barriers to participation. This document reports on a literature review of current trends and concepts in continuing education (CE), semi-structured interviews with stakeholders from CE delivery organisations and focus groups held with community pharmacists. A number of issues for consideration in the development of an ideal model of CE for Australian community pharmacists are presented. Recommendations: 1) A clear strategy for CE and continuing professional development (CPD) should be developed; 2) Assessment should measure professional development, not hours spent in education; 3) Mandatory CE should be considered and CE provided should be assessed.

Objective 5a

A workshop was held, during which, two separate focus groups were conducted: an academic focus group and a community pharmacist focus group. Attitudes towards research, barriers to community pharmacist participation in research and potential strategies to overcome barriers were discussed. The outcomes of the workshop were summarised in a report (Chapter 5), which was used to inform the development of the survey of NSW

pharmacists (Chapter 4, Report 2), the national survey of pharmacists (Chapter 7), and the recruitment and retention strategies booklet (Chapter 9).

Objective 5b

A website has been developed and is available at www.cprsc.org.usyd.edu.au. The website contains a searchable database of research projects and a pharmacist registry. The website will serve to promote future interest in pharmacy practice research and act as a link between researchers and pharmacists to enhance communication.

Objective 5c

A national cross-sectional survey of 1000 randomly-selected Australian pharmacists was conducted to determine their attitudes towards and involvement in pharmacy practice research. A response rate of 37% was achieved. Approximately one-third of responding pharmacists were presently, or had been, involved in research activities, and generally reported positive experiences. Lack of time and never being approached/not being aware of the opportunities were major barriers to pharmacist participation in research. Approximately one-third of the pharmacists were not interested in participating in research. There was low usage of electronic bibliographic databases and of scientific journals. Important factors encouraging pharmacists to participate in research were a desire to improve the profession, the opportunity to learn more about disease management and to provide enhanced services to patients, and personal interest.

Objective 5d

A research mentor has been established in most of the participating Schools of Pharmacy. The mentors have contributed to the development of the CPRSC website and database, have promoted the Centre at conferences and in publications, have conducted feedback sessions with research active pharmacists and will be conducting research information sessions in the future. Furthermore, the mentors have spearheaded the production of a video designed to promote awareness and encourage participation of pharmacists

in practice research. A second training video for pharmacists undertaking research is currently being produced.

Objective 5e

A recruitment and retention strategies booklet has been produced for researchers to use when designing research projects and will be made available to researchers involved in the CPRSC. The booklet incorporates and summarises the lessons learned from the workshop, the feedback sessions, the report on recruitment of pharmacists and the national survey.

Recommendations

1. The databases designed to provide information on pharmacy research and services should be maintained beyond October 2005.
2. Once the new software has been trialed, the PIN teams already established should be asked to continue until mid-2006 and then report on outcomes.
3. A coherent mechanism for multi-organisation delivery of CE/CPD should be developed.
4. Linkages between researchers and pharmacists need to be strengthened; this could take the form of the CPRSC website/registry in combination with mentors in Schools of Pharmacy.
5. There should be some formal recognition of the value of involvement in research by community pharmacists (QCPP, certificates, formal recognition by universities).
6. The research awareness video should be distributed nationally for promotion at pharmacy meetings and the research training video distributed to all Schools of Pharmacy.
7. The research recruitment booklet should be published and perhaps promoted internationally as an initiative of the CPRSC.
8. Overall, the time-frame available for many of the projects precluded a completely successful outcome. There needs to be some recognition that administrative processes such as contracts and ethics approval can take up project time.
9. One of the future roles of the CPRSC should be to promote the work it has done already so that there is value in the outcomes achieved.
10. There needs to be a marketing strategy for the outcomes achieved. Given the success of so many of the projects, time and resources should be devoted to increasing awareness and involving pharmacists in the proposed strategies.

11. The CPRSC has promoted consultation and collaboration between Schools of Pharmacy. In future, the newer Schools formed since the CPRSC was initiated should be included.
12. Since multidisciplinary interventions are likely to be so important in the future, the CPRSC should take a lead in designing research to explore the place of Pharmacy in the new health care system.
13. The structure of any future CPRSC should incorporate an executive group of 3-4 people, who represent the entire advisory team.
14. Management of any future CPRSC is important if future strategies are to be realised. A project officer/research manager should be appointed to run the centre under the guidance of the Executive.
15. Some programs within the CPRSC are 'up and running' and require only a small future investment to achieve great impact.
16. In future the CPRSC should work more closely with pharmacists to inform them of outcomes achieved.
17. Future national and international research could be focussed through the CPRSC with a defined mechanism for promotion and propagation.
18. The future funding of the CPRSC should be considered as a joint proposal between the Pharmacy Guild and the Federal Government through one of the national competitive schemes (Centre of Excellence, ARC Linkage). This could involve a number of partners and extend the value of each partner input. It is recommended that the Pharmacy Guild consider an investment of \$1 million over the next 3-5 years in order to continue the current programs and extend the role and reach of the community pharmacy research support centre.

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Chapter 1

Overview of the CPRSC

Introduction and Background

The Community Pharmacy Research Support Centre is a national consortium of nine academic pharmacy units in Australia. The Centre is coordinated from the Faculty of Pharmacy in The University of Sydney, with nodes in:

- The University of South Australia, Adelaide
- La Trobe University, Bendigo
- The University of Queensland, Brisbane
- University of Tasmania, Hobart
- Monash University, Melbourne
- Curtin University of Technology, Perth
- James Cook University, Townsville
- Charles Sturt University, Wagga Wagga

Governance of the Centre is effected through an Executive Group, comprising a representative of each of the nine nodes, with a chair elected from the membership.

The Centre was founded in 2003 within the context of a national health care system that is critically dependent on community pharmacy services yet was lacking a resource to coordinate the national spectrum of academic expertise in pharmacy practice research.

Community pharmacists deliver the vast majority of prescription and non-prescription medications taken by the Australian population (Emerson et al 1998). The Pharmaceutical Benefits scheme expenditure more than tripled between 1991 and 2001 (Tatchell 2002) and continues to grow due to new and higher-cost drugs and the ageing population. Pharmacists have a major role in the provision of drug information, medication management services, health promotion information and numerous other interventions that improve the outcomes of drug therapy and health generally. Community pharmacists

are responsible for the implementation of many major policy initiatives relating to pharmaceuticals; they serve as the brokers in a large proportion of the nation's total health expenditure and at the same time make a crucial contribution to the containment of health care costs (Benrimoj et al 1998). In this environment, the need for community pharmacy based research on the feasibility and implementation of new practices is critical, yet the capacity of community pharmacy to carry out research and evaluate and apply new research findings was limited and fragmented. Moreover, community pharmacy research carried out by the nine academic pharmacy units spread across six states was also disjointed, with little opportunity for collaboration.

Within this context, the Community Pharmacy Research Support Centre was conceived by The Pharmacy Guild of Australia and founded for the purpose of developing and supporting community pharmacy practice research expertise and capacity. The initial aims of the Centre were to promote community pharmacy practice research, to equip community pharmacists to undertake research and to strengthen links within Australian community pharmacy research and between Australian and international community pharmacy research.

The nine nodes of the Centre contribute individually and collectively to a series of programs that are intended to:

- develop community pharmacy research capacity and expertise;
- promote a research culture in community pharmacy practice;
- provide support to community pharmacists who wish to participate in or undertake research;
- foster research collaborations;
- generate a database of Australian and international community pharmacy research;
- facilitate international collaborations among the PharmInterCom countries, particularly on projects that use methods which can be applied trans-nationally;

- generate reports on topics of interest to the Pharmacy Guild and the Commonwealth; and
- promote awareness of the contribution of the Pharmacy Guild of Australia to the development of community pharmacy research nationally and internationally.

Objectives of the Centre

The original objectives of the Centre were to:

- 1) Develop and maintain a Register of national and international literature and resources related to the remuneration or economics of professional pharmacy services (remunerated by consumers, government or third party payers).
- 2) Develop and maintain an international database of community pharmacy practice research.
- 3) Establish an international pharmacy practice research collaboration, (including the seven PharInterCom countries) to progress collaborative and comparable research on the value of pharmacy professional services.
- 4) Generate reports on issues of interest to the Pharmacy Guild of Australia and the Commonwealth Department of Health and Aging.
- 5) Increase the number of community pharmacists participating, undertaking and applying for pharmacy practice research, under the R&D grants program, the Rural and Remote Pharmacy Infrastructure Grants Scheme (RRPIGS), PHARM grants, Quality Council grants or any other grants the Guild approves.

After holding a focus group with research active pharmacists (Chapter 6), it was realised that community pharmacists were not prepared to undertake research at the level originally foreseen by Objective 5. Therefore Objective 5 was modified to reflect this.

Modified Objective 5:

To facilitate the involvement of and increase the number of community pharmacists participating in pharmacy practice research by:

- a. Conducting a workshop to ascertain the interest of pharmacists participating in research and the education and support they require.
- b. Developing a website containing a searchable database of upcoming and ongoing research projects and a searchable database of pharmacists interested in research.
- c. Conducting a nation-wide survey of randomly selected Australian community pharmacists to determine their attitudes towards and involvement in pharmacy practice research, including the canvassing of perceived barriers and potential solutions to promote research activity in community pharmacy practice.
- d. Designating a mentor responsible for facilitating the involvement of community pharmacists in research at each of the nine CPRSC member Schools of Pharmacy.
- e. Developing a document outlining strategies to increase and retain pharmacists in research, incorporating the results of the survey, reports from mentors, and the report on the workshop.

Format of this Report

The objectives of the CPRSC were carried out by various research teams. The reports for each objective are presented separately in the following chapters.

Chapter 1 References

Benrimoj SI, et al. A randomized trial of the effect of education and a professional allowance on clinical intervention rates in pharmacy: clinical and cost evaluation. The University of Sydney, 1998.

Emerson L, Whitehead P, and Benrimoj SI. The Value of Professional Pharmacy Service. The Pharmacy Guild of Australia, Issue Paper 2, Canberra, 1998.

Tatchell M. Ageing and health spending. Pharm Rev, 2002; April-May: 28-29.

Chapter 2

Objectives 1 and 2:

Development of a Pharmacy Practice Literature Database

Development and Maintenance of an
International Database of Community
Pharmacy Practice Research and International
Literature Related to the Economics of
Professional Pharmacy Services

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This project was funded by the Australian Government Department of Health and Ageing as part of the Third Community Pharmacy Agreement.

Introduction

The Community Pharmacy Research Database project was commissioned by the Community Pharmacy Research Support Centre (CPRSC). The CPRSC was established in September 2003, as a national consortium of nine academic pharmacy units in Australia aiming to develop and support community pharmacy practice research expertise and capacity. The Centre is coordinated from the Faculty of Pharmacy in the University of Sydney with nodes in The University of South Australia (Adelaide), La Trobe University (Bendigo), The University of Queensland (Brisbane), The University of Tasmania (Hobart), Monash University (Melbourne), Curtin University of Technology (Perth), James Cook University (Townsville) and Charles Sturt University (Wagga Wagga). The Centre has been funded by the Australian Government Department of Health and Ageing as part of the Third Community Pharmacy Agreement and the Pharmacy Guild of Australia as managers of the Third Community Pharmacy Agreement Research and Development Grants Program.

The Community Pharmacy Research Database and website was developed by the Quality Use of Medicines and Pharmacy Research Centre (QUMPRC) at the University of South Australia. Development of the database and website was carried out under objectives 1 and 2 of the CPRSC. These objectives are:

Objective 1: “Develop and maintain a Register of national and international literature and resources related to the remuneration or economics of professional pharmacy services (remunerated by consumers, government or third party payers)”

Objective 2: “Develop and maintain an international database of community pharmacy practice research.” (CPRSC, 2004).

Access to the database is freely available over the World Wide Web. It is a searchable database of Australian and international literature resources published since 1990 relating community pharmacy practice research and the economics of professional pharmacist services. The database aims to provide

easy access to research that has been conducted to evaluate the effectiveness and cost-effectiveness of professional pharmacist services in the community setting. The database is particularly aimed at community pharmacists with an interest in research, pharmacy academics and other pharmacy researchers. An email alert service is available for users to register to receive regular updates of newly entered summaries of articles.

The database can be found by logging onto www.communitypharmacyresearch.org which links to the homepage for the database. The web pages provide capacity for quick and more detailed searching of the database, user registration, feedback and database administration.

This report describes the database and the development activities undertaken to establish it, along with a descriptive analysis of the literature resources currently included in the database and the subscribers to the database who have registered to receive regular up-dates. The QUMPRC currently plans to continue hosting, maintenance and updating of the database until at least October 2005.

Methodology

Definition of the data fields and literature to be included

The types of data fields for the database and literature to be included in the database were developed in liaison with the Pharmacy Guild Australia and the Expert Advisory Group (EAG) through the Pharmacy Guild of Australia.

Data fields

Data fields were established to allow searching by author, subject, title, country, service type, disease/condition, study design and outcomes measured. Fields were also designed to allow study outcome measures to be ranked into levels based on those used by the Agency for Healthcare Research and Quality (2001). Data fields were designed to provide a summary table for each study including the target group, evaluable sample, follow-up period and the findings for each outcome measured. For studies which included an economic analysis, a field was included to allow the level of economic evaluation to be categorized using a system adapted from a classification used for papers submitted to the British Medical Journal (Jefferson et al., 1995).

The development of the database, search facility and website was undertaken by the Knowledge South within the Flexible Learning Centre, University of South Australia under direction from the QUMPRC project team.

Included literature

Where possible rigorously conducted studies (randomised controlled trials, controlled trials and systematic reviews) were to be included in the database for each of the pharmacist services. Where this high-level evidence was not

currently available less rigorous evidence (such as pre-post studies without control groups) was to be included.

Only studies that evaluated patient health outcomes, quality of medication use or quality of prescribing were to be included in the database. Studies that examined only the quantity of medication use or the cost of medication use without consideration of patient outcomes or medication appropriateness were not to be included.

Literature included in the database was published or undertaken since 1990. The included literature evaluated pharmacist services in the community pharmacy setting and also in other community, primary or ambulatory care settings that may be relevant to community pharmacy. Studies conducted in the hospital inpatient setting were not to be included. However, studies that examined pharmacist services at the interface between hospital and community care (such as liaison pharmacy or continuity of care services) were to be included.

Identification of the literature

Literature previously obtained for the *Value of Pharmacist Professional Services in the Community Setting* (Roughead et al. 2003) was included in the database. Building on this, a systematic search for literature published from 2002 onwards was performed using standardised search terms to identify relevant papers. These searches were and continue to be updated on a monthly basis. Searches were conducted in MEDLINE, International Pharmaceutical Abstracts, Current Contents, The Cochrane Library and AustHealth Online. Full details of the search terms used in each of the databases are provided in Appendix 1. Additionally relevant articles were obtained and their reference list checked for any further articles not identified through database searches

Review and summarising of the included literature

From the searches detailed above, articles for possible inclusion in the database were identified through review of the article abstracts. Full text articles were obtained for assessment and summarising. A form was developed for reviewing the articles based on the fields included in the database. This included language, setting, country, disease or condition, study design, type of economic analysis, type of publication, type of pharmacist service (according to definitions listed in Appendix 2), outcomes measured, intervention/target group, evaluable sample, study summary (intervention and results) and keywords. Based on the assessment the reviewer indicated whether the article was eligible for inclusion based on the criteria indicated in the section “Included Literature” above. Each article was reviewed by 2 independent reviewers. Where disagreements between reviewers occurred, differences were resolved by discussion or through assessment by a third independent reviewer. Once the assessment and summary of the article was completed, the summary and bibliographic details were entered onto the database.

Promotion of the database and website

After launching the database and website, information about the website was provided to professional pharmacy organizations, other health-related organisations and email discussion groups related to pharmacy and medicines. Details of the groups and organisations contacted during April and May 2005 are given in Appendix 3. The project team envisages conducting further promotion of the database during June and July 2005.

Results

The database and website

Launch of the database

As of the 23rd of March 2005, the Community Pharmacy Research Database and website are fully operational with online capacity for user registration, searching of the database, user feedback and database administration. The database can be found by logging onto

<http://www.communitypharmacyresearch.org> which takes the user to the database homepage. A copy of the homepage of the database website is shown in Appendix 4 to this report. The homepage directs the user to the search pages, resources (links to other relevant web pages), the subscribing facility, “contact us” page and information about the literature included in the database and the rating systems used for outcome measures and economic analyses. The homepage also includes a “news” area. At present, this contains information about the database. With time, it is envisaged that this area will allow information about other projects, landmark studies or other significant reports in the area of community pharmacy research to be posted.

User registration and updates

The website includes an online facility to allow users to subscribe to receive email updates of the database on a regular basis. The subscriber provides their name and email address, with the provision of information about their institution/place of work and country being optional. There is also a facility to unsubscribe. At 20 May 2005, there were 102 subscribers to the database. The occupation of these subscribers is shown in Figure 1, and the geographical location of the subscribers is shown in Figure 2. The first email update of the new entries to the database was sent on 20 May 2005 after promotion of the database and website. The administration pages of the website allow these updates to be automatically generated by selecting the entries made after a specified which are then included as a link in the update email to all subscribers.

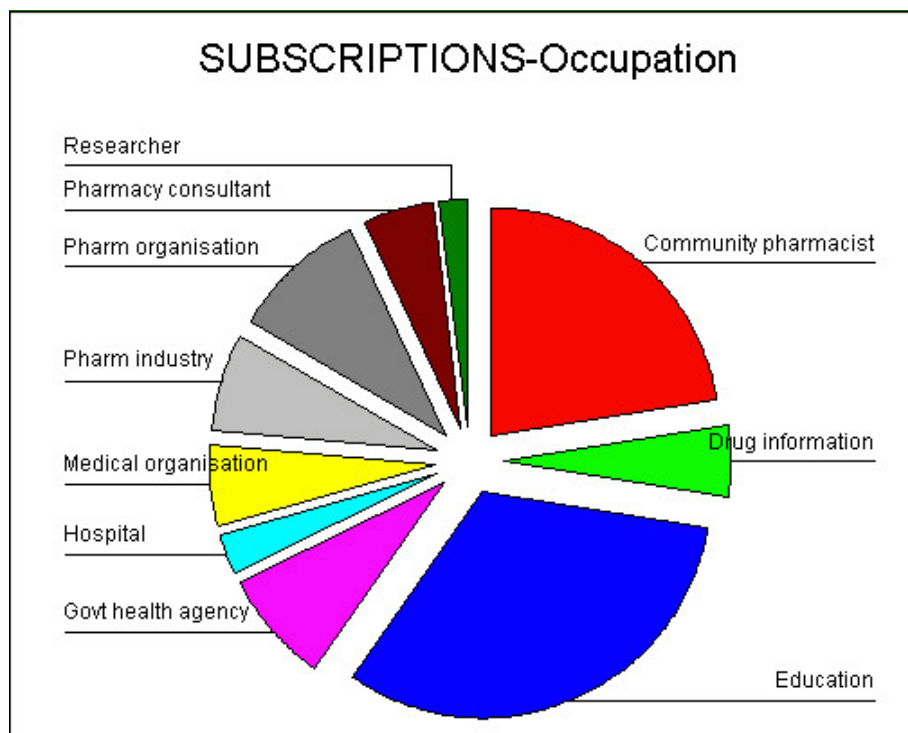


Figure 1. Subscribers to the Community Pharmacy Research Database by Occupation

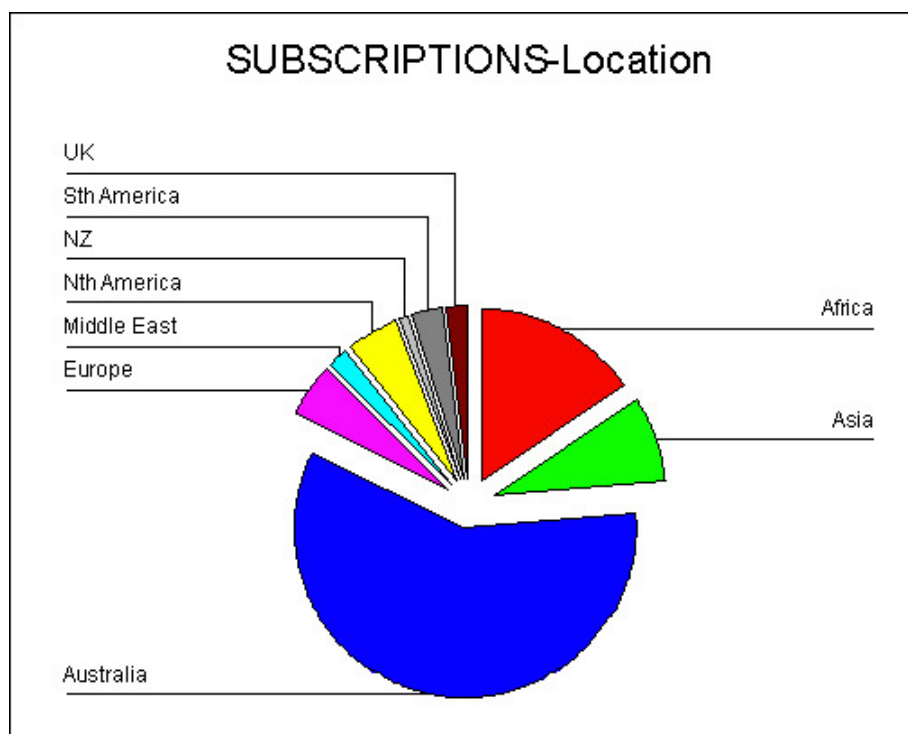


Figure 2. Subscribers to the Community Pharmacy Research Database by Geographical Location

Search facilities

The search engine of the database allows the user to search a variety of different ways. The user can search a specific field, including

- Outcomes measured
- Disease/condition
- Author name
- Keyword

From the list that appears under each of these fields, the user can select the specific outcome measured, disease/condition, author name or keyword.

Searches can also be conducted using as word searches. By default all the words entered are connected with the “and” Boolean. The user can limit their search to selected fields by clicking on the check boxes for each field. A “search tips” link is provided to guide users in the methods for searching the database. Users may also search for entries added after a specified date. Examples of the search pages and an example record are given in Appendix 5.

User feedback

There is a page on the website to facilitate feedback and identification of further relevant studies for inclusion in the database which is accessed through the link “Contact Us”. These messages are automatically emailed to the project administrators, who attend them as required.

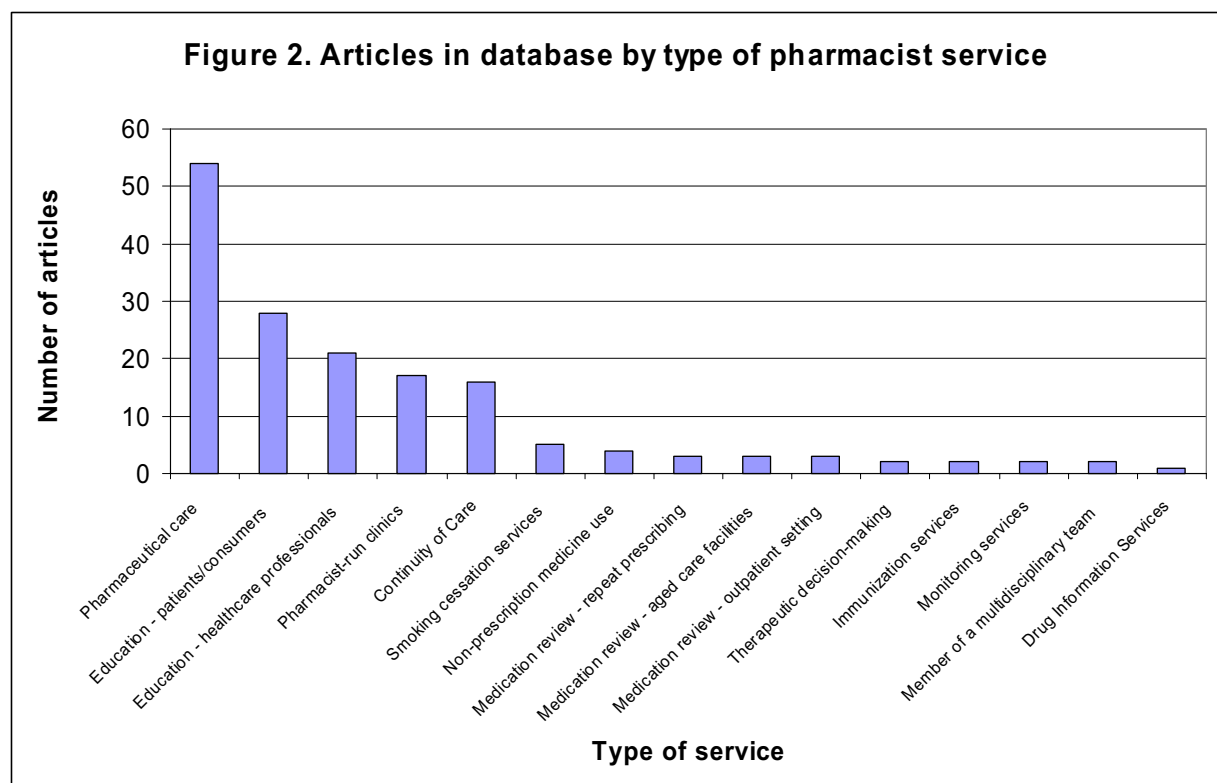
Database administration

Currently, administration of the database can only be undertaken by authorised administrators of the database via password protected pages on the website. At present Mr John Barratt, Ms Karen Martin and Dr Susan Semple (QUMPRC, University of South Australia) are approved administrators. These administrators can continue maintenance and updating of the database, and provision of email updates to subscribers until October

2005. Extension beyond this period will be dependent upon discussions with the Pharmacy Guild of Australia.

Literature included in the database

At 19 May 2005, there were 176 articles included in the database. The types of pharmacist services described in these articles are summarised in Figure 2 (note: some articles such as systematic reviews that reviewed several different types of pharmacist services are not included).



The largest number of articles in the database relate to services classified as pharmaceutical care (54 articles), education services for patients or consumers (28 articles), education services for health care professionals (such as academic detailing) (21 articles), pharmacist-run clinics (17 articles) and continuity of care (16 articles). No articles meeting the inclusion criteria for study outcomes and design were located for services classified as clinical interventions, screening services, hospital in the home or pharmacist prescribing. The study team will consider the inclusion of less rigorously designed studies for these services (such as pre-post without control or comparison group) with further development of the database.

Conclusions

The Community Pharmacy Research Database and website developed under Objectives 1 and 2 of the CPRSC are fully operational with online capacity for user registration, searching of the database, user feedback and database administration. At May 2005 there were 176 summarised articles included in the database and over 100 subscribers to the database. The Quality Use of Medicines and Pharmacy Research Centre at the University of South Australia envisages continuing the maintenance, update and promotion of the database until October 2005. Continuation of the database beyond this date is possible and will be dependent on discussions with The Pharmacy Guild of Australia.

Chapter 2 References

Agency for Healthcare Research and Quality (AHRQ). Making Health Care Safer: A Critical Analysis of Patient Safety Practices. Rockville: U.S Department of Health and Human Services; 2001.

CPRSC (2004) *Community Pharmacy Research Support Centre. A Collaboration of Australian Pharmacy Schools*. [Accessed online at http://www.guild.org.au/public/researchdocs/research_support_summary.pdf 19 October 2004.]

Jefferson T, Demicheli V, Entwistle V. Assessing quality of economic submissions to the BMJ. *British Medical Journal* 1995;311:393-394

Roughead E, Semple S, Vitry A. *The Value of Pharmacist Professional Services in the Community Setting*. Pharmacy Guild of Australia, Canberra, 2003.

Chapter 2, Appendix 1. Search strategies used to identify literature to include in the database

Databases searched and the search terms used (years 2002 – present)

MEDLINE (via Ovid)

- **Pharmacist or pharmacists** [*title, original title, abstract, name of substance, mesh subject heading*]
- **Community pharmacy services.** mp. or exp **Community Pharmacy Services/** (mesh subject heading)
- **Clinical Pharmacy Information Systems/** (mesh heading)
- **Pharmaceutical Services/**(mesh heading)
- **Pharmaceutical care** [*title, original title, abstract, name of substance, mesh subject heading*]
- **Medication review or Medication management.**[*title, original title, abstract, name of substance, mesh subject heading*]
- **(PHARMACY/ or pharmacy.mp).** and **(intervention or interventions).**mp. [*mp=title, original title, abstract, name of substance, mesh subject heading*]
- **(PHARMACY/ or pharmacy.mp).** and **(service or services).**mp. [*mp=title, original title, abstract, name of substance, mesh subject heading*]

Current Contents (via ISI Current Contents Connect)

- **Pharmacist*** (topic/subject search)
- **Pharmaceutical Care** (topic subject search)
- **Medication management or medication review***
- **Pharmacy and service*** (set combination)
- **Pharmacy and intervention***(set combination)

International Pharmaceutical Abstracts (via Ovid)

- **pharmacist managed clinics / pharmacy run clinics**
- **aged care and consumers and education**
- **consumers and education / consumer education / education and consumer and pharmacist**
- **repeat prescribing**
- **medication review**
- **outpatient setting**
- **pharmacists and health care professionals and education**
- **continuity of care / seamless care**
- **decision making**
- **drug Information / drug information services**
- **home health care**
- **immunizations/immunizations**
- **smoking cessation**
- **pharmaceutical care / pharmaceutical care services / medication review / medication management**
- **outpatient setting**
- **pharmacy and monitoring / pharmacists and monitoring**
- **screening**

The Cochrane Library

- **“Pharmacist”** word search Cochrane Central Register of Controlled Trials 21/10/04
- **“Pharmacists”** MESH Heading. Cochrane Central Register of Controlled Trials 22/10/04

Austhealth Online (via Informit)

Databases included:

- AMI - Australasian Medical Index
- APAIS-Health - Australian Public Affairs Information Service – Health
- ATSIhealth - Aboriginal and Torres Strait Islander Health Bibliography
- AusportMed
- H&S - Health & Society Database
- HIVA - HIV/AIDS Database
- RURAL - Rural and Remote Health Database

- **Pharmacist* and Service***
- **Pharmacist* and Intervention***

Chapter 2, Appendix 2. Definitions of pharmacist services used in the database

In the database, interventions that utilised similar activities have been categorised according to the Pharmacist services definitions listed below.

1. Pharmaceutical Care

Pharmaceutical care is considered a patient-focused service, very often for people considered at high-risk of medication-related problems. The service is also offered to people suffering from specific conditions or with specific risk factors for diseases.

For the purposes of the database, an intervention is considered to be a pharmaceutical care intervention if it includes, as a minimum, the following:

- a one-to-one consultation between a patient and a pharmacist with a focus on managing health or resolving drug-related problems,
- development of a care-plan
- follow-up.

Pharmaceutical care is a “whole of disease” or “whole of patient” service.

2. Continuity of Care

Continuity of care services aim to improve medication management for people as they move from hospital back to the community or between different institutions. The service can include activities such as provision of discharge and medication summaries to the patient and their local doctors and pharmacists, the development and co-ordination of care plans to assist medication management, education for the patient about their medicines and where necessary, home visits after discharge from hospital. The services may be provided by either hospital or community pharmacists.

For the purposes of the database, one type of continuity of care service facilitates information provision between care providers based in the hospital and those based in the community setting, with or without home visits to the patient post-discharge. These studies include liaison with at least one community practitioner. A second type of service facilitates continuity of care from hospital but may not include liaison with community-based healthcare practitioners. Such a service may include telephone calls made by a pharmacist to patients at home after leaving hospital.

3. Pharmacist-run clinics

Pharmacist-managed or pharmacist-run clinics described in the international literature provide care to patients with chronic conditions such as diabetes mellitus, hypertension, hyperlipidaemia, coronary artery disease, asthma and epilepsy and to those receiving particular therapies e.g. anticoagulant therapy. Pharmacist services provided in these clinics include monitoring drug therapy outcomes, ordering and interpreting laboratory tests, making recommendations to physicians, providing education to patients, providing a point of contact for patients for queries or concerns and providing follow-up. In some clinics pharmacists have prescribing rights or, using approved protocols, make drug therapy selections and adjustments to drug therapy including dosage changes.

Pharmacists may also provide services in clinics to patients prior to their admission to hospital (pre-admission clinics). These services include medication history taking, prescription transcription and provision of information and advice to patients and health care professionals.

4. Medication review for repeat prescribing

Repeat prescribing allows a patient to obtain a repeated supply of medication without the need for a doctor's consultation. Studies have been undertaken to assess whether a service involving the review of repeat prescriptions by a pharmacist achieves similar or improved patient outcomes compared to usual care, where review is undertaken by another health professional.

For the purposes of the database, studies are classified as medication review services for repeat prescribing if they involve the pharmacist as the identified person responsible for review of the repeat prescription and active assessment of the continuing need for the medication.

5. Medication review in aged care facilities

Pharmacist-conducted medication review (also known as drug regimen review) involves a review of the medication record and medical case notes with an assessment of all factors likely to influence therapeutic outcomes. This involves collection of information about a patient's medications, their relevant

medical history and laboratory test results. This information is used to identify and resolve medication-related problems.

For the purposes of the database, studies are classified as medication review services if the intervention is primarily medication chart and medical case note review, without active consultation with the patient. Studies are included in this category specifically if they assess medication review services conducted by a pharmacist for residents of an aged care facility. Studies including medication review as part of a pharmaceutical care intervention are classified as pharmaceutical care studies.

6. Medication review in the outpatient setting

Pharmacist-conducted medication review (also known as drug regimen review) involves a review of the medication record and medical case notes with an assessment of all factors likely to influence therapeutic outcomes. This involves collection of information about a patient's medications, their relevant medical history and laboratory test results. This information is used to identify and resolve medication-related problems.

For the purposes of the database, studies are classified as medication review in the outpatient setting if they are undertaken in the outpatient setting, involve a review of medical records and case notes to identify and resolve medication-related problems without also including a pharmacist interview with the patient for this purpose. Studies involving medication review as part of a pharmaceutical care intervention are classified as pharmaceutical care studies.

7. Education services to patients/consumers

Pharmacist education or counselling services include the provision of verbal and/or written information and advice for patients or consumers. Verbal education may be provided individually (one-to-one) or to small groups. Education services are generally provided through face-to-face interactions between the pharmacist and patient but may also be conducted by telephone or using video technology. Education services may be single or multiple session services.

For the purpose of the database, studies are classified as education services to patients or consumers if they assess a pharmacist intervention described as counselling, education or verbal information provision delivered to patients or consumers, with or without the provision of written information, compliance aids or self-monitoring. Pharmacist interventions described as adherence or compliance programs are also classified in this category if education, counselling or the provision of information are a major component of the program.

Studies including patient education as part of a pharmaceutical care intervention, a drug information service, continuity of care, smoking cessation or immunisation services have been classified under these other services in the database.

8. Education services for health care professionals

Pharmacists may provide education services to individual health care professionals (one-to-one) or to a group of health professionals. These services are often provided at “outreach visits” which involve visits to the health care provider in their practice setting to deliver educational messages that aim to improve practice. A number of studies have assessed educational services provided by pharmacists that are described as “detailing”. The term “detailing” refers an educational approach based on principles of communications theory and behaviour change. Detailing interventions may involve identifying baseline knowledge and barriers to change, developing focussed educational programs, clearly defining objectives, providing authoritative and unbiased sources of information, encouraging involvement of the physician (or other health care professional) in the educational session and highlighting and reinforcing important messages.

For the purposes of the database, studies are classified as education services to health care professionals if they describe education services provided by pharmacists to physicians or other health care professionals. Studies which describe educational outreach visiting or “detailing” (with or without the provision of additional materials such as prescribing guidelines, promotional leaflets, mailed education campaigns) are included if the face-to-face visiting is conducted by a pharmacist. Studies that describe outreach visiting

conducted by a multidisciplinary team or a physician and a pharmacist are excluded. Studies are also excluded if it is unclear whether a pharmacist conducted the educational visit.

9. Drug Information Services

Drug information services are specialist services that provide drug information and answer general and specialist enquiries concerning medicines and their use.

For the purposes of the database, studies were included in this section if they focus on the provision of a stand-alone drug information service, i.e. drug information provided separately from another pharmacist service. Studies must utilise patient outcomes or changes in medication use as an outcome measure.

Studies that incorporate provision of drug information as part of an education service during medication supply, pharmaceutical care, medication review services for repeat prescribing, medication review in the outpatient setting or medication review in aged care facilities are classified in these other categories in the database.

10. Participation in therapeutic decision-making

Pharmacists can take an active role in the decision-making process about a patient's therapy. This is a collaborative process in which the pharmacist works as part of a team with physicians and other health care professionals. For the purposes of the database, studies are classified as participation in therapeutic decision-making if they assess the impact of a pharmacist's involvement in the decision-making process about a patient's therapy in collaboration with other healthcare professionals. These studies also use a team-approach to care rather than simply the conduct of a medication review by the pharmacist with recommendations made and discussed with the prescriber.

11. Non-prescription medicine use

Pharmacists in many countries are actively involved in providing advice, assistance and recommendations regarding non-prescription medication use.

In some countries, some medicines are restricted to pharmacist or pharmacy only sale because of the perceived additional benefit pharmacists can provide in achieving quality use of medicines.

For the purposes of the database, studies are classified as services related to non-prescription medicine use if they assess patient outcomes associated with pharmacist involvement in the provision or use of non-prescription medicines, not prescribed by another health practitioner.

12. Smoking cessation services

Smoking cessation programs offered by community pharmacies aim to assist consumers to quit smoking. The programs generally include patient assessment, counselling, documentation and ongoing follow-up. Nicotine replacement therapy or referral (as appropriate) are also usually included. The programs are generally implemented within community pharmacies.

For the purposes of the database, studies are classified as smoking cessation services if they provide a program run by a pharmacist with the aim of improving smoking cessation rates. To be included in the database, studies must have utilised some measure of smoking cessation rates as an outcome measure.

13. Immunization services

Pharmacist services related to immunization that are described in the international literature include:

- immunization advocacy programs in which the pharmacist identifies patients requiring immunization and provides information and education with the aim of raising awareness and improving vaccination rates;
- administration or provision of vaccinations in the pharmacy setting to improve vaccine access.

In the USA, community pharmacists are permitted to administer vaccinations.

14. Clinical Interventions

The literature base describing and evaluating clinical interventions provided by pharmacists is usually referring to the detection of errors, actual or potential or inappropriate medication use identified by pharmacists during their routine

practice. For example, the detection of an inappropriate dose, drug-interaction, allergy or contraindication identified and rectified during routine dispensing.

15. Hospital in the home

For the purposes of the database, studies classified as hospital in the home or home healthcare include home medication services provided by a pharmacist such as administration and monitoring of IV therapy in the home.

16. Screening services

For the purposes of the database studies are classified as screening services if they examine pharmacists conducting screening services such as blood pressure, blood cholesterol and blood glucose measurement in the pharmacy or another outpatient setting. Where screening is provided as part of another intervention (e.g. a pharmacist-run clinic the study is classified to the more complex intervention. Only studies that have a) compared outcomes for patients receiving the pharmacist screening service with those that have not received the service; or b) compared outcomes for patients receiving the pharmacist service with those who have received the service from another healthcare provider; or c) examined the effects of the pharmacist screening service on overall screening rates will be included in the database.

17. Monitoring services

Monitoring services aim to improve the proportion of patients achieving target levels for surrogate endpoints such as blood pressure and cholesterol levels. For the purposes of the database, studies are classified as monitoring services if they involve community pharmacists monitoring surrogate endpoints for specific disease states.

18. Pharmacist prescribing

For the purposes of the database, studies are classified as pharmacist prescribing if they involve pharmacists prescribing prescription medicines. Services that include pharmacist prescribing of prescription medicines as part of pharmacist-run clinic intervention are classified under that service.

Pharmacist prescribing of over-the-counter medicines is included in services for non-prescription medicine use.

19. Pharmacist as a member of a multidisciplinary team

Multidisciplinary services involve the pharmacist working as part of a team with other healthcare providers such as physicians, nurses and dieticians. For the purposes of the database, studies are included if they have compared the impact of a multidisciplinary team on patient outcomes with and without the inclusion of a pharmacist.

Chapter 2, Appendix 3. Organizations and discussion groups contacted to promote the database

In addition to the Pharmacy Guild of Australia and Community Pharmacy Research Support Centre, the following organisations and email discussion lists were contacted to provide information and the database and website.

1. AusPharmList - AusPharmList, the internet discussion group for Australian pharmacy has been in operation since January 1996

<http://www.auspharmlist.net.au/>

2. Essential Drug (e-drug) - The objective of E-DRUG is to support the concept of essential drugs by improving and speeding up communications between all health professionals working in the field of essential drugs.

e-drug@healthnet.org

3. Pharmacy Society of Australia (PSA) - The Pharmaceutical Society of Australia (PSA) is the national professional organisation for pharmacists in Australia.

The Society is the leading advocacy organisation for pharmacists, influencing attitudes, opinions and policies through representation, networking, consultation and a range of publications and health promoting programs and resources

<http://www.psa.org.au/>

4. Australian Association of Consultant Pharmacy (AACP) - The AACP is the organisation responsible for accrediting and supporting Consultant Pharmacists in Australia.

<https://www.aacp.com.au/>

5. Department of Veterans' Affairs (DVA) - DVA's Quality Use of Medicines program is designed to encourage best practice in the prescribing, dispensing

and use of veterans' medications. DVA promotes and conducts education and intervention programs to assist veterans and health service providers to better manage specific health problems and reduce unnecessary risks in medication use.

<http://www.dva.gov.au/health/provider/pharmacy/phindex.htm>

6. The International Pharmaceutical Federation (FIP) - The International Pharmaceutical Federation is the global federation of national organisations of pharmacists and pharmaceutical scientists dedicated to improving the access to and value of appropriate medicine use, and contributing to changes in science, practice and health policies worldwide.

<http://www.fip.org/>

7. International Pharmaceutical Students Federation (IPSF) - IPSF was founded in 1949 by a group of pharmacy students in London. The Federation represents approximately 350,000 students from over 90 different countries. The objective of IPSF is to study and promote the interests of pharmaceutical students and to encourage international co-operation among them.

http://www.ipsf.org/new_ipsf_website/Main/index.htm

8. Quality Use of Medicines Mapping Project (QUM) - The aim of this project is to provide a comprehensive map of current major quality use of medicines (QUM) initiatives in Australia. The project provides a resource to inform people working in the QUM area of existing resources, expertise and complementary work. The project is funded and coordinated by the Commonwealth Department of Health and Aged Care.

<http://www.qummap.health.gov.au/>

9. Australian Prescriber - Australian Prescriber is an independent publication providing readily accessible information about drugs and therapeutics. It covers topics assisting doctors, dentists, pharmacists and students.

<http://www.australianprescriber.com/>

10. Canadian Pharmacists Association (CPA)

http://www.pharmacists.ca/content/hcp/resource_centre/pharmacy_practice_research/index.cfm

Chapter 2, Appendix 4. Community Pharmacy Research Database Website Home Page

Community Pharmacy Research Database

Research on pharmacist services in the community setting



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This website

This website provides you with access to a database of Australian and international [literature](#) resources that relate to community pharmacy practice research and the economics of professional pharmacist services. The information is primarily intended for community pharmacists, pharmacy academics and other pharmacy researchers. The database includes studies that evaluate patient health outcomes and quality of medication use or quality of prescribing.

The database was developed by the [Quality Use of Medicines and Pharmacy Research Centre](#) at the University of South Australia for the [Community Pharmacy Research Support Centre](#) in Australia. This project is funded by the [Australian Government Department of Health and Ageing](#) as part of the Third Community Pharmacy Agreement Research and Development Grants Program.

The database contains the bibliographic details of each resource, information about the type of [pharmacy service](#) evaluated, the types of [outcomes measured](#), the type of [economic analysis](#) performed and a summary of the findings of each study.

Updates

The database will be updated monthly. [Subscribe](#) if you would like to receive an email update of new database records.

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The PHARMACY GUILD of AUSTRALIA



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Chapter 2, Appendix 5. Community Pharmacy Research Database Search Pages and an Example Record

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Research on pharmacist services in the community setting



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You can search the database in three ways:

Search for all entries in specific fields

Choose a field

Search for entries that contain your required words

Enter Words

Search for entries added from a specific date

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Search Tips

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Words

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This search will normally search all fields, but you can limit the search to chosen fields by selecting the checkboxes below:

- | | |
|--|---|
| <input type="checkbox"/> Title | <input type="checkbox"/> Study Methodology |
| <input type="checkbox"/> Publication Type | <input type="checkbox"/> Economic Analysis |
| <input type="checkbox"/> Language | <input type="checkbox"/> Type of Economic Analysis |
| <input type="checkbox"/> Author | <input type="checkbox"/> Type of Pharmacist Service |
| <input type="checkbox"/> Institution | <input type="checkbox"/> Disease/Condition |
| <input type="checkbox"/> Source | <input type="checkbox"/> Outcomes Measured |
| <input type="checkbox"/> Date of Publication | <input type="checkbox"/> Keywords |
| <input type="checkbox"/> Locator | <input type="checkbox"/> Intervention/Target group |
| <input type="checkbox"/> Publisher | <input type="checkbox"/> Evaluable sample |
| <input type="checkbox"/> URL | <input type="checkbox"/> Follow-up period |
| <input type="checkbox"/> Setting | <input type="checkbox"/> Summary |
| <input type="checkbox"/> Country | |

Community Pharmacy Research Database

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Selected entries:

Title: Can a self-management programme delivered by a community pharmacist improve asthma control? A randomised trial

Authors: Barbanel D
Eldridge S
Griffiths C

Source: Thorax

Date of publication: 2003

Locator: 58:851-854

Outcomes Level 1 measured: Disease symptom severity

Intervention / Target group	Evaluable sample	Follow-up period	Summary
18-65 years old with a diagnosis of asthma, using inhaled corticosteroids	12 intervention, 11 control patients	3 months	<p>Summary of intervention</p> <p>Review of inhaler techniques and one-to-one education session with pharmacist about asthma, monitoring, inhaler technique, self-monitoring skills and actions in an emergency, smoking cessation (if necessary) and provision of written information and instructions for self-management plan. Weekly follow-up by telephone</p> <p>Summary of results</p> <p>1. Asthma symptoms: (measured by North of England Asthma Symptoms Scale): Mean baseline scores were similar (26.3 intervention versus 27.8 control). At 3 months scores for the control group worsened slightly overall to 28.1, while overall (mean) scores for the intervention group improved in the intervention group to 20.3. The difference between groups adjusted for baseline scores was significant (mean 7.0, 95% CI 4.4 to 9.5, $p < 0.001$).</p>

Chapter 3

Objective 3: International Pharmacy Practice Research Collaboration

Interim Report 2 for:



Pharmaceutical International Network

Connecting policy makers and researchers



Authors: Professor S.I. Benrimoj and Dr. F. Hilferty

25th May 2005

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Acknowledgements

We are grateful for the continuing financial support of this project provided by the Australian Government Department of Health and Ageing through the Third Community Pharmacy Agreement Research and Development Grants Program, administered by The Pharmacy Guild of Australia, and provided through the Community Pharmacy Research Support Centre, a collaboration of Australian Pharmacy Schools.

The PIN Project

The PIN project commenced in August 2004, when the Community Pharmacy Research Support Centre awarded the Faculty of Pharmacy at the University of Sydney \$38,000 (plus 20% University overheads) to establish an international pharmacy practice research and policy collaboration. These funds were provided by the Australian Government Department of Health and Ageing through the Third Community Pharmacy Agreement Research and Development Grants Program, administered by the Pharmacy Guild of Australia. Four project goals were articulated as guidelines. These goals were:

- To formalise and strengthen key stakeholder connections in community pharmacy practice, globally.
- To facilitate fast and efficient knowledge mobilisation and management in relation to the value of community pharmacist services.
- To keep members informed and up-to-date about issues that affect community pharmacy globally, such as changes to the healthcare systems in participating countries.
- To identify and progress a number of internationally collaborative research projects.

PharmIntercom, an international coalition of community pharmacy policy making organisations, was originally identified as a group through which the above project goals could be achieved. For at least fifteen years, the leaders of this group have met informally to compare experiences, share information, and discuss strategies and issues of best practice in community pharmacy. Moreover, the leaders of the organisations that comprise PharmIntercom share a vision of increased collaboration and communication between the allied organisations. The PIN project formalises this alliance by providing PharmIntercom representatives an electronic infrastructure that will support project goals and facilitate increased communication. This infrastructure is based on a software system called “Unilinks”. Unilinks is a collaborative

software tool that employs web-based technology to connect geographically dispersed network members. The software enables network members to share data and discuss ideas, and it also provides a file storage feature that supports the planned development of a valuable library database of current and unpublished international material. The Unilinks software system is discussed more fully in a later section of this report.

The remainder of this document reports on the progress of the PIN project for the period 15 December (when the first project report was submitted to the Pharmacy Guild of Australia) to the end of May, 2005.

Project Update

The original project grant of \$38,000 was almost entirely spent on the salary for the PIN project officer (Fiona Hilferty was contracted to work on the PIN project in August 2004), as well as two key consultancy fees. These fees comprised:

1. A payment of \$7,500 to Dr. Kate Grenot of BCP Investments to provide strategic input for structure and governance of the PIN network, and to provide a document that may be used as a basis for legal codification of network structures.
and
2. A payment of \$5,000 to Dr. Kate Crawford of K-Grid to provide strategic support and advice for developing successful and active online communities.

Additionally, a software licence fee of \$4,000 was paid to K-Grid Pty Ltd to trial the Unilinks software system for a six month period.

Towards the end of November 2004, it became apparent that further funding for the project was necessary as the software licence had been negotiated to

5 April 2005, but the remaining funds would not cover the project coordinator's salary to this period. To this end, in December 2004, the PIN Director, Charlie Benrimoj and the project coordinator, Fiona Hilferty, made an application to the Pharmacy Guild of Australia to extend funding of the project. Two funding options were proposed. These were:

Option 1: to extend funding until expiration of the software licence, i.e. the 5th of April, 2005. Funding amount required = \$21,240.

Option 2: to extend funding until the meeting of PharmIntercom delegates in September, 2005. Funding amount required = \$59,400.

The Guild chose to extend the project until the meeting of PharmIntercom delegates in September 2005 (i.e. Option 2).

To fulfil the original project obligations a report on the status of the PIN project was submitted to The Pharmacy Guild of Australia on the 15th of December, 2004. This report provided a project introduction and summary, and an overview of the project tasks that were undertaken during the initial pilot phase of the project. This report also included a section on project requirements for the second stage of the PIN project. These requirements centred around delivering project costings for a more permanent operation of the PIN website. This work has been completed and is detailed in a later section of this report. The first report also listed a number of activities that had been undertaken to address project goals. In the section below I add to this list by detailing what tasks have been completed since the first Guild report. Some of these tasks were unanticipated and stem from the fact that during the initial pilot stage, some bugs were found to be present in the Unilinks software system. At times, these bugs have restricted successful use of the Unilinks software, and so it became a priority to both resolve existing bugs and to research alternative software suppliers.

Work Completed

A number of activities have been undertaken since submission of the first PIN report. These include the following:

- A 6-month licence agreement extension for Unilinks software was negotiated with K-Grid Pty Ltd. This extension is termed the “second pilot phase” and dates from 5 April 2005 to 5 October 2005.
- The PIN network was shifted to an external hosting arrangement to test whether the bugs found relate to the Unilinks software or the restrictive server arrangements at the University of Sydney.
- A document detailing customisation requirements for a more permanent operation of the PIN network has been drafted and costed.
- An alternative software solution called .LRN (pronounced ‘dot learn’) has been researched and is presently being trialled free of charge.
- A paper entitled “Pharmaceutical International Network: A model for international research and policy collaboration” has been written for submission to various PharmIntercom organisations’ journals (see Appendix 1).
- A poster presentation was given by the Project Director, Charlie Benrimoj, at an international pharmacy conference (see Appendix 2). This presentation generated much interest in network capabilities as well as valuable feedback on network operations.
- A PIN marketing card has been designed and printed (see Appendix 3).
- Two strategies for community development have been planned and are currently being enacted. These strategies comprise trialling various methods to promote greater online interaction using a newly established community of pharmacy postgraduate students, as well as establishing an ‘active four’ team as a discrete trial group in the PharmIntercom community. These strategies are discussed in greater detail in the following section.

- Costings for a future and more permanent operation of the PIN network have been obtained. These costings are shown in a later section of this report.

Strategies for Community Development

The principle goal of the PIN project is to demonstrate that the community is successfully collaborating and interacting online through a global network, and that this interaction is beneficial to pharmacy policy-makers and researchers. In order to meet this goal we need to develop strategies for community development that engage people actively in achieving a shared purpose. Two strategies to stimulate meaningful knowledge exchanges between Pharmintercom members are presently being enacted. These strategies are: the establishment of an independent team within the larger Pharmintercom community; and the establishment of a postgraduate student forum. Each strategy is discussed separately below.

“The Active Four” Team

This independent working group was established with the aim of identifying an area or project where individuals share a common working interest. The group is made up of the four most active participants from the Pharmintercom community. The underlying goal of establishing this group is to determine shared goals for any interaction that are valued enough to stimulate effort and resource allocation. Once shared goals have been established a secondary aim is to negotiate shared purposeful projects that will entail rapid knowledge mobilisation.

The team comprises representatives from The Pharmacy Guild of Australia, the Canadian Pharmacists Association, the Irish Pharmaceutical Union, and the National Community Pharmacy Association (US). Emails prompting interaction between the four have been sent out and a “strategies for

collaboration” forum that is only accessible to this team has been set up as an arena for online discussions. To date, organisational goals have been discussed online, however a shared working project has not yet been identified.

The Postgraduate Student Forum

A postgraduate student community has been set up on the PIN network with the aim of trialling strategies that promote greater interaction. Currently this community comprises 13 postgraduate students from the Pharmacy Faculty at The University of Sydney. This community has been extremely active in online forum discussions that were initiated by the PIN coordinator. An example of such a discussion centred around a student’s request for a clever and catchy title for her PhD thesis. This student received many suggestions in response, along with philosophical comments on the benefits of a catchy title over an informative one.

Future strategies that will be trialled using this community include the collaborative construction of a document that outlines guidelines for participation in the postgraduate online community. It is hoped that the knowledge gained about successful collaboration from this community can be applied to the PharmIntercom community.

Software Options

Global collaboration in a network such as PIN is critically dependent upon access to an effective software system that is robust and easy to use. Unilinks is being trialled during the pilot phase of this project, and another system called .LRN is being researched as a possible alternative.

Unilinks

Unilinks software is the platform upon which the PIN network presently operates. This software system was designed to enable people without specialist IT skills to create and manage customised interactive workgroup sites, as well as to enhance collaboration and knowledge mobilisation.

During the pilot phase of the PIN project a number of bugs have been exposed within the Unilinks software. These bugs relate to system functionality. As a consequence of these bugs the PIN network has been inactive for periods of time whilst upgrade and development work was carried out on the software. This circumstance has slowed progress on the PIN project. In an attempt to improve the performance of the Unilinks software the network was recently moved to an external hosting company. This was done in order to test whether the restrictive server environment that operates at The University of Sydney has contributed to the software's inconsistent performance. The Project Coordinator will undertake a review of this new hosting arrangement on June 5, at which time the new arrangement will have been operating for one month.

Costings for a more permanent deployment of Unilinks software are shown below:

Unilinks annual licence fee = \$9,000 for the first 100 users and thereafter \$50 per additional user in lots of 10 (or as negotiated). Students may use the system at \$10 per head.

Customisation of the Unilinks software so that it more appropriately meets the needs of the PIN network = \$6,500

This customisation will include changes to the links resource so that a text box is attached to each link; to the document database to ensure that files can be

stored either publicly or privately; to email alert system; and to the email options within the Unilinks software.

External hosting of the Unilinks software still needs to be costed.

.LRN

.LRN (dot learn) has been identified as an appropriate alternate software system for the PIN Network. .LRN is an open source application suite for learning and research communities. Originally developed at MIT, and now part of MIT's "Intellectual Commons", .LRN is used by a quarter-million users in more than 18 countries worldwide. As an open-source application .LRN is significantly cheaper than many customised or commercial solutions. Software support is provided by the .LRN Consortium, however independent consultants can also be contracted. To date, discussions have begun with Mark Aufflick, from pumptheory.com. Mark's expertise lies in designing and implementing collaborative systems using the .LRN application, and he has provided costings for utilising .LRN for the PIN project.

.LRN provides some powerful collaboration and community-building tools that would be appropriate for the PIN network. These include:

File Storage – all users have access to personal file storage and can store private files or upload public files that are shared with other registered users. At the community level, community administrators can upload files for distribution to all community members. All subgroups and teams can have their own file storage area for file sharing.

Forums – .LRN includes highly configurable support for discussion forums. Forums may be threaded or flat, open or closed and posts can include URLs and attached files. Email support is extensive and users

can receive instant or batched (hourly or daily) notifications, or can disable email notifications altogether. The system can be configured to allow users to post replies to the forums by email. Teams, communities and subgroups can have their own forums. The forums provide a means for holding online discussions.

News – or “announcements” provide an easy mechanism for one-way communication between community administrators and community members.

Survey – or “polling” module provides a survey tool for collecting data. There are several response types and settings for allowing users to edit or retake a survey. Data can be viewed online through a set of simple reports or the data can be exported as a file for manipulation and compilation using tools such as Excel.

Photo Album – is a tool that can be used for uploading photos and images that can be shared with all members within a community.

WimpyPoint – is the .LRN alternative for Microsoft’s Powerpoint application. In some ways, mostly in design, it is a simpler looking tool, but in another way – collaboration – it is a more powerful, community-minded tool. With WimpyPoint, learners can create presentations that are stored online instead of on one learner’s machine. This enables collaborative development by improving accessibility. The creator of a new presentation chooses her collaborators and who can view the presentation.

More information on .LRN can be found at the link shown below:

<http://dotlrn.org/>

Costs for deploying a .LRN application are as follows:

.LRN is a free-sourced open-based software system which means it would be free to download. A modest fee of US\$250 per annum is required to join the .LRN Consortium which provides support and development benefits.

Costs for an external hosting service (for up to 150 users) that includes site maintenance such as backups, security patches and as-needed database analysis and maintenance = \$135 per month.

Finally a .LRN consultant would be needed to set up the PIN network on the software and make some minor customisation requirements. This would take approximately 12 hours at \$150/hour = \$1,800

Recommendation

Due to the persistence of bugs in the Unilinks software system an implementation plan is being developed that will enable rapid transfer of the PIN network from Unilinks to the .LRN software system. This implementation plan will be finalised following a meeting with expert consultant, Mark Aufflick on Friday 27th of May and will be enacted as soon as practicable. This plan will be forwarded to both the Community Pharmacy Research Support Centre and The Pharmacy Guild of Australia when finalised.

Chapter 3, Appendix 1 PIN Article

Pharmaceutical International Network (PIN): A model for international research and policy collaboration.

Authors: Benrimoj, S.I. & Hilferty, F.

Address: Faculty of Pharmacy, University of Sydney, NSW 2006, Australia.

Introduction and project rationale

The changing status of community pharmacy and the pharmacist's role in healthcare is a global phenomenon. Due largely to a radical shift in professional orientation – from a product focus to a patient-centred practice model, these changes have greatly impacted upon the role of pharmacy researchers and policy-makers, and have increased the need for collaboration between these key stakeholders groups. Pharmacy researchers have responded to the shift in professional orientation by focusing on the development of new models of pharmacy practice that inform and support a transforming profession. For policy-makers, operating within a competitive context of decreasing healthcare funding, the necessary emphasis has been on asserting the fundamental value of pharmacist professional services within this changing environment. The shared advocacy goals and interests of both stakeholder groups are clear and pressing, yet until recently there has been limited international collaboration between them.

This article reports on the progress of a research project that aims to facilitate meaningful collaboration between pharmacy researchers and policy-makers. It was thought that a connection between these groups globally would enable them to better manage the changes that are occurring to the pharmacy profession worldwide. The Pharmaceutical International Network (PIN) was established as a means of formalising this connection. PIN acknowledges the importance of dialogue and partnership between pharmacy policy-makers and researchers – between those responsible for funding and directing public sector research and those undertaking that research. The PIN project is being conducted at the University of Sydney, under the directorship of Professor S.I. Benrimoj. PIN is currently operating as a pilot project, however following a successful demonstration of the network and its potential to executives at the Pharmacy Guild of Australia late last year, the Guild has extended project funding until September, 2005.

The PIN project was designed with 4 goals in mind. These are:

- To formalise and strengthen key stakeholder connections in community pharmacy practice globally.
- To facilitate fast and efficient knowledge mobilisation and management in relation to the value of community pharmacist services.
- To keep members informed and up-to-date about issues that affect community pharmacy globally, such as changes to the healthcare systems in participating countries.

- To identify and progress a number of internationally collaborative research projects.

Each of these projects goals are discussed separately below.

Formalising the connection

The founding members of PIN are leading policy-makers and researchers from community pharmacy organisations that comprise an alliance known as Pharmintercom. Pharmintercom is a group that represents community pharmacy policy interests in Australia, Canada, Ireland, New Zealand, South Africa, the United Kingdom and the United States of America. The organisations that comprise Pharmintercom share a commitment to assuring the value of quality health care provided by pharmacists through community pharmacies. The community pharmacy organisations that comprise Pharmintercom include the Pharmacy Guild of Australia, the Canadian Pharmacists Association, the Irish Pharmaceutical Union, the Pharmacy Guild of New Zealand, the South African Association of Community Pharmacists, the National Pharmaceutical Association (UK), the Pharmaceutical Services Negotiating Committee (England and Wales), and the National Community Pharmacists Association (US).

For at least 15 years, the leaders of these organisations have met annually to compare experiences, share information, and discuss strategies and issues of current and best practice in community pharmacy. PIN provides this alliance the electronic infrastructure needed to realise members' shared vision of increased communication and collaboration. Using sophisticated web-based technology and software, PIN facilitates the development of a genuine community through which members can communicate regularly and easily with each other. PIN renders geographic boundaries insignificant by enabling members to share resources (such as data files or latest research reports), access databases, and discuss areas of common concern or interest. By uniting members in this structured and formalised environment, a global community of collaboration is beginning to emerge.

Mobilising and managing knowledge

In an article that examined the usefulness of cyber-infrastructure for enhanced scientific collaboration, David (2004) states that many research communities view the success of knowledge mobilisation efforts as a high priority requirement. Two reasons for this necessary focus on improved knowledge mobilisation are a rapid expansion of knowledge (that is, the quantity of knowledge is increasing at an exponential rate), and the slow rate at which knowledge is published and applied (publication in scientific journals can take 12-18 months after acceptance, which itself may have taken a year to achieve). PIN researchers similarly regarded effective knowledge mobilisation as imperative, and for this reason, PIN was designed as a vehicle for the timely promulgation of the latest research results and industry knowledge. PIN achieves this goal by encouraging and enabling members to share valuable reports in a private community arena. Furthermore, as PIN does not own any intellectual property the circulation of material via PIN does not interfere with the future publication of same reports in industry journals. PIN therefore enables

members to access and share the latest research, rather than wait for publication in industry journals – a process that can take considerable time.

The PIN network also employs a number of tools that provide a sound structure for effective knowledge management. These tools include a document database that ensures that knowledge is easily accessible in three basic forms – full report, executive summary, and abstract. This database is a growing and dynamic resource that relies upon member organisations as knowledge sources. PIN also provides a news flash system that keeps members informed of network and member developments; a polling mechanism that surveys members' opinions; and a forum component that enables members to discuss topics of interest or concern. To date the forum feature has not developed into the vibrant information exchange tool originally envisaged. Technical and cultural challenges remain, such as reinforcing with members how to use the tools provided and why such knowledge exchange will improve their ability to engage in international research collaboration. As the project progresses however, more members are becoming network savvy and therefore more actively involved. Viewed in total then, network activity suggests that PIN is developing into an important tool that, for members, will accelerate the development and dissemination of pharmacy knowledge, optimize pharmacy research, and minimize the time between discovery and application of pharmacy knowledge. A full project evaluation will be conducted in September. This report will be accessible on the PIN website.

Keeping members informed

By effectively utilising the knowledge mobilisation and management tools described above, PIN keeps members informed of recent developments in community pharmacy from member countries. News reports and emails alert members to items such as changes to remuneration of professional pharmacist services, and legislative reforms that impact on community pharmacy. Such notifications are brief - thereby acknowledging the demanding nature of members' work and their corresponding desire to access summarised information. For issues of significance however, a news item can also be connected to a forum discussion.

As part of PIN's goal to keep members' informed of recent developments, research staff have also written brief documents that summarise key features of the healthcare system and the related role of community pharmacists in member countries. These documents are accessible to all and are located in the document database. These documents highlight areas of unity for network members. Common to all health systems for example, is a growing scarcity of resources necessary to meet society's healthcare demands. Contrasting this shared experience is each country's unique underlying framework of cultural values that drives pharmacy policy-making, financing decisions, and the public's healthcare expectations.

In the specific ways described above PIN extends members' learning about the status of community pharmacy globally. PIN also acknowledges, however, that learning occurs from participation in practical activities and so member feedback on healthcare documents, forum discussions, and news items is encouraged. Indeed, by structuring information items in a way that enables members to engage in a collaborative discussion, PIN frames learning as a shared, participative practice.

A new model for collaborative research

The PIN network serves as a model for supporting international collaboration in pharmacy research and policy-making. The network draws upon the scientific “collaboratory” model first identified by Wulf (1993). The essence of a collaboratory is Internet based software that provides scientists with remote access to documents, databases, instruments and colleagues, and the ability to analyse and test models as though they were being performed locally. PIN adapts this model for the specific purposes of pharmacy policy-makers and researchers however the key elements of remotely providing members with the resources needed to undertake collaborative research remain. To help define this adapted model a member agreed statement outlining network policies in relation to issues such as research ownership, confidentiality and intellectual property has been developed and is accessible on the website. Collaboratories and similar models are well established tools for collaborative research in areas such as nuclear physics, biotechnology and medicine. A survey of recent literature suggests, however, that the PIN project is the first of its kind in establishing a network and providing the electronic infrastructure needed to support collaboration in the context of pharmacy practice research and policy-making.

An overarching goal of the research project has been to identify and progress a number of collaborative research projects. As discussed above, the electronic infrastructure provides the mechanism for this collaboration. To assist members in identifying potential areas of research collaboration, a specific discussion forum has been established. This forum encourages members to prioritise areas for research in their own countries. Country-level priority setting has been identified by network members as an important first step in stimulating collaborative international projects and to date members are still responding to this request. Following these preliminary forum discussions, potential collaborative research projects will be identified and discussed in person, when network members meet in September of this year. A planned goal for this meeting will be to initiate an international research project.

Conclusion

This article has reported on the progress of a research project that seeks to establish a vibrant, collaborative community of leaders in pharmacy practice research and policy-making. The PIN project is significant because it seeks to bridge the gap between these key stakeholder groups, and anticipates that in doing so PIN will promote better and more efficient research practices. Such research practices may help to integrate pharmacists as core (not peripheral) members of the primary care team; set international benchmarks of quality; and develop new models of best practice that support improved health outcomes. To realise these rather grandiose aims PIN relies upon the active participation of its members. Up till now much project activity has been focused on encouraging participation, however, as the network becomes more familiar, less structured collaboration amongst members is beginning to take place. This activity suggests that the challenges involved in using such a new and technical mode of collaboration are decreasing and that members are beginning to see the true potential of PIN. The shared vision of community and collaboration that originally prompted members’ to support this research project, similarly supports the development of PIN as a network that will aid organisational decision-making, reduce

the costly duplication of research, and assist in strategic planning and future profession wide development.

Acknowledgements

The authors gratefully acknowledge the participation of PIN members from the following 8 organisations:

The Pharmacy Guild of Australia
The Canadian Pharmacists Association
The Irish Pharmaceutical Union
The Pharmacy Guild of New Zealand
The South African Association of Community Pharmacists
The National Pharmaceutical Association (UK)
The Pharmaceutical Services Negotiating Committee (UK)
The National Community Pharmacists Association (US)

The authors are grateful for the financial support of this project provided by the Australian Government Department of Health and Ageing through the *Third Community Pharmacy Agreement Research and Development Grants Program*, administered by the Pharmacy Guild of Australia, and provided through the Community Pharmacy Research Support Centre, a collaboration of Australian Pharmacy Schools.

Further information regarding the PIN project may be found at <http://www.pharm.usyd.edu.au/PIN> or you can email Fiona Hilferty at fionah@pharm.usyd.edu.au

References

- David, P.A. (2004). Towards a cyberinfrastructure for enhanced scientific collaboration: Providing its 'soft' foundations may be the hardest part. Retrieved 2 February, 2005 from http://www.oii.ox.ac.uk/resources/publications/OIIRR4_200408.pdf
- Wulf, W.A. (1993). The collaboratory opportunity. *Science*, 261, 854-855.

Chapter 3, Appendix 2 PIN Poster

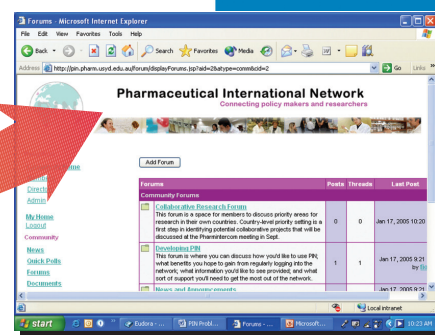
Pharmaceutical International Network (PIN): A model for international research and policy collaboration.

S.I. Benrimoj & F. Hilferty, Faculty of Pharmacy, University of Sydney.

The founding members of PIN are leading policy-makers and researchers from community pharmacy organisations that comprise an alliance known as Pharmintercom. The organisations that comprise Pharmintercom share a commitment to assuring the value of quality health care provided by pharmacists through community pharmacies. These organisations include the Pharmacy Guild of Australia, the Canadian Pharmacists Association, the Irish Pharmaceutical Union, the Pharmacy Guild of New Zealand, the Pharmaceutical Society of South Africa, the National Pharmaceutical Association (UK), the Pharmaceutical Services Negotiating Committee (UK), and the National Community Pharmacists Association (US).

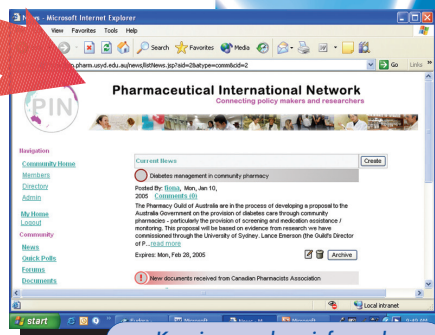
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www.pharm.usyd.edu.au/PIN <<http://www.pharm.usyd.edu.au/PIN>>



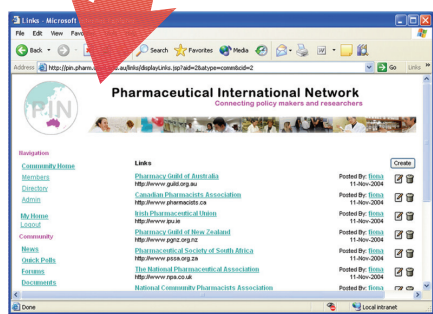
A new model for collaborative research.

- An end goal of the project is to identify and progress a number of international collaborative research projects.
- A specific collaborative research forum engages members in discussions about research priority setting. Following these preliminary discussions a short list of projects will be identified and initiated.



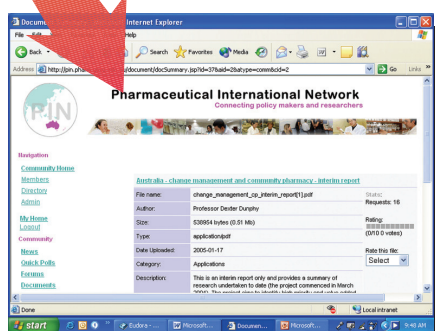
Keeping members informed.

- PIN extends members' learning about the status of community pharmacy globally.
- Network news reports and emails alert members to recent developments, and the document database contains a summary of the healthcare system and related role of community pharmacy in each member country.
- By structuring information items in a way that enables members to engage in a collaborative discussion, PIN frames learning as a shared, participative practice.



Connecting policy-makers and researchers.

- PIN formalises the Pharmintercom alliance by providing the electronic infrastructure needed to realise members' shared vision of increased communication and collaboration.
- PIN renders geographic boundaries insignificant by enabling members to share resources, access data bases, and discuss areas of common concern or interest.
- By uniting members in a structured and formalised environment, a global community of collaboration is beginning to emerge.



Mobilising and managing knowledge.

- PIN employs sophisticated web-based technology and software to accelerate the development and dissemination of pharmacy knowledge, optimize pharmacy research, and minimize the time between discovery and application of pharmacy knowledge.



The University of Sydney



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OF SYDNEY

Acknowledgements

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Chapter 3, Appendix 3 PIN Postcard



www.pharm.usyd.edu.au/PIN <http://www.pharm.usyd.edu.au/PIN

Pharmaceutical International Network

The Pharmaceutical International Network (PIN) was established in 2004 to facilitate increased communication and collaboration between policy-makers and researchers of community pharmacy practice, globally. The core aim of the PIN network is to help these key stakeholder groups better adjust to the demands and challenges of a rapidly transforming profession.

PIN Members form beneficial, global partnerships that provide assistance in the following ways:

- PIN aids decision-making. By providing an arena for the timely exchange of information members are kept up-to-date with what is going on in community pharmacy practice internationally.
- PIN facilitates research that is cost-effective and intellectually rigorous. PIN highlights shared research interests, and promotes the undertaking of research that draws on the resources and expertise of international partners. Such research enables comparative benchmarking that strengthens political advocacy goals.

- PIN reduces the costly duplication of research. PIN provides an effective mode of communication that informs members about projects currently ongoing or recently completed. This information is in a synthesised format where members can choose to access either abstract, executive summary or full report.
- PIN assists strategic planning and future profession-wide development by providing international examples of best and current practice in community pharmacy practice.

Want to know more?

Contact either

Professor S.I. Benrimoj
or **Fiona Hilferty**, (fionah@pharm.usyd.edu.au).



The University of Sydney

Chapter 4

Objective 4:

Summaries of Commissioned Reports

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Overview of Commissioned Reports

Objective 4 of the CPRSC was to generate reports on issues of interest to The Pharmacy Guild of Australia and the Commonwealth Department of Health and Ageing. The topics for the reports were selected by the Commonwealth and The Pharmacy Guild. The CPRSC then sought expressions of interest in preparing the reports from researchers at CPRSC-affiliated universities. The contracts to prepare the reports were then awarded based on a majority vote by the CPRSC members.

A total of five reports were commissioned and the topics were as follows:

Report 1: Third update of the Value of Pharmacist Professional Services report.

Report 2: Tools, mechanisms, strategies to engage and retain pharmacists in research.

Report 3: Tools, mechanisms, strategies to engage and retain clients/ consumers in pharmacy practice research.

Report 4: Health promotion and dissemination activities for pharmacists, as part of health care collaborations/networks.

Report 5: Primary health professional education (GP's, pharmacists, community nurses) current models and barriers to participation.

Summaries of each of the reports are presented below.

Report 1:

The value of pharmacist professional services in the community setting

A systematic review of the literature October 2002 – March 2005

Prepared by:

**SI Benrimoj, Michael Frommer, Lucie Rychetnik, Phoebe Holt,
Monique Heinke, Christine Madronio, Mary George, Rosa Reitano**

April 2005

BACKGROUND

We were commissioned to update a review of Australian and international literature on professional pharmacist services in the community that covered the literature published between 1990 and October 2002 (Roughead, Semple and Vitry, 2003). Our update covered the literature published between October 2002 and March 2005.

METHODS

In accordance with our brief, we used the same literature – search methods and inclusion and exclusion criteria as those described in the 2003 report. We concentrated on examining the highest level of evidence, and we therefore confined our attention to reports of randomised controlled trials (RCTs). For those pharmacist professional services that had not been evaluated with RCTs, we only accepted trials that included a control group. However, our report does not provide a comprehensive review of non-randomised studies relating to all pharmacist services.

From our literature search, it appeared that the rate of publication of RCTs had increased markedly. We identified a total of 40 RCTs that had been published in a period of less than two and half years, up to March 2005, while the previous review identified 70 RCTs over a period of almost 12 years.

RECOMMENDATIONS

First, while the focus on RCTs is desirable for a rigorous evaluation of specific services, it means that informative literature reporting on research that uses other designs is overlooked.

Second, for the development of Australian policy and practice, it is especially important to consider Australian studies of all types. While studies from other countries contribute to the stock of knowledge about the effectiveness of pharmacy interventions, many interventions are highly context-dependent.

Third, in evaluating professional services by pharmacists, it may be preferable to classify interventions according to the type of service provision that they represent, rather than the subdivision of interventions by their purpose or the setting in which they are applied (as was done in the previous review).

Fourth, while we were careful to evaluate effects of interventions that could reasonably be attributed to the specific involvement of pharmacists (as distinct from a multi-disciplinary team), we acknowledge that multi-disciplinary interventions are likely to dominate many aspects of health care in the future.

We recommend that future reviews concentrate on particular types of pharmacy service provision, as suggested above, and that they include studies using all types of analytical and descriptive designs, not just RCTs. Evidence from any rigorous, well-conducted piece of research warrants consideration.

COMMENTS

The authors were restricted in their ability to review non randomised, but controlled trials, based on the history of these reports. There are thus only 2 Australian RCTs reviewed in this report (p 18). Of the 2 reports quoted, they have excellent internal validity in that one pharmacist (the researcher) performed the entire service and was thus able to randomise patients. It is unlikely that this service would be generalisable. There is a 3rd trial; however it fell so far short of its target recruitment it could not be considered.

On the other hand there are a number of controlled trials (it is difficult to randomise in practice and avoid contamination) already completed in Australia which have been published. These trials should be considered in subsequent reviews in order to make a true assessment of the value of pharmacist professional services.

Report 2:

Recruitment and Retention of Community Pharmacists in Pharmacy Practice Research

**B Saini, M Brilliant, J Filipovska, L Gelgor,
B Mitchell, G Rose, L Smith**

May 2005

BACKGROUND

The practice of pharmacy has seen a paradigm shift from product focus to service focus in the last few decades. With the introduction of new roles comes the need to validate their effectiveness. For such research to proceed, the active participation of pharmacy practitioners is required. The aims of this study were to examine Australian community pharmacists' attitudes and perceptions regarding community pharmacy-based research, and to clarify the barriers and facilitators to pharmacists' participation in research projects, by a review of the relevant research literature and a survey of a population of Australian pharmacists.

METHODS

Several electronic databases were systematically searched for articles related to pharmacists' attitudes towards research and involvement in extended services. Several journals were also hand searched.

A survey instrument was developed based on feedback from a previous focus group held with community pharmacists and researchers. The survey was composed of three sections covering demographics, previous participation in research, and perceptions about participation in research. The survey results were analysed for differences between those pharmacists who had previously participated in research (PRP) and those who had never taken part or who had only participated at the level of filling in surveys (NPRP). Barriers and facilitators to research involvement were also identified.

CONCLUSIONS AND RECOMMENDATIONS

- Create a 'research culture' in community pharmacies through:
 - Developing research networks.
 - Establishing research forums in professional meetings and conferences.
 - Promoting the concept of 'Research-Led Teaching' in Pharmacy Schools at Australian Universities.
 - Identifying and acknowledging practitioners and staff from community pharmacies who have contributed significantly to the research within the profession.

- Conducting research and related activities should be accredited for CE points.
- Increasing public awareness at a national level of the role of pharmacists in health care research.
- Addressing workload issues.
- Using the participatory action research methodology, so that community pharmacy practitioners are active designers and doers of research.
- Ensuring incremental changes i.e. pharmacists who have not done research before should be offered smaller more 'doable' projects.
- Make sure the goals of research projects are clear and meaningful to practitioners and offer benefit to the customer. Project protocols should be as simple as possible and time efficient.
- Consult with marketing experts to understand the approach to be used to recruit patients and pharmacists into a research study.
- Potential research projects identified by pharmacists should be followed up.

Report 3:

Patient Recruitment in Community Pharmacy Practice Research – Tools, Mechanisms, Strategies

P Lau, G Duncan, K Stewart

May 2005

BACKGROUND

Recruitment of study subjects is one of the most difficult aspects of research. The same applies across clinical trials, pharmacy practice, nursing and other health disciplines. The overall aim of this report is to identify important considerations and subsequently make recommendations for the development of an ideal framework for recruiting patients, clients and consumers into community pharmacy practice research.

METHODS

Literature Search and Review

Nine electronic databases were systematically searched to review examined recruitment tools and strategies used for healthcare research. The review also examined considerations and issues affecting the planning and developing of a model for recruiting patients, clients and consumers in pharmacy practice research, as well as reasons for non-participation and attrition.

Stakeholders Focus Groups

Teleconference focus groups were held with stakeholders in pharmacy practice research.

- Community Pharmacists and Pharmacy Assistant
- Pharmacy Practice Researchers

CONCLUSIONS AND RECOMMENDATIONS

Important considerations for developing a recruitment and retention strategy:

- Be clear about who the target participants are.
- Make sure the strategy used will return a representative sample, especially for quantitative research.
- Wherever possible, active recruitment methods and strategies that use researchers directly as recruiters should be employed.

- Establishing rapport between the recruiter/researcher and the potential participant will aid in recruitment.
- Emphasise the relevance of the research during recruitment.
- Keep documentation clear, simple and to a minimum
- Make sure that the research strategies used are most appropriate to your goals or aims, the pros and cons that will affect your results and their validity.
- Make sure enough time is allocated for recruitment.
- Be realistic about return rate.
- Review the recruitment process regularly and utilise fallback options if unsuccessful.
- Be clear and rigorous about who the research is for and whose interests we are serving.

New ideas:

- ❖ Consider SMS for patient reminders
- ❖ Identify other projects from which you could collect information.

COMMENTS

A planned teleconference with patients, clients and consumers did not eventuate. This was a real problem for the researchers and limits the conclusions from this report. The short time-frame allowed for this project has severely limited the ability of the researchers to undertake the task.

Report 4:

Health Promotion and Screening Activities by Community Pharmacists

**H Howarth, S Jackson, K Fitzmaurice, P Gee,
L Bereznicki, G Peterson**

June 2005

BACKGROUND

Pharmacists are ideally situated to encourage the adoption and maintenance of healthy lifestyle behaviours, improve the detection and management of various diseases and in doing so make a significant impact on current health care practices and expenditure. Through health promotion the pharmacy profession can contribute to the current National Health Priority Areas (NHPA's). Although some community pharmacists currently undertake health promotion and screening activities these are often limited in nature and poorly documented. This document reports on the current state of community pharmacy-based health promotion and screening programs as reported in published literature and the perceptions of the role of community pharmacists in health promotion by peak bodies representing the conditions described by the NHPA's.

METHODS

Systematic Literature Review

Four electronic databases were systematically searched for published studies describing community pharmacy-based health promotion and screening programs. A manual search was also conducted including the canvassing of community pharmacists to report on their own health promotion activities.

Survey

Peak bodies representing the conditions described by the NHPA's were surveyed to gauge their interpretations of the role of the pharmacy profession in health promotion and screening activities.

CONCLUSIONS AND RECOMMENDATIONS

Although surveys indicate there are many isolated instances of health promotion activities in community pharmacy, there are relatively few studies on the effects of such interventions and those available are generally of poor quality. Health promotion activity in community pharmacy and its effects requires further investigation using high quality randomised control trials. Peak bodies associated with the NHPA appear to have limited views of the role of community pharmacy

practice. Greater cooperation between pharmacy organizations and these bodies is required.

COMMENTS

Unfortunately report 4 was received just before the final deadline and we were therefore unable to abstract recommendations and have them reviewed by the CPRSC consortium.

Report 5:

Primary Health Professional Education: Current Models and Barriers to Participation

K McNamara, G Duncan, J Marriott, D Prideaux

May 2005

BACKGROUND

Continuing Education (CE) for health professionals is a life-long process which endeavours to update or enhance knowledge, refine skills, reinforce professional values and support the delivery of professional practice. It plays a pivotal role in the maintenance of professional competence and in the past decade participation in CE has become an expectation of, rather than an option for, practising health professionals. The time and resources required from organisers and participants in CE and the need to ensure practical outcomes justifies a review of current models being used for its delivery. The overall aim of this study is to identify important considerations and subsequently make recommendations for the development of an ideal model(s) of CE for community pharmacy.

METHODS

Literature Review

A number of electronic databases were systematically searched in order to profile current trends and concepts in CE. CE structures currently in use were investigated by directly accessing the websites of appropriate associations.

Stakeholder interviews

A series of semi-structured interviews were completed with stakeholders from CE delivery organisations across a range of professions, including pharmacy.

Community pharmacy focus groups

A series of focus group teleconferences were held with groups of pharmacists thought to have distinct CE needs: experienced pharmacists (qualified more than 5 years), recently-qualified pharmacists (5 years or less), rural/remote pharmacists, and pharmacists with specialist training needs (such as Home Medication Reviews).

RECOMMENDATIONS

The following issues merit consideration in the development of an ideal model of CE for Australian community pharmacists:

Planning

1. Develop a partnership-based strategy for CE, and a funded consortium of all stakeholders to ensure its implementation.
2. Develop a coherent mechanism for the multi-organisation delivery of CE to pharmacists.
3. Develop a systematic strategy for assessing the education needs of community pharmacists.
4. Pharmacy registering authorities should develop guidelines for parties seeking to deliver CE.
5. A clear policy should be developed on the funding of CE activities so that it is affordable to all pharmacists.

Delivery

1. Delivery of CE should be multi-modal and thereby cater for differences in preferred learning styles, as well as differences in the ability to access certain types of CE.
2. Introduce innovations that will help to overcome real barriers to attendance at CPD. For example, provision of childcare at events, or travel subsidies for rural pharmacists.
3. CEs should be delivered in a manner that considers the principles of successful adult learning, including problem-based learning.
4. Models and approaches to CE should address the defined educational needs of community pharmacists.

Assessment

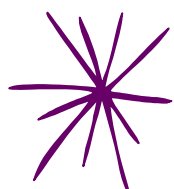
1. The CE undertaken by pharmacists should be assessed in a manner that promotes professional development as the end goal and not the amassing of CPD points.
2. There should be a mandatory requirement for practising pharmacists to undertake the minimum amount of CE required for maintenance of

competency. This will only be justifiable however, if an adequate amount of appropriate CE is clearly available.

3. The objectives and standards for assessment of CE undertaken by pharmacists should be defined by licensing/registration bodies.
4. CE providers should undertake periodic self-assessment.
5. Positive incentives should be used where possible to encourage uptake of CE.

Chapter 5

Objective 5a: Involving Community Pharmacists in Research Workshop



**Community Pharmacy
Research Support Centre**

A Collaboration of Australian Pharmacy Schools

Involving Community Pharmacists in Research

**Report on Workshop
28 April 2004**



CPRSC

“Involving Community Pharmacists in Research” Workshop Report

1. Background

A workshop was held at The University of Sydney on April 28, 2004 to begin addressing objective #5 of the CPRSC: “To increase the number of community pharmacists participating, undertaking and applying for pharmacy practice research – under the R&D grants program, the Rural and Remote Pharmacy Infrastructure Grants Scheme (RRPIGS), PHARM grants, Quality Council grants or any other grants the Guild approves...”.

The goals of the workshop were:

- to ascertain the interest of pharmacists in participating in research,
- to identify the barriers and facilitators involved and
- to determine the education and support pharmacists would require.

2. Attendees

Each member of the consortium of nine schools of pharmacy across Australia was invited to send one academic and two community pharmacists to participate in the workshop. The attendees were:

Academic representatives:

Lyndall Angel – Charles Sturt University
Carol Armour – The University of Sydney
Tim Chen – representing Pharmacist Academics at University Departments of Rural Health
Lynne Emmerton – The University of Queensland
Greg Peterson – University of Tasmania
Rohan Rasiah – James Cook University
Kenn Raymond – LaTrobe University
Joy Spark – LaTrobe University
Kay Stewart – Monash University
Chris Thompson – University of South Australia
Jenny Wilkinson – Curtin University

Community Pharmacists:

Greg Scarlett – SA
John Cagney – SA
Shirley James – Vic
Toni Riley – Vic
Marsha Watson – Vic
John Wooler – Vic

Geoff Hill – Tas
Albert Regoli – NSW
Sherif Fatteh – NSW
Richard French – NSW
Peter Gissing - NSW

Expert Advisory Group:

Louise Kenyon – Pharmaceutical Society of Australia

3. Format of the Workshop

Two separate focus groups, an academic focus group and a community pharmacist focus group, were held. The focus groups were facilitated by Assoc Prof Ines Krass (pharmacists) and Paula Whitehead (academics). Each facilitator administered a different interview instrument to their group (Appendices 1 and 2). The focus groups met for two hours, notes were taken and the sessions were recorded on audiotape. After the focus groups had ended, the academics and community pharmacists gathered and a brief summary report of the results from each group was presented. Based on the outcome of the focus groups, three main areas were identified as barriers to involving community pharmacists in research. The participants were then split into three mixed groups of pharmacists and academics; each mixed group was assigned one of the three barriers and asked to discuss some possible solutions. The mixed groups then reported back on the outcomes of their discussion.

4. Summary of Community Pharmacist Focus Group

The discussion in the community pharmacist focus group has been paraphrased and summarised into two main themes: A) attitudes towards research, and B) barriers to community pharmacist participation in research. The pharmacists also discussed several strategies to overcome these barriers, and these are included in section 6 “Potential Strategies - Outcomes of Mixed Community Pharmacist and Academic Discussion Groups”.

A) Attitudes towards research

- *The importance of research to the profession*
 - Current pharmacy practice has evolved from previous research.
 - If the profession wants to go into new areas of pharmacy practice, an evidence base is needed to support this.
 - Research can help make the case that pharmacies are doing something of great importance to health care. This may be a point of difference

between the present situation and the possible future situation if supermarkets are permitted to open pharmacies.

- Involvement in research changes the way some pharmacists look at their business. It stimulates them to start thinking of ways they will do business in the future.
- *Motivating factors for community pharmacists to be involved in research*
 - An interest in the research subject.
 - A desire to benefit the customer.
 - An interest in the future of the profession.
 - An opportunity to do something outside the ordinary.
 - To improve the perception of pharmacy in the community.
- *The role of community pharmacists in research*
 - Community pharmacists and academics have different skills. Just as researchers are generally not interested in being practising pharmacists, community pharmacists are not interested in becoming researchers. It cannot be assumed that community pharmacists are interested in developing high level research skills. It is more important to establish a relationship between researchers and community pharmacists where each set of skills is utilized productively.
 - Community pharmacists have access to information valuable to the researcher.
 - Some pharmacists want the opportunity to be involved in:
 - generating ideas for research
 - planning of the research project (e.g. how data will be collected)
 - collection of the data
 - Pharmacists generally are not interested in being involved in:
 - analysis of data
 - reporting of results
 - writing of articles
 - Pharmacists do want feedback on the outcomes of the research and guidance on how to use the information in their practice.
- *Other issues*
 - Research projects should be seamless, provide a lot of support, and should not interfere with the running of the business.

- Payment won't drive community pharmacist involvement in research, although pharmacists feel they should be adequately compensated for time and resources.
- Charging customers for service should be incorporated into some research to reflect and test this situation when and if the service is fully implemented.
- Research projects must prove that a service is economically viable for that service to be successful long-term in community practice.

B) Barriers to community pharmacist participation in research

i) Infrastructure

- A lack of time and/or funds to employ replacement staff:
 - A lack of adequate monetary compensation for the time spent on research.
 - The research shouldn't interfere with the running of the business.
- A lack of skills and experience:
 - Skills specific to the research project.
 - Skills to recruit patients into the research project.
 - Skills to take the results of the research and apply them in practice.
 - Skills to organise the research activity in the pharmacy.
- A lack of support from the research personnel.
- A lack of support and interest from partners or employees in the pharmacy.

ii) Recruitment and Communication

- There is a disconnection between academics doing research and community pharmacists practising pharmacy. There is a need for a direct link and a communication strategy between the two.
- There is a need to identify potential research partners.
- There is a need to recruit community pharmacists to research programs.
- There is a need to communicate results of research to community pharmacists:
 - To create awareness.
 - To give feedback, so results can be implemented.
- There is a need to provide support to community pharmacists involved in research.
- The long term goal or purpose of a research project is not always clear to the community pharmacists involved.

- There is a lack of awareness in the community of research being undertaken in pharmacy.

iii) *Mindset/Attitudes*

- Some pharmacists are intimidated by research:
 - Lack confidence in their ability to do research.
 - Scientific language can be off-putting.
- Some pharmacists lack an interest in research or are unaware of research.
- Some pharmacists have a mindset that research is not relevant to their profession:
 - Lack of recognition that research is an integral part of pharmacy practice.
 - Little recognition that research gives benefits to the profession.

5. Summary of Academic Focus Group

The discussion in the Academic focus group has been paraphrased and summarized into two main themes, A) Attitudes towards community pharmacist involvement in research, and B) Barriers to community pharmacist participation in research. The academics also discussed several strategies to overcome these barriers, and these are included in section 6 “Potential Strategies - Outcomes of Mixed Community Pharmacist and Academic Discussion Groups”.

A) Attitudes towards Community Pharmacist Involvement in Research

- Pharmacy practice research is very important to the profession:
 - Provides new areas of expansion.
 - It is necessary for the development of new cognitive pharmacy services and provides evidence needed to implement new services.
 - Practising pharmacists may see issues arise, but may not know how to address them. Research allows them to keep up with new services and shift their focus.
 - Allows the profession to prove its value.
 - Accountability and quality assurance in health care is now very important - research can lead to consistency in the care delivered.
 - An understanding of research methods would allow pharmacists to critically evaluate the evidence for services promoted by marketing

agencies and drug companies and thereby give them more control over their destiny.

- Active pharmacist-led research may provide new skills to pharmacists and lead to active research by other health care professionals.
- Pharmacy practice research is a new area. The heritage of pharmacy has been one of little data collection to support pharmacy services, however we are now entering a phase where data collection is vital.
- Future involvement of community pharmacists in research:
 - Community pharmacists can be a source of very good research ideas, and this resource should be tapped.
 - A good starting point for community pharmacist involvement in research may be learning how to critically appraise published literature and how to apply it in practice, i.e. learning how to search, understand and evaluate evidence (this would require some research methods training).
 - At this time, most community pharmacists would not have the skills, the research background, or the confidence in their own ability to initiate research projects.
 - Future involvement of community pharmacists in research could be at any level - providing ideas, being collaborators, co-investigators or chief investigators. This would depend on what level of involvement community pharmacists want.

B) Barriers to community pharmacist participation in research

i) Infrastructure

- A lack of skills or research background.
- A lack of time or staff.
- A lack of physical infrastructure, eg. space or appropriate/sufficient computer access (this is seen as a minor barrier).

ii) Recruitment and Communication

- Lack of awareness and communication of research.
 - Peer-reviewed papers are published in *Australian Pharmacist* and these are distributed to members of the PSA, but researchers receive little feedback from community pharmacists on their research papers.
- Problem of random sampling:

- If, in future, only community pharmacists interested in research are approached for recruitment to research projects, a random sample of pharmacists will not be achieved. Will the results then be applicable to the whole population of pharmacists?
- The argument can be made that projects now running are not random, since out of the original random sample of pharmacists approached, only interested pharmacists agree to participate.

iii) *Mindset/Attitudes*

- Some community pharmacists lack confidence in their research skills.
- A lack of interest in research (see above re published research papers).
- A lack of incentive:
 - Research is not seen as part of the job of a community pharmacist. Therefore it doesn't really progress their career to be listed as a co-investigator on a project.
 - Why invest the time and work?

6. Potential Strategies - Outcomes of Mixed Community Pharmacist and Academic Discussion Groups

Based on the outcome of the initial focus groups, three main areas were identified as barriers to involving community pharmacists in research: i) infrastructure, ii) recruitment and communication, and iii) mindset/attitudes. The participants were then split into three mixed groups of pharmacists and academics; each mixed group was assigned one of the three barriers and asked to discuss some possible solutions. The solutions (along with solutions raised during the initial focus groups) are paraphrased and summarised below.

i) Infrastructure

Barrier - Lack of time, staff and money

Potential solutions:

- Pharmacists should be adequately compensated for their time involved in research. The business should not suffer because of the research project (cost neutral).

- Alternatively (or in addition to monetary compensation), a replacement pharmacist or a rotating reliever could be provided/funded to allow the research pharmacist time away from his/her regular duties to undertake the research.
- Research assistants could be used to relieve some of the administrative workload such as filling in paperwork.
- The funding for the above should be built into the grant application. The estimate of the time involvement required in a particular research project should be realistic.
- The CPRSC might play a role in setting a consistent rate for research involvement.
- Note: *The community pharmacists participating in the discussion made it clear that those pharmacists involved in research now, do it because of an interest and concern for the future of the profession, not because of monetary value. Reimbursing pharmacists fairly for their time will probably not increase the numbers involved substantially (ie it won't act as an incentive for involvement), but will ensure that those currently involved are more likely to continue.*

Barrier - Lack of appropriate skills

Potential solutions:

- Running information sessions and CE programs on research methods training or on a topic that introduces a research project that is being planned.
- Training for specific research projects should incorporate theory and practical training to develop skills relevant to that project (eg skills in interviewing people or taking blood samples). This builds pharmacists' confidence in their ability to perform the research.
- Building up research skills from the undergraduate level onwards by placing emphasis on evidence-based practice at the undergraduate level and exposing undergraduates to the pharmacy practice research that is underway in their own schools.
- Different levels of training ranging from theoretical, to practical, to refresher courses could be offered to community pharmacists, depending on what level of expertise the individual desires.
 - Evenings and weekends courses and/or an online course with contact time.
 - Any training offered would have to be flexible, i.e. be adjustable to different levels of experience and interest and to metropolitan and rural pharmacists.
 - If possible, include GP's and other health care professionals in the skills training.
 - There may be programs existing at present that can be used as a model for this training, eg The Commonwealth Government program (Primary Health Care Research Evaluation and Development) which is primarily aimed at GPs' involvement in research.
- Pharmacists who have experience with research may act as mentors for inexperienced pharmacists.
- Note: *It is important to note that the academics participating in the workshop raised the possibilities of formal training in research methods or research theory, while the community pharmacists were much more interested in practical training specific to individual research projects.*

Barrier - Optimising the organisation of research in the pharmacy

Potential solutions:

- Ideally a research project should be seamless, with the researchers providing support to the community pharmacist and with no interruption to the business.
- The systems and strategies for efficient organisation should be in place (eg equipment, software).
- Mentoring for the community pharmacist should be available from a community pharmacist with more research experience.
- The project should be tailored to each participating pharmacy, with research staff visiting the pharmacy to look at normal workflow, consultation areas etc., to see how the project could best fit into the normal activities of the pharmacy.
- Feedback from the research staff and other health care providers to the community pharmacist is important, both short-term as the project is underway and long-term.
 - Meetings of participating pharmacists during the project to share ideas and strategies.
 - Post-research gatherings to learn which strategies work and which ones do not. Successful strategies can then be incorporated into future research projects.

ii) Recruitment and Communication

Barrier - Identifying potential research partners

Potential solutions:

- Development of a database/website where pharmacists interested in research could sign up. This database might include such information as:
 - Research interest areas
 - Pharmacy staff levels (to ensure necessary support to get involved in research)
 - Projects in which pharmacists have been previously involved
 - Motivation level
 - Attendance at conferences
 - Facilities available in the pharmacy (eg counselling areas)
 - Whether the pharmacy is accredited
 - Postcode/division
 - A search engine for researchers to find pharmacists who might be potential research partners.

- Development of a database of upcoming/ongoing research projects, where pharmacists could search for available projects.
- A database of innovative practices/services being offered in pharmacies could also be created (or this could be included in Objectives 1 and 2 of the Centre).
 - Some pharmacists are at present implementing innovative services in their practice. These ideas might be developed into research projects.
- *Note: The issue of targeting the same pharmacists over and over was raised. It was also suggested that perhaps researchers should not restrict their research partners to those pharmacists who have self-identified as being interested in research, as others may become interested when approached individually.*

Barrier - Involving more pharmacists in research programs

Potential solutions:

- Researchers could use the database of interested pharmacists described above to identify potential research partners. Pharmacists who have indicated an interest in the research subject could then be sent an email containing a brief description of the project in a succinct, standard format. The targeted email should contain the following information:
 - A brief description of the project.
 - Who is funding the project.
 - The purpose of the research (i.e. what will the outcomes be used for).
 - A timeframe.
 - The incentives (eg payment).
 - Minimum time requirement for participation (eg number of days/week).
 - The level of support that the researchers are offering.
 - The database should be monitored and analysed to determine the rate of usage and whether or not it successfully links researchers and community pharmacists.
- Use peer recruitment. Pharmacists who have been involved in research could give short presentations at conferences (eg PSA) or CE to highlight what is going on in research.
 - Peers may be seen as more reliable/realistic sources of information than academics.
- Academics could run information sessions on their research as part of CE.
 - eg When initiating a new research program a CE program introducing the topic underlying the project could be offered.

- Pharmacists who are doing innovative things in their pharmacies could be approached and asked if they would like to have an evaluation of the service done (potentially by honours students). This might eventually develop into larger research projects.
- Successful research involving community pharmacists needs to be communicated to others - see below.

Barrier - Communicating success

Potential solutions:

- Communicating success to the public:
 - Signage indicating that a pharmacy is or has participated in research.
 - Improves customer perception
 - Lets the public know that pharmacy is involved.
 - A recognition certificate.
 - “National Pharmacy Awareness Week”
 - The Pharmacy Guild or PSA could help organise this.
 - The local press should be used to communicate the success of individual research projects.
 - The Pharmacy Guild could promote pharmacist involvement in research in general.
- Communicating success to other pharmacists:
 - A research newsletter containing short summaries of research projects could be sent to pharmacists every six months.
 - Short presentations given at CE and conferences (see above).
 - Word of mouth is also important. Pharmacists involved in research tend to discuss this with other pharmacists. If the pharmacist is enjoying the research and feel fairly valued (and compensated), they will be more likely to discuss the research positively with others.

Barrier - Support and feedback for the community pharmacist involved in research

Potential solutions:

- Communication between the researcher and the community pharmacist is very important. This may be especially important for isolated rural pharmacists.
 - The type of communication may vary depending on geographic proximity.
 - Telephone, email or face-to-face

- Newsletters
 - It should be made clear to the participating pharmacist the long-term goal of the research in which they are involved (for whose benefit is it?).
- Communication between the community pharmacists involved in a project should be encouraged (peer support).
 - Group discussion before the project begins.
 - Group training.
 - Group meetings throughout the project (if possible).
- Feedback from patients, GP's and other health care providers to the pharmacist on the outcomes of their interventions should be encouraged and facilitated.
- A wrap-up meeting at the end of the project where the results can be presented and discussed:
 - Successes and failures can be discussed and used to improve future research.
 - How to apply the outcomes of the research in pharmacy practice can be discussed.

Barrier - Lack of incentive

Potential solutions:

- Quality Care Pharmacy Program (QCPP) points.
- Continuing Education points.
 - *Note: The general feeling was that there are easier ways to get CE points than by participating in research.*
- Involvement in research may improve professional standing of pharmacy in the community.
- Financial compensation (see notes under barrier: lack of time/staff and money):
 - The business should not be financially disadvantaged by the pharmacist being involved in research.
- The research should be of interest to the pharmacist and be applicable to their practice.
- The service being investigated should have the potential to be revenue-positive once implemented.
- Pharmacists involved in research may like to be given the opportunity to be involved in the next research project (eg preference over people not previously involved).
- Accreditation.

- Honorary affiliate with the participating University.

iii) Mindset/Attitudes

Barrier - Creating interest in other community pharmacists

Potential solutions:

- Teach pharmacy undergraduates that research is an integral and normal part of everyday pharmacy practice:
 - There should be emphasis on evidence-based practice at the undergraduate level and exposure to the pharmacy practice research that is being conducted in their own schools.
 - New pharmacists may then act as “reverse mentors” for experienced pharmacists to expose them to this concept.
- Make research methods a component of Advanced students/Honours rotations.
- Honours students undertaking research with a community pharmacist preceptor is an effective way of exposing community pharmacists to research culture (and students learn from the community pharmacist’s experience and ideas).
- Expose community pharmacists to research through PAC and Guild conferences.
- Use community pharmacists currently involved in research to spread the word on research (see above).
- Convince community pharmacists that being involved in research offers benefits to the business.
- Published research material should be clear about what the outcome of the research means to the future of the profession:
 - Community pharmacists may then change their mindset about the importance of research.

Barrier - Attitudes of other health care professions

Potential solutions:

Involving other health care professionals by communication and education when a new project is planned in an area, eg a local committee of GP, pharmacist, nurse, and consumer as a mini-advisory group with joint meetings to open up communication channels.

Barrier - Lack of support and involvement of pharmacy co-workers and personnel

Potential solutions:

- The pharmacist directly involved in the research along with the researcher has the task of selling the project to other staff in the pharmacy.
- Encourage other staff to attend the training offered for the research project.
- Involve the staff by:
 - 'Brainstorming' to decide priorities.
 - Team meetings.
- Staff may be recruited to take over some tasks to free the pharmacist involved in the research for project work.
- Look at past successes as a model for how to get personnel involved in research projects.

7. Conclusions

The goals of the workshop were A) to ascertain the interest of pharmacists in participating in research, B) to identify the barriers and facilitators involved and, C) to determine the education and support required by the pharmacists.

A) Interest

The community pharmacists in attendance at the workshop were very interested in participating in research. They wanted to be involved in discussion of ideas for research, discussion of how the ideas might be implemented in practice and collecting research data. They clearly were not interested in preparing research proposals, being involved in data analysis, or the writing up of research. They were not interested in being chief investigators at this stage.

B) Barriers and Facilitators

Community pharmacists and academics were in agreement about many of the barriers to community pharmacist involvement in research. The barriers identified fell into three main areas, i) infrastructure, ii) recruitment and communication, and iii) mindset/attitudes. Many potential strategies were proposed to overcome these barriers. Some highlights –

- Fair compensation for pharmacists' time.
- A database/ website of community pharmacists interested in research linked with a targeted email notifying interested pharmacists of upcoming projects.
- Peer recruitment through short presentations at conferences and meetings.

- Clear and frequent communication between researchers and pharmacists.
- Strong support for pharmacists involved in research by the research team.
- Promotion of awareness of pharmacy practice research amongst community pharmacists and the public.
- QCPP points for involvement in research.
- Emphasis on evidence-based practice at the undergraduate level.
- Practical training.

C) Education and Support Required

Community pharmacists were not interested in research methods training. They were interested in receiving practical training specific to individual research projects and would also like skills development in recruiting patients into research projects and organising the research activity in the pharmacy. Community pharmacists were also very interested in learning how to apply the results of research projects to their practice. It is clear that there needs to be a communication strategy between the researchers and the pharmacy community (pharmacists and patients) regarding the results of research.

The community pharmacists would like to have support from researchers in tailoring research projects to their practice and in organising research activities so that interference with the normal activities of the business is minimised.

Chapter 6

Objective 5b: CPRSC Website

BACKGROUND

A lack of communication and coordination between academic pharmacy practice researchers and community pharmacists was identified as a barrier to pharmacists' participation in research during the "Involving Community Pharmacists in Research" Workshop (Chapter 5). Community pharmacists in attendance suggested that a web-based database of ongoing and upcoming pharmacy practice research projects with targeted email to research interested pharmacists might serve as a tool to improve communication between practitioners and researchers.

The CPRSC web site with an associated register of pharmacists and pharmacy practice research projects was developed in response to this suggestion.

METHODS

A software design firm (Digital Wranglers) was commissioned to create a website for the CPRSC with an associated searchable database of upcoming and ongoing research projects and a searchable database of pharmacists interested in research. The site is hosted by The University of Sydney and is located at www.cprsc.org.usyd.edu.au.

The research projects database contains outlines of upcoming and ongoing community pharmacy based research projects and includes the following information on each project: project name, project email address, purpose of the project, brief description of the project, locations covered by the project, data of commencement, date of completion, deadline for recruitment of pharmacists, any pharmacist requirements, incentives and support offered to participating pharmacists, time commitment required from participating pharmacists, project funding source, the University(ies) the researchers are affiliated with, the name of CPRSC mentor at the affiliated University, and the research topics covered by the project.

Pharmacists who are interested in research are invited to register on the site so that they can be contacted in future by researchers. The pharmacist

database contains the following information: pharmacist name, email address, telephone number, pharmacy name, postcode, location, QCCP accredited or not, number of full time pharmacists, research areas of interest, and previous research projects they have been involved in.

Any visitor to the site can search the projects database to find out about ongoing pharmacy practice research. The projects database is searchable by location and research topic. If pharmacists are interested in participating or learning more about a particular project they are asked to register themselves and can then email the mentor associated with the project for more information.

Researchers must be registered by the administrator of the site (currently the CPRSC research manager) and can then search the database of pharmacists by location and research topic for those who might be suitable participants in their research projects.

RESULTS and CONCLUSIONS

The CPRSC website and databases have just recently been released and as such there has not been sufficient time to evaluate their use. The launch of the site has been hampered by delays in hosting of the site by the University of Sydney IT department. At present, all CPRSC members and mentors have been registered on the site as 'researchers', and several community pharmacists have expressed interest in being registered on the site.

The site has funds to continue operating until the end of 2005. Its effectiveness will be evaluated during that time.

Chapter 6 Appendix 1: CPRSC home page



Chapter 7

Objective 5c: National Survey

Objective 5: To increase the number of community pharmacists participating, undertaking and applying for pharmacy practice research (Community Pharmacy Research Capacity Building Program)

Survey to assess attitudes of Australian pharmacists towards pharmacy practice research, barriers and potential solutions

This research is funded by the Australian Government Department of Health and Ageing through the Third Community Pharmacy Agreement Research and Development Program

Final Report 20 May 2005

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Summary

The Project Team has conducted a national cross-sectional survey of randomly selected Australian pharmacists to determine their attitudes towards and involvement in pharmacy practice research, including the canvassing of perceived barriers and potential solutions to promote research activity in community pharmacy practice. This will act as a determination of baseline attitudes towards research and participation rates in research activity amongst community pharmacists, and provide a means of assessing the outcomes of the CPRSC Strategy to increase the number of community pharmacists participating, undertaking and applying for pharmacy practice research (Community Pharmacy Research Capacity Building Program).

The questionnaire was developed around those used in UK and Australasian studies of general practitioners' attitudes towards research. Questions assessed attitudes to research, involvement in research, barriers and facilitators to involvement, self-assessed understanding of research terminology, and access to and use of electronic bibliographic databases.

One thousand pharmacists were randomly selected from the State and Territory Pharmacy Board registers to receive the anonymous questionnaire by mail. Non-respondents were sent a follow-up reminder and second copy of the questionnaire after 3 weeks. A response rate of 37% was achieved. Approximately one-third of responding pharmacists were presently, or had been, involved in research activities, and generally reported positive experiences. Lack of time and never being approached/not being aware of the opportunities were major barriers to pharmacist participation in research. Approximately one-third of the pharmacists were not interested in participating in research.

There was low usage (< 50% pharmacists) of publicly available electronic bibliographic databases (Cochrane Library and PubMed), and of scientific journals. Few pharmacists possessed a good understanding of key terms related to research and evidence-based practice (e.g. p value or number needed to treat).

Important factors encouraging pharmacists to participate in research were a desire to improve the profession, the opportunity to learn more about disease management and to provide enhanced services to patients, and personal interest.

There was overwhelming recognition of the value of research to the profession, and support for continued or increased funding for research within the

Methods

Research was firstly conducted into the optimal approach to administering surveys to ensure a high response rate.^{1,2} The results of this research indicated that:

- The odds of response are more than doubled when using monetary incentives.¹
- One large prize for respondents improves the yield more than many small prizes, despite the lower odds of winning.³
- The odds of response are substantially higher with unconditional incentives, shorter questionnaires, providing a second copy of the questionnaire at follow-up, 'user-friendly' questionnaires and university sponsorship.¹
- The odds of response are increased with pre-notification, non-monetary incentives, follow-up contact, personalised questionnaires, use of colour as opposed to black or blue ink, use of stamped as opposed to franked envelopes, and first-class outward mailing.¹
- The odds of response are reduced when the questionnaire includes questions of a sensitive nature, when questionnaires begin with the most general questions or when participants are offered the opportunity to opt out of the study.¹

As many of these ideals as possible were incorporated into the development of this survey.

The questionnaire was subsequently developed, tested and modified. It was designed around those used in UK⁴⁻⁶ and Australasian⁷⁻¹⁰ studies of general practitioners' attitudes towards research. Questions from each of these sources were collated and then assessed for suitability for this project. Additional questions were included to assess opinions of activities specifically related to community pharmacy in Australia. Questions assessed attitudes to research, involvement in research, barriers and facilitators to involvement, self-assessed understanding of research terminology, and access to and use of electronic bibliographic databases. The findings of the CPRSC workshop of community pharmacists who had been involved in research, conducted at The University of Sydney in April 2004, were also used to guide the formulation of questions. The layout of the questionnaire was highly dependent on the

requirements of the scanning software used for data entry. An attempt was also made to make the questionnaire appear 'user-friendly'. A copy of the final version of the survey that was distributed is available in Appendix 1.

An email was sent in December 2004 to the pharmacists' registering body in each State and Territory of Australia requesting access to their database and mailing addresses of registered pharmacists. Due to the sensitive nature of the request, approval was required from each of the Pharmacy Boards before details could be forwarded. This process created some delay in the project as Boards only meet once each month. The resulting data was collated into one database of all registered pharmacists in Australia.

Three of the registering bodies provided their database at no charge: WA, ACT, and SA. The Pharmacy Board of Victoria charged \$73.30 and the Pharmacy Board of Tasmania charged \$220. NSW waived their normal \$600 fee because the information was required for research purposes. Details of pharmacists registered in QLD are available online, and these data were downloaded manually. Unfortunately, not all QLD registered pharmacists have indicated a publicly available address and hence some were excluded from the survey. Data was provided by each registering body on the condition that it was not reused for any other purpose without prior approval. The NT Health Professions Registering Body would not release names or addresses of anyone on their database, but agreed to distribute surveys to a randomly selected, specified number of pharmacists on our behalf.

Registered pharmacists without an Australian address, or who had not supplied a publicly available address to the relevant registering body, were excluded. Any person who appeared more than once in the master database, at the same address, was also excluded.

A mathematical formula was used to randomly identify the 1000 registered pharmacists who would receive the survey, ensuring that a proportionate number of pharmacists from each state and territory were surveyed. Each person randomly selected to receive a survey was allocated an identifying number. This number was pre-printed on the supplied reply-paid envelope to enable identification of returned surveys. This identification was used only to enable entry into the prize draw, and to identify who reminders were to be sent to. The identified envelope and completed surveys were separated prior to data entry to ensure all responses remained anonymous.

State or Territory	Total number of registered pharmacists	Not eligible to receive survey (excluded)	Eligible to receive survey
ACT	320	5	315
NSW	7405	576	6829
NT	399*		399*
QLD	4014	1891	2123
SA	1238	45	1193
TAS	500	23	477
VIC	5255	178	5077
WA	1923	47	1876
TOTALS	21054	2765	18289

**Estimated figure was supplied by the registering body in the NT. No precise figures were made available.*

Table 1. Description of numbers and region of registered pharmacists across Australia

A different method had to be used for survey participants from the NT as the researchers did not have access to any personal details of these people. An extra identification slip was placed in each envelope, sent for distribution in the NT, asking for the person's name and address. There was no obligation to complete this slip; it was only to be filled in and returned if the person wanted to be in the prize draw. This also meant that reminders were not sent to any of the participants in the NT.

Those pharmacists selected were sent a letter of explanation and the eight-page survey form (Appendix 1). Replies were returned via an enclosed postage-paid envelope. A follow-up reminder letter and a second copy of the survey were sent to non-respondents three weeks after the initial mailing.

All returned survey forms were scanned using a Kodak i40 scanner, which entered responses into Remark Office OMR. Data were stored in Microsoft Excel® and analysed using Statview® (SAS Institute Inc., Cary, NC, USA). Standard parametric and non-parametric statistical techniques were used to analyse the data.

The project had been approved as a Minimal Risk Investigation by the Human Research Ethics Committee (Tasmania) Network. It also had been approved by the Pharmacy Guild of Australia (Study No 609).

Results

One thousand surveys were mailed to the randomly selected pharmacists. The distribution process is detailed in Figure 1. The final number of completed surveys received by 11/5/05 was 365, giving a usable response rate of 37.2%. The highest response rate (55.6%) was from Tasmanian pharmacists (Table 2).

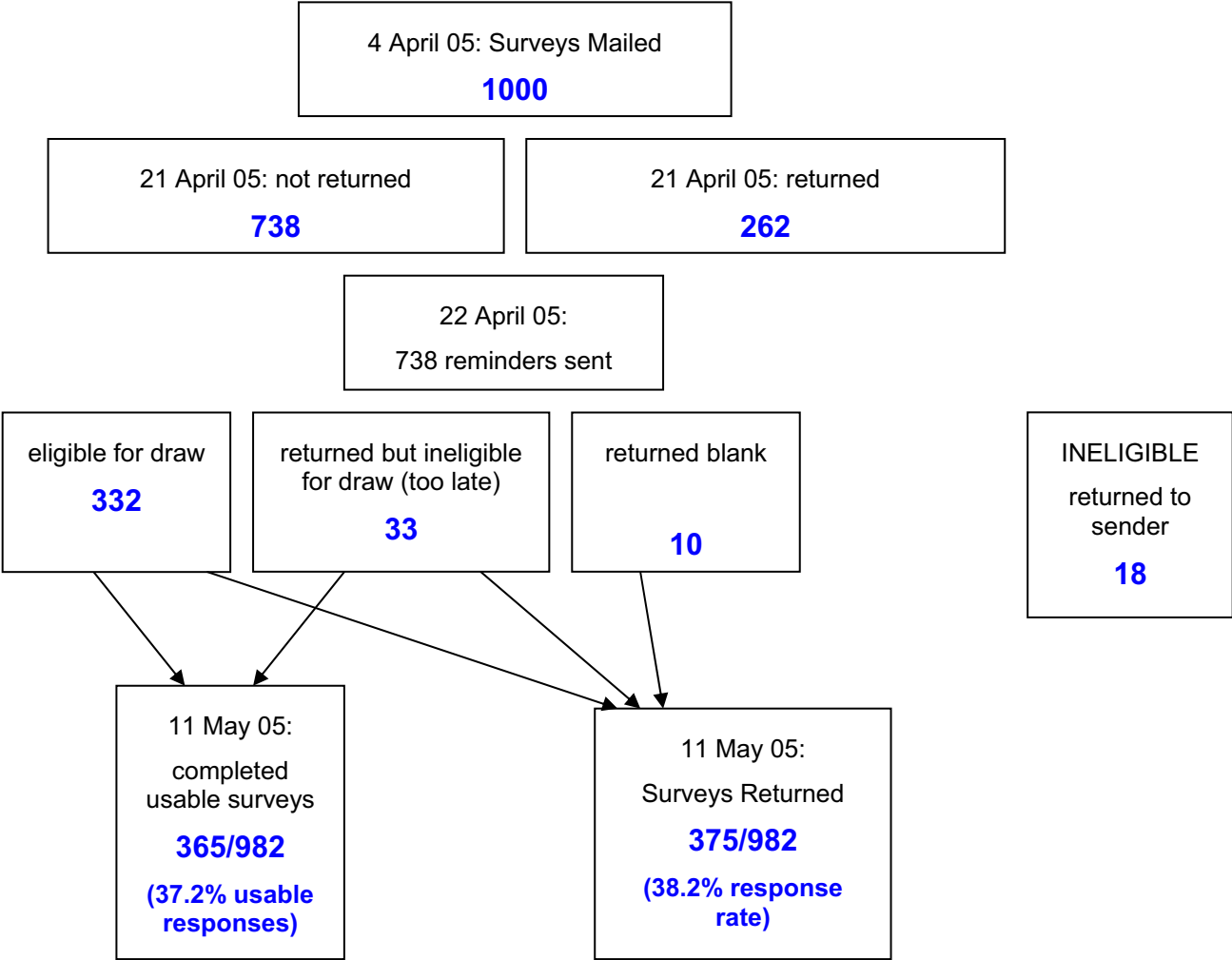


Figure 1. Distribution and return of surveys

State/Territory	Number of surveys sent	Number of surveys returned	Return rate (%)
ACT	23	5	21.7
NSW	367	129	35.1
NT	25	5	20.0
QLD	110	37	33.6
SA	65	19	29.2
TAS	27	15	55.6
VIC	281	114	40.6
WA	102	41	40.2
	Returned to sender/incomplete	28	
Total	1000	393	39.3

Table 2. Rate of return of surveys by state (includes blanks)

The raw data are summarised over the next few pages, and presented in the same format as the survey. The numbers in brackets indicate the number of valid response given for a particular answer. It is these total numbers that the percentages are calculated on, unless otherwise specified. Percentage values have been rounded to the nearest whole number. For sections where more than one answer was requested, total percentage values will add to more than 100%.

Section 1 Definition of research								
a) Have you ever:		Never		Yes, in the past		Currently		Both currently and in the past
1. Recruited patients for a research project? (n = 363)		246	67%	101	28%	4	1%	12 4%
2. Attended a course on research methodology (other than in your degree)? (363)		298	82%	57	16%	4	1%	4 1%
3. Been an investigator on a research project? (362)		281	77%	64	18%	7	2%	10 3%
b) Would you be interested in:		Never		Not now, perhaps in the future		Yes		Maybe, but would like further info
1. Recruiting patients for a research project? (361)		80	22%	131	36%	67	19%	83 23%
2. Attending a course on research methodology? (359)		100	28%	126	35%	75	21%	58 16%
3. Being an investigator on a research project? (362)		105	29%	113	31%	68	19%	76 21%
c) If you HAVE previously participated in a research project:								
		Yes		No		Unsure		
1. Would you describe this as a positive experience? (179)		133	74%	17	10%	29	16%	
2. Would you be prepared to participate again? (177)		118	67%	22	12%	37	21%	
d) If you HAVE NOT participated in a research project in any capacity please indicate why: [More than one response was given to this question by many people, and hence the percentages do not add up to 100] (222)								
No personal interest		Not enough time		Not enough staff		Never been asked to		
45	20%	75	34%	22	10%	159	72%	
Was not aware of opportunity		Not financially viable		No consumer interest		Other		
65	29%	15	7%	7	3%	8	4%	

Section 2 Access to and use of electronic bibliographic databases										
a) Do you have access to the internet: At home (358 responses)			Yes		No		Unsure			
			321	90%	37	10%	0	0%		
At work (344 responses)			268	78%	68	20%	8	2%		
			Yes		No		Unsure			
b) Do you feel confident in using computers to search for research literature relevant to your practice? (346 responses)			242	70%	52	15%	52	15%		
c) If you have access at work, are your onsite computer facilities adequate for searching research literature relevant to your practice? (297 responses)			204	69%	44	15%	49	16%		
d) There are a growing number of reference databases relevant to evidence based medicine. Please indicate those which you have used or are aware of.										
			I am unaware of it		I am aware of it, but have not used it		I have viewed it		I have used it to help with clinical decision making	
1. Cochrane (347)			74	21%	166	48%	56	16%	51	15%
2. Medline (PubMed) (351)			98	28%	75	21%	82	24%	96	27%
3. CINAHL (348)			253	73%	55	15%	23	7%	17	5%
4. Embase (345)			264	77%	28	8%	26	7%	27	8%
e) Which of the following journals do you <i>regularly</i> read? (you may indicate more than one)										
241	66%	Australian Journal of Pharmacy	233	64%	Australian Pharmacist	235	64%	Australian Prescriber		
85	23%	Pharmaceutical Journal	18	5%	British Medical Journal	17	5%	The Lancet		
100	27%	Medical Journal of Australia	31	8%	Journal of Pharmacy Practice and Research	39	11%	Other		
f) Please indicate the source(s) of information that you use on a day to day basis (you may indicate more than one)										
media			colleagues			conferences				
199	55%		211	58%		86	24%			
journals			clinical judgment			seminars				
230	63%		136	37%		114	31%			
official clinical guidelines (eg Therapeutic Guidelines)			evidence based circulars (eg National Prescribing Service)			drug representatives				
257	70%		202	55%		148	41%			
other										
145	40%									

Section 3 Self-assessed understanding of research terminology								
		It would not be helpful to me to understand this term		I don't understand the term but I would like to		I have some understanding of the term		I have a good understanding of this term and could explain it to others
a)	Relative risk (357)	14	4%	56	16%	190	53%	97 27%
b)	Absolute risk (357)	12	3%	74	21%	176	49%	95 27%
c)	Meta-analysis (356)	29	8%	164	46%	101	28%	62 18%
d)	Number needed to treat (356)	17	5%	75	21%	168	47%	96 27%
e)	Confidence interval (356)	26	7%	154	43%	117	33%	59 17%
f)	Publication bias (357)	22	6%	93	26%	161	45%	81 23%
g)	Randomised controlled trial (357)	10	3%	28	8%	154	43%	165 46%
h)	Case-control study (356)	12	3%	91	26%	163	46%	90 25%
i)	P-value (353)	34	10%	176	50%	89	25%	54 15%

Section 4 Attitudes to research										
	Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
a) I find that research articles are generally easy to understand (350)	6	2%	134	38%	117	33%	87	25%	6	2%
b) I feel confident in my ability to evaluate the quality of research papers (358)	22	6%	122	34%	119	33%	92	26%	3	1%
c) Much of the available research is not relevant to my professional practice (356)	10	3%	99	28%	117	33%	119	33%	11	3%
d) I find that available research specific to my work area is of poor quality (355)	1	0%	24	7%	171	48%	146	41%	13	4%
e) I find that the mass of research literature is overwhelming (357)	50	14%	182	51%	77	21%	45	13%	3	1%
f) I feel isolated from knowledgeable colleagues with whom I could discuss research findings (356)	20	6%	96	27%	99	28%	122	34%	19	5%
g) I feel that there are benefits to changing my practice, based on research (356)	32	9%	191	54%	110	31%	21	6%	2	0%
h) I consider that I should do a course to help me use research effectively (356)	18	5%	116	33%	149	42%	68	19%	5	1%
i) There are no incentives to develop my research skills for use in my practice (355)	43	12%	152	43%	85	24%	64	18%	11	3%
j) I find it hard to influence changes to clinical practice in my work setting (355)	22	6%	120	34%	120	34%	85	24%	8	2%
k) My colleagues support the concept of putting sound research into practice (355)	17	5%	156	44%	147	41%	31	9%	4	1%
l) I find time limitations prevent evidence-based medicine being used effectively in my practice (356)	30	9%	163	46%	111	31%	51	14%	1	0%

Section 5 The decision making process										
<i>How do you, or would you, rate each of the following factors when assessing whether to take part in a research project?</i>										
	Very important		Important		Neutral		Unimportant		Very unimportant	
a) A desire to improve the profession (357)	120	34%	208	58%	25	7%	4	1%	0	0%
b) The opportunity to learn more about disease management (357)	146	41%	199	56%	12	3%	0	0%	0	0
c) The ability to provide enhanced services to patients and to improve patient care (313)	138	44%	164	52%	10	3%	1	1%	0	0%
d) The incentive of potential financial reward (357)	38	11%	145	41%	118	33%	52	14%	4	1%
e) An interest in clinical research (358)	33	9%	181	51%	115	32%	29	8%	0	0%
f) Recommendations of a colleague (357)	6	2%	109	31%	184	51%	52	14%	6	2%
g) Availability of CPE points (356)	37	10%	137	38%	116	33%	59	17%	7	2%
h) Consumer expectation or because consumers like it (355)	20	6%	123	34%	145	41%	56	16%	11	3%
i) Personal satisfaction or gratification (287)	1	0%	227	79%	50	18%	8	3%	1	0%
j) The availability of replacement staff/locums (356)	77	22%	146	41%	102	29%	23	6%	8	2%
k) Guild promotion or support of research activities (357)	47	13%	141	39%	120	34%	38	11%	11	3%

Section 6 The value of research												
<i>In your opinion, how valuable is research to;</i>			Extremely valuable		Quite valuable		Minimal value		No value			
a)	The future of community pharmacy? (357)		151	42%	176	50%	29	8%	1	0%		
b)	The future of your practice? (352)		96	27%	185	53%	59	17%	12	3%		
c)	The next Guild-Government Agreement? (352)		134	38%	165	47%	40	11%	13	4%		
d)	The future remuneration of community pharmacists? (354)		129	37%	164	46%	56	16%	5	1%		
e)	Improving patient care (356)		217	61%	122	34%	17	5%	0	0%		
f)	Building relationships with other health professionals (356)		164	46%	155	44%	35	10%	2	0%		
g)	Expanding the role of community pharmacists (356)		145	41%	183	52%	26	7%	2	0%		
h)	Maintaining your interest in community pharmacy (354)		92	26%	165	47%	79	22%	18	5%		
i) Under the Third Community Pharmacy Agreement between the Pharmacy Guild of Australia and the Commonwealth, a total of \$15 million over 5 years has been allocated for research and development in the area of community pharmacy services. Do you think more, the same or less funds should be set aside? (344)												
More			Same				Less					
154			45%		178		52%		12		3%	

Section 7 Personal Details					
a) Gender (359)	Female			Male	
	214	59%	145	40%	
b) Age group (358)	< 35 years		35-55 years		>55 years
	102	28%	171	47%	85 23%
c) Highest pharmacy qualification (359)	PhD		Hons		B.Pharm
	9	3%	21	6%	246 69%
	M.Pharm		Ph.C		Grad.Dip
	7	2%	45	13%	31 9%
d) The period in which I was initially registered was: (359)	prior to 1970		1971 – 1990		1990 - 2005
	71	19%	174	48%	114 31%
e) I was initially registered...(359)	In Australia	327	90%	Overseas	32 9%
f) Are you accredited to conduct HMRs/RMMRs? (354)	Yes		No		Currently enrolled
	57	16%	273	75%	24 7%
g) Which state/territory of Australia do you primarily practice in? (354)					
A.C.T		Queensland		Victoria	
7	2%	33	9%	105	29%
New South Wales		South Australia		Western Australia	
130	36%	21	6%	39	11%
Northern Territory			Tasmania		
2	1%	16	4%		

Section 8 Practice Details					
a) In which area of practice do you spend the majority of your time in most weeks? (356)					
Community Pharmacy		Hospital Pharmacy		Academia/Teaching	
256	72%	52	15%	7	2%
Research		Other, <i>please specify</i>			
3	1%	38		10%	
b) How would you describe your position? <i>Please select as many as are applicable</i>					
Pharmacy Owner		Pharmacy Manager		Employee pharmacist	
93	25%	52	14%	121	33%
Locum		Consultant		Retired	
71	19%	22	6%	24	7%
Research					
6	2%				
Not practicing		Other, <i>please specify</i>			
31	8%	28		33%*	

*Additional comments given in section 8b Position description

- Associate professor
- Medical writing, QUM practice
- Education coordinator
- Information technology
- Maternity leave (2)
- Retired manager for pharmacy software
- CEO for pharmacy retail group
- Production pharmacist
- Volunteer drug sorting for overseas pharmaceutical aid (OPAL)
- Government employee (3)
- Currently undergoing medical training
- Freelance
- Administration
- Aged Care Medication Reviews
- Consultant manager
- Health economics
- Health organisation (NPS)
- HIC
- Industry (2)
- Manufacturing
- Medical writing
- Poisons information
- Project pharmacist, clinical guideline development
- Radiopharmacy
- Regulator

Section 9 Details of place of work (for community pharmacists only)							
a) Approximate floor area (253)							
≤ 100 m ²		101 – 250 m ²		251 – 500 m ²		≥ 501 m ²	
56	22%	129	51%	54	21%	14	6%
b) Approximate turn over (248)							
< \$1.2M		\$1.2 - < \$3M		\$3- < \$5M		≥ \$5 M	
69	28%	120	48%	41	17%	18	7%
c) Location descriptor (263)							
metropolitan		suburban		rural/remote			
52	20%	148	56%	63	24%		
d) Number of pharmacists usually on duty (267)							
1-2		3-4		5+			
225	84%	33	13%	9	3%		
e) Number of hours open each week (270)							
< 50		50 - 70		> 71			
60	22%	143	53%	67	25%		
f) Average number of scripts dispensed each week (265)							
≤ 500		501 - 1200		1201 - 3000		> 3000	
39	15%	134	51%	84	32%	8	2%

General observations

The data requires and will be subject to more extensive cross-analyses, but for the purposes of this report some general observations would include the following.

- a. The response rate of 37% appears to be relatively low, but is considered acceptable for this form of research, especially given the long questionnaire.¹¹
- b. Approximately one-third of responding pharmacists were presently, or had been, involved in research activities, and generally reported positive experiences.
- c. Lack of time and never being approached/not being aware of the opportunities were major barriers to pharmacist participation in research.
- d. Approximately one-third of the pharmacists were not interested in participating in research.
- e. There was low usage (< 50% pharmacists) of publicly available electronic bibliographic databases (Cochrane Library and PubMed), and of scientific journals.
- f. Few pharmacists possessed a good understanding of key research terms (e.g. p value or number needed to treat).
- g. Pharmacists were positive towards the view that there are benefits to changing their practice, based on research.
- h. Important factors encouraging pharmacists to participate in research were a desire to improve the profession, the opportunity to learn more about disease management and to provide enhanced services to patients, and personal interest.
- i. There was overwhelming recognition of the value of research to the profession.
- j. There was overwhelming support for continued or increased funding for research within the Community Pharmacy Agreements between the Australian Government Department of Health and Ageing and the Pharmacy Guild of Australia.

By focussing on pharmacists who have not previously participated in research activities, the remainder of this report is directed at identifying factors which could encourage their participation.

Focus on those pharmacists who have not participated in research

The research team was interested in learning more about the views of pharmacists who had not previously been associated with research. In section 1a of the questionnaire, survey participants were asked to indicate if they have previously been involved in research in any capacity. The respondents who indicated they had not been involved previously, in any aspect of research have been grouped here and called 'non-participants'. These people answered 'NEVER' to all three questions in section 1a. There were 211 people who fitted into this category.

There were some statistically significant differences between pharmacists who had been associated with research, compared with those who had not and these are presented below.

Section 2d Awareness of reference databases

	I am unaware of it	I am aware of it, but have not used it	I have viewed it	I have used to help with clinical decision making
Non- participants	57.6%	24.2%	11.6%	6.6%
Previous participants	34.9%	17.5%	22.1%	25.5%

Chi square 37.6, df 3, $p < 0.0001$

Table 3. A comparison of survey responders who have and have not participated in research in any capacity, and their knowledge of the 'Cochrane library'

There was a significant difference in the responses between previous participants and non-participants ($p < 0.0001$) when describing their familiarity with the Cochrane Database. This is primarily driven by the much greater

proportion of people who have previously participated in research (47.6%) either having viewed or used the database, compared to only 18.2% of non-participants.

	I am unaware of it	I am aware of it, but have not used it	I have viewed it	I have used to help with clinical decision making
Non-participants	34.3%	26.4%	21.4%	17.9%
Previous participants	19.3%	14.7%	26.0%	40%

Chi square 28.5, df 3, $p < 0.0001$

Table 4. A comparison of survey responders who have and have not participated in research in any capacity, and their knowledge of 'Medline'

There was a significant difference in the responses between previous participants and non-participants ($p < 0.0001$) when describing their familiarity with Medline. This is primarily driven by the much larger proportion of people who have used or viewed Medline in the 'previous participants' group (66% vs. 39.3%).

	I am unaware of it	I am aware of it, but have not used it	I have viewed it	I have used to help with clinical decision making
Non-participants	82.9%	11.1%	4.5%	1.5%
Previous participants	59.1%	22.1%	9.4%	9.4%

Chi square 27.2, df 3, $p < 0.0001$

Table 5. A comparison of survey responders who have and have not participated in research in any capacity, and their knowledge of 'CINAHL'

There was a significant difference in the responses between previous participants and non-participants ($p < 0.0001$) when describing their familiarity

with CINAHL. This is primarily driven by the larger proportion of people who have used or viewed CINAHL in the 'previous participants' group (18.8% vs. 6%).

	I am unaware of it	I am aware of it, but have not used it	I have viewed it	I have used to help with clinical decision making
Non- participants	86.4%	6.1%	4.0%	3.5%
Previous participants	63.3%	10.9%	12.2%	13.6%

Chi square 26.8, df 3, $p < 0.0001$

Table 6. A comparison of survey responders who have and have not participated in research in any capacity, and their knowledge of 'Embase'

There was a significant difference in the responses between previous participants and non-participants ($p < 0.0001$) when describing their familiarity with Embase. This is primarily driven by the much larger proportion of people who have used or viewed Embase in the 'previous participants' group (25.8% vs. 7.5%).

Section 4 Attitudes to research

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Non- participants	3.9%	28.5%	35.7%	30.4%	1.4%
Previous participants	9.3%	41.7%	29.8%	19.2%	0%

Chi square 16.0, df 4, $p = 0.003$

Table 7. Section 4b "I feel confident in my ability to evaluate the quality of research papers"

People who had previously participated in research were more confident in their ability to evaluate the quality of research papers (51% vs. 32.4%).

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Non-participants	3.4%	27.8%	38.0%	27.3%	3.4%
Previous participants	2.0%	27.8%	25.8%	41.4%	2.6%

Chi square 10.1, df 4, p = 0.04

Table 8. Section 4c “Much of the available research is not relevant to my professional practice”

Those people who have previously participated in research were more likely to indicate that the available literature was relevant to their practice.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Non-participants	7.8%	30.2%	29.3%	28.3%	4.4%
Previous participants	2.6%	22.5%	25.8%	42.3%	6.6%

Chi square 12.3, df 4, p = 0.02

Table 9. Section 4f “I feel isolated from knowledgeable colleagues with whom I could discuss research findings”

Previous non-participants were more likely to indicate they felt isolated from knowledgeable colleagues.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Non-participants	2.9%	36.6%	49.3%	9.3%	2.0%
Previous participants	7.3%	54%	30.7%	8.0%	0%

Chi square 19.8, df 4, p < 0.001

Table 10. Section 4k “My colleagues support the concept of putting sound research into practice”

People who had previously participated in research indicated that they had more support from colleagues when trying to implement changes based on sound research.

Section 5 The decision making process

Survey participants were asked to indicate the relative importance of each of the following factors when considering whether to take part in a research project.

	Very important	Important	Neutral	Unimportant	Very unimportant
Non-participants	15.0%	38.2%	31.9%	14.0%	1.0%
Previous participants	4.7%	44.0%	34.7%	15.3%	1.3%

Chi square 9.8, df 4, p = 0.04

Table 11. Section 5d “The incentive of financial reward”

Those people, who had not previously participated in research in any capacity, placed greater importance on incentive or financial reward.

The responses to this section were not significantly different across/between the groups for any other factor.

Section 6 The value of research

Survey participants were asked to indicate how valuable they felt research is to different aspects of the future of pharmacy.

	Extremely valuable	Quite valuable	Minimal value	No value
Non-participants	40.8%	45.6%	12.6%	0.0%
Previous participants	53.3%	40.7%	6.0%	0.0%

Chi square 8.8, df 3, p = 0.03

Table 12. Section 6f “Building relationships with other health professionals”

Previous contributors to research were more likely to see the value of research to assist forging improved relationships with other health professionals.

Focus on those pharmacists who have not participated in research but could in the future

This section will demonstrate the differences within the group of people who have not previously participated in research in any capacity. This group is further broken down into the pharmacists who have indicated that they do not want to be involved in research at all, now or in the future (non-participants, n=56), and those who would consider taking part in some capacity in the future (potential participants, n=155). It is these potential participants who need to be targeted in future efforts to increase involvement in research.

Section 2

	I am unaware of it	I am aware of it but have not used it	I have viewed it	I have used it to help with clinical decision making
Non- participants	84.9%	7.5%	7.5%	0.0%
Potential participants	47.6%	30.3%	13.1%	9.0%

Chi Square 23.5, df 3, $p < 0.0001$

Table 13. Section 2d Cochrane

People who indicated they have not been involved in research previously and would not be interested in participating in the future indicated they have never used Cochrane. Indeed, the vast majority were unaware of its existence (84.9%).

	I am unaware of it	I am aware of it but have not used it	I have viewed it	I have used it to help with clinical decision making
Non- participants	57.4%	22.2%	16.7%	3.7%
Potential participants	25.9%	27.9%	23.1%	23.1%

Chi Square 21.0, df 3, p = 0.0001

Table 14. Section 2d Medline

The vast majority of people who have not previously participated in research are unaware of Medline (83.3%). More than twice as many non-participants indicated a lack of awareness when compared to potential participants. Approximately six times the number of people potentially interested in research indicated they used Medline when compared to non-participants.

There was no significant difference across the non-participants and potential participants groups for the other two databases, CINAHL and EMBASE. There was a general lack of awareness of them across both groups.

Section 4 Attitudes to research

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Non- participants	1.8%	29.1%	29.1%	34.5%	5.5%
Potential participants	4.6%	28.3%	38.2%	28.9%	0.0%

Chi square 10.5, df 4, p = 0.03

Table 15. Section 4b “I feel confident in my ability to evaluate the quality of research papers”

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Non-participants	9.1%	54.5%	9.1%	27.3%	0.0%
Potential participants	1.4%	25.7%	27.1%	42.9%	2.9%

Chi square 8.3, df 4, p = 0.08

Table 16. Section 4c “Much of the available research is not relevant to my professional practice”

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Non-participants	1.8%	30.9%	58.2%	7.3%	1.8%
Potential participants	8.6%	58.9%	25.2%	7.3%	0.0%

Chi square 24.6, df 4, p < 0.0001

Table 17. Section 4g “I feel that there are benefits to changing my practice, based on research”

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Non-participants	0.0%	20.0%	38.2%	36.4%	5.5%
Potential participants	7.3%	39.7%	42.4%	9.9%	0.7%

Chi square 30.1. df 4, p < 0.0001

Table 18. Section 4h “I consider that I should do a course to help me use research effectively”

Potential participants were more likely to indicate that; they felt confident in their ability to evaluate research, that current research is relevant to their practice, they could see the benefit of changing their practice, and were more likely to express a keenness or desire to undertake further training to learn more about research.

Section 5 The decision-making process

	Very important	Important	Neutral	Unimportant	Very unimportant
Non-participants	23.6	67.3	9.1	0%	0%
Potential participants	48.7	48.7	2.6	0%	0%

Chi Square 12.5, df 2, p = 0.002

Table 19. Section 5 b “The opportunity to learn more about disease management”

	Very important	Important	Neutral	Unimportant	Very unimportant
Non-participants	32.7%	58.2%	9.1%	0.0%	0.0%
Potential participants	57.9%	40.8%	0.7%	0.7%	0.0%

Chi square 18.0, df 3, p < 0.001

Table 20. Section 5c “the ability to provide enhanced services to patients and to improve patient care”

	Very important	Important	Neutral	Unimportant	Very unimportant
Non-participants	7.3%	32.7%	41.8%	14.5%	3.6%
Potential participants	17.8%	40.1%	28.3%	13.8%	0.0%

Chi square 11.4, df 4, p = 0.02

Table 21. Section 5d “The incentive of potential financial reward”

	Very important	Important	Neutral	Unimportant	Very unimportant
Non-participants	9.1%	67.3%	21.8%	0.0%	1.8%
Potential participants	23.8%	60.3%	13.9%	2.0%	0.0%

Chi square 10.1, df 4, p= 0.04

Table 22. Section 5i “Personal satisfaction or gratification”

Analysis of the results of section 5 has clearly demonstrated that there are four main influencing factors for those pharmacists who have not participated in research but would consider participating in the future. These are:

- The opportunity to learn more about disease management
- Being able to provide enhanced patient services
- Financial reward or incentive
- Personal satisfaction or gratification

In each of these sections, the potential participants were much more likely to indicate these factors were 'very important' when compared to the non-participants. These are clearly the areas that need to be addressed in future efforts to encourage active participation from those who are currently considering participating in research.

Section 6 The value of research

	Extremely valuable	Quite valuable	Minimal value	No Value
Non-participants	18.2%	47.3%	23.6%	10.9%
Potential participants	27.3%	52.0%	18.7%	2.0%

Chi square 9.3, df 3, p = 0.03

Table 23. Section 6b "The future of your practice"

	Extremely valuable	Quite valuable	Minimal value	No Value
Non-participants	42.9%	41.1%	16.1%	0.0%
Potential participants	63.3%	35.3%	1.3%	0.0%

Chi square 19.9, df 2, p < 0.0001

Table 24. Section 6e "Improving patient care"

Non- participants were less likely to see the value of research in relation to the future of their practice or improving patient care.

It has previously been noted in this report that the pharmacists acknowledged that they had relatively poor knowledge of standard health-related research terms. Are pharmacists alone in this regard? How do they compare with doctors? Table 25 presents a comparison with doctors from two surveys using similar questions – one conducted in Australia by Toulkidis and colleagues¹² (involving specialist physicians) and the other in England by McColl and colleagues (involving general practitioners).⁴

Table 25. Comparison of responses regarding familiarity with research terms from Pharmacists and Doctors (two sources)

		It would not be helpful to me to understand this term	I don't understand the term but I would like to	I have some understanding of the term	I have a good understanding of this term and could explain it to others
Relative risk	CPRSC	4%	15%	52%	27%
	<i>McColl</i>	2%	11%	54%	33%
	Toukidis	1.2%	14.3%	35.2%	48.4%
Absolute risk	CPRSC	3%	20%	48%	26%
	<i>McColl</i>	2%	14%	53%	31%
	Toukidis	1.2%	14.8%	38.1%	45.1%
Meta-analysis	CPRSC	8%	45%	18%	17%
	<i>McColl</i>	4%	22%	41%	33%
	Toukidis	0.4%	7.4%	43%	48.4%
Number needed to treat	CPRSC	5%	21%	46%	26%
	<i>McColl</i>	2%	19%	44%	35%
	Toukidis	4.1%	13.9%	41%	40.2%
Confidence interval	CPRSC	7%	42%	32%	16%
	<i>McColl</i>	6%	31%	43%	20%
	Toukidis	2%	9%	43.4%	44.3%
Publication bias	CPRSC	6%	25%	44%	22%
	<i>McColl</i>	7%	30%	46%	15%
	Toukidis	Not measured by Toukidis			
Randomised controlled trial	CPRSC	3%	8%	42%	45%
	<i>McColl</i>	Not measured by McColl			
	Toukidis	0%	2.5%	20.9%	75.8%
Case-control study	CPRSC	3%	25%	45%	45%
	<i>McColl</i>	Not measured by McColl			
	Toukidis	0%	8.2%	29.9%	60.7%
P-value	CPRSC	9%	48%	24%	15%
	<i>McColl</i>	Not measured by McColl			
	Toukidis	1.2%	7%	36.5%	54.5%

Discussion

There were some barriers and limitations in conducting this study. The first difficulty was in creating a database of all registered pharmacists in Australia. The need to individually approach each registering board, their varying approaches to the release of data and the form in which the data are presented are unnecessary hindrances to this style of research. A lot of manipulation of individual databases of registered pharmacists was required to get them into a usable and consistent format for randomly selecting participants and creating a mailing list. There should be a centrally-held database of registered pharmacists with one access point to provide permission for its legitimate use.

There were also a considerable number of pharmacists registered with their Board, but not practicing. This became evident when the researchers received many telephone calls and returned forms from these individuals. There should be a field in the Board's registration databases to indicate if pharmacists have retired or are otherwise not practising pharmacy. Another issue was that incorrect/out of date address details were supplied.

Finally, there was no way of isolating pharmacists who work only in community pharmacy from the registration data we were supplied with. It is possible that many hospital pharmacists read the title of the covering letter and immediately discarded it, deeming it not relevant to their practice at all. This may have contributed to the low, but acceptable, rate of response. The timing of the survey was not ideal. We had planned to send out the questionnaire in early February 2005, and therefore be one of the first surveys people would receive for the year. We also hoped to avoid the busy end of year and holiday period. Unfortunately, due to delays in receiving registration databases, this time frame needed to be adjusted.

The rate of return of the surveys varied between states and territories from 20% to 56%, with an overall return rate of 37%. The relatively low response rate means response bias could be present. Also, it is possible that the stated views could reflect socially desirable responses rather than respondents' true attitudes.⁷

The highest return rate was from Tasmanian pharmacists. This may be due to the fact that the project was conducted out of the University of Tasmania, and familiarity with the researchers and the university may have played a part. Conversely, the relatively low rate of return from the Northern Territory may be attributable to the lack of a follow-up and reminder. It had been suggested by a representative of the health professionals registering board in the NT that there were a high number of pharmacists registered in the NT, but a relatively low number still practising. This factor has played a large role in the relatively low return rate achieved in all states. A proportion of surveys were returned incomplete with messages attached indicating the retired status of the person it had been sent to. Many of these people indicated they did not think their opinion was valid to the survey, as they had not worked for some time. Some people telephoned to query whether they should complete and return the survey, as they were not currently working in community pharmacy in any capacity; some had retired, some had recently given birth. All of these people were encouraged to return the survey, as their registered status enables them to return to the world of community pharmacy at any time and therefore their opinions were welcomed.

Approximately one-third of responding pharmacists were presently, or had been, involved in research activities, and generally reported positive experiences. Another one-third of the pharmacists had not previously participated in research, but would consider it. Lack of time and never being approached/not being aware of the opportunities were cited as major barriers to pharmacist participation in research.

The remaining one-third of responding pharmacists (and perhaps a large proportion of the non-respondents) had no apparent interest in research and they represent a group that is probably not worth attempting to encourage participating in research. Instead, it would be more productive to concentrate on the pharmacists who have not participated previously in research but expressed an interest to do so in the future. These pharmacists suggested that the following key factors would influence their decision to participate: the opportunity to learn more about disease management and being able to provide enhanced patient services, financial reward or incentive, and personal satisfaction or gratification.

There was overwhelming recognition of the value of research to the profession and support for continued or increased funding for research within the Community Pharmacy Agreements between the Australian Government Department of Health and Ageing and The Pharmacy Guild of Australia.

Some of the results were very similar to those from a study of the attitudes towards research amongst Queensland general practitioners, which indicated most had positive attitudes to research, but only 29% wanted more involvement.⁷ Just over half the general practitioners had recruited patients into research projects, which is approximately double the percentage found in this survey of pharmacists.

There was low usage of publicly available electronic bibliographic databases (Cochrane Library and PubMed), and of scientific journals by the pharmacists. The sources of evidence used in practice were poor. There seemed to be a reliance on the use of media and drug company representatives to obtain information.

Few pharmacists possessed a good understanding of key research terms (e.g. p value or number needed to treat). There is a lack of understanding of basic research terminology, so that many pharmacists would be incapable of assessing any papers that they are given by drug company representatives or others. There is clearly a need to increase critical thinking skills and practice in community pharmacy.

There was relatively low level of interest in completing a training course on research overall, but a relatively high proportion of people who would like to be involved in research indicated an interest. Ideally, any training would be integrated into work practice. The Pharmaceutical Society of Australia's online *PriMed Pharmacy* program has recently added a module on "Basic Skills of Evidence-based Practice" which would be a suitable first step for many pharmacists.

There needs to be more promotion of research and its importance to the pharmacy profession. Ideally, the research would also develop the ability of pharmacists to improve patient care and the range of services available in pharmacy practice. The establishment of a pharmacy practice research network, under the auspices of the CPRSC, would promote participation amongst community pharmacists.

It is recognised that research networks are a key part of the current Australian primary healthcare research capacity building program.¹³⁻¹⁸ The purpose of the pharmacy practice research network would be to establish links with academia, enable communication between academic pharmacists and community pharmacists who are interested in being involved in research or have ideas for research projects, facilitate mentoring, and effectively provide a clearing house for possible projects and collaborators, as well as providing a mechanism to pool substantial amounts of collected data. Mentoring has been identified as an essential element in the training and development of researchers to address the lack of an appropriate culture or system to support research activities in general practice.¹³

As has been proposed with general practice, universities could take a nationally coordinated, systematic approach to implement network models, building upon international experience.¹⁴ The intention would be to develop networks of academic pharmacists and research-active practitioners, who, in time, would link up to form a national research network to undertake large-scale studies. As noted by Gunn,¹⁴ achieving this would result in a giant leap towards embedding a research culture in primary health care.

Research networks bring interested people together. In effect, they would be like Divisions of General Practice, which have brought together general practitioners who had been working in relative isolation. It is very difficult to perform meaningful research as general practitioners or community pharmacists in isolation from colleagues.¹⁸ The relatively large samples required for most projects are only possible through collaborations involving research networks. The process can be facilitated by utilising information and communications technology solutions, allowing large-scale data collection.¹⁹

In conclusion, pharmacists generally held positive views towards research and its benefits to the profession. Pharmacists were positive towards the view that there are benefits to changing their practice, based on research.

There was a lack of awareness of opportunity to participate in research. Understanding of research and evidence-based practice terminology was poor, as was the use of available databases. Important factors encouraging pharmacists to participate in research included a desire to improve the profession, the opportunity to learn more about disease

management and to provide enhanced services to patients, and personal interest. As with general practitioners,⁷ it seems that pharmacists will engage in research if the topic is relevant and the logistics of participation are possible within the constraints of pharmacy practice.

References

1. Edwards P, Roberts I, Clarke M, diGiuseppi C, Pratap S, Wentz R, Kwan I. Methods to influence response to postal questionnaires. *The Cochrane database of methodology reviews 2001, issue 2*. Art.No.:MR000008. DOI:10.1002/14651858.MR000008
2. Boynton PM, Greenhalgh T. Selecting, designing, and developing your questionnaire. *BMJ* 2004; 328: 1312-5.
3. Thomson CE, Paterson-Brown S, Russell D, McCaldin D, Russell IT. Short report: Encouraging GPs to complete postal questionnaires – one big prize or many small prizes? A randomized controlled trial. *Family Practice* 2004. Vol 21, No 6 697-8.
4. McColl A, Smith H, White P, Field J. General practitioners' perceptions of the route to evidence based medicine: a questionnaire survey. *BMJ* 1998; 316: 361-5.
5. Jowett SM, Macleod J, Wilson S, Hobbs FD. Research in primary care: extent of involvement and perceived determinants among practitioners from one English region. *Br J Gen Pract* 2000; 50: 387-9.
6. Robinson G, Gould M. What are the attitudes of general practitioners towards research? *Br J Gen Pract* 2000; 50: 390-2.
7. Askew DA, Clavarino AM, Glasziou PP, Del Mar CB. General practice research: attitudes and involvement of Queensland general practitioners. *Med J Aust* 2002; 177: 74-7.
8. Young JM, Ward JE. General practitioners' use of evidence databases. *Med J Aust* 1999; 170: 56-8.
9. Kerse N, Arroll B, Lloyd T, Young J, Ward J. Evidence databases, the Internet, and general practitioners: the New Zealand story. *N Z Med J* 2001; 114: 89-91.
10. Jones A, Burgess TA, Farmer EA, et al. Building research capacity. An exploratory model of GPs' training needs and barriers to research involvement. *Aust Fam Physician* 2003; 32: 957-60.
11. Kellerman SE, Herold J. Physician response to surveys. A review of the literature (1). *Am J Prev Med* 2001; 20: 61-7.
12. Toulkidis V, Donnelly NJ, Ward JE. Engaging Australian physicians in evidence-based medicine: a representative national survey. *Intern Med J* 2005; 35: 9-17.
13. Farmer E, Weston K. A conceptual model for capacity building in Australian primary health care research. *Aust Fam Physician* 2002; 31: 1139-42.
14. Gunn JM. Should Australia develop primary care research networks? *Med J Aust* 2002; 177: 63-6.
15. van Weel C. General practice research networks: gateway to primary care evidence. *Med J Aust* 2002; 177: 62-3.
16. Thomas P, Griffiths F, Kai J, O'Dwyer A. Networks for research in primary health care. *BMJ* 2001; 322: 588-90.
17. Thomas P, While A. Increasing research capacity and changing the culture of primary care towards reflective inquiring practice: the experience of the West London Research Network (WeLReN). *J Interprof Care* 2001; 15: 133-9.
18. Del Mar CB, Freeman GK, Van Weel C. "Only a GP?": is the solution to the general practice crisis intellectual? *Med J Aust* 2003; 179: 26-9.
19. Chew M, Armstrong RM. General practice research: in the big league at last? *Med J Aust* 2002; 177: 60-1.

Chapter 7, Appendix 1. Copy of the covering letter and survey form

30th March 2005

Dear Colleague,

Survey of pharmacists' attitudes towards practice research

Under the Third Community Pharmacy Agreement between the Pharmacy Guild of Australia and the Commonwealth, a total of \$15 million over 5 years was allocated for research and development in the area of pharmacy services - to invest in projects designed to improve the quality and range of pharmacy services to deliver positive health outcomes for Australians.

One of the objectives for the Community Pharmacy Agreement Research & Development Grants Program was to: ***“Develop and support research expertise and capacity in community pharmacy”***.

The Community Pharmacy Research and Support Centre, which is funded by the Third Community Pharmacy Agreement, in collaboration with the Tasmanian School of Pharmacy, is undertaking this survey to identify the facilitators and barriers that support or discourage pharmacists in involvement in practice research activities. The survey outcomes will assist in the development of strategies to promote and support the involvement of community pharmacists in practice research.

We invite you to participate in this survey by completing the enclosed questionnaire. You have been selected at random from the Pharmacy Board register in your State or Territory. Your participation is voluntary, and your consent to participate is evidenced by the completion and return of the questionnaire.

We appreciate your honest opinions, and the questionnaire will take approximately 15 minutes to complete. Responses will be treated anonymously and confidentially and data from all responses will be pooled. There is an identifying number on the reply paid envelope to allow for follow-up and reminders to be sent, and to also allow us to enter you in the prize draw. All identifying details will be removed from each survey prior to data entry to ensure anonymity. The questionnaires will be stored securely for a period of five years before being destroyed.

**Each person who returns a completed questionnaire will be eligible
to win**

\$1000

The project has been approved as a Minimal Risk investigation by the Human Research Ethics Committee (Tasmania) Network. If you have any concerns of an ethical nature or complaints about the manner in which the project is conducted you may contact the Executive Officer of the Human Research Ethics Committee (Tasmania) Network, Amanda McAully (Phone 03 6226 2763 or email Amanda.McAully@utas.edu.au). The study has been approved by the Pharmacy Guild of Australia (Study No 609).

Please return the completed questionnaire in the enclosed reply-paid envelope by 29th April 2005. The prize will be drawn soon after and the winner notified directly, and announced in Retail Pharmacy and AusPharmList. We look forward to your response and thank you for your assistance.

AND DON'T FORGET

Each person who returns a completed questionnaire

ON OR BEFORE APRIL 29th

will be eligible to enter the random to win

\$1000

Yours sincerely,



Gregory Peterson
Professor
Unit for Medication Outcomes Research and Education
Tasmanian School of Pharmacy
University of Tasmania
g.peterson@utas.edu.au

For further information please contact:

Kimbra Fitzmaurice
Clinical Research Project Officer
k.fitzmaurice@utas.edu.au
03) 6226 7526



Please use a **black or dark blue pen** to complete the questionnaire
and **fill in the circle** that best represents your opinion

Section 1 Definition of research				
<p>The following terms are used to identify three distinct research activities of relevance to this survey:</p> <p>Leading research eg initiating research projects; or</p> <p>Participating in research eg providing information to research groups or recruiting patients to clinical research projects; or</p> <p>Evidence based research practice i.e. consciously basing clinical decisions on research evidence eg searching medical databases to answer specific clinical questions</p>				
a) Have you ever:	Never	Yes, in the past	Currently	Both currently and in the past
1. Recruited patients for a research project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Attended a course on research methodology (other than in your degree)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Been an investigator on a research project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Would you be interested in:	Never	Not now, perhaps in the future	Yes	Maybe, but would like further info
1. Recruiting patients for a research project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Attending a course on research methodology?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Being an investigator on a research project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) If you HAVE previously participated in a research project:	Yes		No	Unsure
1. Would you describe this as a positive experience?	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
2. Would you be prepared to participate again?	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>
d) If you HAVE NOT participated in a research project in any capacity please indicate why: (you can select more than one)	No personal interest	Not enough time	Not enough staff	Never been asked to
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Was not aware of opportunity	Not financially viable	No consumer interest	Other
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section 2 Access to and use of electronic bibliographic databases				
a) Do you have access to the internet:		Yes	No	Unsure
At home		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
At work		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If you responded 'yes' to either of the above, please continue with the following questions. If 'no' or 'unsure', please go to Question 2 d)		Yes	No	Unsure
b) Do you feel confident in using computers to search for research literature relevant to your practice?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) If you have access at work, are your onsite computer facilities adequate for searching research literature relevant to your practice?		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) There are a growing number of reference databases relevant to evidence based medicine. Please indicate those which you have used or are aware of.				
	I am unaware of it	I am aware of it, but have not used it	I have viewed it	I have used it to help with clinical decision making
1. Cochrane	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Medline (PubMed)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. CINAHL	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Embase	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Which of the following journals do you regularly read? (you may indicate more than one)				
<input type="checkbox"/> Australian Journal of Pharmacy	<input type="checkbox"/> Australian Pharmacist	<input type="checkbox"/> Australian Prescriber		
<input type="checkbox"/> Pharmaceutical Journal	<input type="checkbox"/> British Medical Journal	<input type="checkbox"/> The Lancet		
<input type="checkbox"/> Medical Journal of Australia	<input type="checkbox"/> Journal of Pharmacy Practice and Research	<input type="checkbox"/> Other, please specify		
f) Please indicate the source(s) of information that you use on a day to day basis (you may indicate more than one)				
<input type="checkbox"/> media	<input type="checkbox"/> colleagues	<input type="checkbox"/> conferences		
<input type="checkbox"/> journals	<input type="checkbox"/> clinical judgment	<input type="checkbox"/> seminars		
<input type="checkbox"/> official clinical guidelines (eg Therapeutic Guidelines)	<input type="checkbox"/> evidence based circulars (eg National Prescribing Service)	<input type="checkbox"/> drug representatives		
<input type="checkbox"/> other, please specify				

Section 3 Self-assessed understanding of research terminology

The following terms are used in research journals in relation to evidence based medicine which may be relevant to your practice. Please indicate your reaction to each of them by ticking the appropriate box.

	It would not be helpful to me to understand this term	I don't understand the term but I would like to	I have some understanding of the term	I have a good understanding of this term and could explain it to others
a) Relative risk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Absolute risk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Meta-analysis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Number needed to treat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Confidence interval	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Publication bias	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Randomised controlled trial	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Case-control study	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) P-value	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section 4 Attitudes to research

When considering each of these questions think of yourself in your present work setting. Reflect on how you feel about each question, as it is your considered opinion that we are interested in. Please indicate how you feel about each question by colouring in the appropriate circle.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
a) I find that research articles are generally easy to understand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) I feel confident in my ability to evaluate the quality of research papers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Much of the available research is not relevant to my professional practice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) I find that available research specific to my work area is of poor quality	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) I find that the mass of research literature is overwhelming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) I feel isolated from knowledgeable colleagues with whom I could discuss research findings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) I feel that there are benefits to changing my practice, based on research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) I consider that I should do a course to help me use research effectively	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) There are no incentives to develop my research skills for use in my practice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) I find it hard to influence changes to clinical practice in my work setting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) My colleagues support the concept of putting sound research into practice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l) I find time limitations prevent evidence-based medicine being used effectively in my practice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section 5 The decision making process

How do you, or would you, rate each of the following factors when assessing whether to take part in a research project?

	Very important	Important	Neutral	Unimportant	Very unimportant
a) A desire to improve the profession	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) The opportunity to learn more about disease management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) The ability to provide enhanced services to patients and to improve patient care	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) The incentive of potential financial reward	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) An interest in clinical research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Recommendations of a colleague	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Availability of CPE points	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Consumer expectation or because consumers like it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Personal satisfaction or gratification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) The availability of replacement staff/locums	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k) Guild promotion or support of research activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section 6 The value of research

<i>In your opinion, how valuable is research to;</i>	Extremely valuable	Quite valuable	Minimal value	No value
a) The future of community pharmacy?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) The future of your practice?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) The next Guild-Government Agreement?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) The future remuneration of community pharmacists?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Improving patient care	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Building relationships with other health professionals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Expanding the role of community pharmacists	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Maintaining your interest in community pharmacy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) Under the Third Community Pharmacy Agreement between the Pharmacy Guild of Australia and the Commonwealth, a total of \$15 million over 5 years has been allocated for research and development in the area of community pharmacy services. Do you think more, the same or less funds should be set aside?		More	Same	Less
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section 7 Personal Details			
a) Gender	<input type="checkbox"/> female	<input type="checkbox"/> male	
b) Age group	<input type="checkbox"/> < 35 years	<input type="checkbox"/> 35 – 55 years	<input type="checkbox"/> > 55 years
c) Highest pharmacy qualification	<input type="checkbox"/> PhD	<input type="checkbox"/> Hons	<input type="checkbox"/> B.Pharm
	<input type="checkbox"/> M.Pharm	<input type="checkbox"/> Ph.C	<input type="checkbox"/> Grad.Dip
d) The period in which I was initially registered was:	<input type="checkbox"/> prior to 1970	<input type="checkbox"/> 1971 – 1990	<input type="checkbox"/> 1990 - 2005
e) I was initially registered...	<input type="checkbox"/> In Australia	<input type="checkbox"/> Overseas	
f) Are you accredited to conduct HMRs/RMMRs?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> currently enrolled
g) Which state/territory of Australia do you primarily practice in?			
<input type="checkbox"/> A.C.T	<input type="checkbox"/> Queensland	<input type="checkbox"/> Victoria	
<input type="checkbox"/> New South Wales	<input type="checkbox"/> South Australia	<input type="checkbox"/> Western Australia	
<input type="checkbox"/> Northern Territory	<input type="checkbox"/> Tasmania		

Section 8 Practice Details		
a) In which area of practice do you spend the majority of your time in most weeks?		
<input type="checkbox"/> Community Pharmacy	<input type="checkbox"/> Hospital Pharmacy	<input type="checkbox"/> Academia/Teaching
<input type="checkbox"/> Research	<input type="checkbox"/> Other, <i>please specify</i>	
b) How would you describe your position? <i>Please select as many as are applicable</i>		
<input type="checkbox"/> Pharmacy Owner	<input type="checkbox"/> Pharmacy Manager	<input type="checkbox"/> Employee pharmacist
<input type="checkbox"/> Locum	<input type="checkbox"/> Consultant	<input type="checkbox"/> Retired
<input type="checkbox"/> Full-time	<input type="checkbox"/> Part-time	<input type="checkbox"/> Research
<input type="checkbox"/> Not practicing	<input type="checkbox"/> Other, <i>please specify</i>	

Section 9 Details of place of work			
<p><i>This information helps us to group people of similar experience and working environments. By doing this we can assess whether one work environment is more or less conducive to research participation than another work place. Please provide the following information for your <u>primary</u> place of employment.</i></p> <p><i>If you are not currently involved in community pharmacy in some capacity please skip this section.</i></p>			
a) Approximate floor area			
<input type="checkbox"/> $\leq 100 \text{ m}^2$	<input type="checkbox"/> $101 - 250 \text{ m}^2$	<input type="checkbox"/> $251 - 500 \text{ m}^2$	<input type="checkbox"/> $\geq 501 \text{ m}^2$
b) Approximate turn over			
<input type="checkbox"/> $< \$1.2\text{M}$	<input type="checkbox"/> $\$1.2 - < \3M	<input type="checkbox"/> $\$3 - < \5M	<input type="checkbox"/> $\geq \$5 \text{ M}$
c) Location descriptor			
<input type="checkbox"/> metropolitan	<input type="checkbox"/> suburban	<input type="checkbox"/> rural/remote	
d) Number of pharmacists usually on duty			
<input type="checkbox"/> 1-2	<input type="checkbox"/> 3-4	<input type="checkbox"/> 5+	
e) Number of hours open each week			
<input type="checkbox"/> < 50	<input type="checkbox"/> $50 - 70$	<input type="checkbox"/> > 71	
f) Average number of scripts dispensed each week			
<input type="checkbox"/> ≤ 500	<input type="checkbox"/> $501 - 1200$	<input type="checkbox"/> $1201 - 3000$	<input type="checkbox"/> > 3000

Thank you for taking the time to participate in this survey; your assistance is appreciated. If you would like to make any further comments or suggestions, please feel free to do so in the space below.

Chapter 7, Appendix 2. Additional written comments from the surveys

Comments from the *Community Pharmacy Research Capacity Building Questionnaire*

I have been retired from pharmacy for some considerable time and feel that any contribution to your survey would be somewhat irrelevant nevertheless many thanks & yours sincerely (226)

Ref: Section 6 (i)

As the Third pharmacy Agreement has actually concluded, isn't this survey an indication that the R & D funds made available were not fully utilized? My experience is that at the end of any budgeted period, there is a mad rush to fully expend allocated funds to ensure that funding for the next period is not cut. (212)

This is not an area I have ever considered becoming involved in. I would like to see it developed, especially working in conjunction with Doctors. Time required would probably be a major problem. (199)

Although retired, I filled in the questionnaire as far as possible because my PH.D thesis was examining practice Training in Pharmacy (mainly) and Medicine & Education. (192)

I must admit when I think about clinical research trials etc, I relate it more to hospital than community pharmacy. What type of research would you do in community? I am not aware of clinical pharmacy research outside the hospital setting. (134)

I am an employee pharmacist - not an owner. I haven't a clue re the answers to a & b above. I work in 3 different pharmacies - hence the 2 answers to 4. My involvement in research to date in recruiting & following up patients has been negative - only in that it was difficult to find time to fit it in especially as it was not remunerated. I may have answered some of the questions above (especially section 6) differently depending on the type of research being conducted. (119)

I was involved in a research programme and genuinely enjoyed it. The customers seemed "honoured" to be asked to be involved when told it involved a university. (105)

Community pharmacy needs to change focus from product sale to service provision (99)

Suggestions by the minister to encourage discontinuing of scripts, reduced remuneration in the 3rd agreement can only lead to staff and hours restriction, and less time for education and research in the practice. I am quite disillusioned by the government's attitude and particularly HIC nit picking, time wasting processes. I can't wait to get out of it. Sooner the better!!! (80)

A main area of frustration amongst retail pharmacists in the tolerance and growth of mail order - pharmacies. They do untold damage to our profession. They create an aura that a 'normal' pharmacy is too dear. They live off our backs like parasites - eg they need our guild negotiations to get some profit eg PBS and then advertise to embarrass us. Why is this relevant to your survey? Because when prices drop profits drop time pressures build up on pharmacists and we are stretched for time to do surveys - contribute to research etc. Do some work on the damage mail order pharmacies can do to Australian Drug Delivery. (38)

This was difficult to answer, as I am currently employed as a hospital pharmacist. My answers therefore may not really be valid for these purposes. (54)

As I work in hospital I feel there is limited time/money etc in pharmacy only research except for that which is useful for other health professionals too. Eg. Drs Research for better pt care and outcomes would eg. Extra staffing etc to relieve staff and this isn't likely to be possible at the moment. (304)

Community pharmacy is most important. In conjunction with doctors, hospitals, nurses (community), lots of publicity required for the public to have an understanding of medications which they do not have now. Disaster and potential disaster lurk where medications are not understood. (233)

I have been retired from pharmacy for 5 years and have done no work for 3 years. The above answers should be assessed having regard to this fact. (360)

Please note, I no longer work in pharmacy as such (I freelance as a medical writer for clinical research organisations, medical education companies etc) I have answered the questionnaire as best I was able, either using my current work as the basis (eg for section 2) or using previous pharmacy experience (eg Section 5) however some questions were just not applicable to me, and I have left these blank. Hope this doesn't much up your stats!! (345)

Also, my involvement with writing for clinical trials probably gives me a knowledge-base quite different to that of my Pharmacist colleagues. (345)

My love of research only developed during my years in med after/ reg affairs in the pharmacy industry- so valuable to me as a contributor to pharmacy practice/communicator. (325)

It is vitally important that there is enough incentive to cover the cost of a locum when taking part in research. (323)

Chapter 8

Objective 5d: Mentoring

BACKGROUND

In order to address the perceived need for better communication between academic pharmacy practice researchers and community pharmacists a mentoring program has been established at each of the pharmacy schools affiliated with the CPRSC. The mentors are responsible for facilitating the involvement of community pharmacists in research. The mentors are responsible for providing research projects for addition to the CPRSC web site (Chapter 6), serving as a point of contact for any community pharmacists interested in participating in research in their area, and promoting research awareness in their local area.

RESULTS

Eight of the nine schools of pharmacy have designated a mentor. These are:

University of Tasmania – Shane Jackson

LaTrobe University – Joy Spark

Curtin University – Bruce Sunderland

University of South Australia – Chris Thompson

The University of Queensland – Lynne Emmerton

Monash University – Kay Stewart

The University of Sydney – Ines Krass & Sinthia Bosnic-Anticevich

Charles Sturt University – formerly Debbie Burton, presently Patrick Ball

These mentors have been involved in a number of activities including:

- provision of research project information for inclusion on the CPRSC web site (all centres)
- promotion of the CPRSC at national and international conferences (The University of Sydney) and in a PSA Queensland Branch newsletter (The University of Queensland)
- discussion with community pharmacists about research and possible opportunities (LaTrobe University)

- conducting feedback sessions on pharmacists' experiences in participating in research projects (The University of Sydney, Monash University)
- planning information evenings with community pharmacists in June and August 2005 on current research, ideas for future projects, needs, and level of interest (Charles Sturt University)
- development of videos to use as recruitment and training tools for community pharmacists (The University of Sydney)

Feedback Sessions

Pharmacists who participated in the Pharmacy Diabetes Care Program (PDCP) in NSW and VIC were invited to attend a session where their experiences of participating in the PDCP project in particular and their perceptions of community pharmacy research in general were sought. The results of these sessions were utilised to inform the booklet "Community Pharmacy Research: Recruitment of Pharmacists into Research Projects", which is discussed in Chapter 9.

Recruitment Video

A short five-minute video has been developed, and is intended to be displayed at various gatherings of community pharmacists (conferences, meetings and continuing education sessions) to promote awareness of community pharmacy research and encourage participation. The video is composed of a series of clips of four pharmacists discussing their experiences of participating in research projects conducted by The University of Sydney. The pharmacists discuss the reasons why they became involved in research, what the benefits to themselves, their patients and their profession were and encourage other community pharmacists to become involved. The video will be distributed to all members and mentors of the CPRSC.

Training Video

A second training video is in production and is scheduled to be completed by mid-June 2005. This video is intended to be used by pharmacy practice

researchers when conducting pharmacist training sessions prior to implementing research projects.

The video will be 20 to 30 minutes long and will be composed of four segments covering the following topics:

- 1) Recruitment of patients into a research project - This segment will cover appropriate and inappropriate methods of approaching patients for involvement in research projects.
- 2) Delivering patient centered services – This segment will cover techniques such as, creating the appropriate environment, engaging the patient, building rapport, motivational interviewing, and goal setting.
- 3) Managing research in the pharmacy - This segment will cover the importance of accurate documentation during a research project.
- 4) Administering an adherence assessment - This segment will illustrate the proper technique for administering an adherence assessment using the BMQ as a model.

Each segment will incorporate role plays, preceded and followed by voice-overs and key points in text on the screen.

CONCLUSIONS

The mentoring program has been hampered somewhat by the delays in development and hosting of the CPRSC web site (Chapter 7), as this is the primary means by which the mentors will be put in touch with community pharmacists interested in being involved in research.

Despite this, the mentors have been active in promoting the Centre, conducting feedback sessions, and developing videos. Furthermore, they are actively planning to continue mentoring activities such as contributing to the upkeep of the CPRSC website, conducting information sessions, and utilising the videos, after the conclusion of the initial phase of the CPRSC.

Chapter 9

Objective 5e: Recruitment and Retention Strategies Document

BACKGROUND and METHODS

One of the most challenging aspects of conducting research in the community pharmacy setting is recruiting enough enthusiastic and committed pharmacists to implement the research program. Pharmacists are sometimes reluctant to participate or may initially agree but then are unable to continue with the study for various reasons.

Over the past two years, the CPRSC has conducted several projects designed to clarify community pharmacists' perceptions of research, appreciate the barriers to participation and learn how to enhance facilitators to participation. The projects conducted were: the Involving Community Pharmacists in Research Workshop (Chapter 5); feedback sessions of pharmacists in research projects (Chapter 8); a literature review of pharmacists' perceptions of research and a survey of NSW pharmacists as a part of the commissioned report on recruitment and retention of pharmacists in research (Chapter 4); and a nationwide survey of Australian pharmacists (Chapter 7). The themes that have emerged from these various projects have been remarkably consistent.

We perceived a need to compile and summarise this research into a simple reference tool for pharmacy practice researchers. Therefore, the main messages to emerge from our research into pharmacists' perceptions of research have been summarised in a booklet (Appendix 1). It presents the lessons learned and offers tips and suggestions for researchers planning to conduct community pharmacy-based research. The hope is that the suggestions will help researchers successfully recruit pharmacists into their research projects and aid them in providing a positive research experience so that community pharmacists will want to participate again in the future.

RESULTS and CONCLUSIONS

The booklet covers considerations when designing research projects, recruiting and training of pharmacists, implementing the research program and after the program is completed. The booklet will be distributed to CPRSC members and mentors initially in hard copy and then to any other pharmacy

practice researchers who are interested. It will also be available in PDF format on the CPRSC web site.

Chapter 9, Appendix 1: Recruitment Strategies Booklet

Community Pharmacy Research

Recruitment of Pharmacists into Research Projects



Community Pharmacy
Research Support Centre



The Community Pharmacy Research Support Centre (CPRSC) was established in September 2003. It is a national consortium of nine academic pharmacy units in Australia and its purpose is to develop and support community pharmacy practice research expertise and capacity.

The CPRSC is funded by the Australian Government Department of Health and Ageing through the Pharmacy Guild of Australia as a part of the Third Community Pharmacy Agreement.

Recruiting Community Pharmacists Into Research

One of the most challenging aspects of conducting research in the community pharmacy setting is recruiting enough enthusiastic and committed pharmacists to implement the research program. Pharmacists are sometimes reluctant to participate, or may initially agree, but then are unable to continue with the study for various reasons.

One of the goals of the CPRSC has been to encourage and facilitate pharmacists' participation in research. In order to do so, the Centre commissioned several research projects designed to clarify community pharmacists' perceptions of research, appreciate the barriers to participation and learn how to enhance facilitators to participation.

The projects conducted were:

- three separate focus groups of research active community pharmacists¹
- a literature review of pharmacists' perceptions of research and a survey of NSW pharmacists (Pharmacists and Pharmacy Practice Research Survey)²
- a nationwide survey of Australian pharmacists (Community Pharmacy Research Capacity Building Survey)³

This booklet arises out of this research. It summarises the lessons learned and offers tips and suggestions for researchers planning to conduct community pharmacy-based research. We hope that these suggestions will help researchers successfully recruit pharmacists into their research projects and also aid them in providing a positive research experience so that community pharmacists will want to participate again in the future.

What factors prevent pharmacists from participating in research?

- ◆ A lack of TIME
- ◆ A lack of awareness of research or never having been asked to participate
- ◆ A lack of reimbursement

What factors encourage pharmacists to participate in research?

- ◆ A personal interest in the research topic
- ◆ A desire to benefit the customer
- ◆ An interest in the future of the profession / a desire to improve the profession
- ◆ An opportunity to learn new skills and information

Before you begin ...

- Find out what research areas are of greatest interest to community pharmacists². Encourage practising pharmacists to contribute suggestions for research. Our research has shown that an interest in the research topic is an important facilitator to participation^{1,2,3}. If your research area is not well known, anticipate that recruitment of pharmacists may be more difficult, and allow for this in your projected time lines.
- Research that offers a direct benefit to the patient will without doubt be more attractive to pharmacists. This factor emerged in all of our research into pharmacists' perceptions of research^{1,2,3}.
- Consider involving community pharmacists in the earliest stages of project design as well as the design of the documentation. Their practical input can be very valuable in developing protocols that fit in well with the day-to-day running of the pharmacy. Research shows that pharmacists feel they have important contributions to make at this stage of research^{1,2}.
- The single most important barrier to pharmacists' participation in research is a lack of time (whether real or perceived)^{1,2,3}. To address this barrier, consider developing simple research protocols that are time efficient. This was the most common response to a question about what factors

would make pharmacists want to participate in future research projects². Researchers sometimes have an inclination (compulsion?) to collect as much data as possible, but there needs to be a balance between the data needed for a valid research study and the time that pharmacists can devote to research. If researchers fail to consider the time pressures that pharmacists are under, pharmacists will be reluctant to participate and those who do will have higher drop-out rates and may be hesitant to volunteer again in future.

- Ensure that funds have been set aside for remuneration and/or locum replacements in research proposals. This will help address two issues: lack of time and lack of remuneration. A lack of remuneration only appears to be a barrier for those pharmacists who have not previously participated in research^{2,3} and most pharmacists do not think that research should be profitable¹. They can, in fact, appreciate the value of research to their profession. However, they do feel that it should be cost neutral, and time taken away from everyday duties in the pharmacy is potentially money lost.

During recruitment...

- Although research is often constrained by time and funding, consider recruiting pharmacists away from areas that have been heavily utilised in the past (i.e. near research institutions). Anecdotally, pharmacy practice researchers report that recruitment of pharmacists is becoming more difficult, presumably due to research 'burn-out'. However, a nation-wide survey of pharmacists found that many have never even been approached to be involved in research (72% of respondents)³. It is likely that the pharmacists located near research institutions are over-utilized, while those more distant are under-utilised. Rural pharmacists in particular may be an untapped resource and need not be restricted to research projects that have a specific rural focus.
- Put a lot of thought into the design of the materials you are using to recruit pharmacists. Clearly state the following:
 - ◆ The goals of the research - pharmacists strongly agree that research should have clear and meaningful goals²
 - ◆ The intended benefit to the patient
 - ◆ What training will be provided (theoretical and practical)
 - ◆ What support will be offered to the pharmacist during the project
 - ◆ What advertising and promotional materials will be provided

-
- The CPRSC has developed an online database of pharmacists who are interested in participating in research (www.cprsc.org.usyd.edu.au). Consider promoting your research project on this site and using it to search for interested pharmacists if the design of your project allows.

Training ...

- Offer training to as many staff as are interested, including pharmacy assistants. Sharing the workload of a research project reduces time pressures on pharmacists.
- Ideally, training should be flexible to accommodate work schedules.
- Provide training on all aspects of the research project, not just theory. Pharmacists have indicated that they need practical training on how to recruit patients, how to organise the research in the pharmacy and how to complete the documentation^{1,2}.

Implementing the research program ...

- Provide lots of support to the pharmacists and communicate regularly with them.
- Provide support staff who are readily available to offer advice and assistance.
- Consider setting up peer support so that pharmacists can discuss their experiences with others in the research study.
- Some pharmacists will appreciate receiving regular newsletters about the study.
- Most pharmacists want feedback on how the study is going - provide this if possible.
- Don't neglect the control pharmacists.
- If appropriate, provide advertising of the program to aid in patient recruitment.
- Offer incentives and rewards such as recognition for achieving patient recruitment targets. For studies of long duration, consider having interim meetings and providing small rewards (certificates or pins).

After the research program ...

- Give all the pharmacists in your research project the appreciation and recognition they deserve. Make every effort to leave them feeling positive about research and valued as participants, so that they will want to participate again in the future. Remember to include the control pharmacists; control pharmacists are sometimes neglected in the aftermath of research studies, even though their contribution is just as valuable as that of the intervention pharmacists.
- Pharmacists are very much interested in learning the outcomes of their research studies^{1,2}. Consider providing a 'lay version' overall summary of the research if appropriate. Also consider providing the pharmacists with outcome summaries of each of their patients.
- Ask some of your participating pharmacists if they would be willing to talk about their experiences and the outcomes of the research at gatherings of pharmacists. This will not only promote the results of your particular research, but may serve to promote awareness of research in general amongst community pharmacists. Pharmacists may be more receptive to hearing about research from their peers than from academics¹.
- Become involved in creating research awareness (a research culture) amongst community pharmacists. The CPRSC has developed a short video of pharmacists discussing their involvement in research and this is available for researchers to use at continuing education and conferences.
- In the long term, incorporate and emphasise the role of research in the practice of pharmacy when teaching undergraduates.

In summary...

The majority of pharmacists consider research to be very important to the future of their profession, and most of those who have participated find the experience greatly rewarding^{2,3}. These are signs that the future of community pharmacy-based research is very bright. Given that clinical research in pharmacy is a relatively new endeavour and has not traditionally been seen as an essential role, the attitudes of pharmacists are very positive. Certainly, there is a lot of interest in research amongst community pharmacists and abundant opportunity for more pharmacists to become involved³.

Researchers can encourage participation by educating undergraduates about the significance of research to their future profession, promoting research awareness amongst community pharmacists, and by taking into consideration the practicalities of the everyday practice of pharmacy when designing their research projects.

References

1. Community Pharmacy Research Support Centre (2004). Involving community pharmacists in research [workshop report].
2. Saini B et al (2005). Recruitment and retention of community pharmacists in pharmacy practice research. CPRSC Report no 3.
3. Peterson G et al (2005). Survey to assess attitudes of Australian pharmacists towards pharmacy practice research, barriers and potential solutions [final report].



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Chapter 10

General Conclusions and Recommendations

CONCLUSIONS

Objectives 1&2

Development and maintenance of a register of national and international literature and an international database of community pharmacy practice research.

The database has been developed and can be found by logging onto www.communitypharmacyresearch.org. It is a searchable database of Australian and international literature resources published since 1990 relating community pharmacy practice research and the economics of professional pharmacist services. The database provides easy access to research that has been conducted to evaluate the effectiveness and cost-effectiveness of professional pharmacist services in the community setting. The database has been promoted by providing information to professional pharmacy organisations, other health-related organizations and email discussion groups related to pharmacy and medicines. At May 2005 there were 176 summarised articles included in the database and over 100 subscribers to the database with community pharmacists representing a significant proportion of these subscribers. The database will be maintained until October 2005.

Objective 3

Establishment of an international pharmacy practice research collaboration to progress collaborative and comparable research on the value of pharmacy professional services.

An international and collaborative network of pharmacy researchers and policy-makers has been established (the Pharmaceutical International Network (PIN)). PIN provides an electronic infrastructure to enhance communication within the PharmIntercom community. The PIN software enables network members to share data and discuss ideas, and provides a file storage feature that supports the development of a library database of current and unpublished international material.

An independent working group of the four most active participants from the PharmIntercom community has recently been established to identify areas of common interest or common goals. Once common goals have been established, shared purposeful projects will be negotiated.

The network has being promoted via a submitted paper, a poster presentation at an international pharmacy conference and a marketing card. At present, the network has been granted extended finding until September 2005.

Objective 4

Generate reports on issues of interest to The Pharmacy Guild of Australia and the Commonwealth Department of Health and Aging.

Five reports were commissioned and have produced a number of significant outcomes and recommendations.

Report 1: Third update of the Value of Pharmacist Professional Services report. This report provides a review of Australian and international literature on professional pharmacist services in the community published between October 2002 and March 2005. Only reports of randomised controlled trials (RCTs) were included. Recommendations include:

- In reviewing Pharmacy literature, there should be an emphasis on Australian studies and not only randomised controlled trials should be considered.
- Multidisciplinary interventions are likely to be important to the future of Pharmacy

Report 2: Tools, mechanisms, strategies to engage and retain pharmacists in research. This report consists of a review of the literature on pharmacist attitudes towards research and the provision of extended services as well as a survey of pharmacists' attitudes towards research. Differences between those pharmacists who had previously participated in research, and those who had

not, are identified and the barriers and facilitators to research involvement are clarified. Recommendations include:

- There is a need to further develop a research culture in community pharmacy.
- The goals of the research should be clear and meaningful.
- The time constraints that pharmacists face should be considered in designing research projects.
- Involve practitioners in the design of research protocols.

Report 3: Tools, mechanisms, strategies to engage and retain clients/ consumers in pharmacy practice research. This report comprises a review of the relevant literature and the outcomes of focus groups held with community pharmacists, a pharmacy assistant, and pharmacy practice researchers. Recommendations include:

- Utilise active recruitment strategies when appropriate.
- Documentation should be simple and kept to a minimum.
- The relevance of the research should be clearly explained.
- Have realistic expectations of time lines and return rates.
- Recruitment strategies should be reviewed and revised if needed.

Report 4: Health promotion and screening activities by community pharmacists. Unfortunately this report was received just before the final deadline and we were therefore unable to abstract recommendations and have them reviewed by the CPRSC consortium.

Report 5: Primary health professional education (GP's, pharmacists, community nurses) current models and barriers to participation. This document reports on a literature review of current trends and concepts in CE, semi-structured interviews with stakeholders from CE delivery organisations

and focus groups held with community pharmacists. A number of issues for consideration in the development of an ideal model of CE for Australian community pharmacists are presented. Recommendations include:

- A clear strategy for CE and CPD should be developed.
- Assessment should measure professional development, not hours spent in education.
- Mandatory CE should be considered and CE provided should be assessed.

Objective 5

To facilitate the involvement of and increase the number of community pharmacists participating in pharmacy practice research by:

a. Conducting a workshop to ascertain the interest of pharmacists participating in research and the education and support they require.

A workshop was held during which two separate focus groups were conducted: an academic focus group and a community pharmacist focus group. Attitudes towards research, barriers to community pharmacist participation in research and potential strategies to overcome barriers were discussed. The outcomes of the workshop were summarised in a report (Chapter 5), which was used to inform the development of the survey of NSW pharmacists (Chapter 4, Report 2), the national survey of pharmacists (Chapter 7), and the recruitment and retention strategies booklet (Chapter 9). The key outcomes of the workshop include:

- Pharmacists feel that there is a lack of awareness of research being undertaken in the profession
- Pharmacists would like to become involved in the planning of projects and data collection but not the analysis.
- Pharmacists would like feedback on the outcomes of their research and the relevance of the research to their practice.

- Pharmacists would like a more direct link between themselves and researchers.
- Pharmacists who have been involved in research should discuss their experiences at meetings of pharmacists.

b. Developing a website containing a searchable database of upcoming and ongoing research projects and a searchable database of pharmacists interested in research.

A website has been developed and is available at www.cprsc.org.usyd.edu.au. The website contains a searchable database of research projects and a pharmacist registry. The website will serve to promote future interest in pharmacy practice research and act as a link between researchers and pharmacists to enhance communication.

c. Conducting a nation-wide survey of randomly selected Australian community pharmacists....

A national cross-sectional survey of 1000 randomly selected Australian pharmacists was conducted to determine their attitudes towards and involvement in pharmacy practice research. A response rate of 37% was achieved. Approximately one-third of responding pharmacists were presently, or had been, involved in research activities, and generally reported positive experiences. Lack of time and never being approached/not being aware of the opportunities were major barriers to pharmacist participation in research. Approximately one-third of the pharmacists were not interested in participating in research. There was low usage of electronic bibliographic databases and of scientific journals. Important factors encouraging pharmacists to participate in research were a desire to improve the profession, the opportunity to learn more about disease management and to provide enhanced services to patients, and personal interest.

d. Designating a mentor responsible for facilitating the involvement of community pharmacists in research at each of the nine CPRSC member schools of pharmacy.

A research mentor has been established in most of the participating pharmacy schools. The mentors have contributed to the development of the CPRSC website and database, have promoted the Centre at conferences and in publications, have conducted feedback sessions with research active pharmacists and will be conducting research information sessions in the future. Furthermore, the mentors have spearheaded the production of a video designed to promote awareness and encourage participation of pharmacists in practice research. A second training video for pharmacists undertaking research is currently being produced.

e. Developing a document outlining strategies to increase and retain pharmacists in research, incorporating the results of the survey, reports from mentors, and the report on the workshop.

A recruitment and retention strategies booklet has been produced for researchers to use when designing research projects and will be made available to researchers involved in the CPRSC. The booklet incorporates and summarises the lessons learned from the workshop, the feedback sessions, the report on recruitment of pharmacists and the national survey.

RECOMMENDATIONS

1. The databases designed to provide information on pharmacy research and services should be maintained beyond October 2005.
2. Once the new software has been trialed, the PIN teams already established should be asked to continue until mid-2006 and then report on outcomes.
3. A coherent mechanism for multi-organisation delivery of CE/CPD should be developed.
4. Linkages between researchers and pharmacists need to be strengthened; this could take the form of the CPRSC website/registry in combination with mentors in Schools of Pharmacy.
5. There should be some formal recognition of the value of involvement in research by community pharmacists (QCPP, certificates, formal recognition by universities).
6. The research awareness video should be distributed nationally for promotion at pharmacy meetings and the research training video distributed to all Schools of Pharmacy.
7. The research recruitment booklet should be published and perhaps promoted internationally as an initiative of the CPRSC.
8. Overall, the time-frame available for many of the projects precluded a completely successful outcome. There needs to be some recognition that administrative processes such as contracts and ethics approval can take up project time.
9. One of the future roles of the CPRSC should be to promote the work it has done already so that there is value in the outcomes achieved.
10. There needs to be a marketing strategy for the outcomes achieved. Given the success of so many of the projects, time and resources should be devoted to increasing awareness and involving pharmacists in the proposed strategies.

11. The CPRSC has promoted consultation and collaboration between Schools of Pharmacy. In future, the newer Schools formed since the CPRSC was initiated should be included.
12. Since multidisciplinary interventions are likely to be so important in the future, the CPRSC should take a lead in designing research to explore the place of Pharmacy in the new health care system.
13. The structure of any future CPRSC should incorporate an executive group of 3-4 people, who represent the entire advisory team.
14. Management of any future CPRSC is important if future strategies are to be realised. A project officer/research manager should be appointed to run the centre under the guidance of the Executive.
15. Some programs within the CPRSC are 'up and running' and require only a small future investment to achieve great impact.
16. In future the CPRSC should work more closely with pharmacists to inform them of outcomes achieved.
17. Future national and international research could be focussed through the CPRSC with a defined mechanism for promotion and propagation.
18. The future funding of the CPRSC should be considered as a joint proposal between the Pharmacy Guild and the Federal Government through one of the national competitive schemes (Centre of Excellence, ARC Linkage). This could involve a number of partners and extend the value of each partner input. It is recommended that the Pharmacy Guild consider an investment of \$1 million over the next 3-5 years in order to continue the current programs and extend the role and reach of the community pharmacy research support centre.