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STOCKTAKE OF PRIMARY HEALTH CARE RESEARCH IN AUSTRALIA

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EXECUTIVE SUMMARY

Since the commencement of the Primary Health Care Research, Evaluation and Development (PHCRED) strategy in 2000, research targeted on Primary Health Care services, and on the health care system as it relates to Primary Health Care has been a focus for many academic and clinical primary health care researchers.

Over that period, 46 research grants have been awarded through the competitive grant system led by the Australian Primary Health Care Research Institute and 166 projects through the National Health and Medical Research Council.

In addition, the Research Capacity Building Initiative has focused on developing capacity within the Primary Health Care Researcher community through education, awareness raising, mentoring, and research. Of particular note has been the development of the Practice Based Research Networks, which have provided opportunities for clinicians to become active in research and for collaborations between academic and clinical practitioners.

A stock-take of the individual research projects funded through the PHCRED strategy funding shows that most of the 46 projects funded through the Australian Primary Health Care Research Institute have a focus on health services and systems, most are descriptive studies and address issues of knowledge translation. The 166 studies funded through the NHMRC are more directed to clinical intervention research.

A more detailed analysis suggests that the strengths of Primary Health Care Research in Australia are:

- A supportive targeted infrastructure to develop research and researchers
- A diverse research workforce
- A culture of research collaboration
- Broad research activity covering models of care, workforce needs, interventions for specific population groups.

Research into patient centered care is limited, with only a small research output on health literacy and self management, although some research in this area is contained in chronic illness research projects.

Limited research is available to support new policy and practice in systems and services innovation, with little evidence in health economics and implementation relating to health services change.

Some research areas need to be enhanced to provide evidence to meet the needs of the future health system.

- Consumers are infrequently engaged in the research activity and effective means of engaging them in the research/policy/practice triangle are not well established in Australia;
- Translation of evidence from multiple small scale research activities to the creation of a policy-relevant body of knowledge that could apply to services and systems needs further development, building on the existing investment that has been made in linkage and exchange methods;
- Implementation and evaluation research is limited and rarely applied from the beginnings of a system or service intervention;
- The economics of primary health care are not well researched, particularly for primary care areas outside of general practice
- Intervention research is needed to test new care delivery approaches, such as enrolment for people with diabetes, or primary care organisations.

INTRODUCTION

Ovhed et al, reporting a multi-country study of the development of Primary Care Research in 2005, stated that Australia, New Zealand and the UK led the world in the number of Primary Care Research publications per head of country population. (1) Their rate of publication was twice as high as the next set of researchers, the Scandinavian countries and the Netherlands. While this might sound like good news for Australia, there were still only 20 publications on Primary Health Care per million population- or about 400 publications for the 2003 year across the country.

The Primary Health Care Research and Evaluation (PHCRED) Strategy (2) has driven the development of Primary Health Care Research in Australia through establishing research priorities, providing capacity building funding to Academic Departments of General Practice and Rural Health, providing a Research Grants Program and establishing the Australian Primary Health Care Research Institute (APHCRI). APHCRI has three aims; to strengthen primary care research capacity, facilitate the uptake of research evidence into policy and practice and to enhance capacity through strategic partnerships within Australia and internationally. The PHCRED strategy, commenced in 2000, was developed by the Department of Health and Aged Care in consultation with the General Practice Partnership Advisory Council.

A consultation process headed by Libby Kalucy and carried out by the Primary Health Care Research and Information Service (PHC RIS) at Flinders University in South Australia led to the identification of a set of seven thematic areas cutting across the priority research foci of rural and remote populations, Aboriginal and Torres Strait Islander communities, people who are disadvantaged due to their health, or social, economic or environmental factors. The process led to a report released in May 2001. (3)

Since that time, the state of Primary Health Care Research in Australia has been examined in a number of publications, most comprehensively through the chapter included in *General Practice in Australia 2004*, written by Deborah Askew, Chris del Mar, Brian McAvoy and David Lyle (4). This publication focuses on general practice research, as the title suggests. There is as yet no similar publication covering research by other primary health care professions.

Research priorities have been revisited on a number of occasions, most recently in the early stages of the current health reform process, at the 2009 General Practice and Primary Health Care Research Conference in Melbourne. The conference held a workshop session to address the topic "Primary health care reform: setting the research agenda" (5). The workshop, led by Associate Professor Gawaine Powell-Davies from the UNSW Research Centre for Primary Health Care and Equity, asked representatives providing policy, practice, academic and consumer perspectives to set the scene, following which the workshop participants identified research questions in health reform relevant areas and some of the challenges facing researchers in answering them.

In light of the development of Primary Health Care Research over the past 10 years, and the current agenda for reform, this work sets out to do three things:

- Provide a stocktake of the current state of Primary Health Care Research in Australia
- Identify the current strengths and weakness of Australian Primary Health Care Research in light of current health priorities
- Identify ways in which current research gaps might be addressed.

PRIMARY HEALTH CARE RESEARCH IN AUSTRALIA: INFRASTRUCTURE

As previously stated, the main vehicle for development funding in Primary Care Research is the Primary Health Care Research, Evaluation and Development (PHCRED) Strategy. (2) Detailed information about the strategy can be obtained from the PHC RIS website (www.phcris.org.au), or the Department of Health and Ageing Website (<http://www.health.gov.au/internet/main/publishing.nsf/Content/health-pcd-programs-pcprograms-collab.htm>).

In summary, the PHCRED strategy was established in 2000, replacing and extending the previous principal funding streams for Primary Care Research. The Strategy was funded initially for five years. Phase 1 goals were to embed a research culture in Australian general practice specifically and Australian primary health care more generally. After review in 2005 Phase 2 goals of the strategy were to achieve:

- An expanded pool of primary health care researchers
- More research relevant to practice and policy
- In collaboration with other relevant organisations, well informed primary health care practice and policy.

The strategy consists of four major components:

- The Australian Primary Health Care Research Institute (APHCRI), tasked with providing leadership in Primary Health Care Research
- The Research Capacity Building Initiative (RCBI), funding Academic Departments of General Practice and Rural Health to provide training and support in primary care research for early career researchers
- A program of Training Awards, and investigator driven and priority driven clinical research grants, administered by the National Health and Medical Research Council (NHMRC) (in addition to research funded directly as NHMRC competitive grants)
- The Primary Health Care Research and Information Service (PHC RIS): providing support in the area of dissemination and knowledge- exchange.

These elements combine to form the infrastructure that leads, funds, develops and disseminates a major part of primary health care research activity carried out in Australia, particularly in relation to developing the evidence base for policy decision making.

The Strategy was reviewed in 2008. In 2010, PHC RIS and APHCRI were awarded new 5 year contracts for Phase Three of the Strategy, and the RCBI program was funded until the end of the 2010 calendar year.

THE RESEARCH CAPACITY BUILDING INITIATIVE

The Research Capacity Building Initiative grants funds to 26 (most) of the Academic Units of General Practice and Departments of Rural Health around the country. These grants have been the principal funding stream for the development of early career researcher capacity in Primary Health Care. Through a mix of education, access to research learning opportunities, mentoring

and establishing and supporting research networks, the initiative was directed towards increasing research awareness as well as to increasing researcher skills capacity.

Each of the funded Academic Units provides information on the research conducted each year to the Department of Health and Ageing. Summary reports of this information are available through the PHC RIS site, particularly in the report of McIntyre et al on building research capacity in Australian Departments of General Practice. (8) The reports show year on year increases in the number of early career researchers supported by RCBI, most at the pre-Masters level; and year on year increases in the number of peer reviewed publications achieved, with 146 publications in the 2007 year. If Ovhed (1) is correct, and Australia is publishing at a rate of about 400 primary health care publications a year, the RCBI funded research makes up a considerable proportion of that output. However this current stocktake has not identified and tracked individual RCBI research projects, although these could be added to the data base in subsequent version.

As well as publication rates, another measure of increased capacity is successful grant applications by RCBI funded researchers.

In the 2007 year, of the 117 grant applications, 64 were successful, 28 were unsuccessful and 25 were still in progress or their status was unknown. Hence 70% of those 92 applications with known outcomes were successful. In the same year, 146 papers were published in peer reviewed journals and 322 presentations were made at conferences (141 at national conferences) and other events. Several RCBI funded departments have also provided support for practice-based research networks (PBRN) - a model where general practices form the 'laboratories' wherein research is undertaken and utilised. Seven such networks were in place in 2007.

Further analysis of the growth of Primary Health Care Research capacity could provide information about geographic spread of research, types of research and researcher and a value for money analysis of the RCBI funding similar to the information collected for this stocktake.

OTHER FUNDING SOURCES FOR PRIMARY HEALTH CARE RESEARCH

In addition to the PHCRED strategy, primary care research is funded through states, territories and local health services, with particular emphasis on public health research and local health services research, which can incorporate issues and practices relevant to primary care, but does not have a special focus on primary health care.

The other major funding sources for primary health care research are industry organizations, such as the Pharmacy Guild and the Royal Australian College of General Practitioners; the benevolent trusts of private sector agencies, such as MBF; the funding trusts of health interest organizations, such as Diabetes Australia, the Heart Foundation and beyond blue, and of private philanthropic bodies, such as the Ian Potter Foundation. Apart from the Pharmacy Guild, by nature a primary care focused body, other agencies provide funding to a wide range of researchers, mainly outside the primary care field.

Research activities funded from these sources have not been included in this stocktake due to lack of comprehensive data.

RESEARCH PRIORITIES IN PRIMARY HEALTH CARE: 2001-2009

When implementation of the PHCRED strategy began in 2000, an attempt was made to identify the areas of most pressing need for Primary Health Care Research to inform the selection criteria for competitively funded grant applications, in the context of the goals of the strategy and the knowledge of the stakeholders. These research priorities were drawn together in the PHC RIS report "Priorities for Primary Health Care Research, Evaluation and Development in Australia" and identified the need for research in:

- Evidence based practice
- Quality of care
- Models of organization and delivery of primary care
- Integration
- Economic issues relating to optimal use of resources
- Health inequalities and the determinants of health
- Illness prevention and health promotion.

PRIORITIES LINKED TO THE HEALTH REFORM PROCESS: 2008-2010

In 2009 with the work of the National Health and Hospitals Reform Commission, the National Primary Care Strategy and the Preventive Health Taskforce well underway, researchers attending the General Practice and Primary Health Care Research Conference in Melbourne identified priorities for research relevant both to the reform agenda and to the ongoing needs of primary health care research. The report of this meeting (5) identified the following priorities:

- Patient centred care
- Reform focused research
- Equity
- Health economics focused research
- Research which focuses on Australia as a special condition rather than repeating research that had been conducted overseas
- Provider focused research
- E-health
- Models of funding/payment
- Change management
- Optimal organisational mixes needed to deliver PHC services
- Knowledge brokering
- How to integrate PHC with other departments (education departments, etc).
- Fewer RCTs in PHC settings as they can be too reductionist and a greater focus on community based research
- A move away from focusing on single risk factors and diseases towards research into multi-morbidity

- A focus on how systems operate on a day to day basis in PHC rather than under 'ideal conditions'
- Governance models in corporate and clinical settings, including ingredients for success, sustaining improvements, and processes for shared learning.

Many of these priorities have been reflected in *Building a 21st Century Primary Health Care System: A Draft of Australia's First National Primary Health Care Strategy*, released in August 2009. (6) The recommendations in each share a focus on patient centred care, the need to understand and research health economics as part of care design and delivery and the need to understand and develop the use of E-Health technologies.

However, the draft National Primary Health Care Strategy recommends specifically that research areas should include research on multi-morbidity, evaluation research and the need to improve research skills in non-GP clinicians. The draft National Primary Health Care Strategy identifies the following priorities for research in Primary Health Care:

- More research on preventative health
- Patient centred care
- Evaluation of self management and building health literacy
- Health economics, including comparative assessments of effectiveness across different treatments, assessments and interventions (meta-analyses?)
- Research on multi-morbidity
- Evaluation research
- Improving skills in research by other non-GP clinicians (e.g. nurses)
- E-health technologies for sharing, extracting, and creating data linkage across different settings.

The major forum for Primary Health Care Research presentation in Australia is the Primary Health Care Research Conference, which in 2010 sought abstracts for research that relates to the health reform agenda under a set of themes agreed between Department of Health and Ageing and PHC RIS, the conference organiser¹. Fourteen research themes have been identified, within the overall theme of "Primary health care research and health reform: Improving care", as follows:

- Access and equity
- Building research capacity
- Coordinated care of complex conditions
- Education and training of the workforce
- Research & evaluation methodology
- Health care systems
- Health literacy & self management
- Improved workforce conditions
- Knowledge exchange and translation
- Management of health information
- Patient-centred care
- Preventive health

¹ See <http://www.phcris.org.au/conference/2010/abstracts.php>

- Quality of care
- Response to local needs

What is evident from looking at the research priorities over the past 9 years is the degree to which they are enduring - issues of access and equity, responsiveness to patients, workforce and quality, in addition to the issues of workforce capacity in both primary care practice and primary care research.

The level to which these priorities have been targeted in competitive grants is best seen in the Streams of thematic research commissioned by the Australian Primary Health Care Research Institute. To date, APHCRI has funded work in the following areas:

- Aboriginal and Torres Strait Island Primary Health Care
- Access to Primary Health Care
- Adolescent/ Child Health
- Chronic disease management
- E-health
- Mental Health
- Multidisciplinary teams
- Primary Health Care models of and delivery of care
- Primary Health Care Performance
- Practice Nursing
- Preventive Medicine
- Rural and Remote Primary Health Care
- Self Help Organisations, and
- Workforce.

Those projects funded through the NHMRC or through the RCBI funds have been driven mainly by investigator priorities and interests, which in many cases fall within the priority areas. This will be explored further in Chapter 5.

New areas have begun to appear in the priority themes, including a focus on co-morbidity, management of chronic illness and health literacy on the one hand, and the issues of research and evaluation methodology and knowledge translation on the other.

In March 2010, the Commonwealth government released a major policy document following the final report of the *National Health and Hospitals Commission: A National Health and Hospitals Network for Australia's Future*, followed in April 2010 by *The National Health and Hospitals Network: Further Investments in Australia's Health*. (7)

This document deals with some aspects of primary care, citing particularly the issues of access and of co-ordination of care. The policy proposes a number of changes to the way Primary Health Care is funded and delivered, principally:

- The introduction of enrolment for people with chronic disease, to begin with diabetes care
- The introduction of pay for outcome for GPs, when they “keep people healthy and out of hospital”
- The establishment of Primary Care Organisations, leading and organising aspects of primary care, in collaboration with local Hospital Networks, to improve services and outcomes for their local communities.

This most recent document points to significant changes in the nature and operation of Primary Health Care, areas in which Primary Health Care Research might be expected to provide evidence that will inform decisions about these new models of care and new organizations for care.

To what extent does Primary Health Care Research provide us with the evidence required to meet the needs of the new reform agenda, and what should happen next?

PRIMARY HEALTH CARE RESEARCH STOCKTAKE

One of the major challenges in taking stock of the extent and nature of PHC research is identification of completed projects in this field. The bibliometric analysis of research funded by the NHMRC does not distinguish Primary Care or Primary Health Care from other research, nor does Primary Care Research feature in the specialty areas examined, alongside, for example, nursing and dentistry. (8) The World of Science databases on which bibliometric analysis depends have insufficient coverage of PHC, public health and health services research to make bibliometric analysis accurate and reliable.

The data collections of Primary Care Research activity are limited in their ability to collect information about details of the research. For example, while many research projects relate to the issue of access, the collections are not immediately informative about what aspects of the issue have been studied, what methods and research approaches were used, or what the outcomes and uptake of the research was. This stock-take makes a start in developing a richer understanding of what evidence exists.

The principal focus of this stock-take of Primary Health Care Research is research activities that have been funded through PHCRED and NHMRC. These include the NHMRC partnership and project grants, and the APHCRI funded research streams. Although Primary Health Care Researchers are funded from other sources as described in section 2.0, comprehensive data are not available about these projects. The exception to this is the research funded through the Pharmacy Guild, which reports funded research activity. The number of projects funded by the Guild is included in the tally of research projects.

PHC RIS holds the principal data base of Primary Health Care Research Activity conducted in Australia in its ROAR data base (Roadmap Of Australian Primary Health Care Research). This collection is researcher driven, and researchers are invited and encouraged to make available their personal research skills and interests and current or completed research, and its publication outputs. Researchers from all fields, with funding from a wide variety of sources, enter details about their research. The collection was an early initiative of PHC RIS, and now includes information about 920 research initiatives, and 2950 researchers.

The searchable data base is managed by staff at PHC RIS, who are developing a 'tagging' system to allow the data base to be searched according to specified themes or topics related to the health reform agenda, including what the research is about and who is involved in it.

The extensive ROAR data base is not necessarily comprehensive. No analysis has yet been undertaken about the extent to which the research it contains matches the priorities identified by PHCRED and others.

The authors decided that much could be gained from developing a framework and a tool that would allow Primary Health Care research to be captured and organised in alignment with the research priorities, as a measure of research relevance.

METHOD: CODING FRAMEWORK, DATA COLLECTION, CROSS CHECKING

The coding frame for the stocktake has been developed iteratively from two sources- the information about each project collated by the PHC RIS team and the 14 themes, developed in collaboration with the Department of Health and Ageing, for the PHC Research Conference 2010.

The coding frame included 8 theme categories, covering:

- Knowledge translation
- Patient Centred research
- Health services and systems
- Workforce

- Population/Benefit Groups
- Aim (descriptive research or intervention/evaluation research)
- Methods
- Researcher Profile.

Where the outputs of the research, such as publications, were known, these were collected and are available in the data base but have not been used in the analysis.

The coding frame was tested by a member of research staff at each location, Nathaniel Ward at APHCRI and Rachel Katterl at PHC RIS. Modifications to the framework were made to arrive at the current tool, approved by all the authors. We recognised that the framework developed here could be of value as an open access tool for primary care researchers, practitioners and decision makers in identifying topics of research, teams of researchers, and types of research. There is as yet no well used method of evaluating the quality of research in the PHCRED strategy areas of health services and systems, beyond the standards of publication and citation. The authors hope to develop the tool further to add to the existing PHC RIS collection capacity.

The coding framework was set up in a 'Google Docs spreadsheet'², with read and write capacity from APHCRI and PHC RIS staff. This web based tool allowed both APHCRI and PHC RIS staff to simultaneously work on the spreadsheet, for example to code the projects against the coding framework. PHC RIS staff maintained the integrity of the spreadsheet.

FINDINGS

The total data set of APHCRI and NHMRC funded primary health care research projects consists of 212 separate projects. The data base created for the stock take includes the coded data for each research project and is available through PHC RIS.

The main limitations of this stock take are firstly that the information on which it is based is that available in easily accessible locations and often in summary form. Secondly, the decision to assess research in the context of the identified priorities has obscured other aspects of research. We attempted to offset this weakness by including population benefit groups to enrich the content of the research activity and distinguish research with a particular focus on groups with disadvantage. Third, the clearly flagged intentions of the researcher limited the decision of the coders about whether a particular aspect of research should be coded. Many studies will include aspects of knowledge translation, for example, that coders may not have identified from the information available.

On the other hand, the stock take has provided a vehicle to collate and compare a substantial body of primary care research, and to create a foundation for an ongoing tool to track and assess research activity and outputs in primary care research. The tool allowed us to identify the breadth of research activity both within and between studies, illustrating the diversity of approach taken by many of the researchers working in studies of health systems and services.

Projects were coded across the eight different themed categories stated above. The first four categories relate specifically to areas of primary health care research identified as ones of special interest to the Department of Health and Aging. Under each themed category the additional codes were added to increase the level of detail, yielding a total of 62 different codes under which each piece of research could be coded.

How the research fits into the first four categories of 'Knowledge Translation'; 'Patient Centred'; 'Systems'; and 'Work Force' is outlined below. Where appropriate how the research fits with the categories of purpose and method will also be signalled. The aim here is to identify some of the 'richness' in the research projects themselves, beyond just their fit with identified research priority areas.

² <http://docs.google.com>

TYPE OF GRANT & FUNDING SOURCE

All Primary Health Care Research projects from the following sources for the period the PHCRED strategy has been operating (since 2000 for NHMRC, and since 2003 for APHCRI) were included in the analysis, as shown in Table 1. Fifty six of the NHMRC grants supported individual researchers, and 110 supported research.

Table 1: Type of grant by funding body

Funder Name	Type	N
APHCRI	Research stream grants	46
NHMRC	Career Development Awards	1
	NHMRC Career Awards	1
	NHMRC Partnership Projects	27
	NHMRC Project Grants	64
	NHMRC Scholarships	39
	NHMRC Strategic Awards	19
	Training Fellowship (Australia)	13
	Training Fellowship (Overseas)	2
Pharmacy Guild	Commissioned	36
	Investigator Initiated	32
	Investigator Initiated Grant	14
TOTAL		294

Many projects fitted more than one category, as shown in Table 2 shows the percentages of all projects coded as addressing issues in one or more of the following categories. It is apparent that many projects fit more than one category.

Table 2: Percentage of all projects (n=294) addressing main priority categories

CODING CATEGORY	% of studies coded to the category
Knowledge Translation	48
Patient Centred	39
Systems (structural/organizational/systemic)	60
Work force	22
Specific population/benefit groups:	23

Table 3 shows the percentage of the research activity funded by each funding body in each category.

Table 3: Studies addressing each coding category as a percentage of the total number of grants from each funding body

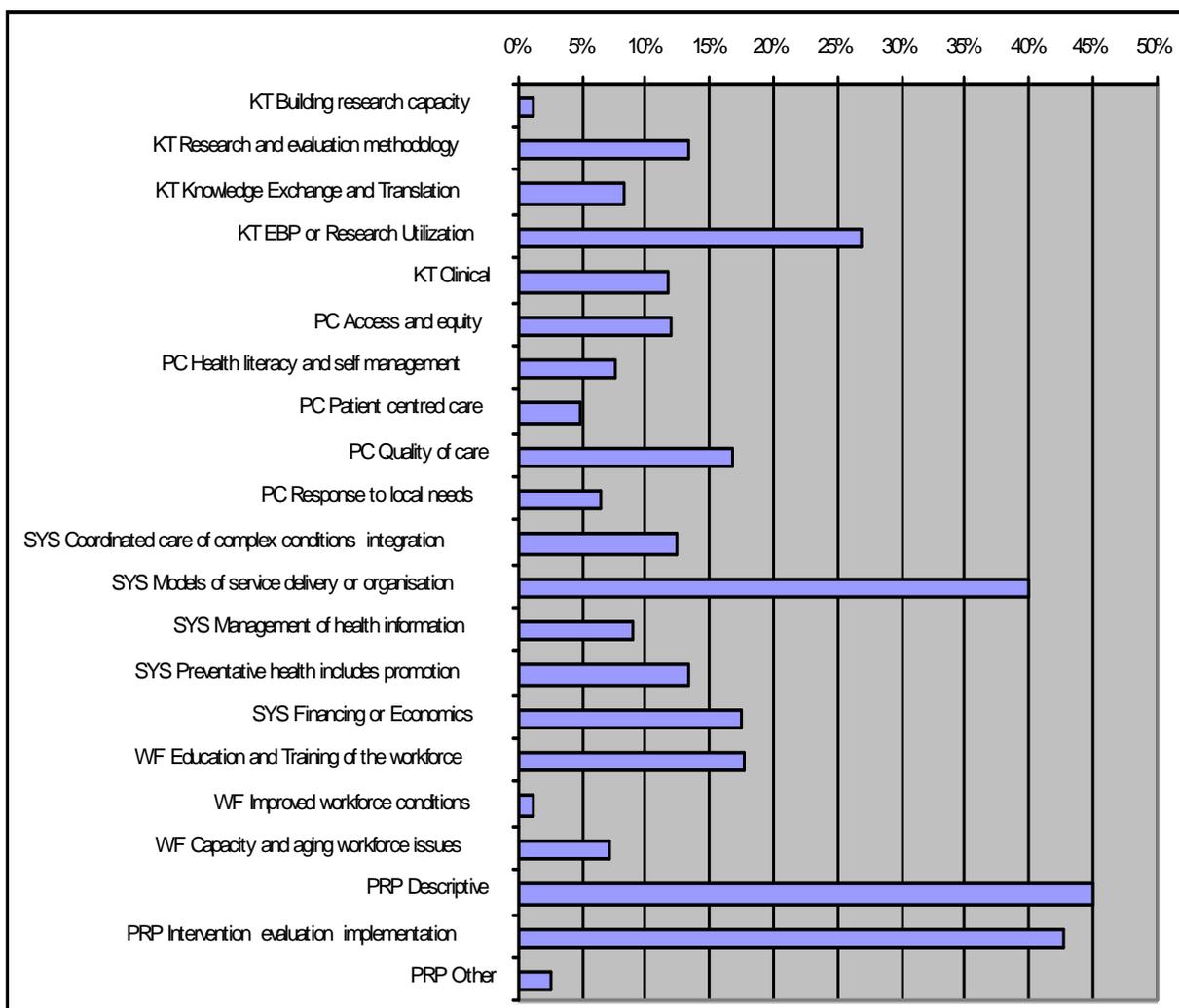
CODING CATEGORY (and sub category where appropriate)	Proportion by funding organisation			Proportion of ALL projects N=294 %
	APHCRI N=46 %	NHMRC N=166 %	Pharmacy Guild N=82 %	
Knowledge Translation	74	43	44	48
Patient Centred	46	45	24	39
Systems (structural/organizational/systemic)	91	37	87	60
Work force	24	22	21	22
Population/benefit groups (specifically targetted)	43	25	7	23
Purpose: Descriptive	85	36	41	45
Purpose: Intervention/evaluation/implementations	13	42	60	43
Method: Qualitative	30	19	30	24
Method: Quantitative	11	29	43	30
Method: Multiple/mixed	35	15	62	31

Some interesting contrasts can be drawn between the types of research funded through APHCRI and NHMRC. APHCRI-funded research has a significant body of projects clustered around the categories of knowledge translation and systems, with lower proportions of research conducted in the patient centred and work force categories. By contrast, NHMRC has an even spread of research across all four of the major categories coded for in the stock take. There are differences too in the purpose of research funded by each body. NHMRC funds more research that is of the intervention/evaluation /implementation type; reflecting perhaps that more of the projects funded here have clinical components to them. By contrast, much of the research conducted through APHCRI is descriptive in nature, which is reflected in the fact that the research projects tend to be more qualitative or mixed method than those funded through NHMRC which have a stronger emphasis on quantitative methods. A final point of contrast between each funding body that emerges from the stocktake is that APHCRI tends to fund more pieces of research that have specifically targeted population/benefit groups than NHMRC. The percentages for NHMRC research in this regard are consistent with the even spread of research it funds conducted across all the categories coded for in the stocktake.

The research projects funded by the Pharmacy Guild are included in this section to demonstrate the scale of their presence in the field.

Figure 1 illustrates the final column of Table 3.

Figure 1: Percentage of all studies addressing each coding category (n=294)



There was a fairly even spread across the projects in terms of research being coded as having either a descriptive or having intervention/evaluation /implementation purpose, although marginally more descriptive projects were registered. The knowledge translation category had its biggest groupings of projects around aspects that related to 'EBP' or research utilization, this being the second largest sub category of research across all the projects coded in the stocktake. The smallest sub category of research in knowledge translation was that of building research capacity. Along with research on improved workforce conditions in the larger 'workforce' category, building research capacity had the smallest percentage of research across all the projects coded. Within the 'patient centred' category most projects fell into research around 'quality of care', and the least amount of research within patient centred category was around patient centred care itself. Many of the projects had systems components to them. Of all of the subcategories within systems, the largest was that of models of service delivery; this was by far the largest sub category of research across the whole stocktake. Within systems, though, the least amount of research coded was around management of health information. Of the four main categories, fewest studies were coded as having a workforce component. Of these, most centred on education and training, with the fewest centred on improved workforce conditions.

CATEGORY BY CATEGORY ANALYSIS

KNOWLEDGE TRANSLATION

The category of Knowledge Translation contained five elements: 'Building Research Capacity'; 'Research and 'Evaluation Methodology'; Knowledge Translation and Exchange'; Evidence Based Practice/Research Utilization'; and 'Clinical'. Each of these is dealt with in turn.

BUILDING RESEARCH CAPACITY

Most research funded through PHCRED outside the RCBI contains elements of research capacity building, but this may not be identified by the investigators as a principal element of the work.

One example of a capacity building focus is Gunn's Extending Reorder – Tasmanian and Cross Cultural Component led by the University of Melbourne. This project has an intervention/evaluation/implementation focus, as well being qualitative and employing an 'action research' methodology.

RESEARCH & EVALUATION METHODOLOGY

Twenty seven projects were coded under this heading. Of the 20 APHCRI funded projects 6 were systematic reviews, all of which also coded as having a systems focus.

These included:

- Zwar's *A Systematic Review of Chronic Disease Management* (UNSW 2006)
- Humphrey and Wakerman's *A Systematic Review of Primary Healthcare Delivery Models in Rural and Remote Australia* (centre for Remote Health 2006)
- Moulding's *Optimising the Primary Mental Healthcare Workforce* (University of Melbourne 2007).

The remainder of the APHCRI funded projects were multi-method research, and included:

- Jackson's *Integration, Co-ordination and Multidisciplinary Care in Australia: Growth via Optimal Governance Arrangements* (University of Queensland 2006)
- Harris' *Implementation of a SNAP Intervention in Two Divisions of General practice: A Feasibility Study* (UNSW 2005).

Five of 7 NHMRC funded projects were intervention /evaluation /implementation research projects, and included:

- Leeder and Glasgow's *Serious and Continuing Illness Policy and Practice Study (SCIPPS)*, conducted through the Menzies Centre for Health Policy. Set to finish in 2011 the project employs a multi method approach that uses a full spectrum of both qualitative and quantitative research methodologies and is intended to develop better approaches to chronic illness management. The project also has a descriptive component.

The other 4 were:

- Dixon's *Improving and Implementing Best practice in the Detection, Assessment and management of Childhood Obesity in General practice* (Monash University);
- Nelson's *Ankle Brachial Index determination by Oscillometric Method in General Practice (ABIDING)* (Menzies research Institute);
- Baillie's *National Research Partnership to Improve Primary healthcare Performance and Outcomes for Indigenous Peoples* (Menzies School of Health Research); and
- Venn's *Improving Health and Wellbeing in the Tasmanian State Workforce* (Menzies research institute).

KNOWLEDGE TRANSLATION & EXCHANGE

Eighteen projects were coded to this category. Of the 5 APHCRI funded projects 2 are listed as single method research. These were:

- Hearn's *Preventing Overweight and Obesity in Young Children: Synthesising the Evidence for management and Policy Making* (APHCRI Linkage and Exchange—Edith Cowan University)
- McDonald's *A Narrative Synthesis of Models of Integrated Care Centres/Polyclinics* (UNSW).

Of the remaining APHCRI funded projects listed as 'multiple method', Phillips' The Australian General Practice Nurses Study (AGPN; ANU) is of particular interest. This study employed a range of innovative methodologies including ethnographic fieldwork. Within the NHMRC funded projects in this category, 5 are funded through partnership project grants. These projects also have an intervention/evaluation/implementation focus. Included here are three projects which combine intervention and descriptive research:

- Harris' *Implementing Guidelines to Routinely Prevent Chronic Disease in General Practice* (UNSW)
- Haines' *Determinants of Effective Clinical Networks* (University of Sydney)
- Craig Veitch's *Integrating Evidence into Policy and Sustainable Service Delivery: 'The Wobbly Hub and Spokes' Model* (University of Sydney).

There are a number of these descriptive projects, but one worth drawing attention to in particular is the project by Laws, funded under an NHMRC scholarship, *Integrating Lifestyle Risk Factor Management into Community Health Care Service Provision: Multiple Case studies* (UNSW).

EVIDENCE-BASED PRACTICE/RESEARCH UTILISATION

Forty eight projects coded under this category: 15 APHCRI funded and 32 NHMRC. The Harris, Veitch and Laws projects mentioned above fell across this domain for the NHMRC, but there are also 8 single method research projects funded through the NHMRC. These spread across both the qualitative and quantitative spectrum of research activity.

Examples of quantitative single method research from this category are

- Reddel's *Improving Asthma Control: General Practice Strategies to Optimise Medication Adherence* (University of Sydney)
- Gattellari's *DESPATCH: Delivering Stroke prevention for Arterial Fibrillation: Assisting Evidence-Based Choice in Primary Care* (UNSW)
- Day's *Evidence based Targeting for Preventing Falls among Community Dwelling Older People in Victoria* (Monash University).

Qualitative studies include

- Naccarella's *Siren project: Systems Innovation and Reviews of Evidence in Primary Health care: Narrative Review of Innovative Models for Comprehensive Primary Health Care Delivery* (University of Melbourne)
- Duncan's *Medical Maturity: An Assessment of Clinicians' Methods for Judging Competence in Young people* (Murdoch Children's Research Institute).

Several APHCRI funded projects under this heading focus on specific groups. Examples of this are

- Sanci's *A Trial of New Ways to Encourage Adolescent Australians to Avoid Risk taking Behaviour* (University of Melbourne) and Fuller's *Mapping Aboriginal Health Partnerships for Evidence Policy Transfer* (University of Sydney) and

- The Co-operative Research Centre for Aboriginal Health's *Improving the Identification of Aboriginal and Torres Strait Islander People in General Practice*.

CLINICAL

Twenty seven projects were coded here, all of which were funded through the NHMRC. Much of this research is not limited to primary health care. Examples of clinical projects are:

- Anuska Patel's *Randomised trial of a Combined pill* (University of Sydney);
- Gregory Gass' *Exercise: An Examination of Dose Response relationships for Women Aged 65-74 Years* (Bond University); and
- Douglas Pritchard's *A Randomised Controlled Trial of Evidence Based Medicine in the Management of Hypertension* (University of Western Australia).

There are also a number of descriptive studies coded here. These include

- Lisa Amir's *A Longitudinal Study to Determine aetiology of the Condition Known as 'Breast Thrush' in Lactating Women* (La Trobe University);
- Christopher Maher's *Are Back Guidelines Wrong?* (University of Sydney); and
- Justin Beilby's *Spirometry and Asthma Management in Children and Adults in General practice* (University of Adelaide).

RESEARCH INTO PATIENT CENTRED CARE

Under the category of research addressing patient centred approaches five fields; 'Access and Equity'; 'Health Literacy and Self Management'; Patient Centred Care'; 'Quality of Care'; and 'Response to Local Needs' were identified.

Access & Equity

30 projects addressed issues of access and equity, 9 APHCRI funded and 21 funded through NHMRC.

- Of the APHCRI Funded projects 6 were systematic reviews. Examples of these are McDonald's Systematic Review of Comprehensive Primary Health Care Models and Pashen's The Expanding Role of Generalists: A Systematic Review.
- Two projects had an Indigenous component, while three addressed rural and remote health. The 9 APHCRI projects were descriptive research projects.
- Of the NHMRC funded projects, 4 of were multiple method research, 2 of which had qualitative components.
- The majority of the NHMRC funded research projects were descriptive, while 7 could be clearly identified as having intervention/evaluation/implementation as their purpose.
- The research was directed to a range of population/benefit groups, including 5 studies addressing aspects of Indigenous health, 2 about rural health and 1 each about child health and immigrant health.

Health Literacy And Self Management

Fourteen projects addressed health literacy and self-management.

Of the 4 projects funded by APHCRI:

- three are systematic reviews with a descriptive purpose
- where benefit/population groups could be identified 1 project coded as Indigenous and another related to adult health literacy.

Eight of the NHMRC projects were identified as either intervention/evaluation/implementation research in terms of their purpose, with one coded as descriptive.

- Three of these projects sat squarely in the multiple method category, with one of these also having a qualitative component.
- Of the population/benefit groups to which the research was directed, 1 study related to Indigenous health, 1 to child health, 4 to adult, 4 to older people and one having a focus on migrants.

Patient Centred Care

Fourteen projects were coded under this category.

- Seven had an intervention/evaluation/implantation purpose, while the remaining 7 were descriptive.
- One used single method research alone and there were 4 quantitative and 4 qualitative research projects. Three projects had both qualitative and quantitative components.
- In terms of the benefit groups that could be identified, 2 had Indigenous components, 1 a non Indigenous component, and 1 had an urban component. One coded as having a child focus as part of its purview and 1 other had teen in addition. Two projects took in the adult age range, whilst 3 also had an older people focus, and 1 with a migrant focus as one of the groups addressed.

Quality Of Care

Twenty eight projects had quality of care as part of their focus.

- 22 of these were descriptive research, with 3 being described as having intervention/evaluation/implementation intention.
- Nine projects used multiple research methods, with 5 using single method research.
- Seven projects used a mix of quantitative and qualitative methods.
- In terms of population benefit groups, 3 coded as having an Indigenous component, 1 as non Indigenous, 1 with a rural/remote component, 2 as urban, 2 as adult, 1 as aged, and 1 project had a migrant component.

Response To Local Needs

Fifteen projects addressed local needs.

- Twelve projects were descriptive projects and 3 were interventions, evaluation/implementation projects. Two projects were intended to be both descriptive and intervention.
- Six pieces of research used multiple method research, with 5 using single method research. Four projects coded as being quantitative research with 8 coding as qualitative.
- Seven projects addressed Indigenous health. Eight addressed rural/remote health issues and 2 focused on urban health. One coded as infant, 1 as child, 2 as adult, 2 as aged, 1 as migrant.

SYSTEMS

Under the category systems were the codes: 'coordinated care of complex conditions'; 'models of service delivery' 'organisation/multidisciplinary practice'; 'management of health information' (including e-health); 'preventative health (including promotion)'; and 'financing/ economics'.

Coordination of care of complex conditions/integration of care

A total of 29 projects appeared under this code:

- Seventeen of these projects coded as having a descriptive purpose, with 13 coding as having a purpose of intervention/evaluation/Implementation—2 of these cross coded as having both as their purpose.
- Thirteen of the projects coded as being multiple method research, with 6 coding as being single method research.
- Eight of the projects coded as being quantitative, with 9 coding as being qualitative. Four projects coded as having both quantitative and qualitative components.
- For benefit groups 4 coded as having an Indigenous component, 1 non-Indigenous. Two coded as having a rural/remote component, and 2 as having an urban component. Two projects coded as having a child component, 1 as having an adult component, 2 an aged component, and 1 as having a migrant component.

Models Of Service Delivery & Approaches To Care

A total of 63 projects could be coded under this category, making it one of the biggest areas of research focus.

- Six projects coded as having a descriptive purpose and 15 coded as having an intervention/evaluation/implementation purpose—6 projects coded as having both these purposes.
- Nineteen projects coded as being multiple method with 21 projects coding as being single method research.
- Nine projects coded as being quantitative research and 18 coded as being qualitative research, with 6 projects coding as having both quantitative and qualitative aspects.
- In terms of the benefit groups: 12 projects coded as Indigenous and 1 coded as having a non-Indigenous component. Ten projects coded as rural/remote and 6 projects coded as urban. One project coded under infant, 2 under child, 2 under teen, 3 under adult, 4 under aged and 1 had a migrant component.

Management of health information including health records and e-health

A total of 14 projects could be coded under this category.

- Seven projects coded as descriptive for their purpose with 4 projects coded under intervention/evaluation/implementation—1 project coded as being both descriptive and intervention/evaluation/implementation.
- Four projects coded as multiple method research with 3 coding as single method research.
- Two projects coded as being quantitative, with 3 being identified as qualitative and 1 project being picked up as having both quantitative and qualitative components.
- For benefit population groups 2 coded as Indigenous and 1 as non Indigenous. Two coded as rural/remote, while 1 coded as urban. One project coded as having a teen component, 1 as aged, and 1 as having a migrant component to the research.

Preventive health & health promotion

Thirty two projects addressed preventive health and/or health promotion.

- Twelve projects were listed as descriptive in purpose with 18 having their purpose as intervention/evaluation/implementation, 2 coded across both these purposes.
- Nine projects used multiple methods, with 5 as single method research.
- Ten projects had a quantitative focus and 4 a qualitative focus. The 4 qualitative projects also coded as having quantitative elements.
- The benefit groups that could be identified for this category were 4 Indigenous, 3 rural remote and 1 urban. One project addressed infant health, 4 addressed child health, 2 adolescent health, 1 adult health, and 5 the health of older people.

Financing/Economics

Twenty three projects included issues of financing or health economics.

- Eighteen of these projects were descriptive, and 2 focused on intervention/evaluation/implementation—1 project was coding as having both these as their purpose.
- Eight of the projects used multiple methods with 12 projects coding as single method.
- Four projects had a quantitative focus and 6 a qualitative focus—2 coded as having both qualitative and quantitative elements.
- The benefit groups coded for this category included 1 Indigenous project, 4 rural and 3 urban studies. Two projects addressed adolescent health, 2 focused on adults, 2 on older people, and 1 on prevention and promotion in migrant communities.

WORKFORCE

The category of workforce broke down into 3 different coding categories: 'education and training'; 'improved work force conditions'; and 'capacity and aging workforce issues':

- Education and training. Thirty seven studies addressed this category: Seventeen projects were coded as descriptive, with 18 registering as intervention/evaluation/implementation—3 projects coded as having both of these for purposes. Eight pieces of research were multiple methods, with 9 coded as single method research. Nine studies were quantitative, 8 qualitative, with 4 projects containing both qualitative and quantitative elements. For benefit and population groups 4 came out as indigenous, 1 non Indigenous, 4 rural/remote, and 1 urban. Two coded under child, 1 under teen, 1 adult, 1 aged, and 1 under migrant.
- Improved work force conditions. Only 3 projects coded under this category. All were coded as being descriptive for purpose, and all 3 were qualitative studies with only 1 project cross coded as having quantitative elements. Of these three projects only 1 could be clearly coded as multiple method research. Two of the projects had rural/remote benefit/population groups, with 2 also registering under urban.
- Capacity and ageing work force issues. A total of 17 projects coded under this category: Twelve of these were descriptive and 5 intervention/evaluation/implementation focused, with 2 projects coding under both. Four projects were clearly identified as multiple method research with 7 adopting a single method. Four studies were quantitative, 6 qualitative and 4 projects registering as having both qualitative and quantitative elements. For population and benefit groups 2 projects had an Indigenous component, 1 non Indigenous, 6 rural/remote and 1 urban. One project had an adult component, 1 an aged component, and 1 a migrant focus as part of its scope.

RESEARCH TEAM PROFILE

The diversity of the research team was examined in all projects (Table 4).

Table 4: Research team profile

	Proportion by funding organisation			Proportion of AALL projects N=294 %
	APHCRI N=46 %	NHMRC N=166 %	Pharm Guild N=82 %	
Team	98	55	74	67
Solo	2	9	0	5
Professional_group	46	11	0	13
Academic	43	65	39	54
Clinical_practice	43	35	11	30
Social_science	9	33	1	20
Health_economic	13	8	2	7
Advisory_board	2	7	27	12
Medical	9	54	1	32
Nursing	7	4	1	4
Allied_health	0	16	0	9
Consumer	4	2	2	2
Users_or_policy_makers	0	5	1	3
Collaborative	0	7	0	4

The disciplinary backgrounds of PHC researchers and their teams were examined to better understand the preponderance of different tertiary fields in this group of researchers. We also examined the degree of consumer and user engagement in the research process.

It is not surprising that a majority of PHC research is undertaken in teams. These team based research projects often focus on multidisciplinary and evidence based practice in PHC settings. A small minority of work is undertaken by individual researchers, though these projects often form part of the researcher’s postgraduate studies (such as PhD scholarships). The researchers usually are located within academic institutions, though a small amount of research is undertaken by professional bodies and the like.

An examination of the tertiary backgrounds of the researchers uncovered similar results to those obtained by Katterl and Kalucy (2009): similar proportions of medical, clinical (excluding medical) and social science backgrounds were represented. Closer observation of these numbers indicated that about 8% of research projects included a health economist within the team, and 4% of included those from nursing backgrounds. Interestingly, there was a concentration of medical practitioners obtaining the 'big ticket' grants, such as NHMRC grants, whereas clinical and social scientists less often undertook that chief investigator role.

The intended 'target users' of research were infrequently engaged in the research. Approximately 12% of projects utilised an advisory board to guide the research process. A small handful of projects engaged consumers, users or policy makers, or had formalised collaborative processes built into the research process (each form of engagement accounting for approximately 3% of projects). Those projects that did engage users and consumers tended to focus on evidence based practice and research translation. Very few of the projects focused on aspects pertaining to patient centred care.

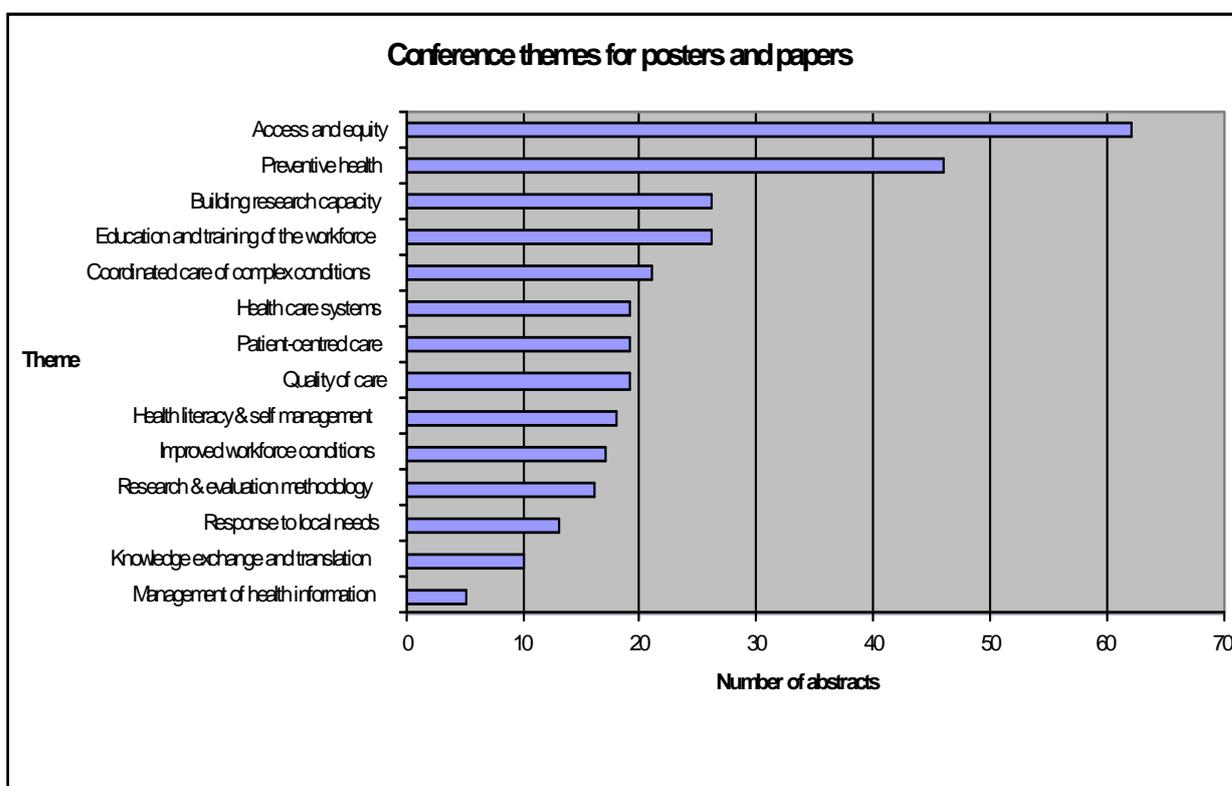
While the APHCRI and NHMRC funded research has been analysed using the PHC conference themes, the pattern of research focus is different for these projects when compared to the wider research interest illustrated by the list of conference abstracts (see figure 2).

Authors submitting abstracts to the PHC conference were asked to select the themes which most closely matched their projects. Figure 2 following shows the dominance of Access and Equity, followed by preventive health, with a relatively even spread across other themes.

As we can see from a comparison between figure 1 and figure 2, most of the research endeavour in both APHCRI and NHMRC funded research touches on knowledge translation, in particular, on evidence based practice and research utilization, where the PHC conference abstracts overwhelmingly address issues of access and equity, and of preventive health.

This difference suggests that there is a significant need to translate the wealth of smaller scale research carried out by multiple researchers and clinicians in primary health care into the systems and services-relevant evidence that is more the purview of the APHCRI and NHMRC funded research.

Figure 2 number of abstracts submitted for each theme (as selected by abstract author) for 2010 PHC Research Conference



DISCUSSION OF FINDINGS

The translation of research into evidence based practice is a key focus of the PHCRED funded research. Studies that specifically address the translation and implementation of research in health services and systems are limited but translation of research in one form or another now appears in about 75% of research funded by APHCRI. When this is seen alongside a rate of 90% of projects addressing some aspect of services or systems of health care, it is clear that the message about the need to ensure dissemination of evidence, and to link it to potential practical application has been heeded by both funders and researchers, although to a lesser extent for research funded through NHMRC. However, even within a strong showing in APHCRI research, knowledge translation and exchange is a much less frequently addressed component than, for example, studies looking at evidence based practice. Research and evaluation methodology remains, worryingly, a minor area of focus.

It is notable too, that little of the research funded through APCHRI and NHMRC is directed to patient centred care, addressing local needs, or issues of health literacy and self management as specific areas of focus and nor are they major areas identified in the PHC Conference abstracts. However, this may be because the issues are picked up more under the "access" heading for the PHC Conference and may well be being picked up more under the organisational and systems categories of the stock-take.

The key issue of access, a research priority for the whole of the period in which PHCRED has been active and a named priority area for Primary Health Care under the recent reforms, has been addressed mainly by descriptive studies or systematic review and narrative synthesis. Few studies were directed to reducing inequity and meeting the needs of particular population groups. This stock-take found few research studies funded by NHMRC and APHCRI on issues of access within mainstream primary care or within the communities that will be the catchment groups for the new Primary Care Organisations or the Local Hospital Networks. In contrast, the majority of abstracts submitted for the GP PHC conference address access and equity. This suggests both that little large scale research on access and equity has been conducted in the Australian setting, and the need to glean useful, widely applicable knowledge from the many smaller projects that are being conducted around the country for translation of research evidence.

The stocktake points to the negligible amount that has been done in the area of health information management, including the issue of health records, and e-health, a crucial component of the reformed health system, and of necessity requiring a much better understanding of governance, privacy and access concerns within and between the stakeholders.

While the vast majority of studies undertaken in this period by APHCRI funded researchers were descriptive, overall there were similar numbers of descriptive and intervention/ evaluation/ implementation projects. It appears from the data that this 'correction' is caused mainly by NHMRC studies of clinical research. We know that almost all APHCRI studies were shorter term projects, and many were systematic reviews and narrative synthesis. The findings point out the tiny number of intervention/ implementation studies carried out from a services or systems perspective within the primary health care arena. The stocktake shows that much research carried out in primary health care uses mixed methods, and the data base of the analysis can provide a more detailed breakdown of the particular methods used.

The stocktake shows there is research carried out in each of the research priority areas outlined in the Draft National Primary Health Care Strategy:

- More research on preventative health
- Patient centred care
- Evaluation of self management and building health literacy
- Health economics, including comparative assessments of effectiveness across different treatments, assessments and interventions (meta-analyses?)

- Research on multi-morbidity
- Evaluation research
- Improving skills in research by other non-GP clinicians (e.g. nurses)
- E-health technologies for sharing, extracting, and creating data linkage across different settings.

However, the areas in which there is a relatively small amount of research, and so possibly the areas which would reward further research, are patient centred care, and evaluation of self management and health literacy on the one hand; but with a very serious need to examine issues relating to new ways of delivering health care, and including issues linked to economic assessment of effectiveness and value and the use of e-technologies.

In terms of the preparedness of primary care to meet the challenges of health reform, the stocktake shows few studies that explore implementation and evaluation of system change, and while models of care and service organisation have been explored particularly under the APHCRI streams, much of this research is secondary. The descriptive evidence that has been obtained through these valuable studies has been applied in setting new policy and practice direction, and it is now important that primary research is undertaken, evidence made available, and implementation and evaluation studies undertaken to achieve the outcomes we need.

STRENGTHS & WEAKNESSES OF PRIMARY HEALTH CARE RESEARCH IN AUSTRALIA

Beasley, Starfield and colleagues have identified the areas of primary health care in which they consider primary health care research to be necessary.⁽⁹⁾ They cite:

- 1) Basic research- studies that develop the research tools necessary for primary care research
- 2) Clinical research- including epidemiology and clinical intervention studies
- 3) Health services research- incorporating research on the process of health care provision, models of care, inter-disciplinary and inter-professional practice and on issues of quality and best practice
- 4) Health systems research- covering health and its relationships within the social, economic, political and policy context, inequities in health care, and decisions about the allocation and distribution of health care funding and financing
- 5) Education and Capacity Building- addressing research in medical education, continuous professional development, skills and research career building.

Research in basic and clinical research will always be necessary to reflect the changing opportunities for improved practice through technology, innovation and changed population health patterns.

PHCRED has focussed on the latter three areas of research identified by Beasley and Starfield: health services research, health systems research and education and capacity building.

In the analysis of the literature on research in primary health care, and of the Primary Health Care Research undertaken as part of the PHCRED strategy a number of features of the state of Australian Primary Health Care Research emerge.

The first and most obvious strength of the Primary Care Research environment in Australia is that it is supported by an infrastructure that both sets the parameters of this area of research and provides funding for researchers at a number of levels of involvement and research maturity- the PHCRED strategy. This alone creates a protected space for the development of Primary Health Care Research, allowing researchers to enter and progress within the field and to compete for grants with peers in Primary Health Care Research.

Second, the community of researchers created through the strategy is diverse, multi-professional and multi-skilled. Kalucy (14) reports on a review of authorship of papers in

Primary Health Care, about one third of lead authors are general practitioners, another 20% are nurses or allied health professionals and the next largest group is a mixture of social scientists, including health economists and epidemiologists. The pattern is similar for the research abstracts submitted for the 2010 Primary Health Care Research Conference. In a review of the Researcher Development Program, McIntyre and colleagues found that two thirds of the research fellows were clinical practitioners, mostly general practitioners and nurses. (15) However in the research funded through PHCRED there is less variation, and future strategy should address how successful applications from disciplines other than medicine can be achieved. APHCRI has begun to address this in the rationale for the most recent streams, and particularly through broadening the professional base of members of the Research Advisory Board to include more allied health and nursing professionals.

Third, the implementation of the strategy has fostered substantial collaboration within the Primary Health Care research community. We believe that this is a result of two features of the strategy. First PHC RIS provides a forum for an extensive collection of researcher profiles along with details of their research activity, enables researchers and decision makers to identify people who may be working in the same, or in complementary areas, and offers the potential for many collaborations. Second, APHCRI fosters collaboration directly:

- through seminars held throughout the period of each research project for the virtual community of researchers created by each of the stream areas;
- through encouraging research collaborations across institutional and state boundaries, such as the research undertaken by Jon Humphreys in Ballarat and John Wakerman in Alice Springs, or the collaboration between UNSW and APHCRI in a 'rapid response' on the model being considered for GP Superclinics;
- through promoting relationships between researchers and policy and decision makers through the "Conversations with APHCRI" series and the presentations of research findings to policy makers and through the use of the 1: 3: 25 format to make findings available and accessible for use in policy decisions;
- through the Travelling Fellowships where Australian researchers spend time with an overseas research organization; and
- through the International Visiting Fellowships which enable Australian researchers to collaborate with overseas researchers 'on the ground'.

In addition to these elements, the Practice Based Research networks which have developed as part of the RCBI have provided opportunities for collaboration between academic and clinical researchers, encouraging the development of research awareness and skills development for clinicians as well as providing an immediate feasibility and relevance test to the research itself. Mentoring of clinical researchers is able to be provided by the senior researchers to enable stronger capacity building within the sector. Particular instances of the impact of research based on the Networks have been published on www.phcris.org.au/phcred/snapshot/2008/index.php. Two of these, Clare Heal's work titled "Can I get my stitches wet" and Nick Zwar and Justin Beilby's work titled "Delivering better asthma care" provide good examples of the power of such networks to change the accepted wisdom about aspects of care and develop care approaches that are ready tested to have better outcomes. Dr Heal's work made it to the front cover of the BMJ as the featured article.

Translation of evidence into policy and into practice has become, over the period of the PHCRED strategy, increasingly important. While investigator driven research remains at the heart of the research endeavour, the PHCRED strategy has fostered the consideration of policy and practice relevant research particularly through the requirement that research funded through the APHCRI streams focus on how the knowledge obtained is translated into meaningful policy and practice outcomes. The current state of play in knowledge translation in Primary Health Care research is addressed in more detail below.

Active dissemination of research findings, tailored and targeted for an identified audience, is necessary but not sufficient for primary health care research to inform policy and practice. From the researcher perspective, the major forms of dissemination are publishing in peer reviewed

journals, preparing reports, presenting results at conferences and workshops, communicating through personal networks, and contributing to policy submissions such as to recent consultations about health system reform. Publishing results in peer reviewed journals is an essential first step if research findings are to contribute to the body of evidence, though publication by itself does not ensure uptake of the findings. A recent study of PHC research impact (Kalucy et al 2009a) (11) found research leaders assumed responsibility for raising awareness of the research process and findings through a range of dissemination methods, and put substantial energy and effort into dissemination.

The study also showed that the number of dissemination outputs bore little relationship to the impacts of research which were outside the influence of the researchers, such as use by decision-makers. Making information available to decision makers is a good first step but does not mean that it will be used. The findings need to be relevant, timely and accessible to decision makers with skill and capacity, decision makers need to interact with credible researchers, researchers need to be part of networks of influence, and systems at all levels need to support the use of evidence and knowledge – in other words, all the components of knowledge translation and exchange.

STRENGTHS IN THE CURRENT SYSTEM FOR DISSEMINATION & UPTAKE

PHC research in Australia is currently strongly positioned to contribute to policy and practice.

- The Australian Government has made strong commitments to evidence-informed policy in health, reinforced by the consultative processes used in health reform initiatives so far.
- Primary health care research made a considerable contribution to the early stages of the reform processes through people on working groups, submissions, and references to PHC research in discussion documents and final reports (Kalucy and Jackson-Bowers 2009b) (10).
- APHCRI has played a key role in facilitating the uptake of research into health care policy and practice. The Institute has evolved the Linkage and Exchange model developed by Dr Jonathan Lomas of the Canadian Health Services Research Foundation. Policy advisors, researchers, providers of primary health care services and consumers are key stakeholder groups for APHCRI, who seek to encourage them to increase the probability of their research outcomes being of practical use in both policy development and clinical practice. The systematic reviews funded through Australian Primary Health Care Research Institute (APHCRI) in recent years on topics of policy relevance, through these linkage and exchange processes, provided substantial sources of evidence for the reform initiatives.
- The Department of Health and Ageing is strongly supportive of knowledge translation initiatives, as evident from the refunding of APHCRI and PHC RIS, the Department's use of these organisations to provide rapid responses to policy requests and its willingness to engage in knowledge brokering events such as round table discussions, research conversations, and master classes with international visitors.
- Researchers in Australia are increasingly aware that uptake is more likely if potential users perceive research is relevant to them, and are involved throughout the research process. Researchers are aware of the need for such collaborations, helped by the varied nature of the research workforce. More than half come from general practice, nursing and allied health clinical backgrounds, as well as social science and other research disciplines (Kalucy et al 2009c) (11). The Annual Research Conference provides opportunity for primary health care researchers to present completed work as well as maintain and develop partnerships and collaborations (Winter et al 2008) (12).
- PHC RIS eBulletin promotes awareness of relevant research outputs by including them with electronic links in the weekly email to more than 2000 subscribers to this service

from research, policy and practice organisations. APHCRI values this service to promote publication of outputs from APHCRI research funding streams among others. Other PHC RIS activities such as Rapid Responses and roundtable discussions and infrastructure such as ROAR supplement the information available about primary health care research and researchers.

WEAKNESSES IN THE CURRENT SYSTEM FOR DISSEMINATION & UPTAKE

- Research workforce uncertainty and turnover, with many short term contract positions and few tenured positions, limits publication, dissemination, and the use of personal networks to aid uptake of research findings.
- Senior PHC researchers face competing demands from teaching and administration in the current highly competitive university environment.
- Academic incentives focus on publication in high impact journals or those listed as A or A* through the Australian Research Council, and few if any incentives exist for researchers to conduct rigorous research that is also relevant to practice or policy, and requires time consuming and therefore costly engagement with those sectors. As a result, impact and uptake are not major considerations for most researchers when developing projects.
- Clinicians conducting research in primary health care settings are motivated to make a difference to practice, but without the support of an academic unit are unlikely to publish for more widespread impact (Beacham et al 2003) (13).
- Use of the internet has benefited dissemination and uptake as 'grey' literature is now much more accessible, but its content is more ephemeral than expected. An example is the removal from the Department of Health and Ageing website of published national reports on the Coordinated Care Trials from 2000 which were then inaccessible to systematic reviewers of closely related matters. A more permanent accessible repository is essential to keep important evidence in the public domain.

In the next vital phase of implementing major reforms in primary health care, balanced dissemination of formal evidence with the varied perspectives from stakeholders will be essential for success and sustainability.

It is important to say that these are not weaknesses that exist only in the Australian context- health systems in many countries are grappling with similar issues, and much can be learnt through collaborative problem solving.

The challenges facing us are inherent to the nature of primary health care- a complex service environment with multiple professional users in private and public practice in a non-hierarchical relationship with each other. The context in which primary care operates is socially as well as professionally complex, leading to methodological challenges, particularly in the health services and health systems areas in implementation and evaluation research.

In addition, research funding rarely includes capacity to support research partnerships, a block to many providers of care who see research as taking away rather than creating resources, and who are then loath to allocate time away from what is often seen as the 'real job'. While many organizations pay lip service to the need to innovate and to develop solutions, this rarely includes support for partnerships between people with research skills and people with clinical and delivery skills, or for the involvement of service users. Experiments in interventions are rarely seen as possible and are often regarded as too risky or unnecessary. Initiatives commence which are founded in good clinical evidence but lack evidence about implementation and are rarely subject to a sound formative evaluation which could result in improvements to program delivery. The involvement of clinicians in research in Primary Care is often hostage to the business imperatives of their practice and to the demands placed by high clinical loads.

While the Primary Health Care Research workforce is diverse, it is still small. For many people, involvement is limited to the research they do in a higher degree, and for many, this does not lead to careers as researchers.

CONCLUSION

For the next phase of the Primary Health Care Research, Evaluation and Development Strategy decisions will be needed on the degree to which research funded through the strategy should be directed to the gaps in the existing identified research priorities and to the need for evidence to inform decision making in this period of fundamental system and service reform.

The most pressing need for Primary Health Care research will be in areas that enable primary health care itself to function effectively, but perhaps more importantly, provide evidence on how to implement the upcoming health system reforms and achieve the best outcomes.

While Primary Health Care research in Australia has grown stronger throughout the period of the PHCRED strategy, our knowledge of achievements and the areas in which evidence will be needed to support decision making in the health system over the next 10 years suggests a number of priorities for the next phase.

- More emphasis on longer term research that allows progress beyond description to testing different interventions and innovations in health services and health systems in the varying Australian contexts. Such research should be collaborative both within Australia and with other countries; should be developmental and capacity building within the Australian context. Such projects should allow experimentation and comparisons, and follow research from design, through to translation, implementation and evaluation.
- Research is needed that involves all the players and sectors operating in primary health care. This will mean involving professions other than general practice, such as nursing and allied health staff; there is a particular need in both services and systems research to understand how government, private and non-government services can operate together in a complex environment.
- No research in the current round examines the interaction between public and private health services provision such as between private allied health services and publicly funded services; or even between different sectors of public provision, such as mainstream and Indigenous primary care services.
- Consumers will increasingly become part of the research process- from design to evaluation. Methods of consumer involvement as well as evaluation of the impact of consumer involvement are needed in health service and health systems research.
- Implementation research is needed to understand how services and systems in an Australian context translate evidence into action- which itself requires interaction and collaboration between practitioners, researchers, policy makers and preferably consumers- research funding needs to recognise the importance of such collaboration.

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