



**AUSTRALIAN PRIMARY HEALTH CARE
RESEARCH INSTITUTE**

**UNIVERSITY OF NEW SOUTH WALES
UNIVERSITY OF WESTERN SYDNEY
UDRH, UNIVERSITY OF NEWCASTLE
UNIVERSITY OF MANCHESTER**

**OPTIMISING SKILL-MIX IN THE PRIMARY
HEALTH CARE WORKFORCE FOR THE CARE OF
OLDER AUSTRALIANS: A SYSTEMATIC REVIEW**

**Professor Nicholas Zwar
Dr Sarah Dennis
Professor Rhonda Griffiths
Dr David Perkins
Dr Jenny May
Iqbal Hasan
Professor Bonnie Sibbald
Dr Gideon Caplan
Professor Mark Harris**

November 2007

ACKNOWLEDGMENTS

The research reported in this paper is a project of the Australian Primary Health Care Research Institute, which is supported by a grant from the Australian Government Department of Health and Ageing under the Primary Health Care Research, Evaluation and Development Strategy. The information and opinions contained in it do not necessarily reflect the views or policies of the Australian Government Department of Health and Ageing.

The research team would like to thank the following people for their contributions to the review:

- Danielle Tran – University of Western Sydney
- Prof Jane Hall – Centre for Health Economics Research and Evaluation, University of Technology, Sydney
- Dr Sue Page – Northern Rivers University Department of Rural Health
- Jan Newland – Alliance of NSW Divisions
- Andrew Cashin – Australian Nurse Practitioners Association
- Belinda Caldwell – Australian Practice Nurses Association
- Brenda Tait -- South East Queensland Division of General Practice
- Clare Anderson – National Aboriginal Community Controlled Health Organisation
- Diane Lawson – Community Services and Health Industry Council
- Prof Dimity Pond – University of Newcastle
- Elizabeth McGarry – Migrant Resource Centre
- Fiona Armstrong -- Australian Nursing Federation
- Francis Sullivan – Catholic Health Australia
- Andrew Dalley – Illawarra Division of General Practice
- Mile Vilevski -- NSW Transcultural Aged Care Service
- Owen Allen – Services for Australian Rural and Remote Allied Health
- Rene Pennock – Macarthur Division of General Practice
- Prof Rhonda Nay – La Trobe University
- Rod Young – Aged Care Association of Australia
- Liz Drew – Association for Australian Rural Nurses
- Sophie Heathcote – Council of Remote Area Nurses of Australia
- Pauline Randall – Frontier Services, NT
- Tanja McLeish – North West Slopes Division of General Practice
- Alma Quick – Australian Department of Health and Ageing
- Paula Swift -- Australian Department of Health and Ageing
- Lexie Brans -- Australian Department of Health and Ageing
- Ian Gibbs – Productivity Commission
- Kos Sclavos – Pharmacy Guild of Australia
- Charmaine Rodricks – Administrative Assistant, GP Unit, Fairfield Hospital
- Other Stream Six spokes

Australian Primary Health Care Research Institute (APHCRI)
ANU College of Medicine and Health Sciences
Building 62, Cnr Mills and Eggleston Roads
The Australian National University
Canberra ACT 0200

T: +61 2 6125 0766

F: +61 2 6125 2254

E: aphcri@anu.edu.au

W: www.anu.edu.au/aphcri

ACKNOWLEDGMENTS	2
LIST OF ABBREVIATIONS.....	7
LIST OF TABLES	7
LIST OF FIGURES	7
BACKGROUND	8
OBJECTIVES.....	8
THE PROJECT INITIALLY SOUGHT TO ANSWER THE FOLLOWING QUESTIONS:.....	8
SKILL MIX DEFINITIONS.....	9
PRODUCTIVITY COMMISSION REPORT	9
Health system level.....	9
professional level issues	10
Workforce shortages serving particular communities	11
STAKEHOLDER CONSULTATION PROCESS	12
Results of stakeholder consultation.....	12
REVIEW QUESTIONS	13
METHODS FOR THE SYSTEMATIC REVIEW	14
SEARCH CRITERIA.....	14
INCLUSION CRITERIA.....	14
QUALITY ASSESSMENT FOR EXPERIMENTAL PAPERS	14
Screening.....	14
verificaTion	15
quality assessment.....	15
data extraction	15
snowballing	15
DATA EXTRACTION FOR NON-EXPERIMENTAL DATA.....	15
CASE STUDIES	16
DATA SYNTHESIS	16
RESULTS	17
SELECTION OF PAPERS FOR INCLUSION	17
RESULTS FROM THE EXPERIMENTAL PAPERS	18
Characteristics of the studies	18
Quality scores of the included papers.....	22
Characteristics of Effective Interventions.....	22
The impact of skill-mix on patient service use.....	23
Effect by disease.....	23
Effect by role change	24
Economic outcomes	25
RESULTS FROM THE NON-EXPERIMENTAL PAPERS	26
CASE STUDIES	29
Aboriginal Health Workers	29
Skill mix.....	29
Setting	29
Training.....	29
Licensing	29
Payment Systems	29
Acceptability / patient preferences	29
Expanded Paramedic health care roles.....	30
Skill Mix	30
Setting	30
Training.....	30

Licensing	30
Payment systems	30
Acceptability / patient preferences	31
KEY FINDINGS	32
DISCUSSION	33
DEFINING SKILL MIX	33
EXPERIMENTAL STUDIES	34
Impact on patient level outcomes.....	34
Medical conditions.....	35
NON-EXPERIMENTAL STUDIES	35
WHAT LESSONS CAN AUSTRALIA LEARN FROM THE UK?.....	35
POLICY ISSUES AND OPTIONS	36
Scope of practice	36
Health Professional Training.....	36
Licensing and professional regulation.....	37
Payment systems.....	37
Rural and remote Australia	37
Policy options	38
SUMMARY	39
REFERENCES	40
APPENDICES	43
APPENDIX 1: SEARCH STRATEGY FOR BLACK LITERATURE	44
APPENDIX 2: SEARCH STRATEGY FOR GREY LITERATURE	47
APPENDIX 3: STUDY VERIFICATION FORM	48
EXPERIMENTAL DESIGN	48
DESCRIPTIVE STUDY	48
DOCTOR SUBSTITUTION	48
INNOVATION OR NEW ROLE	49
HOSTEL OR NURSING HOME DWELLING.....	49
RECEIVING ONE OFF ASSESSMENTS	49
RECEIVING PLANNED CARE	49
APPENDIX 4: QUALITY ASSESSMENT FORMS	50
CONCEALMENT OF ALLOCATION (PROTECTION AGAINST SELECTION BIAS).....	50
ADEQUATE FOLLOW-UP (PROTECTION AGAINST EXCLUSION BIAS)	50
BLINDED ASSESSMENT OF PRIMARY OUTCOME(S) (PROTECTION AGAINST DETECTION BIAS)	50
BASELINE MEASUREMENT.....	50
RELIABLE PRIMARY OUTCOME MEASURE(S)	51
PROTECTION AGAINST CONTAMINATION	51
METHODS OF STATISTICAL ANALYSIS	51
CONTEMPORANEOUS DATA COLLECTION?	52
BASELINE MEASUREMENT.....	52
CHARACTERISTICS FOR STUDIES USING SECOND SITE AS CONTROL.....	52
BLINDED ASSESSMENT OF PRIMARY OUTCOME(S)* (PROTECTION AGAINST DETECTION BIAS).....	52
PROTECTION AGAINST CONTAMINATION (STUDIES USING SECOND SITE AS CONTROL).....	52
RELIABLE PRIMARY OUTCOME MEASURE(S)	53
ADEQUATE FOLLOW-UP (PROTECTION AGAINST EXCLUSION BIAS)	53
METHODS OF STATISTICAL ANALYSIS	53
APPENDIX 5: BRIEF DESCRIPTION OF THE 61 EXPERIMENTAL PAPERS	54

APPENDIX 6: LIST OF THE 61 EXPERIMENTAL PAPERS INCLUDED	68
APPENDIX 7: LIST OF THE 30 GREY AND DESCRIPTIVE PAPERS INCLUDED	72
APPENDIX 7: LIST OF THE 30 GREY AND DESCRIPTIVE PAPERS INCLUDED	72
APPENDIX 8: LIST OF PAPER EXCLUDED FROM THE REVIEW	74

LIST OF ABBREVIATIONS

ANU – Australian National University
APHCRI – Australian Primary Health Care Research Institute
AHW – Aboriginal Health Workers
AIHW – Australian Institute for Health and Welfare
BA – before and after
CALD – Culturally and linguistically diverse
CBA – controlled before and after
CCT – controlled clinical trial
CINAHL – Cumulative Index to Nursing and Allied Health Literature
DARE – Database of Abstracts of Reviews of Evidence
DM – disease management
EPC – Enhance Primary Care
EPOC – Effective Practice and Organisation of Care
HACC – Home and Community Care
HP – health promotion
ITS – interrupted time series
JBI – Joanna Briggs Institute
NP – nurse practitioner
PA – physician assistant
PC – Productivity Commission
PMOD – physiological measure of disease
QAS – Queensland Ambulance Service
QoL – Quality of life
RCT – randomised controlled trial
UNSW – University of New South Wales
UWS – University of Western Sydney
WHO – World Health Organisation

LIST OF TABLES

Table 1 Stakeholder organisation
Table 2 Study characteristics of the primary research papers
Table 3 Health professionals in the intervention groups and their roles
Table 4 Skill-mix changes addressed in the interventions
Table 5 Types of skill-mix changes by disease
Table 6 Types of skill-mix changes by country
Table 7 Types of skill-mix changes by roles of health professionals
Table 8 Quality scores of the papers included in the review
Table 9 Skill-mix changes and outcome measures
Table 10 Impact of skill-mix changes on patient service use
Table 11 Skill-mix changes and outcomes measures by disease
Table 12 Skill-mix changes and outcome measures by roles of health professionals
Table 13 Summary of the themes emerging from the Australian non-experimental studies
Table 14 Summary of the main themes emerging from the UK non-experimental studies
Table 15 Summary of the key findings from the primary research papers
Table 16 How skill-mix changes can be obtained at various levels of health systems

LIST OF FIGURES

Figure 1 Practitioners to population ratios relative to major city levels
Figure 2 Selection processes of the primary research papers

BACKGROUND

The demographics of the Australian population are changing with increasing numbers of older people. The proportion of the Australian population aged 65 and over is projected to increase from 13% in 2004 to 16.4% by 2015 and 20.3% by 2025 [1]. This will be accompanied by an increase in the prevalence of chronic diseases. Over 80% of the elderly are living with at least one chronic illness and 50% have two or more [2]. Almost one in five Australians has a cardiovascular condition with heart, stroke and vascular conditions being far more prevalent in older age groups. In the 45-54 age group 28% of Australians report such a condition compared to more than 50% of 65-74 year olds [3]. Chronic disease accounts for a substantial and increasing proportion of health care expenditure and general practitioner (GP) workload [4, 5].

The expectations of the Australian population are also changing. Increasingly Australians are unwilling to accept the limited options for aged care that were available to their parents or grandparents. The range of management options for chronic illness is also expanding and there is a need to explore innovative methods to deliver this care in a cost effective way.

The Productivity Commission on Australia's Health Workforce identified developing technology, growing community expectations and population ageing as drivers of increased demand for health workforce services [6]. These factors combine to increase pressure on health services including primary care services that provide care to older people living in the community. In the area of general practice Australia is experiencing workforce shortages, especially in regional and rural areas [7]. This is in part due to the restraints placed on universities and the GP vocational training program in the 1990s. There have also been substantial changes in workforce participation related to GPs reducing their work hours and feminisation of the GP workforce [6, 8]. Workforce shortages are also an issue in other health professions such as nursing and allied health [6]. There was a projected shortfall of nursing graduates of 4,051 in 2006. In the aged care sector there are particular problems of recruitment and retention of staff because of the low status of the speciality.

The increase in demands of caring for an older population and the increase in prevalence of chronic disease has required new thinking about workforce including the distribution of role and responsibilities. Sibbald and others have put forward a model of skill-mix change as a way of thinking about workforce redesign. Skill-mix change can be brought about through the process of job and role enhancement, substitution, delegation and innovation. Skill-mix changes can also be made through a change in the interface between services by transfer, relocation and liaison [9]. There is an emerging literature on skill-mix changes especially in relation to role substitution [10] [11]. In Australia the role of practice nurses is evolving to include multidisciplinary care and chronic illness care [12] but there is also need to examine the roles of nurses in other contexts such as independent practice in rural and remote areas.

OBJECTIVES

The project initially sought to answer the following questions:

1. What is already known about the priorities for skill-mix changes in the primary health care workforce?
2. What are the needs for the provision of care for older people that could be addressed by changing skill-mix in the primary health care workforce?
3. How are these needs affected by context including remote, rural, outer metropolitan, and urban? Issues for groups with special needs such as indigenous or non-English speaking Australians will be examined in each of these settings.
4. What do the stakeholders believe are the skill-mix changes required to meet these needs?
5. What does the literature tell us about the optimal skill-mix to meet the needs as identified in questions 1 to 4?
6. What information is there on the cost effectiveness of these skill-mix changes?

7. How are the effective solutions applicable in the Australian context? This will consider how systems of pay/reimbursement in primary care and state/federal regulations governing scope of practice/licensing of various health professions are likely to constrain what can be done in terms of skill-mix change.
8. What are the policy options and investments necessary to implement the solution as identified in question six.

SKILL MIX DEFINITIONS

The World Health Organisation (WHO) in its World Health Report 2000 highlighted the importance of "skill-mix" in health [13]. It acknowledged that determining and achieving the "right mix" of health professionals is challenging for most health care organisations and health systems.

In its definition of "skill mix" the WHO identified two major components:

1. Mix of posts, grades or occupations in an organisation.
2. Combination of skills or competencies needed for each job with the organisation.

Buchan and colleagues [14] defined "skill-mix" as a mix of skills or competencies possessed by an individual; the ratio of senior to junior grade staff within a single discipline; or a mix of different types of staff within a multidisciplinary team.

In this review we have focussed on skill-mix changes in individual health care workers. According to the model proposed by Sibbald et al [9], skill-mix changes in individuals could be obtained through the following:

- **Substitution** – expanding the breadth of a job by working across professional divides. For example, counsellors substituting for doctors for some mental health problems in primary care settings.
- **Enhancement** – increasing the depth of a job by extending the role or skills of workers. For example, community matrons, as in the UK, providing intensive home support to patients with long-term conditions.
- **Delegation** – moving a task up or down a traditional unidisciplinary ladder. For example, an enrolled nurse performing some roles traditionally performed by a registered nurse.
- **Innovation** – creating new jobs by introducing new types of workers. For example, physician-assistant providing some routine care, eg. routine follow-ups for patients with chronic diseases.

PRODUCTIVITY COMMISSION REPORT

The Productivity Commission's report on Australia's Health Workforce described some of the issues at both the professional and health system level that currently affect the primary healthcare workforce in Australia [6].

HEALTH SYSTEM LEVEL

Workforce shortages are occurring across a range of health professionals, including general practitioners and nurses. In 2005 it was estimated that there was a shortfall of 800 to 1300 GPs (which was 4-6% of the workforce at the time) and a shortfall of 10 to 12,000 nurses, which would require a doubling of the number of nursing graduates. The shortages are more acute in rural and remote areas of Australia and include shortages of Aboriginal Health Workers (AHW). These workforce shortages are occurring against a background of an ageing population with an increasing prevalence of chronic disease, which is placing even more demands on the health care system.

The Productivity Commission's report on Australia's Health Workforce identified some key trends affecting the health workforce:

- An ageing workforce.
- Increasing feminisation of the workforce.
- Reduced working hours.
- Increased specialisation of the workforce.
- Poor retention of the workforce. For example, as many as 10% of registered or enrolled nurses are not working as nurses, 5000 registered pharmacists are not working in pharmacy and 19% of occupational therapists leave the health service each year.
- Changing models of care and service delivery.

The National Health Workforce Strategic Framework has been established to try to guide health workforce policy and planning with a focus on long term solutions rather than relying on overseas trained health professionals to fill some of these gaps. An increase in the number of undergraduate training places has been planned with a 30% increase in the number of places for medicine, 4800 extra nursing places and 3600 extra allied health places by 2008. Inevitably there will be a delay before these health professionals graduate and move into the workplace. In the meantime there is a need to modify the way in which health professionals work, such as multidisciplinary teamwork or skill mix changes to fill these gaps in the short term.

The Productivity Commission identified some barriers to effective skill mix and team working in Australia. The current funding and payment systems favour a medical (doctor) workforce, if other health professionals are to provide some aspects of a patient's care then changes need to be made to the payment system to facilitate and support this. The current funding system also favours doctors working in certain specialities creating shortages in less well-reimbursed areas such as general practice. Health professionals are expected to work together in multi-disciplinary teams and yet they are trained separately so they have less understanding of the roles of the other members of the team.

PROFESSIONAL LEVEL ISSUES

Many of the current regulations for different health professionals reinforce professional boundaries and roles and reduce the flexibility of the various professionals to develop new competencies and scopes of practice in response to workforce shortages. These regulations were developed to ensure the competency of the health professionals but also served to protect the workload and potential income. This system of regulation is different for each health profession and often varies from state to state, such as the legal scope of practice of Aboriginal Health Workers. This fragmented system of registration and licensing makes it difficult to have a coordinated approach to workforce planning to address shortages.

There is a further level of fragmentation between those responsible for planning the healthcare workforce and those involved in the education and training which means that universities are not able to respond quickly to changes in workforce need. As the length of time it takes to train suitable qualified health professionals increases this adds further delay in the ability to respond to workforce shortage. A "skills escalator" has been proposed in the UK [15] to address this. Students undertake a shorter generic health degree first and then add more training as needed to specialise in a particular field but this has not been welcomed by the professional organisations in Australia, as they believe that it would reduce the quality of health care.

Turf wars between the different professional groups add to the complexity and pose a significant barrier to the adoption of skill mix innovations in Australia. Many health professionals such as registered nurses, physiotherapists and pharmacists believe that their training equips them to work at a higher level however some professions are resistant to delegation of tasks to other professionals. For example both doctors and pharmacists have been reluctant to accept the role of the nurse practitioner, particularly if this role includes prescribing.

The Productivity Commission proposed a set of national workforce structures to address the issues in the health workforce. The most relevant of these to the issue of skill mix was the establishment of a Workforce Improvement Agency. The proposed role for this agency was to “support local innovation, and to objectively evaluate, facilitate and drive those of national significance”. They also recommended changes to the accreditation system for health professional qualifications and the establishment of a single national health professional registration board with professional panels. The Government welcomed the recommendations in the report and the response from the Council of Australian Governments has included making changes to the system of health professional registration and to establish a national accreditation scheme for health professional training. The proposal of a Health Workforce Improvement Agency was recast as establishing a taskforce to conduct studies and provide advice to the Australian Health Ministers Advisory Council on workforce innovation and reform. It is not clear if this taskforce has been established to date.

WORKFORCE SHORTAGES SERVING PARTICULAR COMMUNITIES

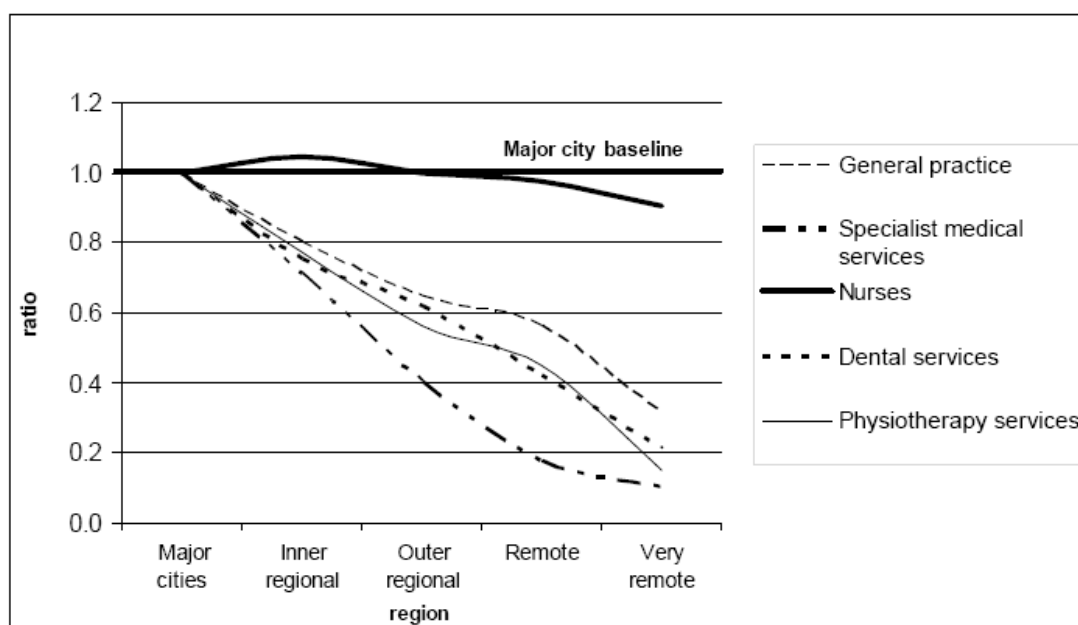


Figure 1 Practitioner to population ratios relative to major city levels

(From Productivity Commission Report [6])

The shortage of doctors, dentists and allied health professionals worsens with increasing distance from major cities in Australia, Figure 1. The ratio of nurses to the population does not decrease with distance from major cities as much as for other professions but the ratio of enrolled to registered nurses increases [16]. In remote areas people have particular difficulty accessing services because of the distances involved. For older people who may require regular or even daily care for chronic disease this poses particular problems in terms of cost and time and many people may be forced to move to nearby regional centres for their care. Skill mix innovations may be important in these areas provided they are well supported by qualified health professionals.

In rural and remote Indigenous communities, workforce shortages can be particularly acute and exacerbated by limited access to Medicare rebates. Aboriginal Community Controlled Health Services provide some primary care and funding for programs to support the training and use of other health workers such as Aboriginal Health Workers. Care by family members is important for older people in the community, but in Indigenous communities the “elders” may not have family members to support them in the community because of the high mortality rates among young and middle aged Indigenous people [17]. Indigenous people have difficulty accessing

mainstream services for elderly because of location, cultural or language difficulties. Their preference is for care provided by Aboriginal workers but there are important issues to be aware of such as the gender of the carer when providing personal care [17].

Aged care as a sector of the health workforce is experiencing specific problems because it has low status and low pay particularly in nursing. Over recent years the number of registered or enrolled nurses has decreased and reliance on personal care assistants has increased [17]. A National Aged Care Workforce Strategy [18] has been established to try to address some of these issues although the focus has been on the residential aged care sector and not community care. Promoting aged care as an area of need would facilitate the development of nurse practitioners and there is need to explore how enrolled nurses could take on some of the medication giving roles. There are specific issues for culturally and linguistically diverse (CALD) populations where workforce shortages are exacerbated by the need to provide health workers with language skills and they are in even shorter supply. This is likely to present even greater problems as the population of older people from culturally and linguistically diverse backgrounds is set to increase by 66% over the next 10 to 15 years [19].

STAKEHOLDER CONSULTATION PROCESS

Key stakeholders were identified from organisations involved in the care of community dwelling older Australians, see Table 1. These stakeholders were invited to take part in semi-structured telephone interviews and gave their informed consent.

Table 1. Organisation of the stakeholders	
<ul style="list-style-type: none"> • Australian Nurse Practitioners Association • Australian Practice Nurses Association • National Aboriginal Community Controlled Health Organisation • Community Services and Health Industry Skills Council • Centre for Research and Education in Ageing, University of Newcastle • Migrant Resource Centre, Centre North West Region • Australian Nursing Federation • Catholic Health Australia • NSW Transcultural Aged Care Service 	<ul style="list-style-type: none"> • Services for Australian Rural and Remote Allied Health • Australian Centre for Evidence Based Aged Care, La Trobe University • Aged Care Association of Australia • Association for Australian Rural Nurses • Council of Remote Area Nurses of Australia • Frontier Services, NT • Australian Division of General Practice • Divisions of General Practice (metropolitan and rural Divisions)

Table 1 Stakeholder organisations interviewed in the consultation process

The stakeholders were asked their opinions on:

- The health care needs of older community dwelling Australians that could be addressed through skill-mix changes in the primary care workforce.
- The health care needs specific to older Australians from remote, rural, outer metropolitan and urban areas or those from indigenous or culturally and linguistically diverse (CALD) backgrounds as appropriate depending on stakeholder’s background or expertise.
- What skill mix changes they were aware of and what further changes they saw as being needed.

The interviews lasted about 30 minutes and were recorded and extensive field notes taken. The field notes were used, and a thematic analysis was undertaken.

RESULTS OF STAKEHOLDER CONSULTATION

Skill mix in the primary care workforce is being driven by necessity, particularly in rural and remote areas where suitably qualified health professionals are in short supply. Some of the main skill mix issues in primary care suggested by the stakeholders as important were:

- Enhancing the role of Home and Community Care (HACC) workers to take on more basic nursing roles with training and supervision.
- Training “assistants” to work under the supervision of health workers such as allied health assistants.
- Ensuring that practice nurses and nurse practitioners have the necessary training and support to take on enhanced roles.
- Enhancing the role of Aboriginal Health Workers in aged care and ensuring minimum competency standards.
- Supporting GPs to delegate tasks to other suitably qualified health professionals

There were some issues specific to older people from CALD backgrounds. Many of the workforce shortages in the wider Australian community are exacerbated in these populations because there is a need for health professionals with language skills. There is an expectation in some CALD communities that care should be provided solely by family members and to accept outside help means that the family are not doing their duty. Some CALD HACC workers and health professionals find themselves under pressure to work beyond their scope of practice out of loyalty to their community.

Training and support were identified as important to support skill mix changes. Many of the stakeholders were concerned that the rapid pace of skill mix changes meant that the education and training of health professionals might not keep pace. There were also concerns that local successful innovations were not being objectively evaluated and generalised to other communities because the structure and processes were not in place for this to occur.

REVIEW QUESTIONS

After the analysis of the stakeholder interviews, the following emerged as the key research questions for the review:

1. What is the impact of skill-mix changes of delegation, enhancement or substitution between doctors and other health professionals in the planning and delivery of continuous* care for community dwelling older people on patient outcomes, process of care, health care utilisation, quality of life (QoL), and satisfaction?
2. What is the impact of skill-mix changes of delegation, enhancement or substitution between registered nurses, enrolled nurses and HACCs (Health and Community Care workers) in the planning and delivery of continuous* care for community dwelling older people on patient outcomes, process of care, health care utilisation, QoL, and satisfaction?
3. What is the impact of the role of new types of health worker or health workers not normally involved in the delivery of continuous care for community dwelling older people in rural and remote areas on patient outcomes, process of care, health care utilisation, QoL, and satisfaction?
4. What are the facilitators, barriers necessary for this to be effective? (Here we were keen to look at support networks, supervision, accountability and applicability to rural, remote, CALD etc)

*By “*continuous care*” we mean ***not*** one-off assessments or hospital out-reach services

METHODS FOR THE SYSTEMATIC REVIEW

SEARCH CRITERIA

Studies meeting the inclusion criteria for the review were identified by searching Medline, Embase, CINAHL, Cochrane Library (Issue 4, 2006), the Database of Abstracts of Reviews of Evidence (DARE) and the Joanna Briggs Institute (JBI) Library from 1990 to February 2007. Terms for skill mix developed by Bonnie Sibbald and colleagues [9, 10] were combined with terms for primary and community care and the EPOC quality filter was applied to include randomised controlled trials (RCTs), controlled clinical trials (CCTs), controlled before and after (CBA) and interrupted time series (ITS) studies (Appendix 1) for the detailed search strategy. Systematic reviews identified in the process were read and all included papers that met the criteria for this particular review were added to the list of papers. In addition to this there was a grey literature search of relevant government and health related websites (Appendix 2). The bibliographies of all experimental papers included in the review were searched to identify additional studies for inclusion.

INCLUSION CRITERIA

Studies were included in the review if they contained male or female adults aged 65 years and over and living in the community. Older people living in hostels or nursing homes were excluded. The interventions were defined as those that involved the planning and delivery of continuous care by primary health care professionals including doctors, nurses, pharmacists, allied health professionals, aboriginal health workers, Home and Community Care Services (HACCS) (nursing care, personal care or domestic help) or others (lay health workers or administrative staff such as receptionists). Papers were not restricted to countries comparable to Australia as long as they were relevant to the question and published in English during or after 1990.

Studies were included in the review if they were randomised or quasi-randomised controlled trials (RCTs), controlled clinical trials (CCT), before and after studies (BAs), or interrupted time series (ITS). The EPOC criteria were used to guide this process but papers were not excluded on the basis of quality because of the nature of many of the studies identified in this area but were summarised (EPOC Checklist 2002). Non-experimental papers such as literature reviews, discussion papers and editorials were identified for inclusion in the non-experimental extraction process.

Experimental studies were included if they objectively measured health service use, quality of care or patient outcomes in a clinical setting or self-report measures with known validity and reliability. Quality of care included process outcomes such as adherence to disease specific guidelines, disease specific measurements such as blood pressure, blood glucose, spirometry, weight, referrals and follow up. Patient outcomes included disease control, self-report measures with known validity and reliability such as well-being, quality of life and disability scores. Patients' health service use, patient satisfaction, provider satisfaction and economic measures were also included.

QUALITY ASSESSMENT FOR EXPERIMENTAL PAPERS

There were four processes undertaken to select the experimental studies for inclusion in this review.

SCREENING

One reviewer (SD) screened the titles and abstracts of all the articles identified from the database and grey literature search strategies. Where there was any doubt as to the relevance of the study it remained in the list. Because of the broad nature of the research questions it was important that the search strategy was sensitive but not too specific. This meant that a

large number of articles that were identified in the initial search were clearly irrelevant to this review and this initial screen simply removed these articles from the list.

Two reviewers (IH and DT) screened the abstracts of the remaining articles independently. Abstracts remained in the list if they did not contain sufficient information for a decision to exclude to be made. The results of the screening were recorded in Excel spreadsheets for comparison. Any disagreements were resolved by a third reviewer (SD).

VERIFICATION

Attempts were made to obtain full-texts of all the articles screened and included in the list for verification. The sources utilised included all online sources, library visits, inter-library loan requests, and purchasing on-line.

A study verification form (Appendix 3) was developed (RG and SD) from those used by JBI and EPOC. Two reviewers (IH and DT) independently verified the papers for relevance to the review questions. Again, the results of the verification process were recorded in Excel spreadsheets for comparison and any disagreements were resolved by a third reviewer (SD).

QUALITY ASSESSMENT

Two reviewers (IH and DT) assessed the quality of the experimental articles. Papers were not excluded on the basis of the quality score but an assessment of the quality of the study was provided.

DATA EXTRACTION

Data were extracted by two reviewers (DT and IH). A data extraction form (Appendix 4) was developed from those used by JBI and EPOC. A Microsoft Access database was developed for data entry. Data were entered directly into the Access database while articles were being read. The skill mix interventions were categorised into four main groups:

- Pharmacists substituting for GPs
- Nurses substituting for GPs
- Enhancement or delegation within the nursing continuum.
- Innovation

Within each of these groups the actual interventions delivered by the health professionals were categorised into three groups. Two reviewers (IH and SD) independently reviewed the intervention description and categorised the interventions as follows:

- Health promotion activities
- Disease management activities
- Both health promotion and disease management activities

SNOWBALLING

One reviewer (IH) screened the bibliographies of all the included papers and identified primary research articles and systematic reviews for inclusion. All the additional articles and reviews identified through the snowballing process underwent the screening, verification, quality assessment and data extraction process as detailed above.

DATA EXTRACTION FOR NON-EXPERIMENTAL DATA

The list of non-experimental papers remaining after verification were categorised according to country of origin / publication, health professional perspective and skill mix component of substitution, enhancement, delegation or innovation. All those papers published in an Australian journal or from an Australian institution were identified and random samples generated stratifying for health professional perspective and skill mix. Data were extracted sample by

sample until saturation of themes was reached. The following headings were used in the data extraction:

- Practice level – competency, acceptability to patients, supervision, payment systems and change management.
- Professional level – training, licensing, acceptability to health professionals, legal scope of practice, legal liability, turf wars and efficiency.
- Health system level – levels of pay, career development, workforce supply, change in service access or demand and health care teams.

A second sample of papers was identified from UK researchers or published in a UK journal. Data were extracted sample-by-sample using the same data extraction template until saturation of themes was reached. The purpose of this sample was to identify how the skill mix debate had moved on in the UK health system and whether there were lessons to be learnt that may be applicable to the Australian context.

CASE STUDIES

There were some innovative examples of skill mix changes that did not meet the inclusion criteria for the experimental papers. They addressed skill mix in the Australian context and arose directly from need within certain Australian populations. These were included as case studies.

DATA SYNTHESIS

We took a vote-counting approach to examine the effectiveness of the skill-mix changes reported in the studies. No studies were discarded on the basis of the disease focus and we took a comprehensive approach to recording outcome measures. As a result of this there was heterogeneity in the extracted data, which prevented us from doing a meta-analysis to explore the effect-sizes.

The outcome measures that we recorded were:

1. Health care professional adherence to guidelines.
2. Patient outcomes:
 - physiological measures of disease,
 - adherence to treatment,
 - health service use,
 - quality of life,
 - risk behaviour,
 - satisfaction,
 - health status, and
 - functional status.

We entered all the key outcome measures recorded in the studies under each of the categories listed above. For each of the categories, if one of the recorded outcome measures showed a statistically significant improvement (p value <0.05) that outcome measure was coded as a statistically significant improvement. For example, if a randomised controlled trial focussing on diabetes reported HbA1c, blood lipids and blood glucose as physiological measures of disease (PMOD) and there was a statistically significant improvement (P<0.05) for HbA1c then we recorded the PMOD outcome for that study to have produced a positive outcome irrespective of the results for blood lipids and glucose. The aim of the analysis was to examine how many studies reported at least one outcome measure in one particular category and how many studies reported positive outcome in that particular category. Tables were produced that summarised the effective outcomes by possible skill-mix changes.

All analyses were performed using SPSS 15.0 for Windows, SPSS Inc.

RESULTS

SELECTION OF PAPERS FOR INCLUSION

The initial database search identified 15,148 articles that were published between 1990 and February 2007. An initial screening by a single reviewer reduced this to 566. This number was further reduced to 201 when detailed screening was undertaken by two reviewers through abstract reading. Thirteen relevant systematic reviews were identified during this process and these were added to the list of 11 systematic reviews identified from the DARE and Cochrane databases. As none of the 24 (11+13) systematic reviews solely focussed on skill-mix changes and/or focussed on health care of community dwelling elderly it was decided that relevant primary research papers would be pulled out of the systematic reviews and added to the list of primary papers. This resulted in another 28 papers added to list of the primary research papers to be reviewed. We attempted to obtain full-text of (201+28) 229 research papers for verification but were only able to obtain 217.

122 papers passed the verification stage, which included 55 experimental and 67 descriptive papers. Snowballing of the 55 experimental papers resulted in another 11 papers (two descriptive and nine experimental) added to the review. We did not snowball descriptive papers for reasons explained in the methods. The 64 (55 +9) experimental papers were quality assessed before data extraction. Because of the low number of eligible experimental papers finally included in the review, no paper was discarded on the basis of their quality score.

We were able to extract data from 61 experimental papers. Data could not be extracted from three papers as two were subsequently found not to be eligible for the review (one in hospital setting and the other was a collaborative approach and did not have any element of skill-mix in its intervention) and the other was inadequately reported. Figure 2 summarises the study selection process.

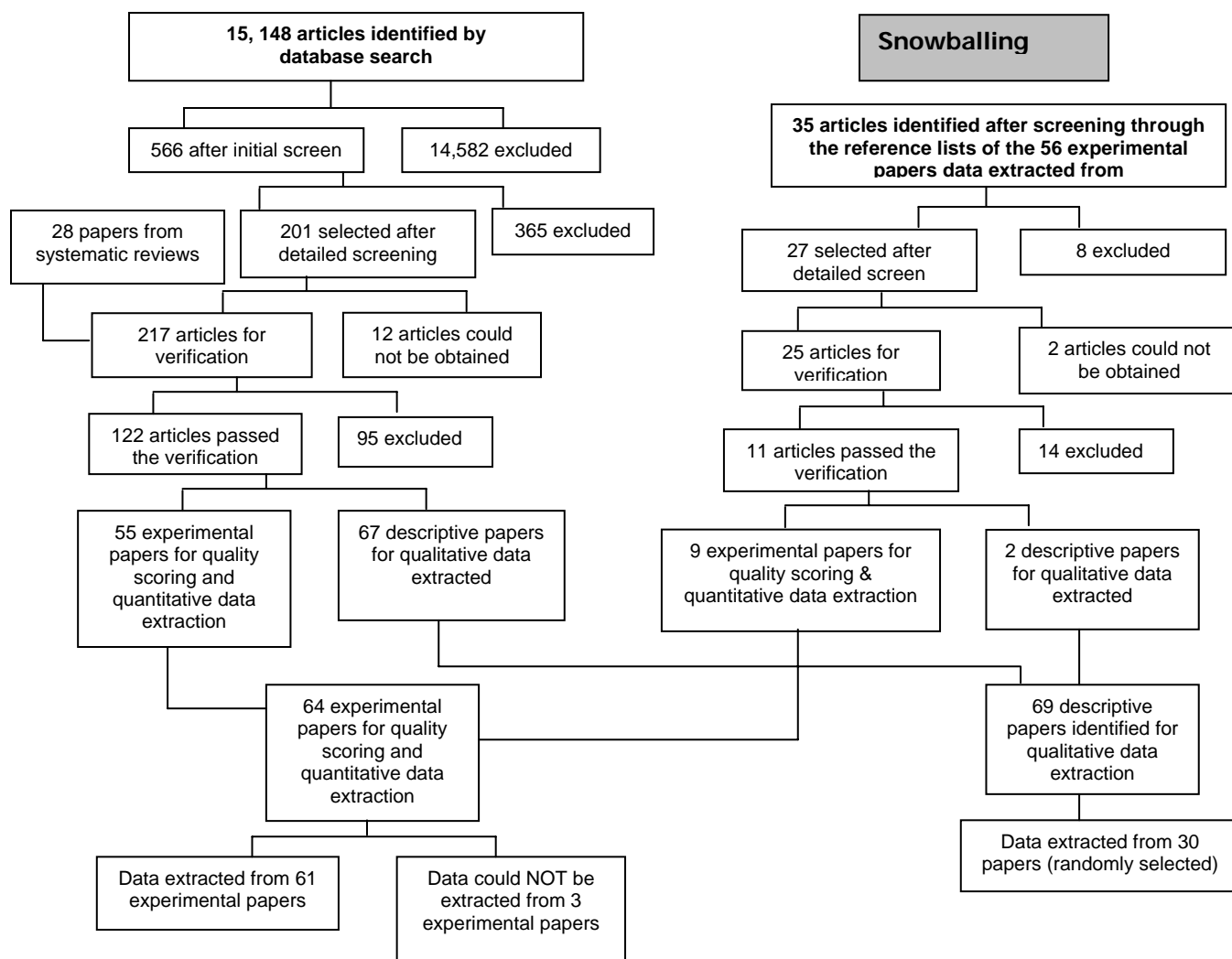


Figure 2: Selection process of the primary research papers

RESULTS FROM THE EXPERIMENTAL PAPERS

CHARACTERISTICS OF THE STUDIES

Of the 61 studies included in data extraction the majority (65.6%) were randomised controlled trials (RCT). The next most common study design was before and after (BA) (16.4%) followed by controlled before and after (CBA) (13.1%). There were three controlled clinical trials (CCT) included in the review. Over four-fifths (82.0%) were published in year 2000 and later and the remaining 12.0% were pre-2000.

Primary care was the location of care for the majority (68.9%) of the papers examined. This was followed by pharmacy (9.8%) and community (9.8%). Three interventions were located in either a managed care organisation or in a community-based organisation.

The majority (68.9%) of the interventions were conducted in an urban setting and another 14.8% in both urban and rural settings followed by 9.8% purely in a rural setting. There were two studies conducted in remote areas.

Over forty per cent (42.6%) of studies were conducted in the USA followed by 27.9% in the UK. There were six studies conducted in the Netherlands and four in Canada and another four in Australia.

Fifteen of the 61 interventions were targeted at patients with cardiovascular conditions, 14 focussed on diabetes and/or related conditions. Twelve studies were not aimed at any particular disease group. The other disease groups targeted included: multiple chronic conditions (7), musculo-skeletal conditions (4), mental conditions (3), and respiratory conditions (2).

Table 2. Study characteristics of the primary research papers

Study characteristics	Number	Percentage
Study design		
Randomised controlled trial	40	65.6
Before and after (no control)	10	16.4
Controlled before & after	8	13.1
Controlled clinical trial	3	4.9
Length of study (in months)		
Mean	15.9 (SD= 9.8)	
Range (min – max)	3 – 48	
Year published		
Pre-2000	11	18.0
2000 and later	50	82.0
Settings		
Primary Care	42	68.9
Pharmacy	6	9.8
Community	6	9.8
Community based care	3	4.9
Managed Care Organisation	3	4.9
Others	1	1.6
Intervention area		
Urban	42	68.9
Urban + rural	9	14.8
Rural	6	9.8
Remote	2	3.3
Not clear	2	3.3
Country		
USA	26	42.6
UK	17	27.9
Netherlands	6	9.8
Australia	4	6.6
Canada	4	6.6
Other	4	6.6
Disease		
Cardiovascular conditions	15	24.6
Diabetes & related conditions	14	23.0
Not mentioned	12	19.7
2 or more chronic conditions	7	11.5
Musculo-skeletal conditions	4	6.6
Mental conditions	3	4.9
Respiratory conditions	2	3.3
Others	4	6.6

A primary care physician was the key health care provider for control groups in the majority (80.3%) of the studies. In intervention groups, 34 (55.7%) studies had nurses as the key

health care provider followed by pharmacists in 25 (41.0%) studies. Physician assistant and AHWs were the key health care providers in one study each.

The roles played by the key health care providers in the 61 interventions included in this review were categorised into two broad categories – disease management (DM) role and health promotion role (HP). Both nurses and pharmacists predominantly performed disease management roles, though nurses were more likely to perform health promotion role only. There were some interventions where nurses and pharmacists performed both disease management and health promotion roles as shown in Table 3. Detailed descriptions of the effective interventions for disease management and health promotion are in Table 15.

Table 3. Health professionals in the intervention group and types of roles played by them

Health Professional	Disease management role only	Health promotion role only	Both DM and HP
Nurses	19	8	7
Pharmacist	14	3	8
Aboriginal HW	0	1	0
Physician assistant	0	0	1

The majority (75.4%) of the interventions assessed doctor substitution by other health professionals. Nurse enhancement was used as the key element of intervention in 13 studies (Table 4). There was one study in the Netherlands examining the impact of involving physician assistants (innovation) in the health care of patients suffering from respiratory conditions (Table 4).

Table 4. Skill-mix addressed in the interventions

Skill-mix	No.	%
Dr substitution by pharmacist	25	41.0
Dr substitution by nurses	21	34.4
Nurse enhancement	13	21.3
Dr substitution by others eg. AHW	1	1.6
Innovation	1	1.6

Doctor substitution by pharmacists was the most commonly assessed skill-mix change across the majority of the disease groups, although more likely in diabetes and cardiovascular disease. The efficacy of doctor substitution by pharmacists was also examined in patients having multiple chronic conditions. Nurse substituting doctors was tested in diabetes and cardiovascular disease (Table 5). Nurse enhancement was more likely to be used in conditions such as cardiovascular and musculoskeletal conditions (Table 5).

Table 5. Types of skill-mix by disease

Disease	Dr substitution by nurses	Dr substitution by pharmacist	Dr substitution by others	Nurse enhancement	Innovation
Respiratory condition (2)	1	0	0	0	1
Diabetes & related (14)	5	7	1	1	0
Cardiovascular (15)	6	6	0	3	0
Musculo-skeletal (4)	1	1	0	2	0
Mental conditions (3)	1	2	0	0	0
2+ chronic conditions (7)	2	4	0	1	0
Others (4)	0	0	0	4	0
No disease mentioned (12)	5	5	0	2	0
All conditions (61)	21	25	1	13	1

The studies that examined doctor substitution by pharmacists dominated the interventions that were conducted in the USA. The UK studies were dominated by doctor substitution by nurses (Table 6), which was also true for the Netherlands. The impact of nurse enhancement was tested in the USA and the UK.

Table 6. Types of skill-mix by country

Disease	Dr substitution by nurses	Dr substitution by pharmacist	Dr substitution by others	Nurse enhancement	Innovation
USA (26)	9	14	0	3	0
UK (17)	8	4	0	5	0
Netherlands (6)	3	1	0	1	1
Canada (4)	1	1	0	2	0
Australia (4)	0	2	1	1	0
Others (4)	0	3	0	1	0
All conditions (61)	21	25	1	13	1

Irrespective of whether nurses or pharmacists substituted doctors, both the groups predominantly performed a disease management (DM) role (Table 7). The role of nurse enhancement was more likely to include a disease management role. Comparatively, nurses were more likely to perform health promotion (HP) role and pharmacist were more likely to perform a combined DM and HP roles.

Table 7. Types of skill-mix by roles performed by intervention health care providers

Disease	Dr substitution by nurses	Dr substitution by pharmacist	Dr substitution by others	Nurse enhancement	Innovation
Disease management (DM) role only (33)	11	14	0	8	0
Health promotion (HP) role only (12)	5	3	0	3	1
Both DM and HP (16)	5	8	1	2	0
All conditions (61)	21	25	1	13	1

QUALITY SCORES OF THE INCLUDED PAPERS

The included papers were quality assessed independently by two reviewers (DT and IH). An inter-rater reliability test was performed to test the agreement rate between the two scorers. A one-way ANOVA was used to calculate mean squares of the scores and then a Spearman-Brown equation was used to estimate the inter-rater reliability. The agreement rate was 0.9.

The quality scale included eight criteria. For each of the criterion the possible scores were between 0 and 2. Overall, the mean score of all the included papers was 9.9. The studies that involved nurses scored higher than the studies that had pharmacist as the key intervention providers (Table 8).

Table 8. Quality scores of the papers included in the review

Skill-mix	Mean (SD)	Median	Mode	Range
Overall (n=61)	9.9 (2.0)	10.0	11.5	10.0 (5.0 – 15.0)
Nurse substituting doctors (n= 21)	10.2 (1.9)	10.0	8.5	9.5 (5.5 – 15.0)
Pharmacist substituting doctors (n= 25)	9.6 (2.1)	10.0	10.0	7.5 (5.0 -- 12.5)
Nurse enhancement (n=13)	10.3 (1.6)	11.0	11.0	5.5 (6.5 – 12.0)
Dr substitution by other eg. AHW (n=1)	6.5*	--	--	--
Innovation (n=1)	11.5*	--	--	--

* only one paper

CHARACTERISTICS OF EFFECTIVE INTERVENTIONS

Results showed that the programs that used doctor substitution by pharmacist were more likely to produce positive outcomes for the intervention groups (Table 9). Pharmacist substituting doctors not only improved health professionals' adherence to the disease management guidelines, but also had positive impact on the number of patient related outcomes measures, which included physiological disease measures, adherence to treatment, patients' health status and patient satisfaction.

In interventions where nurses substituted doctors, patients' physiological disease measures improved and so did health care professional's adherence to disease management guidelines. The evidence suggests that nurse enhancement improved patient adherence to treatment, patient quality of life and functional status.

Table 9. Skill-mix changes and outcome measures

Skill-mix	Outcome Measures							
	Professional adherence to guideline	Patient adherence to treatment	Patient service use	Patient physiological measure of disease	Patient quality of life	Patient health status	Patient Satisfaction	Patient functional status
Dr substitution by nurses	8 (10)	0 (1)	2 (12)	6 (9)	3 (8)	2 (8)	3 (8)	0 (2)
Dr substitution by pharmacist	6 (6)	8 (11)	2 (11)	13 (14)	3 (9)	4 (5)	5 (6)	--
Nurse enhancement	1 (2)	3 (4)	3 (7)	2 (4)	2 (3)	3 (6)	--	4 (5)
Innovation eg. physician assistant	--	--	--	0 (1)	0 (1)	1 (1)	--	--

Note1: None of the 61 studies had "nurse delegation" as a component in their intervention.

Note2: Number in cells is the number of studies showing at least one positive outcome for that particular outcome measure.

Note3: Number in bracket is the number of studies reporting at least one outcome measure in that particular category.

THE IMPACT OF SKILL-MIX ON PATIENT SERVICE USE

As shown in Table 9, there were thirty studies that reported at least one outcome measure categorised under patient service use. Irrespective of which skill-mix was used in the interventions, the analysis showed very little impact of skill-mix on patient service use. The outcome measures that were categorised under patient service use included hospital admission, referral, tests, consultation number and time. Table 10 shows the impact of skill-mix on each of these outcome measures.

Table 10. Impact of skill-mix on patient service use

Skill-mix	Patient Service Use				
	Less hospital admission	Less referral to health service/specialists	Less number of tests	Less number of consultation	Less consultation time
Dr substitution by nurses	1 (7)	0 (8)	--	1 (8)	1 (5)
Dr substitution by pharmacist	1 (7)	1 (4)	0 (1)	1 (7)	0 (4)
Nurse enhancement	1 (5)	1 (4)	--	1 (3)	1 (2)

Note1: None of the 61 studies had "nurse delegation" as a component in their intervention.

Note2: Number in cells is the number of studies showing at least one positive outcome for that particular outcome measure.

Note3: Number in bracket is the number of studies reporting at least one outcome measure in that particular category

EFFECT BY DISEASE

The evidence showed that doctor substitution by nurses produced better outcomes when it involved patients with diabetes (and related conditions) and cardiovascular disease and also in patients with multiple chronic conditions (Table 10). Similar evidence was found for interventions that involved pharmacist substituting doctors. In diabetes, both nurses and pharmacists were able to improve professionals' adherence to disease management guidelines

as well as patients physiological measures. In cardiovascular disease nurses only improved patients' quality of life, whereas, pharmacist in addition improved patients' adherence to treatment, physiological disease measures, and patients' health status (Table 11). In patients having multiple chronic conditions, nurses and pharmacist substituting doctors improved physiological measures of disease (Table 11).

Nurse enhancement was found to have a positive impact when it involved an intervention to target patients with cardiovascular disease (Table 11). The outcomes measures that nurse enhancement positively impacted were patients' adherence to treatment and patients' service use.

Table 11. Skill-mix changes and outcome measures by disease

Skill-mix changes	Outcome Measures							
	Professional adherence to guideline	Patient adherence to treatment	Patient service use	Patient physiological measure of disease	Patient quality of life	Patient health status	Patient Satisfaction	Patient functional status
Dr substitution by nurse								
Overall	8 (10)	0 (1)	2 (12)	6 (9)	3 (8)	2 (8)	3 (8)	0 (2)
Respiratory			0 (1)		0 (1)		0 (1)	
Diabetes & related	5 (5)		0 (1)	3 (5)	0 (2)	1 (2)	0 (2)	0 (1)
Cardiovascular		0 (1)	1 (3)	1 (2)	3 (4)	1 (4)	0 (1)	0 (1)
Musculoskeletal					0 (1)			
Mental condition			0 (1)			0 (1)		
2+ chronic condition	0 (2)		0 (1)	2 (2)				
Others								
Not mentioned	3 (4)		1 (5)			0 (1)	3 (4)	
Dr substitution by pharmacist								
Overall	6 (6)	8 (11)	2 (11)	13 (14)	3 (9)	4 (5)	5 (6)	
Respiratory					1 (2)		1 (2)	
Diabetes & related	3 (3)	1 (1)	0 (1)	6 (6)				
Cardiovascular		2 (2)	0 (2)	4 (5)	2 (3)	2 (2)	1 (1)	
Musculoskeletal						1 (1)		
Mental condition	1 (1)	1 (1)	1 (1)			1 (2)	1 (1)	
2+ chronic condition	1 (1)	0 (2)	1 (2)	3 (3)	0 (2)		1 (1)	
Others								
Not mentioned	1 (1)	4 (5)	0 (5)		0 (2)		1 (1)	
Nurse enhancement								
Overall	1 (2)	3 (4)	3 (7)	2 (4)	2 (3)	3 (6)		4 (5)
Respiratory								
Diabetes & related		0 (1)	0 (1)	1 (1)		1 (1)		
Cardiovascular		2 (2)	2 (2)	1 (3)	1 (1)	1 (1)		1 (1)
Musculoskeletal	1 (1)		0 (1)			0 (1)		1 (1)
Mental condition								
2+ chronic condition		1 (1)						
Others	0 (1)		0 (1)		1 (2)	1 (2)		0 (1)
Not mentioned			1 (2)			0 (1)		2 (2)

Note1: Number in cells is the number of studies showing at least one positive outcome for that particular outcome measure

Note2: Number in bracket is the number of studies reporting at least one outcome measure in that particular category

EFFECT BY ROLE CHANGE

Findings suggest that, irrespective of whether the interventions involved doctors substituted by nurses or pharmacists or nurse enhancement, as long as the intervention health professionals were performing some sort of disease management roles, those interventions were more likely to produce positive outcomes (Table 12).

When doctors were substituted by nurses with disease management roles the outcomes measures that were improved were professionals' adherence to guidelines and disease measures. Health promotion roles by nurses improved patient's quality of life. A combination of both roles improved professional adherence to guidelines, patients' disease measures and their health status (Table 12).

When doctors were substituted by pharmacists and pharmacists performed disease management roles the outcomes that were improved included professionals' adherence to guidelines, patients' adherence to treatment, disease measures and patient's satisfaction with health care. A combination of disease management and health promotion role by pharmacists had similar impact. A health promotion role by pharmacist was not found to be very effective (Table 12).

Nurse enhancement was found to be effective when the nurse played disease management roles. The outcomes that were improved with nurse enhancement included patients' adherence to treatment, patients' service use, disease measures, patients' quality of life and their functional status.

Table 12. Skill-mix changes and outcome measures by role change of health professionals

Skill-mix changes	Outcome Measures							
	Professional adherence to guideline	Patient adherence to treatment	Patient service use	Patient physiological measure of disease	Patient quality of life	Patient health status	Patient Satisfaction	Patient functional status
Dr substitution by nurse								
Overall	8 (10)	0 (1)	2 (12)	6 (9)	3 (8)	2 (8)	3 (8)	0 (2)
Disease management role (DM)	6 (8)	0 (1)	1 (8)	3 (4)	0 (4)	0 (3)	3 (6)	0 (1)
Health promotion role (HP)			0 (2)	1 (2)	2 (3)	0 (3)	0 (1)	0 (1)
Both (DM + HP)	2 (2)		1 (2)	2 (3)	1 (1)	2 (2)	0 (1)	
Dr substitution by pharmacist								
Overall	6 (6)	8 (11)	2 (11)	13 (14)	3 (9)	4 (5)	5 (6)	
Disease management role (DM)	5 (5)	5 (7)	2 (7)	8 (9)	2 (6)	1 (1)	4 (4)	
Health promotion role (HP)		1 (1)	0 (1)	1 (1)	1 (1)	1 (2)		
Both (DM + HP)	1 (1)	2 (3)	0 (3)	4 (4)	0 (2)	2 (2)	1 (2)	
Nurse enhancement								
Overall	1 (2)	3 (4)	3 (7)	2 (4)	2 (3)	3 (6)		4 (5)
Disease management role (DM)	1 (2)	2 (3)	3 (6)	2 (3)	2 (2)	1 (2)		3 (3)
Health promotion role (HP)			0 (1)	0 (1)	0 (1)	1 (3)		1 (1)
Both (DM + HP)		1 (1)				1 (1)		0 (1)

Note1: Number in cells is the number of studies showing at least one positive outcome for that particular outcome measure

Note2: Number in bracket is the number of studies reporting at least one outcome measure in that particular category

ECONOMIC OUTCOMES

Of the 61 studies included in this review only seven reported economic outcomes for their interventions. Skill-mix changes reported in these seven studies included doctor substitution by pharmacist (5), doctor substitution by nurse (1) and nurse enhancement (1).

In all five studies where pharmacists substituted doctors the key role performed by the pharmacist was medication review and compliance check and this did not produce a significant

positive economic outcome. In the two studies that reported significant positive economic outcomes the pharmacists involved played a more active role in patient management by patient monitoring and changing treatment regimen in consultation with doctors, in addition to medication and compliance review.

The other two studies that reported economic outcomes, both involved nurse practitioners performing patient consultations and none reported any reduction in health care costs as a result of the intervention.

RESULTS FROM THE NON-EXPERIMENTAL PAPERS

Summaries of the key themes emerging from the Australian and UK non-experimental literature are presented in Tables 13 and 14. There was a literature review from the UK on task allocation or delegation between nurses and doctors in primary care which highlighted many of the same themes as emerged from the non-experimental data [20]. The review was written from a nursing angle and their key findings were that skill mix should be thought of as task allocation rather than delegation and that sharing of tasks was more equitable. They highlighted the difficulties of inter professional team working.

Skill mix in UK primary care has occurred against the background of the General Medical Services (GMS) contract. The concerns that GPs have regarding the indemnity and safety issues have been addressed by clinical governance arrangements where the responsibility of quality of care for patients is the responsibility of all health professionals.

Practice level	Professional level	System level
<p>Wider role Doctors argue that when they see a patient they are seeing the “whole” patient and that other professions don’t do this. Nurses argue that there is more to nursing than simply performing a task and that nursing assistants might not do this. Doctors do not think that nurses should diagnose conditions as they see that as the role of the doctor.</p> <p>Payment systems The Medicare payment system hampers changes in skill mix. The fee for service model offers no incentive to restructure care.</p> <p>Hierarchy / control There is an assumption that doctors do not make mistakes and that other health professionals might. Many of the doctors concerns address the issues of safeguards, standardisation to minimise error, assessment of competency etc. This may be a symptom of the lack of indemnity arrangements for other health professionals and fear of being liable themselves.</p> <p>Teamwork Doctors are less keen to work in a team unless they are in charge of that team. Shared records may help to foster teamwork.</p> <p>Patient expectations There is an assumption that patients would not understand skill mix and changing roles of health care professionals</p>	<p>Safety Overarching theme is safety. Doctors are concerned about the safety of other health professionals providing care on their behalf. There needs to be adequate indemnity arrangements and checks of other professionals.</p> <p>Minimum standards Other health professionals must meet minimum standards to ensure quality of care. This could also be achieved by licensing roles such as Nurse Practitioner, AHW.</p> <p>Training and ongoing accreditation Other health professionals must undergo extensive training and preferably with on-going accreditation in order to ensure minimum standards are met. Lack of training opportunities for practice nurses.</p> <p>Define scope of practice In order to delegate tasks roles must be clearly defined, both doctors and nurses are reluctant to do this. Scope of practice is influenced by history not always defined by the evidence.</p> <p>Control / power Doctors see skill mix as a threat to their skills and knowledge. They see themselves as the primary care team leaders. They are opposed to change that threatens their role such as nurse prescribing.</p> <p>Continuity of care Skill mix changes threaten the doctor patient relationship and continuity of care</p> <p>Understanding of other professions Professionals are trained separately and then expected to work together in multidisciplinary team care but do not understand the full roles of the professionals in the team.</p>	<p>Salaries As team members become more skilled they will demand higher salaries. They may also be less flexible.</p> <p>Sustainability Any skill mix solution must be sustainable and not shift workforce shortages to another professional group. Doctors are concerned that if they delegate some simpler tasks they will have no “catch-up” time in their day if all their cases are complex and increase their risk of burn out.</p> <p>Health care teams If teams become too large (teams of specialists) then it becomes more difficult for the patients to negotiate their way through the maze. Large teams are more difficult for organisations to manage. Continuity of care will be affected. The professions rather than the skills they bring define teams.</p> <p>Career structure Parallel career ladders for different professionals but it is not clear how they relate to one another. Attractive career structure will improve uptake of training for nursing assistants and retention of staff. Nurses are highly trained, without challenges and complex roles more will leave. Career change means you go to the bottom of the ladder again.</p> <p>Status Aged care is seen as low status across many professions. Technical or skilled tasks are valued more highly than “caring” or domestic tasks.</p> <p>Payment Current Medicare system prevents skill mix changes.</p>

Table 13. Summary of the main themes emerging from Australian non-experimental literature on skill mix

Practice level	Professional level	System level
<p>Clarity of roles Lack of understanding of the roles of different health professionals hampers effective skill mix. If health professionals do not understand the role of other health professionals it makes it difficult to share tasks. Patients do not always understand the roles of different health professionals. Older people wanting home visits would continue to ask for the same GP.</p> <p>Payment systems In the UK the new GMS contract has facilitated the use of other health professionals. Practices receive payments for meeting quality standards in four areas: clinical, organisational, patient experience and additional services offered. The drawback is that practices concentrate on services that generate fees more easily rather than those most needed. In order to achieve this GPs have had to make good use of a range of other health professionals.</p> <p>Efficiency NPs are able to deal safely with minor illness and same day appointments. Evidence that the use of nurse practitioner did not always reduce the amount of time patients had to wait to see a GP. Some authors reported that NPs did reduce the workload of GPs such that the GP was able to increase the consultation time. Those patients who were seen by the NP were usually happy with the service and felt the nurse had explained things in detail. NP helped to take the pressure off female GPs by providing care to women.</p> <p>Hierarchy / control Within a practice there was disagreement over the role of the NP, even between the GPs. NPs reported feeling a lack of support from practice staff. NPs did not always have the same autonomy over their workload as GP colleagues</p> <p>Supervision There is evidence that assistants can provide effective nursing care but over time the opportunity for supervision may be reduced. Skills of health care assistants may not be transferable</p>	<p>Career structure Medicine and nursing have a hierarchical career structure. Skill mix changes such as NP substituting for GPs takes a nurse out of the nursing hierarchy but they do not fit into the GP hierarchy. Some NPs felt isolated and without a clear role definition.</p> <p>Professional philosophy The training of nurses and doctors is different and this has an impact in the way that they approach patients. PAs are trained in the medical model and if nurses took on this role they would not be using their nursing training so better to recruit from science graduates</p> <p>Control / power GPs are threatened by the NP. Nurses see skill mix changes as a way of health service managers saving money by employing less skilled nurses. Often resistance to NP role comes from nurses themselves. GPs are threatened by NPs. GPs are concerned that they are losing their monopoly as the gatekeeper of primary care services as nurses and pharmacists take on more roles. There are turf wars between different types of nurses as they are concerned about level of qualifications. GPs did not sign off on protocols for nurses. The health system is changing and the argument as to who does what is becoming increasingly irrelevant in the UK.</p> <p>Licensing There is a need for indemnity if nurses are to prescribe.</p>	<p>Sustainability The GMS contract supports the role of salaried GPs that may appeal to female GPs who want to work part-time. Solutions to workforce shortages in one profession do not always take shortages in other professionals into account. Support for NP to develop is needed, if they are not supported and if there are not career opportunities then they will leave.</p> <p>Salaries Health care assistants were reluctant to take on more roles and tasks if their salary was going to remain the same. NP did not always see their salaries increase. As health professionals become more specialised they will want higher salaries.</p> <p>Payment structures The payment structures in the UK have supported the use of a variety of health professionals to meet quality standards.</p> <p>Health care teams If multidisciplinary teams are to be effective all members of the team need to be able to influence the decisions of the team. Currently health care assistants do not feel empowered to be able to do this.</p>

Table 14. Summary of the main themes emerging from UK non-experimental literature on skill mix

CASE STUDIES

ABORIGINAL HEALTH WORKERS

SKILL MIX

Current roles of Aboriginal Health Workers (AHW) include cultural brokerage, clinical functions, health promotion and community development [21] [22]. The evolution of the Australian AHW has been that of an indigenous person working in conjunction with a health team providing culturally appropriate primary health care. There has been some confusion about the many roles AHWs have been expected to perform and the legislative framework for these activities.

SETTING

Most AHWs work in Aboriginal Community Controlled Health Organisations or state health facilities [23].

TRAINING

A recent project from the Community Services and Health Industry Skills Council was undertaken to allow national recognition of various competencies and therefore some recognition of skills and potential portability of qualifications [24]. The Aboriginal Health Worker and Torres Strait Islander Health Worker qualifications were signed off by state/territory ministers for Education and Training in 2007. A separation of roles is proposed with Certificate IV qualifications in community care (community development and health promotion) and in Primary Health care (clinical) [24].

It is clear that the new competencies will also describe related vocational streams currently encompassed by the term aboriginal health workers such as liaison, patient transport, alcohol and substance misuse workers, social and emotional well being workers and men's, women's and sexual health workers

It is likely that the new qualifications framework will have an impact on how any moves toward registration or accreditation may be considered, especially in formally defining skills required for scope of practice and identifying career pathways between AHW and other roles.

LICENSING

Licensing of AHW roles currently only occurs in the Northern Territory (NT) and is associated with prescribing registration. With individual state responsibility for training and licensing the new clinical stream Certificate IV will be used as the basis for continuing licensure in the NT. Clinical supervision and line management usually occurs through the employing organisation and often by a senior health worker. For medication dispensing the scope of practice is defined by protocols and clinical practice guidelines. Drug therapy protocols are delivered under medical consultation.

PAYMENT SYSTEMS

Some limited capacity through Medicare in the last few years. In the Northern Territory where there is formal recognition of AHW approval has been given to extend Medicare item numbers for wound care and immunization and antenatal care previously only given to practice nurses [25].

Liability for AHWs remains with the employer usually Aboriginal Community Controlled Health Organisations (ACCHO) or the State Health employer.

ACCEPTABILITY / PATIENT PREFERENCES

AHWs perform an important and influential role as cultural brokers and interpreters for the health system. In the NT they have legislative support and licensing for a clinical scope of

practice, which has been shown to have positive effects on health of indigenous people [26]. Extending the legislative framework and the opportunity to use and support EPC item numbers would be advantageous for many aboriginal communities in Australia.

EXPANDED PARAMEDIC HEALTH CARE ROLES

SKILL MIX

The Expanded Paramedic health care role change involves retaining and enhancing pre-existing emergency skills of remote paramedics and adding clinical skills to enable them to provide community health services and chronic disease management [27]. The paramedics receive additional training in examination, assessment and management of a range of conditions and administration of pharmaceutical and other therapies. They also develop their skills working with small communities to identify their needs in terms of prevention of disease and injury (population health skills) [28]. The new expanded role for paramedics will involve legislation changes to permit paramedics to deliver some drugs under medical supervision.

SETTING

This project had its genesis in the deep north of Queensland with an exploration of the appropriate roles for paramedics in some of the Cape communities. Often whilst they attended to the infrequent but important emergency stabilisation and management of patients they were aware of other community needs. Delivery of health care in remote areas is often based on perception of need driving existing or available health professionals to move beyond traditional scopes of practice and develop new skills and new linkages within traditional health systems.

A literature review of extended paramedic roles was undertaken by the Australian Centre for Pre-Hospital Research and the University of Queensland [27]. A survey was undertaken to identify possible scope of practice in February 2006 [29].

TRAINING

Existing paramedics complete a Graduate Certificate in Rural and Remote Paramedic Practice, which is part-time over a twelve-month period in an external multimodal form. It has been developed as a collaboration between Queensland Ambulance Service (QAS), Queensland Health and Mount Isa Centre for Rural and Remote Health (MICRRH). In order to integrate the clinical component of the paramedic practice into the broader context of the health system, they complete the modified Remote Isolated Practice for Enhanced Rural Nursing (RIPERN) curriculum. This has been standardized for Queensland nursing and utilizes the shared text "The Primary Health Care Manual" to coordinate protocols across all sectors of rural and remote health in Queensland.

LICENSING

Accountability and maintenance of competent practice are managed via QAS and will be regularly assessed and peer reviewed. Indemnity is also provided by QAS.

Legislative change is a key component of this skill mix innovation with alterations needed to the Drugs and Poisons regulations. This is underway and will be overseen by a committee comprising a range of medical, nursing and ambulance personnel who will monitor health management protocols and drug therapy protocols.

PAYMENT SYSTEMS

The Queensland Ambulance Service is state funded with no current capacity for practitioners to charge for service provision

ACCEPTABILITY / PATIENT PREFERENCES

There is ongoing cross boundary negotiations with other health service providers in the areas to avoid duplication and competition and the co-ordination to support the organisation of new referral networks. There is ongoing licensing and development of clinical quality improvement and audit frameworks. In addition to this there is a need to maximise access to new technologies for ongoing training, clinical supervision and support including improved access to telemedicine.

KEY FINDINGS

Table 15. Summary of the key findings from the primary research papers

Skill-mix change	Effective Interventions	Effective on (outcome measures)	Education and supervision	Facilitators	Barriers
Doctor substitution by nurses	<p>Nurse case-management using guidelines, proactive follow-up and referral as necessary</p> <p>General patient consultation and support, care planning and goal setting.</p> <p>Patient triage and treatment of minor illnesses</p> <p>Patient self-management education</p>	<p>Professional adherence to guidelines</p> <p>Physiological measures of disease</p>	<p>Training of nurses by GPs and/or specialist on disease specific patient management</p> <p>Training of nurse by specialist allied health professionals i.e. diabetes educator, dietician etc.</p> <p>Nurse worked under the supervision of GPs and/or specialist</p>	<p>Nurse practitioners authority (restricted) to prescribe medications was already in place</p>	<p>GP or specialist supervision is required to implement intervention</p> <p>Nurse required additional training in patient management</p> <p>Nurse prescribing authority needs to be in place</p> <p>Nurse payment system needs to be in place</p>
Doctor substitution by pharmacists	<p>Medication review and maintenance (change of medication and/or dose adjustment or making recommendation to physician) as per published therapeutic algorithms and guidelines</p> <p>Proactive patient management, monitoring, goal-setting, follow-up and referral to primary care physician and to other health care professionals as appropriate</p> <p>Regular patient consultation and medication compliance check and medication counselling</p> <p>Pharmacist ensured medication compliance by keeping repeat prescriptions and dispensing when needed</p> <p>Proactive patient screening for disease risk factors and referral as necessary</p> <p>Face-to-face patient self-management education, motivation and distribution of education materials</p>	<p>Professional adherence to guidelines</p> <p>Patients adherence to treatment</p> <p>Physiological measures of disease</p> <p>Patient health status</p> <p>Patient satisfaction with health care</p>	<p>Training of pharmacists in disease and medication management.</p> <p>Training of pharmacist in disease screening, health promotion, inter-personal skills and patients' behaviour changing technique</p> <p>Pharmacist requiring postgraduate degree and residency training before being granted prescribing privileges</p> <p>Pharmacist supervision by physician and/or specialist</p>	<p>Pharmacists authority (restricted) to prescribe medication and to order laboratory test were already in place</p> <p>Pre-established collaborative relationship between primary care physician and pharmacist for patient management facilitated the implementation of the intervention</p> <p>Pharmacists having the knowledge to interpret laboratory test results and the authority make dose adjustment facilitated the implementation of the intervention</p>	<p>Pharmacists required additional training in patient management</p> <p>Pharmacist prescribing authority need to be in place</p> <p>Pharmacist pathology test ordering authority need to be in place</p> <p>Pharmacist payment system need to be in place</p> <p>Pharmacists are costlier than nurse and often in short supply</p>
Nurse enhancement	<p>General patient consultation, patient home-visits and support, care planning and goal setting</p> <p>Patient self-management education</p>	<p>Patient adherence to treatment</p> <p>Patient quality of life</p> <p>Patient functional status</p>	<p>Training of nurse in disease management and health promotion activities</p> <p>Primary care physician supervised nurse activities</p>	<p>A collaborative arrangement was already in place and nurse worked under supervision of a physician and or specialist</p>	<p>Primary care physicians might be inclined to keep overall control of patient management and use nurses' role and supplement to their own health care</p>
Innovation	Little published experimental evidence				

DISCUSSION

DEFINING SKILL MIX

The concept of skill-mix in health systems is complex. In its broadest term “skill-mix” refers to the mix of staff in the workforce [13]. According to Jarvis [30] skill mix is the use of one type of health professional to carry out roles or tasks traditionally performed by another health care professional. To Buchan and colleagues’ [31] skill-mix should include mix of skills or competencies possessed by an individual; or the ratio of senior to junior grade staff within a single discipline; or mix of different types of professionals in a multi-disciplinary team.

Skill-mix changes may involve a variety of developments at different levels of the health care system. In Table 16 we have summarised how skill-mix changes can be obtained at various level of the healthcare system.

Table 16. How skill-mix changes can be obtained at various levels of health system

Skill-mix changes		
Organisation level	Team-level	Individual level
By mix of post, grades or occupations to meet the needs of the population being served	By combination of health professionals within a team setting (both in terms of types of professionals and ratio)	Enhancement of roles and skills of individual workers
By combination of skills and competencies for each job as demanded by local needs		Task substitution across professionals divides
Substituting one type of workers for another and thus changing the ratio with the aim of improving efficiency		Task delegation within same profession
		By creating new generation of health workers eg. physician assistants

In this review we explored skill-mix changes between individual health care workers. The reason for this focus was primary care for community dwelling elderly population where skill-mix changes at an individual level are more relevant than skill-mix changes in a team setting or within an organisation.

We used the concept proposed by Sibbald et al [32] that skill-mix changes between individuals could be obtained through task substitution, enhancement, delegation and innovation. Though Sibbald’s concept provided a useful theoretical framework to examine the impact of skill-mix changes between individual health workers in primary care, the post-review consultations with the stakeholders revealed confusion among people about the skill-mix terms we had used, “substitution” in particular. It was important for us to understand this distinction. At the organisational level “substitution” means replacing one type of health professional by another, but at the individual level “substitution” usually refers to “task substitution”, where a person from a one professional background performs a task traditionally performed by another type of health professional.

Another issue that affected the review process was the lack of experimental literature specifically addressing skill mix changes in the continuous care of older community dwelling people. This made it extremely difficult to draw conclusions as to the effectiveness of substitution, enhancement, delegation and innovation in primary care workforce in this context. The published literature tended to focus on skill-mix changes that were already established such

as doctor substitution by nurses and pharmacists and to some extent nurse enhancement. There was lack of evidence examining doctor substitution by other health professionals or the impact of the newer generation health workers such as the physician assistant in primary care in the care of older people living in the community.

EXPERIMENTAL STUDIES

IMPACT ON PATIENT LEVEL OUTCOMES

The evidence presented in this review supports the substitution of doctors by nurses and pharmacists in the role of disease management or health promotion for older people with a range of chronic conditions. There was evidence that physiological measures of disease improved, as did adherence to treatment and health professional adherence to guidelines. The evidence for improved patient outcomes was stronger for pharmacists than for nurses, with pharmacists improving a greater range of patient outcomes compared to nurses substitution of doctors. In disease management programs where pharmacists performed tasks traditionally undertaken by doctors, patients were more likely to comply with their treatment regimen and were more likely to have their disease measures controlled. They were also more likely to have improved health status and higher satisfaction with health care. In disease management programs where nurses substituted for doctors, there were improvements in patient's disease measures but not other patient related outcomes.

There were a few studies examining the impact of nurse enhancement on quality of care and patient outcomes and no studies looking at nurse delegating tasks to other health workers in the nursing spectrum involved in the care of older people living in the community. The impact of the nurse enhancement interventions was to increase motivation of the patients to adhere to their treatment and in addition quality of life and functional status were improved.

IMPACT ON HEALTH SERVICE USE

It was interesting to note that when other health professionals substituted for doctors in disease management or health promotion there was not a reduction in health service use for both nurses and pharmacists. This has been reported elsewhere [33, 34] when nurses undertake disease management roles. The reason for this could be that disease management using guidelines may result in the health professional identifying changes in the health of the patient that necessitate referral back to the doctor or other services. This would not necessarily appear as increased service use if the GP were managing the patient as they could make more changes to treatment before needing to refer. The lack of effect or even potential increase in health service use with skill mix interventions means that skill mix interventions may not always be associated with cost savings.

DISEASE MANAGEMENT OR A COMBINATION OF DISEASE MANAGEMENT AND HEALTH PROMOTION

The evidence presented in this review suggests that the interventions most likely to be successful when performed by another health professional on behalf of a GP are disease management either alone or in combination with health promotion. For nurses, the disease management roles that produced positive results included case-management using guidelines, general patient consultation and support, care planning and goal setting. For pharmacists the disease management roles that were effective included medication review and maintenance using a standard algorithm, proactive patient management, monitoring and goal setting; regular patient consultation, medication compliance check, counselling, and patient screening. For both nurses and pharmacist disease management roles in combination with health promotion activities such as patient self-management education and motivation were likely to produce positive outcomes.

A health promotion alone did not tend to result in positive outcomes. The reason for this could be the nature of the health promotion task health professionals are asked to perform on behalf

of the GP. For example, it is difficult to affect change patient behaviour with a patient education program aimed at changing the life-style of patients with cardiovascular conditions irrespective of whether a doctor, a nurse or any other health professionals provides the education.

MEDICAL CONDITIONS

Search terms for specific chronic disease were not included in the database searches in this review to include/exclude any particular disease group because the focus of the review was older people living in the community. The results revealed that diabetes (and related conditions) and cardiovascular disease were the commonly used conditions to test the effectiveness of skill-mix changes in community dwelling primary care settings. This could be because of the suitability of those conditions for protocol driven disease management and clear unambiguous outcomes measures.

There was little experimental evidence in this review to support the role of the physician assistant in the management of older people in the community. The main reason for this was because physician assistants had tended to be used in more acute situations and so we dropped during the search strategy.

NON-EXPERIMENTAL STUDIES

The themes emerging from the non-experimental literature suggest that there is considerable resistance to skill mix changes such as substitution of doctors by other health professionals as illustrated by a recent press release from the Australian Medical Association [35] yet the evidence suggests that this may not be the case [36]. Some of this opposition may be because of a misunderstanding of the term skill mix and in particular the term "substitution" and also loss of control. In the context of this review "substitution" meant the substitution of tasks usually performed by the GP by another health professional and not substitution of a whole person and their wider role. However, if skill mix changes are viewed in terms of role enhancement then many health professionals believe that their training equips them for extended roles [6].

Many of the barriers to skill mix change in Australia operate at the professional and health system levels. There is resistance from doctors who argue that there are safety concerns to delegating tasks to other health professionals and that to do so would affect continuity of care [37]. Nurses are reluctant to delegate tasks to nursing assistants because they argue that nursing is more than a collection of tasks to be delegated and pharmacists are concerned about the possibility of nurse practitioners prescribing on safety grounds. A further complication of the concept of task substitution is the role of supervision and who provides that supervision. Health professionals in hospital settings work in profession-specific hierarchical structures with supervision provided within the profession. These structures exist in parallel with other professional hierarchies in hospitals. In primary care these hierarchies do not exist to the same extent and the concept of interdisciplinary supervision is not straightforward [20]. The notion of a GP supervising a nurse performing nursing tasks is difficult, it may be more useful to think in terms of clinical governance and accountability and shared responsibility for tasks [38, 39].

Aged care is seen as low status and has experienced particular difficulty recruiting and maintaining health professionals such as nurses [40] in favour of more high-tech nursing [41] and this adds to workforce shortages.

WHAT LESSONS CAN AUSTRALIA LEARN FROM THE UK?

Exploring the non-experimental data from a health system such as the UK provided some insights into the issues around skill mix and the way in which the debate has progressed over time. There was reluctance amongst health professionals initially to consider skill mix innovations and there was resistance from doctors to the expanded role of nurses. Similar concerns about loss of control emerged. The event that changed things in the UK was the General Medical Services (GMS) contract and this facilitated the use of other health professional to provide services in primary care and to meet the targets set by the government. GPs quickly

saw the benefit of practice nurses providing some of the routine care and many have increased their earnings as a result of the Quality and Outcomes Framework [42, 43]. The current fee for service model of payment in Australia does not encourage this type of task transfer in general practice though on a smaller scale GPs have seen the advantage of practice nurses and nurses providing services on contract arrangements contributing to chronic disease care through assisting with health assessments of older people and care plans for those with complex chronic illnesses. .

Increasing skill mix and role enhancement in the UK has not been without its problems. Health professionals exist within an extremely hierarchical unidisciplinary career structure. Skill mix developments such as the role of the nurse practitioner takes nurses out of the traditional nursing career and supervision structure. They report being isolated as they exist somewhere between the nursing structure and the medical structure [44].

POLICY ISSUES AND OPTIONS

SCOPE OF PRACTICE

Health professionals have a limited understanding of the roles and scope of practice of other health professionals in the management of certain conditions. In order for skill mix changes to be effective the Productivity Commission report highlighted the importance of the need for health professionals to define their role [6]. Neither doctors nor nurses are keen to define their role to determine the potential for delegation or enhancement as both consider any contact with patients as important to further develop the doctor patient relationship and continuity of care, or as an opportunity to provide broader nursing care. The trials of allied health assistants in Western Australia highlighted what can be achieved in skill mix when health professionals defined their scope of practice and that of the assistants [45]. This was supported by a comprehensive training and supervision program and the allied health professionals were directly involved in providing this for the assistants [46]. Duckett suggested that a regulatory framework for delegation may help guide health professionals and address their concerns [47].

The role of some health professionals in providing care for older people with complex needs in the community may be dependent on referral from another. For example, pharmacists are able to undertake home medicines reviews, which may highlight medication issues for older people with polypharmacy, but they require doctor referral [48].

HEALTH PROFESSIONAL TRAINING

Some of the lack of awareness about the roles of other health professionals arises during training as health professionals are educated separately and then expected to work together in a team upon graduation [49]. Interprofessional education is being offered at a number of universities such as the University of Queensland and involves students from medicine, physiotherapy, pharmacy, nursing, dietetics, speech pathology and occupational therapy. Pre and post testing indicated that students had a greater understanding of the role of other professionals and improved attitude to multidisciplinary care [50]. It is too early to tell whether this approach to undergraduate teaching will have an impact on perception of professional boundaries in the workplace. Other models of interprofessional education in Australia have included the training of the expanded role of paramedics in north Queensland. The approach there has been to utilise some of the course units from the Rural Isolated Practice Endorsed Registered Nurse (RIPERN) course rather than develop new stand-alone course units for topics such as chronic disease management particularly as they may be working along side each other in many of the rural and remote areas [29].

Not all health professionals in Australia have national standards for training and this makes movement of the workforce into areas of need more problematic on graduation. A national approach to training in Australia is available for undergraduate pharmacy but other disciplines, such as nursing, tends to vary state by state.

LICENSING AND PROFESSIONAL REGULATION

The complexity of the Australian health care system adds to the difficulty of the role of skill mix in the workforce. There are differences in the licensing, professional regulations and scope of practice for health professionals between states. For example, Aboriginal Health workers in the Northern Territory have access to Medicare benefits, which they do not have in other states such as NSW. In Queensland enrolled nurses can undertake additional training to become an advanced practice enrolled nurse [51]. However some professional groups such as community pharmacists and GPs have a national approach to regulation through the Pharmacy Guild and the Royal Australian College of General Practitioners (RACGP).

Some of these differences in registration and licensing are currently being addressed by the National Health Workforce Strategic Framework [52], which held its first forum in May 2007. The aim is to develop a national approach to work force issues such as registration and qualifications. The Community Services and Health Industry Skills Council have developed a national training and qualifications skills framework to assist with the consistency of VET sector training of health professionals [53]. This system would ensure that health workers such as Aboriginal Health Workers do not work unsupervised without a minimum of level IV qualifications [24].

PAYMENT SYSTEMS

Reimbursement for health care in Australia favours a medical model of care particularly in urban and metropolitan areas. In rural and remote areas there may be access to other funding streams outside Medicare to enable other health professionals to provide care. Also health services have been forced to explore ways of using health professionals other than doctors using MBS income from doctors to subsidise this. However, despite some innovation in the Enhanced Care Program, in urban general practice most fee for service payments are linked to provision of care by a single provider rather than team care.

In addition, there is also an expectation from health professionals that pay should increase with increased training. This was seen particularly in the health assistants role as they were reluctant to take on more nursing roles if they were not going to see an increase in their salaries [54]. This may be more pronounced in an area such as institutional aged care, which traditionally has been seen to have low status and offers less opportunity for specialisation and advancement.

Improvements in the quality of care for a variety of conditions have occurred through the Quality and Outcomes Framework in the UK [42, 43]. Here the quality of care has been shown to improve in terms of targets met and this is linked to payments to the practice but has been achieved by fully utilising a variety of health professionals in the practice and practice nurses in particular.

RURAL AND REMOTE AUSTRALIA

Communities in rural and remote Australia have tended to lead the way in developing innovative approaches to delivering health care, which includes skill mix such as allied health assistance in Western Australia [45] [46] and the expanded role of paramedics in North Queensland [29]. The most potent driver of this innovation has been need as many of these communities experienced shortages of health professionals and have been forced to take a more flexible approach to the delivery of health services. Skill mix innovations occur differently in that complex multi-disciplinary teams of highly specialised health professionals may not be appropriate and models tend to favour the development of broader skills.

The success of some of these innovative approaches to health care delivery / provisions in rural and remote areas may be because of the lack of rivalry and higher levels of personal knowledge and trust between health professionals. One of the barriers to skill mix identified in the Productivity Commission report was a lack of understanding of the role of other health professionals and a need to define the role. Because there are no other health professionals providing these services then there are fewer problems with overlapping roles or need for other professions to fully understand their roles. Skill mix innovations are not without their problems

in rural and remote areas. As they have developed out of need this may mean that there is not always sufficient supervision and support for health professionals in the field. This has implications for quality and safety if health professionals are functioning at the limits of their competence and confidence.

POLICY OPTIONS

A change in traditional health professional roles is often threatening and difficult to manage. Any change in role requires a high level of trust and collaboration between the health professional groups involved. The logic behind the policy options described here is that in order for changes in role to occur it is important to facilitate dialogue to build and support that process of trust between health professionals.

1. To develop a process for identifying and evaluating the significance of skill mix innovation. Currently innovation is driven by need and often occurs in rural and remote areas but may not be rigorously evaluated or successful changes generalised.
 - Explore how health professionals in other areas, particularly urban areas can learn from skill mix innovation in rural and remote Australia
 - a. Funding for projects to evaluate skill mix in a variety of settings including rural, metropolitan, urban and CALD communities.
 - b. Dialogue at the level of professional organisations to share information of successful and innovative approaches to skill mix for the care of older people.
2. To develop a process for the implementation of effective skill mix change.
 - Establish a Health Workforce Improvement Agency as recommended by the Productivity Commission.
 - Professional organisations representing doctors and nurses, particularly those in primary care, to discuss professional scope of practice and to identify opportunities for effective and supported task allocation in primary care for older people living in the community.
 - Focus on dialogue involving medicine and nursing as this is where the majority of barriers currently exist in Australia.
3. To streamline professional regulation, accreditation and training to ensure safety and quality of care for older people in the community.
 - A national system of registration within health professions. Removal of inconsistencies between States and Territories will facilitate the movement of health professionals nationally.
 - A national system of regulation of the scope of practice of health professionals. This would include national standards for health professional education and the standards recognised in the legal definitions of scope of practice in all States and Territories.
4. To ensure health professional education programs meet the national standards for accreditation. When other health professionals are performing tasks previously performed by medical practitioners, it is important that the health professional has received the necessary education or training and is well supported to ensure safety and quality of care.
 - Review the structures for dialogue between the health system and the health professional education system. This would support health professional education that is responsive to the workforce need.
 - Facilitate a greater understanding of the roles of health professional in the team by including interprofessional education at a range of levels such as undergraduate

education, vocational training and training provided by organisations such as Divisions of General Practice.

5. To modify the range of payment options that could be implemented to facilitate and support skill mix at a local level to provide ongoing care for a patient with chronic disease. Possible options might include:
 - Explore a payment to the primary care practice (general practice or Aboriginal Community Controlled Health Service) based on achieving benchmarks of quality of care for chronic disease. Payments would not be tied to a particular health professional providing the care to encourage greater local flexibility in task allocation.
 - Explore the expansion of the access to MBS payments for other health professionals to provide chronic disease care such as practice nurses or pharmacists receiving MBS payments for disease management roles.
 - Encourage patients with chronic disease to register with a particular GP for the ongoing management of their condition. This might include incentives for both the GP and the patient in the form of access to a wider range or increased number of items such as allied health visits.
 - Define and deliver roles and support team building at a local level with funding for the time needed to do this. This might include payments through PIP or Divisions to support the development of communication systems, negotiation around roles and team building at a local level.
6. To develop skills in change management in health professionals in primary care. Without an understanding of the process of change management and a readiness for innovation skill mix changes may not be adopted in practice.
 - Support the training of health professionals in change management.
7. Maximise the use of IT and e-health to ensure adequate clinical supervision particularly for clinicians in rural and remote areas and to enhance communication between team members.

SUMMARY

In Australia, workforce shortages are occurring in all health professions and in particular those working in primary care. There is a need for workforce innovation to meet the increasing demands of caring for an older population and the increasing prevalence of chronic disease and this has necessitated new thinking about workforce including the distribution of roles and responsibilities.

The key findings from this review indicate that interventions that addressed task substitution or allocation between doctors and nurses or doctors and pharmacists for the care of community dwelling older people in primary care were associated with improved patient and process outcomes. The enhancement of the role of nurses was also associated with improvements in patient outcomes. However the results suggest that skill mix interventions for the care of older people in the community may not reduce health service use.

The review does not provide a clear solution to some of the barriers or concerns about task substitution although teamwork is a pre-requisite for changing the skill mix in general practice. The policy options presented are multifaceted and operate across a range of levels, including scope of practice, licensing, regulation and accreditation, training, payment systems, health professional and patient acceptance of roles and change management none of which can operate in isolation.

REFERENCES

- [1] Australian Bureau of Statistics (ABS). Population projections Australia 2004-2101. Canberra: ABS; 2005. Report No.: ABS Cat No. 3222.0
- [2] Shah S, Harris M, Conforti D, Dickson H, Fisher R. Elderly Care: A pilot project on opportunistic geriatric assessment in general practice. *Australian Family Physician*. 1997;26:275-9.
- [3] Australian Institute of Health and Welfare (AIHW). Heart, stroke and vascular diseases: Australian facts 2004. Canberra: Australian Institute of Health and Welfare; 2004. Report No.: AIHW Cat No. CVD 27.
- [4] Britt H, Sayer G, Miller G, Charles J, Scahill S, Horn F, et al. BEACH - Bettering the Evaluation and Care of Health: A study of general practice activity, six month interim report. Canberra: Australian Institute of Health and Welfare; 2002. Report No.: General Practice Series 4. 4.
- [5] Mathers C, Vos T, Stevenson C. The burden of disease and injury in Australia. Canberra: AIHW; 1999. Report No.: AIHW Cat NoPHE 17.
- [6] Productivity Commission. Australian Health workforce research report. Canberra; 2005.
- [7] Australian Medical Workforce Advisory Committee. The general practice workforce in Australia: Supply and requirements to 2013. Sydney: AMWAC Report 2005.
- [8] Schofield D, Beard J. Baby boomer doctors and nurses : demographic changes and transitions to retirement. *Med J Australia*. 2005;183:80-3.
- [9] Sibbald B, Shen J, McBride A. Changing the skill-mix of the health care workforce. *Journal of Health Services & Research Policy*. 2004;9(Suppl 1):28-38.
- [10] Laurant M, Reeves D, Hermens R, Braspenning J, Grol R, Sibbald B. Substitution of doctors by nurses in primary care. *Cochrane Database of Systematic Reviews*. 2005(2):CD001271, 2005.
- [11] Cooper R, Stoflet S. Diversity and consistency: the challenge of maintaining quality in a multidisciplinary workforce. *J health Serv Res Policy*. 2004;9(Suppl 1):39-47.
- [12] Halcomb E, Patterson E, Davidson P. Evolution of practice nursing in Australia. *J Adv Nurs* 2006;55:376-88.
- [13] World Health Organisation. The World Health Report, 2000 – Health systems: improving performance. Geneva: World Health Organisation; 2000.
- [14] James Buchan, Mario R. Dal Poz. Skill mix in the health care workforce: reviewing the evidence. *Bulletin of the World Health Organization*. 2002;80:575-80.
- [15] Department of Health. HR in the NHS Plan More staff working differently. London: Department of Health; 2002.
- [16] National Rural Health Alliance. NRHA Submission to the National Review of Nursing Education; National Rural Health Alliance; 2001 August 2001.
- [17] Department of Health and Ageing. THE COMMUNITY-BASED AGED CARE WORKFORCE: A DESKTOP REVIEW OF THE LITERATURE; 2006 January 2006.
- [18] Aged Care Workforce Committee. NATIONAL AGED CARE WORKFORCE STRATEGY. Canberra: Commonwealth of Australia; 2005 March 2005.
- [19] Hogan WP. Pricing Review of Residential Aged Care. Canberra: Department of Health and Ageing; 2004.
- [20] Richards A, Carley J, Jenkins-Clarke S, Richards DA. Skill mix between nurses and doctors working in primary care-delegation or allocation: a review of the literature. *International Journal of Nursing Studies*. 2000;37(3):185-97.

- [21] National Rural Health Alliance. Aboriginal and Torres Strait Islander health workers. 2006 [cited 2007 31 August]; Available from: <http://nrha.ruralhealth.org.au/cms/uploads/publications/aboriginal%20and%20torres%20strait%20islander%20health%20workers.pdf>
- [22] Abbott K, Fry D, Ahmat C, Elliott R. Aboriginal Health Workers Competency Standards, Career Structures and History. 29 August 2001 [cited 2001 21 August]; Available from: <http://www.healthinonet.ecu.edu.au/cabahwa/article.htm>
- [23] Curtin Indigenous Research Centre. Training re-Visions A National Review of Aboriginal and Torres Strait Islander health Worker Training. Perth: Curtin Indigenous Research Centre; 2000.
- [24] Community Services and Health Industry Skills Council. Aboriginal Health Worker and Torres Strait Islander Health Worker Primary Health Care Qualifications. [cited 2007 21 August]; Available from: <http://www.cshisc.com.au/docs/upload/Aboriginal%20Health%20Worker%20and%20Torres%20Strait%20Islander%20Health%20Worker%20Quals.pdf>
- [25] Department of Health and Ageing. Medicare rebates for NT Aboriginal Health Worker services. 2006 [cited 2007 04 Sept]; Available from: <http://www.health.gov.au/internet/ministers/publishing.nsf/Content/health-mediarel-yr2006-ta-abb039.htm?OpenDocument&yr=2006&mth=3>
- [26] Si D, Bailie R, Togni S, d'Abbs P, Robinson G. Aboriginal health workers and diabetes care in remote community health centres: a mixed method analysis. *Med J Aust.* 2006 3 Jul;185(1):40-5.
- [27] Raven S, Tippett V, Ferguson J, Smith S. An Exploration of expanded paramedic healthcare roles in Queensland: Australian Centre for Prehospital Research; 2006 September 2006.
- [28] Raven S, Tippett V, Murdoch J, Stevens J, O'Brien A. Expanded paramedic health care roles in rural and remote communities. *National Rural Health Alliance Conference.* Albury 2007.
- [29] Queensland Ambulance Service. Rural and remote Paramedics expanded scope of practice paramedic survey; Mar 2006.
- [30] Jarvis S. Skill mix in primary care-implications for the future: NHS Medical Practice committee; 2001.
- [31] Buchan J, Dal Poz MR. Skill mix in the health care workforce: reviewing the evidence. *Bulletin of the World Health Organization.* 2002;80:575-80.
- [32] Sibbald B, Shen J, McBride A. Changing the skill-mix of the health care workforce. *Journal of Health Services Research & Policy.* 2004;9(Suppl 1):28-38.
- [33] Gravelle H, Dusheiko M, Sheaff R, Sargent P, Boaden R, Pickard S, et al. Impact of case management (Evercare) on frail elderly patients: controlled before and after analysis of quantitative outcome data. *BMJ* %R 101136/bmj3902041331055. 2006 November 15, 2006:bmj.39020.413310.55.
- [34] Laurant MGH, Hermens RPMG, Braspenning JCC, Sibbald B, Grol RPTM. Impact of nurse practitioners on workload of general practitioners: randomised controlled trial. *BMJ.* 2004 April 17, 2004;328(7445):927-.
- [35] Australian Medical Association. There is No Substitute for Your Doctor. 2007 27 July 2007 [cited 2007 30 August]; Press release]. Available from: <http://www.ama.com.au/web.nsf/doc/WEEN-75GVM5>
- [36] Ellis N, Robinson L, Brooks PM. Task substitution: where to from here? Meeting future health workforce needs is a challenge for all health professionals. *Med J Aust.* 2006 Jul 3;185(1):18-9.
- [37] Kidd MR, Watts IT, Mitchell CD, Hudson LG, Wenck BC, Cole NJ. Principles for supporting task substitution in Australian general practice. *Med J Aust.* 2006 Jul 3;185(1):20-2.

- [38] NSW Department of Health. NSW Clinical Governance Directions Statement. Sydney: NSW Department of Health; 2005.
- [39] Baker R, Lakhani M, Fraser R, Cheater F. A model for clinical governance in primary care groups. *BMJ*. 1999 March 20, 1999;318(7186):779-83.
- [40] Pearson; A, Nay; R, Midwifery; SoNa, University LT. Australian Aged Care Nursing: A critical review of education, Training, recruitment and retention in residential and community settings: DEST; 2001 5 Dec 2001.
- [41] Pearson A. Multidisciplinary nursing: re-thinking role boundaries. *Journal of Clinical Nursing*. 2003;12:625-9.
- [42] Campbell SM, Roland MO, Middleton E, Reeves D. Improvements in quality of clinical care in English general practice 1998-2003: longitudinal observational study. *BMJ*. 2005 November 12, 2005;331(7525):1121-.
- [43] Roland M. Linking Physicians' Pay to the Quality of Care -- A Major Experiment in the United Kingdom. *N Engl J Med*. 2004 September 30, 2004;351(14):1448-54.
- [44] Carnwell R, Daly WM. Advanced nursing practitioners in primary care settings: an exploration of the developing roles. *Journal of Clinical Nursing*. 2003;12:630-42.
- [45] Ivan Lin, Emma Birch, Belinda Goodale. Rural and remote therapy assistants in Western Australia: the development of a statewide approach. *NSW RRAH Conference 2005*.
- [46] Lin IB, Goodale BJ. Improving the supervision of therapy assistants in Western Australia: the Therapy Assistant Project (TAP). *Rural & Remote Health*. 2006 Jan-Mar;6(1):479.
- [47] Duckett SJ. Interventions to facilitate health workforce restructure. *Aust New Zealand Health Policy*. 2005 Jun 29;2:14.
- [48] Department of Health and Ageing. Home Medicines Review (HMR). 01 July 2005 [cited 2007 02 Sept]; Available from: <http://www.health.gov.au/internet/wcms/Publishing.nsf/Content/health-epc-dmmr.htm>
- [49] Del Mar CB, Dwyer N. A radical new treatment for the sick health workforce. *Med J Aust*. 2006 Jul 3;185(1):32-4.
- [50] Claire Louise Jackson, Caroline Nicholson, Treasure McGuire. Training the primary care team - A successful interprofessional education initiative. *Australian Family Physician*. 2006;35(10):753 - 832.
- [51] Queensland Government. Enrolled Nurse (Advance Practice). 2006 04 May 2006 [cited 03 September 2007]; Available from: http://www.health.qld.gov.au/nursing/enrolled_advanced.asp
- [52] Australian Health Ministers' Conference. NATIONAL HEALTH WORKFORCE STRATEGIC FRAMEWORK. Sydney: NSW Health Department; 2004 April 2004.
- [53] Community Services and Health Industry Skills Council. HLT07 Health Training Package Endorsed components - Qualifications Framework. Sydney: Community Services and Health Industry Skills Council, Commonwealth of Australia; 2007.
- [54] Hancock H, Campbell S. Developing the role of the healthcare assistant. *Nursing Standard*. 2006 Aug 16-22;20(49):35-41.

APPENDICES

APPENDIX 1: SEARCH STRATEGY FOR BLACK LITERATURE

Medline	Embase	CINAHL
Set 1 Health professionals		
1. exp Nurse Practitioners/ 2. exp Community Health Nursing/ 3. exp Nurse Clinicians/ 4. exp Nurses' Aides/ 5. exp Allied Health Personnel/ 6. exp Community Health Aides/ 7. exp Nurse's Role/ 8. nurs\$.tw. 9. district nurs\$.tw. 10. community nurs\$.tw. 11. health care assistant\$.tw. 12. exp Home Care Services/ 13. exp Home Nursing/ 14. nurs\$ assistant\$.tw. 15. personal care aide\$.tw. 16. enrolled nurse\$.tw. 17. neighbourhood nurs\$.tw. 18. ambulatory nurs\$.tw. 19. exp Physicians, Family/ 20. exp Pharmacists/ 21. exp Nurse Practitioners/ 22. exp Nurse Clinicians/ 23. exp Allied Health Personnel/ or exp Allied Health Occupations/ 24. exp Rural Health Services/ or exp Health Services, Indigenous/ 25. practice nurse\$.tw. 26. nurse practitioner\$.tw. 27. aboriginal health worker.tw. 28. indigenous health worker.tw. 29. general practitioner\$.tw. 30. (gp or gps).tw. 31. exp Community Pharmacy Services/ 32. pharmacist\$.tw. 33. allied health professional\$.tw. 34. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33	1. exp General Practitioner/ 2. exp PHARMACIST/ 3. exp case manager/ or exp clinical nurse specialist/ or nurse practitioner/ or exp family nurse practitioner/ or exp gerontologic nurse practitioner/ 4. exp rural health nursing/ or exp community health nursing/ 5. exp Rural Health Care/ 6. practice nurse\$.tw. 7. nurse practitioner\$.tw. 8. aboriginal health worker\$.tw. 9. indigenous health worker\$.tw. 10. general practitioner\$.tw. 11. (gp or gps).tw. 12. pharmacist\$.tw. 13. district nurse\$.tw. 14. allied health professional\$.tw. 15. exp case manager/ or exp expert nurse/ or exp registered nurse/ or exp staff nurse/ or exp advanced practice nurse/ or exp nurse practitioner/ 16. exp NURSING ASSISTANT/ 17. exp "quality of nursing care"/ 18. exp ambulatory care nursing/ or exp community care/ or exp home care/ 19. district nurse\$.tw. 20. practice nurse\$.tw. 21. enrolled nurse\$.tw. 22. health care assistant\$.tw. 23. personal care assistant\$.tw. 24. community nurse\$.tw. 25. nurse\$.tw. 26. personal care aide\$.tw. 27. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26	1. MH "Pharmacists" 2. MH "Physicians, Family" 3. MH "Nurse Practitioners" or MH "Adult Nurse Practitioners" or MH "Advanced Practice Nurses+ " 4. MH "Clinical Nurse Specialists" 5. MH "Allied Health Personnel+ " 6. MH "Rural Health Personnel" or MH "Rural Health Nursing" 7. TX practice nurse* 8. TX nurse practitioner* 9. TX aboriginal health worker* or TX indigenous health worker* 10. TX general practitioner* 11. TX general practitioner* or TX gp or TX gps 12. TX pharmacist* 13. TX district nurse* 14. TX allied health professional* 15. MH "Community Health Nursing+" or MH "Home Health Care+ " 16. MH "Nursing Assistants" or MH "Team Nursing" 17. MH "Home Health Aides" 18. MH "Nursing Role" 19. TX nurse* or TX community nurse* or TX health care assistant* 20. TX nurse assistant* 21. TX personal care assistant* 22. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21
Set 2 APHCRI Stream 4 Primary Health Care Filter		
35. exp Primary Health Care/ 36. exp Comprehensive Health Care/	28. exp general practice/ or exp primary medical care/ 29. exp general practitioner/	23. MH "Family Practice" or MH "Physicians, Family" 24. MH "Primary Health Care"

<p>37. exp Patient Care Management/ 38. exp Family Practice/ 39. exp Physicians, Family/ 40. exp Community Health Services/ 41. (primary adj1 (care or health)).tw. 42. (family adj1 (doct\$ or medic\$ or pract\$ or physic\$)).tw. 43. (general adj1 pract\$).tw. 44. (gps or gp).tw. 45. 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44</p>	<p>30. (general adj2 practi\$).tw. 31. (gps or gp).tw. 32. (family adj2 physician\$).tw. 33. exp primary health care/ 34. (family adj2 doctor\$).tw. 35. (family adj2 pract\$).tw. 36. (primary adj2 care).tw. 37. primary health.tw. 38. family medicine.tw. 39. 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38</p>	<p>25. TX gp or gps 26. TX general W2 practice 27. TX family W2 physician* 28. TX primary W2 care 29. TX primary W2 pract* 30. TX primary health 31. TX family medicine 32. 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31</p>
<p>Set 3 Study Design</p>		
<p>46. exp Research Design/ 47. exp Follow-Up Studies/ 48. exp Single-Blind Method/ 49. exp Prospective Studies/ 50. exp Random Allocation/ 51. exp Randomized Controlled Trials/ 52. exp Clinical Trials/ 53. exp Evaluation Studies/ 54. exp Double-Blind Method/ 55. exp Controlled Clinical Trials/ 56. 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 57. comparative stud\$.tw. 58. interrupted time series.tw. 59. experimental studies.tw. 60. ((comparative studies and animal) not human).tw. 61. (comparative studies and human).tw. 62. 60 not 59 63. (pretest or pre test or (posttest or post test)).tw. 64. (time adj series\$).tw. 65. experiment\$.tw. 66. impact\$.tw. 67. intervention\$.tw. 68. chang\$.tw. 69. evaluat\$.tw. 70. effect\$.tw. 71. 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 59 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69 or 70</p>	<p>40. Randomized Controlled Trial/ 41. (randomised or randomized).tw. 42. experiment\$.tw. 43. (time adj series).tw. 44. (pre test or pretest or post test or posttest).tw. 45. impact.tw. 46. intervention\$.tw. 47. chang\$.tw. 48. evaluat\$.tw. 49. effect?.tw. 50. compar\$.tw. 51. exp pretest posttest control group design/ or methodology/ or exp control group/ or exp double blind procedure/ or exp experimental design/ or exp parallel design/ or exp single blind procedure/ 52. 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51</p>	<p>33. MH Clinical Trials 34. TX controlled W2 study or TX controlled W2 trial 35. TX randomised or TX randomized 36. TX random\$ W1 allocat* or TX random\$ W1 assign* 37. MH Pretest-Posttest Design 38. MH Quasi-Experimental Studies 39. MH Comparative Studies 40. TX time series 41. TX experiment* 42. TX impact 43. TX intervention* 44. TX evaluat* 45. TX effect* 46. 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45</p>
<p>Set 4 Sibbald Skill Mix Filter</p>		
<p>72. exp Clinical Competence/ 73. exp Cooperative Behavior/ 74. exp Job Description/ 75. exp Professional Autonomy/ 76. clinical practice.tw.</p>	<p>52. exp clinical competence/ or nursing competence/ or exp professional competence/ 53. exp cooperation/ or exp teamwork/</p>	<p>47. MH "Clinical Competence+" or MH "Professional Competence+" 48. MH "Cooperative Behavior" 49. MH "Work Redesign"</p>

<p>77. deleg\$.tw. 78. multidisplin\$.tw. 79. substitut\$.tw. 80. cooperat\$.tw. 81. role\$.tw. 82. skill mix.tw. 83. health promotion.tw. 84. team\$.tw. 85. patient counseling.tw. 86. 72 or 73 or 74 or 75 or 76 or 77 or 78 or 79 or 80 or 81 or 82 or 83 or 84 or 85 87. 34 and 45 and 71 and 86</p>	<p>54. clinical practice.tw. 55. deleg\$.tw. 56. multidiscip\$.tw. 57. substitut\$.tw. 58. cooperat\$.tw. 59. role\$.tw. 60. skill mix.tw. 61. health promotion.tw. 62. team\$.tw. 63. patient counseling.tw. 64. 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63</p>	<p>50. MH "Job Description" 51. MH "Professional Autonomy" 52. TX clinical practice 53. TX deleg* 54. TX substitut* 55. TX cooperat* 56. TX role* 57. TX skill mix 58. TX health promotion 59. TX team* 60. TX patient counselling 61. TX multidisciplin* 62. 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61</p>
Limits		
<p>88. limit 87 to (humans and english language and yr="1990 - 2007") 89. exp Child/ 90. exp Child, Preschool/ or exp Infant/ 91. exp Adolescent/ 92. 89 or 90 or 91 93. 88 not 92</p>	<p>65. 27 and 39 and 52 and 64 66. limit 67 to (human and english language and yr="1990 - 2007" and (adult <18 to 64 years> or aged <65+ years>))</p>	<p>63. 22 and 32 and 46 and 62 English langaue Year 1990 to 2007 Adults >18 years old</p>

APPENDIX 2: SEARCH STRATEGY FOR GREY LITERATURE

AIHW http://www.aihw.gov.au/	National Primary and Community Health Network (website under construction, use: http://www.latrobe.edu.au/aipc/cdih/pchnetwork/05abstracts/
Arthritis Australia (AA) http://www.arthritisaustralia.com.au/	National Rural Health Alliance (NRHA) http://www.ruralhealth.org.au/nrhapublic/
Australian College of Rural and Remote Medicine (ACRRM) http://www.acrrm.org.au/	National Stroke Foundation (NSF) http://www.strokefoundation.com.au/
Australian Divisions of General Practice (ADGP) http://www.adgp.com.au/site/index.cfm?display=8	Northern Territory http://www.nt.gov.au/health/cdc/preventable/index.shtml
Australian Drug Foundation (ADF) http://www.adf.org.au/	NSW http://www.health.nsw.gov.au/living/chron.html
Australian Health Ministers' Advisory Council (AHMAC) Rural Subcommittee http://www.ahmac.gov.au/site/home.asp	Office for Aboriginal and Torres Strait Islander Health OATSIH www.health.gov.au/oatsih/cont.htm
Australian Indigenous Healthinonet http://www.healthinonet.ecu.edu.au/frames.htm	Osteoporosis Australia (OA) http://www.osteoporosis.org.au/html/index.php
Australian Lung Foundation (ALF) http://www.lungnet.org.au/	Practice nurse association www.apna.asn.au
Australian Medical Association (AMA) http://www.ama.com.au/web.nsf?opendatabase	Productivity commission www.pc.gov.au
Australian Nursing Federation (ANF) http://www.anf.org.au/	Public Health Association of Australia (PHAA) http://www.phaa.net.au/
Community services and health industry skills council www.cshisc.com.au	Queensland http://www.health.qld.gov.au/publications/corporate/chronstrat2005/default.asp
Consumers' Health Forum (CHF) http://www.chf.org.au/index.asp	Royal Australian College of General Practitioners (RACGP) http://www.racgp.org.au/
Cooperative Research Centre for Aboriginal Health http://www.crcah.org.au/	Royal College of Nursing Australia www.rcna.org.au
Department of Health and Ageing (DoHA) http://www.health.gov.au/	Rural Doctors Association of Australia (RDAA) http://www.rdaa.com.au/
DEST-Commonwealth Dept of Education science and Training http://www.dest.gov.au/	South Australia http://www.dh.sa.gov.au/pehs/publications/public-health-bulletin.htm
Diabetes Australia (DA) http://www.diabetesaustralia.com.au/home/index.htm	State and Territory directors of primary health care
Ethnic communities council http://eccv.org.au/doc	State based primary health care research centres attached to universities
Heart Foundation (HF) http://www.heartfoundation.com.au/	Tasmania http://www.dhhs.tas.gov.au/
Kidney Health Australia (KHA) http://www.kidney.org.au/?section=2&subsection=163	Victoria http://www.health.vic.gov.au/harp-cdm/
National Aboriginal Community Controlled Health Organisation (NACCHO) http://www.naccho.org.au/	WA http://www.anf.org.au/
National Asthma Council Australia (NAC) http://www.nationalasthma.org.au/index.htm	www.phcris.com.au

APPENDIX 3: STUDY VERIFICATION FORM

Endnote Record Number

--	--	--

Author and year

Journal

Title

Name/code of reviewer

INSTRUCTION: Please tick the appropriate box(es)

1. General

Published in English language Yes No *Do not continue*

Published in 1990 or later Yes No *Do not continue*

2. Types of Studies

Experimental Design

- RCT
- CCT
- CBA (with or without control group)
- ITS

If experimental design complete ALL sections of this form.

Descriptive Study

- Survey
- Editorial / discussion
- Policy paper
- Other please specify) _____

If descriptive design complete sections 3, and 4 only.

3. Setting

- Community setting
- Nursing home / hostel *If "yes" do not continue*
- Hospital setting *If "yes" do not continue*

4. Types of skill mix

Doctor substitution

Yes No

Expanding the breadth of a job, in particular by working across professional divides or exchanging one type of worker for another, e.g. GP for pharmacist

Enhancement of role

Yes No

Increasing the depth of a job by extending the role or skills of a particular group of workers, e.g. enhancing the role of practice nurses

Delegation of role

Yes No

Moving a task up or down a traditional unidisciplinary ladder, e.g. an enrolled nurse taking on the tasks normally performed by a registered nurse

Innovation or new role Yes No

Creating new jobs by introducing a new type of worker, e.g. physician assistant

5. Types of participants

Patients

Adult males and females aged 65 years and over living in the community receiving planned or continuous care in a primary or community care setting.

Sex	Male subjects	<input type="checkbox"/>	Female subjects	<input type="checkbox"/>
Age	≥ 65 years	<input type="checkbox"/>	≥ 45 years	<input type="checkbox"/> Include if also includes ≥ 65
Community dwelling		<input type="checkbox"/>		
Hostel or nursing home dwelling		<input type="checkbox"/>	If "yes", exclude	
Receiving one off assessments		<input type="checkbox"/>	If "yes", exclude	
Receiving planned care		<input type="checkbox"/>		
Receiving hospital outreach services		<input type="checkbox"/>	If "yes", exclude	
Others (specify)	_____			

Health care professionals

The intervention to the patient must be delivered by non-hospital health professionals (including doctors, nurses, pharmacists, allied health professionals) or other non-hospital staff (lay health workers or administrative staff) in a primary or community care setting.

Doctors	<input type="checkbox"/>	Pharmacists	<input type="checkbox"/>
Nurse practitioner	<input type="checkbox"/>	Practice nurse	<input type="checkbox"/>
Community nurse	<input type="checkbox"/>	Enrolled nurse	<input type="checkbox"/>
Other nurse	<input type="checkbox"/>	Home and Community Care Workers	<input type="checkbox"/>
Allied health professionals	<input type="checkbox"/>	Aboriginal Health Workers	<input type="checkbox"/>
Administrative staff	<input type="checkbox"/>	Lay health workers	<input type="checkbox"/>
Physician assistant	<input type="checkbox"/>		
Others (specify)	_____		

6. Types of outcome measures

Health professional performance	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Patient outcomes (eg blood pressure)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Patient satisfaction	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Health professional satisfaction	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Quality of life	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Health service use	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Economic measures	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Others (specify)	_____	

APPENDIX 4: QUALITY ASSESSMENT FORMS

For Randomised Controlled Trials & Controlled Clinical Trials

Endnote Record Number

Author and year _____

Journal _____

Title _____

Name/code of reviewer _____

TOTAL SCORE _____

Scoring: DONE=2; NOT CLEAR=1; NOT DONE=0

Concealment of allocation (protection against selection bias)

DONE ₂ NOT CLEAR ₁ NOT DONE ₀

DONE = Randomisation process is described explicitly, e.g. random number, coin flips, centralised randomisation scheme, an on-site computer system or sealed opaque envelopes.

NOT CLEAR = The unit of allocation is not described explicitly OR the unit of allocation was by patient or episode of care and the authors report using a 'list' or 'table', 'envelopes' or 'sealed envelopes' for allocation.

NOT DONE = Allocation using date of birth, date of admission, hospital numbers or alternation.

Adequate follow-up (protection against exclusion bias)

DONE ₂ NOT CLEAR ₁ NOT DONE ₀

DONE = Outcome measures obtained for 60-100% of subjects randomised.

NOT CLEAR = Not specified in the paper

NOT DONE = Outcome measures obtained for less than 60% of subjects randomised.

Blinded assessment of primary outcome(s) (protection against detection bias)

DONE ₂ NOT CLEAR ₁ NOT DONE ₀

DONE = Primary outcome(s) were assessed blindly OR the outcome variables are objective, e.g. length of hospital stay.

NOT CLEAR = Not specified in the paper

NOT DONE = The outcome(s) were not assessed blindly

Primary outcome(s) are those variables that correspond to the primary hypothesis or question as defined by the authors. In the event that some of the primary outcome variables were assessed in a blind fashion and others were not, score each separately and label each outcome variable clearly.

Baseline measurement

DONE ₂ NOT CLEAR ₁ NOT DONE ₀

DONE = Outcomes were measured prior to the intervention, and no substantial differences were present across study groups.

NOT CLEAR = Not reported, or if it is unclear whether baseline measures are substantially different across study groups.

NOT DONE = There are differences at baseline in main outcome measures likely to undermine the post intervention differences (e.g. are differences between the groups before the intervention similar to those found post intervention).

Reliable primary outcome measure(s)

DONE ₂ NOT CLEAR ₁ NOT DONE ₀

DONE = Two or more raters with at least 90% agreement or kappa ≥ 0.8 OR the outcome is obtained from some automated system e.g. length of hospital stay, drug levels as assessed by a standardised test.

NOT CLEAR = reliability is not reported for outcome measures that are obtained by chart extraction or collected by an individual.

NOT DONE = Agreement is less than 90% or kappa is less than 0.8.

In the event that some outcome variables were assessed in a reliable fashion and others were not, score each separately on the back of the form and label each outcome variable clearly.

Protection against contamination

DONE ₂ NOT CLEAR ₁ NOT DONE ₀

DONE = Allocation was by community, institution or practice and it is unlikely that the control received the intervention.

NOT CLEAR = Professionals were allocated within a clinic or practice and it is possible that communication between experimental and group professionals could have occurred.

NOT DONE = It is likely that the control group received the intervention (e.g. cross-over trials or if patients rather than professionals were randomised).

Methods of statistical analysis

DONE ₂ NOT CLEAR ₁ NOT DONE ₀

The study should include a statement describing or giving references for all statistical procedures used.

For Before and After and Controlled Before and After Studies

Endnote Record Number

Author and year _____

Journal _____

Title _____

Name/code of reviewer _____

TOTAL SCORE _____

Scoring: DONE=2; NOT CLEAR=1; NOT DONE=0

Contemporaneous data collection?

DONE ₂ NOT CLEAR ₁ NOT DONE ₀

DONE = Pre and post intervention periods for study and control sites are the same.

NOT CLEAR = If it is not clear in the paper

NOT DONE = If data collection was not conducted contemporaneously during pre and post intervention periods for study and control sites

Baseline measurement

DONE ₂ NOT CLEAR ₁ NOT DONE ₀

DONE = Outcomes were measured prior to the intervention, and no substantial differences were present across study groups.

NOT CLEAR = Not reported, or if it is unclear whether baseline measures are substantially different across study groups.

NOT DONE = There are differences at baseline in main outcome measures likely to undermine the post intervention differences (e.g. differences between the groups before the intervention similar to those found post intervention).

Characteristics for studies using second site as control

DONE ₂ NOT CLEAR ₁ NOT DONE ₀

DONE = Characteristics of study and control providers are reported and similar.

NOT CLEAR = Not clear in the paper e.g. characteristics are mentioned in the text but no data are presented.

NOT DONE = There is no report of characteristics either in the text or a table OR if baseline characteristics are reported and there are differences between study and control providers.

Blinded assessment of primary outcome(s)* (protection against detection bias)

DONE ₂ NOT CLEAR ₁ NOT DONE ₀

DONE = Primary outcome(s) were assessed blindly OR the outcome variables are objective, e.g. length of hospital stay.

NOT CLEAR = Not specified in the paper.

NOT DONE = The outcome(s) were not assessed blindly.

Primary outcome(s) are those variables that correspond to the primary hypothesis or question as defined by the authors. In the event that some of the primary outcome variables were assessed in a blind fashion and others were not, score each separately and label each outcome variable clearly.

Protection against contamination (Studies using second site as control)

DONE ₂ NOT CLEAR ₁ NOT DONE ₀

DONE = Allocation was by community, institution or practice and it is unlikely that the control received the intervention.

NOT CLEAR = Professionals were allocated within a clinic or practice and it is possible that communication between experimental and group professionals could have occurred.

NOT DONE = It is likely that the control group received the intervention (e.g. cross-over trials or if patients rather than professionals were randomised).

Reliable primary outcome measure(s)

DONE ₂ NOT CLEAR ₁ NOT DONE ₀

DONE = Two or more raters with at least 90% agreement or kappa ≥ 0.8 OR the outcome is obtained from some automated system e.g. length of hospital stay, drug levels as assessed by a standardised test.

NOT CLEAR = reliability is not reported for outcome measures that are obtained by chart extraction or collected by an individual.

NOT DONE = Agreement is less than 90% or kappa is less than 0.8.

In the event that some outcome variables were assessed in a reliable fashion and others were not, score each separately on the back of the form and label each outcome variable clearly.

Adequate follow-up (protection against exclusion bias)

DONE ₂ NOT CLEAR ₁ NOT DONE ₀

DONE = Outcome measures obtained for 80-100% of subjects randomised.

NOT CLEAR = Not specified in the paper

NOT DONE = Outcome measures obtained for less than 80% of subjects randomised.

Methods of statistical analysis

DONE ₂ NOT CLEAR ₁ NOT DONE ₀

The study should include a statement describing or giving references for all statistical procedures used.

APPENDIX 5: BRIEF DESCRIPTION OF THE 61 EXPERIMENTAL PAPERS

<p>[1] RCT Primary Care Urban, USA Duration: ? months</p>	<p>Control Group Diabetes N = 59 Intervention Group Diabetes N = 86</p>	<p>Skill Mix : Dr substitution by nurse Control intervention Usual care by physicians. Intervention Group intervention Nurse practitioners provided consultation for diabetes patients</p>	<p>Outcome measures Adherence to guidelines Documentation on education: Any teaching: Documentation on education: General diabetes education Documentation on education: Nutrition Documentation on education: Weight Documentation on education: Exercise Health service use Hospitalisation 6 months Specialist visits Quality of life Physical component Mental component Information received: Monitoring blood glucose Information received: Diet and exercise Information received: Complications of diabetes Information received: Side effects of medication Physiological measures of disease HbA1c Blurred vision Drowsiness Polyuria Nocturia</p>
<p>[2] BA Primary Care Urban, USA Duration: 24 months</p>	<p>Control Group Hypertension Ischaemic heart disease Diabetes N = 436 Same as Control</p>	<p>Skill Mix : Dr substitution by nurse Intervention Nurses undertook comprehensive CVD risk assessment, patient education, and counselling.</p>	<p>Outcome measures Physiological measures of disease SBP (mmHg) DBP (mmHg) LDL (mg/dL)</p>
<p>[3] CBA Primary Care Urban, Netherlands Duration: 36 months</p>	<p>Control Group Diabetes N = 400 Intervention Group Diabetes N = 1127</p>	<p>Skill Mix : Dr substitution by nurse Control intervention Usual care, no extra support for GPs. Intervention Group intervention Diabetes specialist nurse provided annual patient exam, education, and recommendations to GPs. Possibility of GPs sending patients to the nurses for on-demand consultation within primary care setting.</p>	<p>Outcome measures Adherence to guidelines Foot exam Eye exam HbA1c measurement BP measurement Total cholesterol Physiological measures of disease Percentage HbA1C<=7% Percentage BP<=150/85 mmHg Percentage total cholesterol <=5mmol/l</p>
<p>[4] RCT</p>	<p>Control Group Ischaemic heart</p>	<p>Skill Mix : Dr substitution by nurse Control intervention</p>	<p>Outcome measures Health service use</p>

AUSTRALIAN PRIMARY HEALTH CARE RESEARCH INSTITUTE

Primary Care Urban and rural, Scotland Duration: 12 months	disease N = 670 Intervention Group Ischaemic heart disease N = 673	Usual care by primary care physician Intervention Group intervention Review of patient's symptoms, treatment, BP, lipid, lifestyle factors and motivation for behavioural changes.	Hospitalisation rate Median length of stay in hospital (day) Median number of GP consultation in 3 months Quality of life SF_36 Role - Physical Health status Hospital anxiety score Depression score Chest pain reported Chest pain worsening reported Chest pain worsening reported
[5] RCT Primary Care Urban, USA Duration: 26 months	Control Group Asthma Diabetes Hypertension N = 510 Intervention Group Asthma Diabetes Hypertension N = 806	Skill Mix : Dr substitution by nurse Control intervention Usual care by primary care physician. Intervention Group intervention Nurse practitioners provided primary care follow up and ongoing care.	Outcome measures Health service use Hospitalisation Specialty visits, Primary care visits Quality of life SF_36 Role - Physical Provider attributes (mean) Overall satisfaction (mean)
[6] RCT Managed Care Organisation Urban, USA Duration: 12 months	Control Group Ischaemic heart disease Hypertension Rheumatoid arthritis N = 100 Intervention Group Ischaemic heart disease Hypertension Rheumatoid arthritis N = 101	Skill Mix : Dr substitution by nurse Control intervention Usual care by primary care physician and access to all activities available to intervention group. Intervention Group intervention Physical activity and chronic illness management counseling by geriatric nurse practitioner.	Outcome measures Health service use Hospitalisation (number) Total emergency visits Quality of life SF_36 Role - Physical Health status Depression-CES-D Health Assessment Questionnaire
[7] RCT Primary Care Urban, UK Duration: 3 months	Control Group N = 49 Intervention Group N = 47	Skill Mix : Dr substitution by nurse Control intervention Usual care by primary care physician Intervention Group intervention Case management for depressed elderly people by community psychiatric nurse.	Outcome measures Health service use Face-to-face visits to intervention nurse (mean) Hours of face-to-face contact over 3 months Health status Short-CARE score
[8] RCT Primary Care Urban and rural, Netherlands	Control Group N = ? Intervention Group N = ?	Skill Mix : Dr substitution by nurse Control intervention Usual care by primary care physician Intervention Group intervention Practices nurses undertook specific elements of	Outcome measures Health service use Number of contacts during surgery hours (mean) Number of contacts out of hours (mean) Quality of life

AUSTRALIAN PRIMARY HEALTH CARE RESEARCH INSTITUTE

Duration: ? months		care including: diagnostic tests, patient assessment and education, preventive patient visits and coordinating the care of patients.	GP Subjective workload: Available time (mean score) GP Subjective workload: Job satisfaction (mean score) GP Subjective workload: Inappropriate demands (mean score) GP Subjective workload: Cost benefit (mean score)
[9] RCT Primary Care Urban, UK Duration: 48 months	Control Group N = 670 Intervention Group N = 673	Skill Mix : Dr substitution by nurse Control intervention Usual care by primary care physician Intervention Group intervention Health promotion on medical and lifestyle components, and regular follow up by nurses.	Outcome measures Physiological measures of disease Aspirin management BP management Lipid management Modearte exercise Low fat diet Health status Non-smoking
[10] RCT Primary Care Urban, UK Duration: 12 months	Control Group N = 7308 Intervention Group N = 7184	Skill Mix : Dr substitution by nurse Control intervention Usual care Intervention Group intervention Nurses provided telephone consultations after-hours.	Outcome measures Adherence to guidelines Calls managed with nurse telephone advice (median) Calls managed with GP telephone advice (median) Patient attended primary care centre (median) Patient visited at home by duty GP (median) Health service use Hospitalisation within 24 hours of call (number) Advised to attend emergency or referred for admission (number) Emergency attendance within 3 days of call (number)
[11] CBA Community based care Urban, USA Duration: 12 months	Control Group Heart failure Hypertension Diabetes N = 10 Intervention Group Heart failure Hypertension Diabetes N = 13	Skill Mix : Dr substitution by nurse Control intervention Usual care by cardiologist and cardiac fellows Intervention Group intervention Patient education, medication compliance, diet and nutrition counselling	Outcome measures Quality of life QoL Index-Cardiac Tool: Total Functional capacity
[12] RCT Primary Care Urban, England Duration: ?months	Control Group N = 716 Intervention Group N = 562	Skill Mix : Dr substitution by nurse Control intervention Patient consultations by primary care physician Intervention Group intervention Patient consultations by nurse practitioners	Outcome measures Adherence to guidelines Prescription issued Investigation ordered Referral to secondary care Follow up advised Reconsultated for same problem Health service use Median length of consultation (min) Quality of life Adult patient satisfaction (median) Children patient satisfaction (median)

AUSTRALIAN PRIMARY HEALTH CARE RESEARCH INSTITUTE

<p>[13] RCT Primary Care Urban and rural, England Duration: ? months</p>	<p>Control Group N = 665 Intervention Group N = 651</p>	<p>Skill Mix : Dr substitution by nurse Control intervention Patient consultations by primary care physician Intervention Group intervention Patient consultations by nurse practitioners</p>	<p>Physiological measures of disease Outcome measures Adherence to guidelines Physical examination Prescription given Antibiotic prescribed Investigation ordered Patient acutally returned Health service use Hospital referral Mean number of return visits Mean total consultation time (min) Quality of life Adult patients: Medical interview satisfaction (mean) Adult patients: Communication (mean) Adult patients: Distress relief (mean) Adult patients: Clinical behaviour (mean)</p>
<p>[14] CCT Primary Care Rural, USA Duration: 12 months</p>	<p>Control Group Diabetes N = 252 Intervention Group Diabetes N = 252</p>	<p>Skill Mix : Dr substitution by nurse Control intervention Usual care provided by primary care physician. Intervention Group intervention Trained nurse providing diabetes care following detailed protocols and algorithms under the supervision of a diabetologist.</p>	<p>Outcome measures Adherence to guidelines Timely HbA1c measurement (% pt) Timely lipid profile (% pt) Timely eye exam (% pt) Timely diabetes education (% pt) Timely nutritional counselling (% pt) Physiological measures of disease HbA1c</p>
<p>[15] RCT Primary Care Urban, UK Duration: 6 months</p>	<p>Control Group Diabetes Hypertension N = 60 Intervention Group Diabetes Hypertension N = 60</p>	<p>Skill Mix : Dr substitution by nurse Control intervention Usual care Intervention Group intervention PN follwed BP management guidelines -- BP measured every month, drug compliance reviewed, pt education re: need for BP control and lifestyle changes for BP control. Also initiated drug changes if necessary thru attending physician.</p>	<p>Outcome measures Physiological measures of disease Systolic BP (mean) Diastolic BP (mean) Total cholesterol (mean) HDL (mean) HbA1c</p>
<p>[16] CBA Primary Care Urban, Netherlands Duration: 12 months</p>	<p>Control Group Diabetes N = 47 Intervention Group Diabetes N = 52</p>	<p>Skill Mix : Dr substitution by nurse Control intervention Usual care by internist and specialist nurse in the hospital Intervention Group intervention Quarterly consultation by diabetes specialist nurse in general practice and annually check up by hospital internist.</p>	<p>Outcome measures Adherence to guidelines Consultations with nurse specialist (mean) Consultation with GP (mean) Consultation with internist (mean) Consultation with nurse specialist+GP+internist (mean) Quality of life COOP/WONCA: Physical fitness Satisfaction about received diabetic care Physiological measures of disease</p>

AUSTRALIAN PRIMARY HEALTH CARE RESEARCH INSTITUTE

			HbA1c Total cholesterol (mmol/L) HDL-cholesterol (mmol/L) SBP (mmHg) DBP (mmHg) Health status Knowledge of diabetes
[17] RCT Primary Care Urban, Canada Duration: 12 months	Control Group N = 253 Intervention Group N = 250	Skill Mix : Dr substitution by nurse Control intervention Usual care Intervention Group intervention Nurse home-assessment of elderly people at risk of functional decline and reporting and recommending to pts' PCP for intervention.	Outcome measures Quality of life Functional Autonomy Measurement System Score
[18] RCT Primary Care Urban, USA Duration: 12 months	Control Group Diabetes Hypertension Lipid disorders N = 85 Intervention Group Diabetes Hypertension Lipid disorders N = 84	Skill Mix : Dr substitution by nurse Control intervention Usual care Intervention Group intervention RN assessed pts, orgained group-classes, made followup phone calls, and titrate medication using a treatment algorithm based of National guidelines.	Outcome measures Adherence to guidelines Foot exam as per guideline (% of pt) Eye exam as per guideline (% of pt) Flu shot as per guideline (% of pt) Dental exam as per guideline (% of pt) Pneumovax shot as per guideline (% of pt) Health service use HospitalED referral Physician visit per year (mean) Physiological measures of disease HbA1c Cholesterol (Total) LDL BP (systolic) BP (diastolic)
[19] RCT Primary Care Urban and rural, UK Duration: ? months	Control Group N = 915 Intervention Group N = 900	Skill Mix : Dr substitution by nurse Control intervention Usual care by primary care physician Intervention Group intervention Patient with minor illnesses management by practice nurses.	Outcome measures Adherence to guidelines Prescription written Advice about self medication given Advice about general self management given Care managed totally by allocated professional Referred to and seen by doctor at same visit Health service use Self-reported emergency room attendance Returned visits to surgery (mean) Self-reported out of hours calls to GP Mean length of consultation (min) Quality of life General satisfaction (mean) Professional care (mean) Depth of relation (mean) Perceived time (mean) Health status Self-reported health status
[20] RCT Primary Care Urban, USA	Control Group Hypertension N = 294 Intervention Group	Skill Mix : Dr substitution by nurse Control intervention Usual care Intervention Group intervention	Outcome measures Health service use Minute of phone call (average) Quality of life

AUSTRALIAN PRIMARY HEALTH CARE RESEARCH INSTITUTE

Duration: 24 months	Hypertension N = 294	Patient-tailored telephone to promote medication adherence and health behaviours.	Self-confidence with hypertension (mean) Health status Hypertension knowledge (median)
[21] RCT Primary Care Urban, USA Duration: 12 months	Control Group Diabetes N = 150 Intervention Group Diabetes N = 182	Skill Mix : Dr substitution by nurse Control intervention Usual care by primary care physician, no interaction with nurse case manager. Intervention Group intervention Nurse case management: behavioral goal setting, care plan, self-management education and patient surveillance.	Outcome measures Adherence to guidelines Eye exam Foot exam Urine albumin screen Pneumonia vaccination Dietician visit Physiological measures of disease SBP (mmHg) DBP (mmHg) LDL HbA1C Weight (kg) Health status Diabetes related distress PAID score
[22] BA Community based care Remote, Australia Duration: 36 months	Control Group Diabetes N = 137 Same as Control	Skill Mix: Dr substitution by others Intervention Aboriginal health workers provided diabetes care in remote community health centres.	Outcome measures No reportable outcome measure
[23] BA Community Urban, UK Duration: ? months	Control Group N = 143 Same as Control	Skill-mix: Dr substitution by pharmacist Intervention Community pharmacist review medications, identify risks, change medicine regime in liaison with GPs, and medication counselling.	Outcome measures Health service use Length (mins) of adherence support service time (median)
[24] CBA Pharmacy Rural, Australia Duration: ?months	Control Group N = 205 Intervention Group N = 185	Skill-mix: Dr substitution by pharmacist Control intervention Health promotion and cardiovascular risk factor screening service in community pharmacies. Intervention Group intervention Health promotion and cardiovascular risk factor screening service in community pharmacies.	Outcome measures Physiological measures of disease BMI (kg/m ²) Total cholesterol (mmol/L) SBP (mmHg) DBP (mmHg) Health status Current smoker Inadequate physical activity
[25] BA Primary Care Urban, USA Duration: ?months	Control Group Diabetes N = 23 Same as control	Skill-mix: Dr substitution by pharmacist Intervention Pharmacist provided diabetes education, medication counseling, monitoring and insulin initiation/adjustment.	Outcome measures Physiological measures of disease HbA1c Random blood glucose RBG (mg/dL) Fasting blood glucose FBG (mg/dL)
[26] RCT	Control Group N = 1404	Skill-mix: Dr substitution by pharmacist Control intervention	Outcome measures Health service use

AUSTRALIAN PRIMARY HEALTH CARE RESEARCH INSTITUTE

Pharmacy Urban and rural, UK Duration: 12 months	Intervention Group N = 905	Usual repeat prescribing system Intervention Group intervention Pharmacist kept repeated prescription and dispensed monthly following a protocol.	Hospital admission
[27] RCT Primary Care Urban and rural, Netherlands Duration: 6 months	Control Group Ischaemic heart disease Hypertension Diabetes N = 78 Intervention Group Ischaemic heart disease Hypertension Diabetes N = 74	Skill-mix: Dr substitution by pharmacist Control intervention Usual care by GPs Intervention Group intervention Community pharmacist provided monthly consultations for patients with heart failure about medication compliance	Outcome measures Health service use Total number of hospitalisation Quality of life COOP/WONCA
[28] RCT Pharmacy Rural and remote, Australia Duration: 6 months	Control Group N = 60 Intervention Group N = 46	Skill-mix: Dr substitution by pharmacist Control intervention Usual care by community pharmacist Intervention Group intervention Extra advice and support to patients with depression provided by rural community pharmacist when dispensing medication.	Outcome measures Health status K10 score Drug Attitude Index
[29] RCT Primary Care Urban, UK Duration: 12 months	Control Group N = 580 Intervention Group N = 608	Skill-mix: Dr substitution by pharmacist Control intervention Usual care by primary care physician Intervention Group intervention Pharmacists reviewed repeat prescription.	Outcome measures Health service use Admission to hospital at least once Outpatient appointment (median) General practice consultations (median) Average medication review time by pharmacist/patient (mins)
[30] CBA Managed Care Organisation Urban, USA Duration: 24 months	Control Group Depression N = 129 Intervention Group Depression N = 91	Skill-mix: Dr substitution by pharmacist Control intervention Usual care by primary care physicians. Intervention Group intervention Clinical pharmacist provided medication maintenance and follow up for patients depression.	Outcome measures Health service use Total visits to primary care physicians Mean phone contact with pharmacist (min) Quality of life Overall treatment Personal nature of care HMO overall Explanation why the antidepressants prescribed Health status Work and Social Disability Scale (WSDS) Inventory for Depressive Symptoms (IDS score)
[31]	Control Group	Skill-mix: Dr substitution by pharmacist	Outcome measures

AUSTRALIAN PRIMARY HEALTH CARE RESEARCH INSTITUTE

RCT Primary Care Rural, USA Duration: 6 months	Hypertension N = 26 Intervention Group Hypertension N = 25	Control intervention Usual care Intervention Group intervention Community pharmacist as member of interdisciplinary team monitored hypertensive patients.	Health service use Visit to pharmacist (mean) Quality of life SF_36 Role - Physical Overall, program provided a valuable service Satisfied with quality of information provided by pharmacist Better understanding of hypertension Satisfied with consultaiton area Physiological measures of disease SBP (mmHg) DBP (mmHg)
[32] RCT Primary Care Urban, Canada Duration: 5 months	Control Group Hypertension Osteoarthritis Ischaemic heart disease N = 458 Intervention Group Hypertension Osteoarthritis Ischaemic heart disease N = 431	Skill-mix: Dr substitution by pharmacist Control intervention Usual care by primary care physician Intervention Group intervention Pharmacist consultation including medication assessment, recommendation to physician, and patient follow up.	Outcome measures Health service use Admission to hospital (mean)Other health care services/visits to health professional (mean) Lab test/imaging procedures (mean) Physician visits (mean) Time spent with pharmacist (min) Quality of life SF_36 Role - Physical
[33] RCT Primary Care Urban and rural, Other Duration: 6 months	Control Group Hypertension N = 117 Intervention Group Hypertension N = 118	Skill-mix: Dr substitution by pharmacist Control intervention Usual care by hospital or primary care units. Intervention Group intervention Patients medication assessment, counselling, and recommendations for regimen changes by a pharmacist.	Outcome measures Physiological measures of disease SBP (mmHg) DBP (mmHg) Health status Regular exercise
[34] RCT Primary Care Urban, USA Duration: 24 months	Control Group Diabetes N = 39 Intervention Group Diabetes N = 41	Dr substitution by pharmacist Control intervention Usual care by primary care physician Intervention Group intervention Evaluation of patients' therapeutic regimens, disease and medication management.	Outcome measures Adherence to guidelines HbA1C measurement LDL measurement Eye exam within 2 years Urine albumin screen Foot exam Physiological measures of disease HbA1C
[35] BA	Control Group Diabetes	Skill-mix: Dr substitution by pharmacist Intervention	Outcome measures Health service use

AUSTRALIAN PRIMARY HEALTH CARE RESEARCH INSTITUTE

Primary Care Urban, USA Duration: 9 months	N = 138 Same as control	Pharmacist provided diabetes education, frequent phone follow up and medication algorithms for high-risk patients with diabetes.	Contact time per patient per month (mins) Physiological measures of disease HbA1C SBP (mmHg)
[36] RCT Primary Care Not clear, USA Duration: 6 months	Control Group Hypertension N = 27 Intervention Group Hypertension N = 26	Skill-mix: Dr substitution by pharmacist Control intervention Usual care Intervention Group intervention Monthly pt visit for appropriate changes to prescribed medication, dosage adjustment & drug counselling as per standard guidelines.	Outcome measures Physiological measures of disease Blood pressure - systolic (Mean) Blood pressure - diastolic (Mean)
[37] BA Pharmacy Urban, USA Duration: 12 months	Control Group Lipid disorders Hypertension N = 25 Same as control	Skill-mix: Dr substitution by pharmacist Intervention Patients with lipid disorders received therapeutic assessment, goal setting, therapy recommendation and follow up by pharmacists, and a visit with a registered dietician.	Outcome measures Quality of life SF_36 Role - Physical MKL: Availability MKL: Consultation MKL: Consideration MKL: Finance Physiological measures of disease Total cholesterol (mg/dL) HDL (mg/dL) LDL (mg/dL) Triglycerids (mg/dL)
[38] RCT Primary Care Urban, UK Duration: 6 months	Control Group N = 164 Intervention Group N = 168	Dr substitution by pharmacist Control intervention Pharmaceutical care issues identified without care planning. Intervention Group intervention Medication review led by a pharmacist	Outcome measures Adherence to guidelines Potential/suspected adverse drug reaction resolved Monitoring issues resolved Potential ineffective therapy resolved Education required resolved Inappropriate dosage regime resolved Health service use Number of admissionNumber of practice nurses contact for drug related or therapy monitoring Number of GPs contact for drug related or therapy monitoring Quality of life SF36 Total SF_36 Role - Physical
[39] RCT Pharmacy Other Duration: 18 months	Control Group N = 1164 Intervention Group N = 1290	Skill-mix: Dr substitution by pharmacist Control intervention Usual care Intervention Group intervention Pharmacist undertook patient assessment, education, and implemented compliance-improving strategies.	Outcome measures Health service use Hospitalisation Number of contact with GPs (mean) Quality of life SF_36 Role - Physical Rating the pharmacist services as excellent Satisfaction with the pharmacist services Overall positive opinion of pharmaceutical care

AUSTRALIAN PRIMARY HEALTH CARE RESEARCH INSTITUTE

<p>[40] RCT Community based care Urban and rural, USA Duration: ? months</p>	<p>Control Group N = 331 Intervention Group N = 344</p>	<p>Skill-mix: Dr substitution by pharmacist Control intervention Patients received the same brochure, general advice only with minimal follow-up Intervention Group intervention Community pharmacist provided patient education, point of care cholesterol measurement, and regular follow up, and brochures on risk factors</p>	<p>Outcome measures Adherence to guidelines Performance of a cholesterol panel New prescription of a cholesterol-lowering medication Increase dose of cholesterol-lowering medication Health service use Quality of life SF-12 physical health status General satisfaction with pharmacy services (mean) Satisfaction with pharmacist-physician communication (mean)</p>
<p>[41] CBA Primary Care Urban, USA Duration: ?months</p>	<p>Control Group Lipid disorders Hypertension Diabetes N = 41 Intervention Group Lipid disorders Hypertension Diabetes N = 47</p>	<p>Skill-mix: Dr substitution by pharmacist Control intervention Usual care Intervention Group intervention Pharmacist prescribing and adjusting the drug therapy for patients with elevated LDL.</p>	<p>Outcome measures Physiological measures of disease LDL (mg/dL) HDL (mg/dL) Total cholesterol (mg/dL)</p>
<p>[42] BA Pharmacy Urban, USA Duration: ?months</p>	<p>Control Group N = 111 Same as control</p>	<p>Skill-mix: Dr substitution by pharmacist Intervention Osteoporosis screening and intervention programme directed by a pharmacist in community setting.</p>	<p>Outcome measures Health status Self-rating of awareness of osteoporosis score Self-rating of risk (median)</p>
<p>[43] CCT Primary Care Urban, USA Duration: ?months</p>	<p>Control Group Diabetes N = 92 Intervention Group Diabetes N = 89</p>	<p>Skill-mix: Dr substitution by pharmacist Control intervention Usual care Intervention Group intervention Pharmacist provided diabetes care following detailed algorithms under supervision of a diabetologist.</p>	<p>Outcome measures Physiological measures of disease HbA1c</p>
<p>[44] BA Primary Care Urban, USA</p>	<p>Control Group Diabetes N = 157 Same as control</p>	<p>Dr substitution by pharmacist Intervention Diabetes management provided by clinical pharmacist.</p>	<p>Outcome measures Adherence to guidelines Eye exam Foot exam Urine microalbumin screening Physiological measures of disease</p>

AUSTRALIAN PRIMARY HEALTH CARE RESEARCH INSTITUTE

Duration: ?months			HbA1C LDL (mm/dL) Triglycerids (mg/dL) HDL (mg/dL)
[45] RCT Primary Care Rural, Other Duration: 6 months	Control Group Hypertension N = 41 Intervention Group Hypertension N = 41	Skill-mix: Dr substitution by pharmacist Control intervention Usual care- brief counselling, usual medication review & monitoring for adverse drug reactions. Intervention Group intervention Pharmacist monitor BP; assess pt's adherence to Rx; prevent, detect, and resolve drug related problems; and encourage lifestyle changes that control BP.	Outcome measures Physiological measures of disease Systolic blood pressure (mean) Diastolic blood pressure (mean)
[46] CCT Primary Care Urban, USA Duration: 24 months	Control Group Diabetes % Hypertension N = 75 Intervention Group Diabetes % Hypertension N = 75	Skill-mix: Dr substitution by pharmacist Control intervention Usual care Intervention Group intervention Clinical pharmacist-managed pharmacotherapy clinics in implementing and maximizing therapy with a agents known to reduce morbidity & mortality associated with CVD.	Outcome measures Physiological measures of disease Total cholesterol (mean) Triglyceride (mean) LDL (mean) HDL (mean)
[47] RCT Primary Care Rural, USA Duration: 12 months	Control Group Hypertension Lipid disorders Diabetes N = 36 Intervention Group Hypertension Lipid disorders Diabetes N = 33	Skill-mix: Dr substitution by pharmacist Control intervention Usual care Intervention Group intervention Pharmacists made recommendations to the pt's PCP re: therapy indications, dosage, drug interactions, therapy cost. These are based on published therapeutic algorithms and guidelines.	Outcome measures Adherence to guidelines Pt having at least 1 medication misadventure Pt medication knowledge score (mean) No. of medication prescribed (mean) Health service use Change in the no. of hospitalisation Change in referral to ED Quality of life SF_36 Physical role Satisfaction with pharmacist Physiological measures of disease % of pts having BP within limit (<140/<90) % of pts having HbA1C <7.5% % of pt meeting lipid goals % of pts meeting antocoagulation therapy goal
[48] RCT Primary Care Urban, Netherlands Duration: 24 months	Control Group Asthma COPD Other N = 137 Intervention Group Asthma COPD Other N = 139	Skill-mix : Innovation Control intervention Usual care by GP Intervention Group intervention Education for asthma and COPD patients by general practice assistants about disease	Outcome measures Quality of life Respiratory Illness QoL (mean) Physiological measures of disease Degree of dyspnea (mean) No chronic cough and phlegm production No wheezing

AUSTRALIAN PRIMARY HEALTH CARE RESEARCH INSTITUTE

		knowledge, inhalation technique, smoking cessation.	Health status Self-efficacy (mean) Coping style: Avoidance (mean) Coping style: Rational (mean) Coping style: Emotional (median) Coping style: Emotional (median) Correct inhalation technique
[49] RCT Primary Care Urban, USA Duration: 12 months	Control Group Diabetes N = 67 Intervention Group Diabetes N = 71	Skill-mix: Nurse enhancement Control intervention Usual care from primary care physician Intervention Group intervention Case management for diabetic patients	Outcome measures Health service use Admission rate Emergency visit rate Physiological measures of disease SBP (mmHg) DBP (mmHg) HbA1C Fasting blood glucose (mg/dL) Weight (kg) Health status Self-reported health status score
[50] BA Community Urban, Australia Duration: ?months	Control Group N = 24 Same as control	Skill-mix: Nurse enhancement Intervention Nurse-initiated medication intervention including assessment, education, support, adherence review.	Outcome measures No reportable outcome measure
[51] BA Managed Care Organisation Urban, USA Duration: ?months	Control Group Heart failure Diabetes Hypertension N = 51 Same as control	Skill-mix: Nurse enhancement Intervention Heart failure case management by a nurse.	Outcome measures Health service use Hospitalisation rate/year Cardiology visit rate Emergency room visit for heart failure rate General medical visits rate Total contact time/patient (hours) Quality of life Physical component Mental component Physiological measures of disease Dietary sodium intake (mg) Moderate/severe cough Moderate/severe dyspnea on exertion Moderate/severe orthopnea Moderate/severe fatigue
[52] RCT Primary Care Urban, Netherlands Duration: 18 months	Control Group N = 157 Intervention Group N = 159	Skill-mix: Nurse enhancement Control intervention Usual care Intervention Group intervention Community nurse provided assessment for factors causing falls and impairments in mobility at home and advice, referrals for elderly people living in the community	Outcome measures Health status At least one fall More than one fall Injurious fall Fall resulting in medical care Fall resulting in medical care Mental health (mean) Social functioning (mean)

AUSTRALIAN PRIMARY HEALTH CARE RESEARCH INSTITUTE

[53] RCT Community Urban, USA Duration: 36 months	Control Group N = 199 Intervention Group N = 215	Skill-mix: Nurse enhancement Control intervention Usual care (medical and social services) Intervention Group intervention Annual inhome comprehensive geriatric assessment and follow up by nurse practitioner	Outcome measures Health service use Hospitalisation rate Mean visits to physicians per month
[54] RCT Community Urban, UK Duration: 12 months	Control Group Other N = 89 Intervention Group Other N = 87	Skill-mix: Nurse enhancement Control intervention Usual care on discharge from rehab unit. Intervention Group intervention Stroke nurses provided outreach education and support to stroke patients and carers	Outcome measures Health status Nottingham: Total score (median) Nottingham: Energy (median) Nottingham: Emotional reaction (median) Nottingham: Physical mobility (median) Nottingham: Physical mobility (median) Nottingham: Pain (median) Nottingham: Social isolation (median)
[55] RCT Community Urban, Canada Duration: 14 months	Control Group Osteoarthritis Hypertension Other N = 69 Intervention Group Osteoarthritis Hypertension Other N = 73	Skill-mix: Nurse enhancement Control intervention Usual care. Intervention Group intervention The nurse provided patient review, assessment, and care plan for patients.	Outcome measures Adherence to guidelines Influenza vaccination Pneumonia vaccination Health service use Hospitalisation Visits to specialist Visits to family physician Days of hospital stay
[56] RCT Community Rural, Other Duration: 18 months	Control Group N = 60 Intervention Group N = 59	Skill-mix: Nurse enhancement Control intervention Usual routine and community care Intervention Group intervention Public health nurse provided preventive home visits for ambulatory housebound elderly.	Outcome measures Health service use Home visit number/18 month (mean) Health status Psycho. status: Self-efficacy for daily activities Psycho. status: Self-efficacy for health promotion Psycho. status: Geriatric Depression Scale Psycho. status: Noguchi Social Support Scale Psycho. status: Noguchi Social Support Scale
[57] CBA Primary Care Urban, UK Duration: 24 months	Control Group N = 66 Intervention Group N = 66	Skill-mix: Nurse enhancement Control intervention Usual care Intervention Group intervention Advanced primary nurses provided case management	Outcome measures Health service use Admission rate per month Mean length of stay (days)
[58] RCT	Control Group N = 60	Skill-mix: Nurse enhancement Control intervention	Outcome measures Quality of life

AUSTRALIAN PRIMARY HEALTH CARE RESEARCH INSTITUTE

Primary Care Urban and rural, UK Duration: 12 months	Intervention Group N = 67	Standard treatment: nurse usual advice Intervention Group intervention Screening and brief intervention for reducing alcohol consumption.	SF-12 Physical health Health status AUDIT score (mean) Standard drink units/week (mean) Drinking problem Index (mean)
[59] RCT Primary Care Urban, Canada Duration: 18 months	Control Group Ischaemic heart disease Diabetes N = 63 Intervention Group Ischaemic heart disease Diabetes N = 64	Skill-mix: Nurse enhancement Control intervention Usual care by primary care physician Intervention Group intervention Nurses provided follow up after patients discharge from hospital, monitor lipid level, recommend physician for appropriate intervention, and ensure treatment initiated.	Outcome measures Health service use Consultation time/patient/18months Quality of life Physiological measures of disease Percentage achieved LDL <2.5mmol/L Percentage achieved all lipid targets
[60] CBA Other Urban, England Duration: 24 months	Control Group Other N = 323 Intervention Group Other N = 293	Skill-mix: Nurse enhancement Control intervention Usual care (Patients in 2 neurological sites not in the programme) Intervention Group intervention Care provided to patients with MS by MS specialist nurse at rehab centres and neurological services.	Outcome measures Adherence to guidelines Information available on Care and Treatment Information available on Living with MS Care quality of named-coordinator Care quality of contact person Care quality of ability to get help in an emergency Quality of life SF_36 Role - Physical MSIS-29: Psychological
[61] RCT Primary Care Urban, UK Duration: 12 months	Control Group N = 567 Intervention Group N = 316 N =	Skill-mix: Nurse enhancement Control intervention Usual care Intervention Group intervention Brief behavioural counselling by practice nurses	Outcome measures Physiological measures of disease Total cholesterol (mmol/l) BMI SBP (mmHg) DBP (mmHg) Body weight (kg) Health status Cigarettes per day Fat score Number of exercise session Smoking quit

APPENDIX 6: LIST OF THE 61 EXPERIMENTAL PAPERS INCLUDED

- [1] Lenz ER, Mundinger MO, Hopkins SC, Lin SX, Smolowitz JL. Diabetes care processes and outcomes in patients treated by nurse practitioners or physicians. *Diabetes Educator*. 2002;28(4):590-8.
- [2] Carol P. McPherson, Karen K. Swenson, Donald A. Pine, Linda Leimer. A Nurse-Based Pilot Program to Reduce Cardiovascular Risk Factors in a Primary Care Setting. *Am J Man Care*. 2002;8:543-55.
- [3] Ubink-Veltmaat LJ, Bilo HJ, Groenier KH, Rischen RO, Meyboom-de Jong B. Shared care with task delegation to nurses for type 2 diabetes: prospective observational study. *Netherlands Journal of Medicine*. 2005 Mar;63(3):103-10.
- [4] Campbell NC, Thain J, Deans HG, Ritchie LD, Rawles JM, Squair JL. Secondary prevention clinics for coronary heart disease: randomised trial of effect on health. *BMJ*. 1998 May 9, 1998;316(7142):1434-7.
- [5] Mundinger MO, Kane RL, Lenz ER, Totten AM, Tsai W, Cleary PD, et al. Primary care outcomes in patients treated by nurse practitioners or physicians: a randomized trial... Copyright © 2000 American Medical Association. All rights reserved. *JAMA*, January 5, 2000-Vol 283, No. 1 pages 59-68. *Academic Nurse*. 2000 Spring;17(1):8-17.
- [6] Leveille SG, Wagner EH, Davis C, Grothaus L, Wallace J, LoGerfo M, et al. Preventing disability and managing chronic illness in frail older adults: a randomized trial of a community-based partnership with primary care. *Journal of the American Geriatrics Society*. 1998;46(10):1191-8.
- [7] Waterreus A, Blanchard M, Mann A. Community psychiatric nurses for the elderly: well tolerated, few side-effects and effective in the treatment of depression. *Journal of Clinical Nursing*. 1994;3(5):299-306.
- [8] Laurant MG, Hermens RP, Braspenning JC, Sibbald B, Grol RP. Impact of nurse practitioners on workload of general practitioners: randomised controlled trial. *BMJ*. 2004 Apr 17;328(7445):927.
- [9] Murchie P, Campbell NC, Ritchie LD, Simpson JA, Thain J. Secondary prevention clinics for coronary heart disease: four year follow up of a randomised controlled trial in primary care. *BMJ: British Medical Journal*. 2003;326(7380):84-7.
- [10] Lattimer V, George S, Thompson F, Thomas E, Mullee M, Turnbull J, et al. Safety and effectiveness of nurse telephone consultation in out of hours primary care: Randomised controlled trial. *British Medical Journal*. 1998;317(7165):1054-9.
- [11] Kutzleb J, Reiner D. The impact of nurse-directed patient education on quality of life and functional capacity in people with heart failure. *Journal of the American Academy of Nurse Practitioners*. 2006 Mar;18(3):116-23.
- [12] Kinnersley P, Anderson E, Parry K, Clement J, Archard L, Turton P, et al. Randomised controlled trial of nurse practitioner versus general practitioner care for patients requesting "same day" consultations in primary care. *BMJ*. 2000 April 15, 2000;320(7241):1043-8.
- [13] Venning P, Durie A, Roland M, Roberts C, Leese B. Randomised controlled trial comparing cost effectiveness of general practitioners and nurse practitioners in primary care. *BMJ*. 2000 April 15, 2000;320(7241):1048-53.
- [14] Davidson MB MB. Effect of nurse-directed diabetes care in a minority population,. *Diabetes Care*. 2003;8:2281-7.
- [15] Denver EA MB, R.G. Woolfson, K.A. Earle Management of uncontrolled hypertension in a nurse-led clinic compared with conventional care for patients with type 2 diabetes. *Diabetes Care* 2003;26 (8):2256-60.

- [16] Vrijhoef HJ, Diederiks JP, Spreeuwenberg C, Wolffenbuttel BH. Substitution model with central role for nurse specialist is justified in the care for stable type 2 diabetic outpatients. *Journal of Advanced Nursing*. 2001 Nov;36(4):546-55.
- [17] Herbert R RL, Roy PM, Bravo G, Voyer L. Age Efficacy of a nurse-led multi-dimensional preventive programme for older people at risk of functional decline: a randomized controlled trial. *Ageing*. 2001;30:147-53.
- [18] Taylor B NHM, K.R. Reilly, G. Greenwald, D. Cuning, A. Deeter, et al. . Evaluation of a nurse-care management system to improve outcomes in patients with complicated diabetes,. *Diabetes Care* 2003;26(4):1058–63.
- [19] Shum C, Humphreys A, Wheeler D, Cochrane M-A, Skoda S, Clement S. Nurse management of patients with minor illnesses in general practice: multicentre, randomised controlled trial. *BMJ*. 2000 April 15, 2000;320(7241):1038-43.
- [20] Bosworth HB, Olsen MK, Gentry P, Orr M, Dudley T, McCant F, et al. Nurse administered telephone intervention for blood pressure control: a patient-tailored multifactorial intervention. *Patient Education & Counseling*. 2005;57(1):5-14.
- [21] Gabbay RA, Lendel I, Saleem TM, Shaeffer G, Adelman AM, Mauger DT, et al. Nurse case management improves blood pressure, emotional distress and diabetes complication screening. *Diabetes Research & Clinical Practice*. 2006;71(1):28-35.
- [22] Si D, Bailie RS, Togni SJ, d'Abbs PH, Robinson GW. Aboriginal health workers and diabetes care in remote community health centres: a mixed method analysis. *Medical Journal of Australia*. 2006 Jul 3;185(1):40-5.
- [23] Raynor DK, Nicolson M, Nunney J, Petty D, Vail A, Davies L. The development and evaluation of an extended adherence support programme by community pharmacists for elderly patients at home. *International Journal of Pharmacy Practice*. 2000;8(3):157-64.
- [24] Krass I, Hourihan F, Chen T. Health promotion and screening for cardiovascular risk factors in NSW: a community pharmacy model. *Health Promotion Journal of Australia*. 2003;14(2):101-7.
- [25] Coast-Senior EA, Kroner BA, Kelley CL, Trilli LE. Management of patients with type 2 diabetes by pharmacists in primary care clinics. *Annals of Pharmacotherapy*. 1998;32(6):636-41.
- [26] Bond C, Matheson C, Williams S, Williams P, Donnan P. Repeat prescribing: A role for community pharmacists in controlling and monitoring repeat prescriptions. *British Journal of General Practice*. 2000;50(453):271-5.
- [27] Bouvy ML, Heerdink ER, Urquhart J, Grobbee DE, Hoe AW, Leufkens HGM. Effect of a Pharmacist-Led Intervention on Diuretic Compliance in Heart Failure Patients: A Randomized Controlled Study. *Journal of Cardiac Failure*. 2003;9(5):404-11.
- [28] Crockett J, Taylor S, Grabham A, Stanford P. Patient outcomes following an intervention involving community pharmacists in the management of depression. *Australian Journal of Rural Health*. 2006;14(6):263-9.
- [29] Zermansky AG, Petty DR, Raynor DK, Freemantle N, Vail A, Lowe CJ. Randomised controlled trial of clinical medication review by a pharmacist of elderly patients receiving on repeat prescriptions in general practice. *BMJ*. 2001;323:1-5.
- [30] Finley PR, Rens HR, Pont JT, Gess SL, Louie C, Bull SA, et al. Impact of a collaborative pharmacy practice model on the treatment of depression in primary care. *American Journal of Health-System Pharmacy*. 2002;59(16):1518-26.
- [31] Carter BL, Barnette DJ, Chrischilles E, Mazzotti GJ, Asali ZJ. Evaluation of hypertensive patients after care provided by community pharmacists in a rural setting. *Pharmacotherapy*. 1997 Nov-Dec;17(6):1274-85.
- [32] Sellors J, Kaczorowski J, Sellors C, Dolovich L, Woodward C, Willan A, et al. A randomized controlled trial of a pharmacist consultation program for family physicians and their elderly patients. *CMAJ: Canadian Medical Association Journal*. 2003;169(1):17-22.

- [33] Sookaneknun P, Richards RME, Sanguansermisri J, Teerasut C. Pharmacist involvement in primary care improves hypertensive patient clinical outcomes. *Annals of Pharmacotherapy*. 2004;38(12):2023-8.
- [34] Choe HM, Mitrovich S, Dubay D, Hayward RA, Krein SL, Vijan S. Proactive case management of high-risk patients with type 2 diabetes mellitus by a clinical pharmacist: a randomized controlled trial. *American Journal of Managed Care*. 2005;11(4):253-60.
- [35] Rothman R, Malone R, Bryant B, Horlen C, Pignone M. Pharmacist-led, primary care-based disease management improves hemoglobin A1c in high-risk patients with diabetes. *American Journal of Medical Quality*. 2003;18(2):51-8.
- [36] VivianEM. Improving blood pressure control in a pharmacist-managed hypertension clinic. . *Pharmacotherapy*. 2002;22:1533- 40.
- [37] Shibley MC, Pugh CB. Implementation of pharmaceutical care services for patients with hyperlipidemias by independent community pharmacy practitioners. *Annals of Pharmacotherapy*. 1997 Jun;31(6):713-9.
- [38] Krska J, Cromarty JA, Arris F, Jamieson D, Hansford D, Duffus PR, et al. Pharmacist-led medication review in patients over 65: a randomized, controlled trial in primary care. *Age & Ageing*. 2001 May;30(3):205-11.
- [39] Bernsten C, Bjorkman I, Caramona M, Crealey G, Frokjaer B, Grundberger E, et al. Improving the well-being of elderly patients via community pharmacy-based provision of pharmaceutical care: a multicentre study in seven European countries. *Drugs & Aging*. 2001;18(1):63-77.
- [40] Tsuyuki RT, Johnson JA, Teo KK, Simpson SH, Ackman ML, Biggs RS, et al. A Randomized Trial of the Effect of Community Pharmacist Intervention on Cholesterol Risk Management: The Study of Cardiovascular Risk Intervention by Pharmacists (SCRIP). *Arch Intern Med*. 2002 May 27, 2002;162(10):1149-55.
- [41] Till LT, Voris JC, Horst JB. Assessment of clinical pharmacist management of lipid-lowering therapy in a primary care setting.[see comment]. *Journal of Managed Care Pharmacy*. 2003 May-Jun;9(3):269-73.
- [42] Law AV, Shapiro K. Impact of a community pharmacist-directed clinic in improving screening and awareness of osteoporosis. *Journal of Evaluation in Clinical Practice*. 2005 Jun;11(3):247-55.
- [43] Davidson MB KV, Hair TL. . Effect of a pharmacist-managed diabetes care program in a free medical clinic. *Am J Med Qual* 2000;15:137-42.
- [44] Kiel PJ, McCord AD. Pharmacist impact on clinical outcomes in a diabetes disease management program via collaborative practice. *Annals of Pharmacotherapy*. 2005 Nov;39(11):1828-32.
- [45] Garcao JA CJ. Evaluation of a pharmaceutical care program for hypertensive patients in rural Portugal. *J Am Pharm Assoc (Wash)*. 2002;42:858-64.
- [46] Geber J PD, Beckey NP, Korman L. *Pharmacotherapy*. . Optimizing drug therapy in patients with cardiovascular disease: the impact of pharmacist-managed pharmacotherapy clinics in a primary care setting. 2002;22:738-47.
- [47] Taylor CT BD, Krueger K. I. Improving primary care in rural Alabama with a pharmacy initiative. . *Am J Health Syst Pharm*. 2003;60:1123-9.
- [48] Hesselink AE, Penninx BWJ, Daw, van Duin BJ, de Vries P, Twisk JWR, et al. Effectiveness of an education programme by a general practice assistant for asthma and COPD patients: results from a randomised controlled trial. *Patient Education & Counseling*. 2004;55(1):121-8.
- [49] Aubert RE, Herman WH, Waters J, Moore W, Sutton D, Peterson BL, et al. Nurse case management to improve glycemic control in diabetic patients in a health maintenance organization. A randomized, controlled trial.[see comment]. *Annals of Internal Medicine*. 1998 Oct 15;129(8):605-12.

- [50] Griffiths R, Johnson M, Piper M, Langdon R. A nursing intervention for the quality use of medicines by elderly community clients. *International Journal of Nursing Practice*. 2004;10(4):166-76.
- [51] West JA, Miller NH, Parker KM, Senneca D, Ghandour G, Clark M, et al. A comprehensive management system for heart failure improves clinical outcomes and reduces medical resource utilization. *American Journal of Cardiology*. 1997 Jan 1;79(1):58-63.
- [52] van Haastregt JC, Diederiks JP, van Rossum E, de Witte LP, Voorhoeve PM, Crebolder HF. Effects of a programme of multifactorial home visits on falls and mobility impairments in elderly people at risk: randomised controlled trial.[see comment]. *BMJ*. 2000 Oct 21;321(7267):994-8.
- [53] Stuck AE, Aronow HU, Steiner A, Alessi CA, Bula CJ, Gold MN, et al. A trial of annual in-home comprehensive geriatric assessments for elderly people living in the community.[see comment]. *New England Journal of Medicine*. 1995 Nov 2;333(18):1184-9.
- [54] Burton C, Gibbon B. Expanding the role of the stroke nurse: a pragmatic clinical trial. *Journal of Advanced Nursing*. 2005 Dec;52(6):640-50.
- [55] Dalby DM, Sellors JW, Fraser FD, Fraser C, van Ineveld C, Howard M. Effect of preventive home visits by a nurse on the outcomes of frail elderly people in the community: a randomized controlled trial.[see comment]. *CMAJ Canadian Medical Association Journal*. 2000 Feb 22;162(4):497-500.
- [56] Kono A, Kai I, Sakato C, Harker JO, Rubenstein LZ. Effect of preventive home visits for ambulatory housebound elders in Japan: A pilot study. *Ageing-Clinical & Experimental Research*. 2004;16(4):293-9.
- [57] Patrick H, Roberts N, Hutt R, Hewitt P, Connelly J, Oliver D. Nursing models and theory. Evaluation of innovations in nursing practice: report and discussion. *British Journal of Nursing (BJN)*. 2006;15(9):520-3.
- [58] Lock CA, Kaner E, Heather N, Doughty J, Crawshaw A, McNamee P, et al. Effectiveness of nurse-led brief alcohol intervention: a cluster randomized controlled trial. *Journal of Advanced Nursing*. 2006 May;54(4):426-39.
- [59] Lapointe F, Lepage S, Larrivee L, Maheux P. Surveillance and treatment of dyslipidemia in the post-infarct patient: can a nurse-led management approach make a difference? *Canadian Journal of Cardiology*. 2006 Jul;22(9):761-7.
- [60] Forbes A, While A, Mathes L, Griffiths P. Evaluation of a MS specialist nurse programme. *International Journal of Nursing Studies*. 2006 Nov;43(8):985-1000.
- [61] Steptoe A, Doherty S, Rink E, Kerry S, Kendrick T, Hilton S, et al. Behavioural counselling in general practice for the promotion of healthy behaviour among adults at increased risk of coronary heart disease: randomised trial • Commentary: Treatment allocation by the method of minimisation. *BMJ*. 1999 October 9, 1999;319(7215):943-8.

APPENDIX 7: LIST OF THE 30 GREY AND DESCRIPTIVE PAPERS INCLUDED

1. Spilsbury, K. and J. Meyer, Defining the nursing contribution to patient outcome: lessons from a review of the literature examining nursing outcomes, skill mix and changing roles. *Journal of Clinical Nursing*, 2001. **10**(1): p. 3-14.
2. Meek, I., Evaluation of the role of the health care assistant within a community mental health intensive care team. *Journal of Nursing Management*, 1998. **6**(1): p. 11-9.
3. Leese, B., New opportunities for nurses and other healthcare professionals? A review of the potential impact of the new GMS contract on the primary care workforce. *Journal of Health Organization & Management*, 2006. **20**(6): p. 525-36.
4. Hancock, H. and S. Campbell, Developing the role of the healthcare assistant. *Nursing Standard*, 2006. **20**(49): p. 35-41.
5. Philip, M. and B. Turnbull, A study into the effectiveness of unqualified GP assistants. *British Journal of Nursing*, 2006. **15**(14): p. 782-6.
6. Yong, C.S., Task substitution: the view of the Australian Medical Association.[see comment]. *Medical Journal of Australia*, 2006. **185**(1): p. 27-8.
7. Kidd, M.R., et al., Principles for supporting task substitution in Australian general practice.[see comment]. *Medical Journal of Australia*, 2006. **185**(1): p. 20-2.
8. Parle, J.V., N.M. Ross, and W.F. Doe, The medical care practitioner: developing a physician assistant equivalent for the United Kingdom.[see comment]. *Medical Journal of Australia*, 2006. **185**(1): p. 13-7.
9. Sibbald, B., M.G. Laurant, and D. Reeves, Advanced nurse roles in UK primary care.[see comment]. *Medical Journal of Australia*, 2006. **185**(1): p. 10-2.
10. Lin, I.B. and B.J. Goodale, Improving the supervision of therapy assistants in Western Australia: the Therapy Assistant Project (TAP). *Rural & Remote Health*, 2006. **6**(1): p. 479.
11. Vlastos, I.M., A.G. Mpatistakis, and K.K. Gkouskou, Health needs in rural areas and the efficacy and cost-effectiveness of doctors and nurses. *Australian Journal of Rural Health*, 2005. **13**(6): p. 359-63.
12. Crossan, F. and D. Ferguson, Exploring nursing skill mix: a review. *Journal of Nursing Management*, 2005. **13**(4): p. 356-62.
13. Perry, C., et al., The nurse practitioner in primary care: alleviating problems of access? *British Journal of Nursing*, 2005. **14**(5): p. 255-9.
14. Halcomb, E., et al., Australian nurses in general practice based heart failure management: implications for innovative collaborative practice. *European Journal of Cardiovascular Nursing*, 2004. **3**(2): p. 135-47.
15. Reveley, S., The role of the triage nurse practitioner in general medical practice: an analysis of the role. *Journal of Advanced Nursing*, 1998. **28**(3): p. 584-591.
16. Pearson, A., et al., Australian Aged Care Nursing: A critical review of education, Training, recruitment and retention in residential and community settings. 2001, DEST.
17. Pearson, A., Multidisciplinary nursing: re-thinking role boundaries. *Journal of Clinical Nursing*, 2003. **12**: p. 625-629.
18. Carnwell, R. and W.M. Daly, Advanced nursing practitioners in primary care settings: an exploration of the developing roles. *Journal of Clinical Nursing*, 2003. **12**: p. 630-642.

19. R Booth, S Roy, and H Jenkins, Old But not out-a snapshot of recognition and workplace training practices in the aged care sector, in Avestra. 2004: Eagle Hawk.
20. Judy Parker and David Dunt, Victorian Nurse practitioner project-Evaluation of Phase 1 demonstration projects.
21. Hogan, C.D., More than task substitution and transfer. *Med J Aust*, 2006. **185**(10): p. 575.
22. Duckett, S.J., Health workforce design for the 21st century. *Aust Health Rev*, 2005. **29**(2): p. 201-10.
23. Ellis, N., L. Robinson, and P.M. Brooks, Task substitution: where to from here? Meeting future health workforce needs is a challenge for all health professionals. *Med J Aust*, 2006. **185**(1): p. 18-9.
24. Del Mar, C.B. and N. Dwyer, A radical new treatment for the sick health workforce. *Med J Aust*, 2006. **185**(1): p. 32-4.
25. Duckett, S.J., Interventions to facilitate health workforce restructure. *Aust New Zealand Health Policy*, 2005. **2**: p. 14.
26. Brooks, P.M., Submission to Productivity commission. 2005.
27. Health Queensland, Enhanced Clinical roles, in Issues paper for bundaberg Royal commission. 2006: Brisbane.
28. Dept Human Services Tasmania, Bibliography and Lit review Nusre Practitioner.
29. Ian Cameron, Middle Level Clinicians – A Role in Rural Australia?, NSW Rural Doctors Network.
30. Ivan Lin, Emma Birch, and Belinda Goodale, Rural and remote therapy assistants in Western Australia: the development of a statewide approach, in NSW RRAH Conference. 2005.

APPENDIX 8: LIST OF PAPER EXCLUDED FROM THE REVIEW

1. Lundh, L., L. Rosenhall, and L. TÅrnkvist, Care of patients with chronic obstructive pulmonary disease in primary health care. *Journal of Advanced Nursing*, 2006. 56(3): p. 237-246.
2. Cole, I. and C.A. Chesla, Interventions for the family with diabetes. *Nursing Clinics of North America*, 2006. 41(4): p. 625-639.
3. Barnes, S., et al., Characteristics and views of family carers of older people with heart failure. *International Journal of Palliative Nursing*, 2006. 12(8): p. 380-389.
4. Smith, K.L., et al., A multidisciplinary program for delivering primary care to the underserved urban homebound: looking back, moving forward. *Journal of the American Geriatrics Society*, 2006. 54(8): p. 1283-1289.
5. Earthy, A., Inappropriate use of medicines in acute care for the elderly related to a focus on acute care, providers' passive attitudes about learning, and paternalistic decision making. *Evidence-Based Nursing*, 2006. 9(3): p. 96-96.
6. Counsell, S.R., et al., Geriatric Resources for Assessment and Care of Elders (GRACE): a new model of primary care for low-income seniors. *Journal of the American Geriatrics Society*, 2006. 54(7): p. 1136-1141.
7. Schure, L.M., et al., Beyond stroke: description and evaluation of an effective intervention to support family caregivers of stroke patients. *Patient Education & Counselling*, 2006. 62(1): p. 46-55.
8. Jacobs, S., et al., From care management to case management: what can the NHS learn from the social care experience? *Journal of Integrated Care*, 2006. 14(3): p. 22-31.
9. Lyndon, H., Developing the role of the community matron: the Cornwall experience. *Primary Health Care*, 2006. 16(5): p. 14-17.
10. Cox, K., et al., Preferences for follow-up after treatment for lung cancer: assessing the nurse-led option. *Cancer Nursing*, 2006. 29(3): p. 176-187.
11. Craig, G.P., CIN plus. Native American elders health care series. *CIN: Computers, Informatics, Nursing*, 2006. 24(3): p. 133-135.
12. Brown, L.H., Senior drivers: risks, interventions, and safety. *Nurse Practitioner*, 2006. 31(3): p. 38.
13. Cockerill, R., et al., Components of coordinated care: a new instrument to assess caregivers' and care recipients' experiences with networks of dementia care. *Dementia (14713012)*, 2006. 5(1): p. 51-66.
14. Bailey, P., L. Jones, and D. Way, Family physician/nurse practitioner: stories of collaboration. *Journal of Advanced Nursing*, 2006. 53(4): p. 381-391.
15. Turnbull, D.A., et al., Disease management for hypertension: a pilot cluster randomized trial of 67 Australian general practices. *Disease Management & Health Outcomes*, 2006. 14(1): p. 27-35.
16. Stewart, S., Review: multidisciplinary interventions reduce hospital admission and all cause mortality in heart failure. *Evidence-Based Nursing*, 2006. 9(1): p. 23-23.
17. Graham, L., et al., Ideas at work. The effect of a primary care intervention on management of patients with diabetes and hypertension: a pre-post intervention chart audit. *Healthcare Quarterly*, 2006. 9(2): p. 62-71.

18. Stark, S.W., The effects of master's degree education on the role choices, role flexibility, and practice settings of clinical nurse specialists and nurse practitioners. *Journal of Nursing Education*, 2006. 45(1): p. 7-15.
19. Crustolo, A.M., et al., Integrating nutrition services into primary care: experience in Hamilton, Ont. *Canadian Family Physician*, 2005. 51: p. 1647-1653.
20. McCrone, P., et al., Joint working between social and health services in the care of older people in the community: a cost study. *Journal of Integrated Care*, 2005. 13(6): p. 34-43.
21. Al Khaja, K.A.J., R.P. Sequeira, and A.H.H. Damanhori, Comparison of the quality of diabetes care in primary care diabetic clinics and general practice clinics. *Diabetes Research & Clinical Practice*, 2005. 70(2): p. 174-182.
22. Forbes, D.A., An educational programme for primary healthcare providers improved functional ability in older people living in the community. *Evidence-Based Nursing*, 2005. 8(4): p. 122-122.
23. Wilson, D., et al., The possibilities and the realities of home care. *Canadian Journal of Public Health*, 2005. 96(5): p. 385-389.
24. Boardman, H., et al., Use of community pharmacies: a population-based survey. *Journal of Public Health*, 2005. 27(3): p. 254-262.
25. Arends, D., The nurse's role in screening and early detection of Alzheimer's disease. *Advanced Studies in Nursing*, 2005. 3(6): p. 206-218.
26. Sperl-Hillen, J.M. and P.J. O'Connor, Factors driving diabetes care improvement in a large medical group: ten years of progress. *American Journal of Managed Care*, 2005. 11(5): p. S177-85.
27. Evans, C., V. Drennan, and J. Roberts, Practice nurses and older people: a case management approach to care. *Journal of Advanced Nursing*, 2005. 51(4): p. 343-352.
28. Chambers, L.W., et al., A community-based program for Cardiovascular Health Awareness. *Canadian Journal of Public Health*, 2005. 96(4): p. 294-298.
29. Upchurch, S.L., A collaborative care intervention improved depression outcomes, but not glycaemic control, in diabetes and comorbid depression. *Evidence-Based Nursing*, 2005. 8(3): p. 81-81.
30. Doherty, T.M. and M. Coetzee, Community health workers and professional nurses: defining the roles and understanding the relationships. *Public Health Nursing*, 2005. 22(4): p. 360-365.
31. Shephard, M.D.S., et al., The impact of point of care testing on diabetes services along Victoria's Mallee Track: results of a community-based diabetes risk assessment and management program. *Rural & Remote Health*, 2005. 5(3): p. 1-15.
32. Doucette, W.R. and T.N. Andersen, Practitioner activities in patient education and drug therapy monitoring for community dwelling elderly patients. *Patient Education & Counselling*, 2005. 57(2): p. 204-210.
33. Jackson, G.L., et al., Veterans Affairs primary care organizational characteristics associated with better diabetes control. *American Journal of Managed Care*, 2005. 11(4): p. 225-237.
34. Vass, M., et al., Feasible model for prevention of functional decline in older people: municipality-randomized, controlled trial. *Journal of the American Geriatrics Society*, 2005. 53(4): p. 563-568.
35. Drennan, V., et al., The feasibility and acceptability of a specialist health and social care team for the promotion of health and independence in 'at risk' older adults. *Health & Social Care in the Community*, 2005. 13(2): p. 136-144.
36. Kemp, L.A., E. Harris, and E.J. Comino, Changes in community nursing in Australia: 1995-2000. *Journal of Advanced Nursing*, 2005. 49(3): p. 307-314.

37. Taylor, K.I., et al., Promoting health in type 2 diabetes: nurse-physician collaboration in primary care. *Biological Research for Nursing*, 2005. 6(3): p. 207-215.
38. Houghton, S., et al., Experience of a falls and injuries risk assessment clinic. *Australian Health Review*, 2004. 28(3): p. 374-381.
39. Fletcher, A.E., et al., Population-based multidimensional assessment of older people in UK general practice: a cluster-randomised factorial trial. *Lancet*, 2004. 364(9446): p. 1667-1677.
40. Crotty, M., et al., An outreach geriatric medication advisory service in residential aged care: a randomised controlled trial of case conferencing. *Age & Ageing*, 2004. 33(6): p. 612-617.
41. Dobrzanska, L., J. Dean, and F. Graham, Introducing a health awareness day for the over-75s. *British Journal of Community Nursing*, 2004. 9(10): p. 429-432.
42. Barnett, L.M., et al., Program sustainability of a community-based intervention to prevent falls among older Australians. *Health Promotion International*, 2004. 19(3): p. 281-288.
43. Mejhert, M., et al., Limited long term effects of a management programme for heart failure. *Heart*, 2004. 90(9): p. 1010-1015.
44. Fortinsky, R.H., et al., Fall-risk assessment and management in clinical practice: views from healthcare providers. *Journal of the American Geriatrics Society*, 2004. 52(9): p. 1522-1526.
45. Phelan, E.A., et al., Effects of provider practice on functional independence in older adults. *Journal of the American Geriatrics Society*, 2004. 52(8): p. 1233-1239.
46. Lee, T., I. Ko, and S.H. Jeong, Is an expanded nurse role economically viable? *Journal of Advanced Nursing*, 2004. 46(5): p. 471-479.
47. Reavis, C., Nurse practitioner-delivered primary health care in urban ambulatory care settings. *American Journal for Nurse Practitioners*, 2004. 8(5): p. 41.
48. Bornman, J., E. Alant, and L.L. Lloyd, Severe disability: do primary health care nurses have a role to play? *Curationis*, 2004. 27(2): p. 32-49.
49. Muramatsu, N., E. Mensah, and T. Cornwell, A physician house call program for the homebound. *Joint Commission Journal on Quality & Safety*, 2004. 30(5): p. 266-276.
50. Wetzels, R., et al., GP's views on involvement of older patients: an European qualitative study. *Patient Education & Counseling*, 2004. 53(2): p. 183-188.
51. Ciechanowski, P., et al., Community-integrated home-based depression treatment in older adults: a randomized controlled trial. *JAMA: Journal of the American Medical Association*, 2004. 291(13): p. 1569-1577.
52. De Berardis, G., et al., Quality of care and outcomes in type 2 diabetic patients: a comparison between general practice and diabetes clinics. *Diabetes Care*, 2004. 27(2): p. 398-406.
53. Scisney-Matlock, M., et al., Comparison of quality-of-hypertension-care indicators for groups treated by physician versus groups treated by physician-nurse team. *Journal of the American Academy of Nurse Practitioners*, 2004. 16(1): p. 17-23.
54. Jiwa, M., et al., Hypertension and the older patient in general practice. A comparison of process and outcome for patients on multiple therapies at two practices. *Quality in Primary Care*, 2004. 12(4): p. 243-249.
55. Majumdar, S.R., et al., Controlled trial of a multifaceted intervention for improving quality of care for rural patients with type 2 diabetes. *Diabetes Care*, 2003. 26(11): p. 3061-3066.
56. Barnett, L., et al., Falls prevention in rural general practice: what stands the test of time and where to from here? *Australian & New Zealand Journal of Public Health*, 2003. 27(5): p. 481-485.

57. Kane, R.L., et al., The effect of Evercare on hospital use. *Journal of the American Geriatrics Society*, 2003. 51(10): p. 1427-1434.
58. Litaker, D., et al., Physician-nurse practitioner teams in chronic disease management: the impact on costs, clinical effectiveness, and patients' perception of care. *Journal of Interprofessional Care*, 2003. 17(3): p. 223-237.
59. Whittemore, R., et al., Promoting lifestyle change in the prevention and management of type 2 diabetes. *Journal of the American Academy of Nurse Practitioners*, 2003. 15(8): p. 341-349.
60. Hope, K., A hidden problem: identifying depression in older people. *British Journal of Community Nursing*, 2003. 8(7): p. 314.
61. Slimmer, L., A collaborative care management programme in a primary care setting was effective for older adults with late life depression. *Evidence-Based Nursing*, 2003. 6(3): p. 91-91.
62. Gary, T.L., et al., Randomized controlled trial of the effects of nurse case manager and community health worker interventions on risk factors for diabetes-related complications in urban African Americans. *Preventive Medicine*, 2003. 37(1): p. 23-32.
63. Unsworth, J., Falls in older people: the role of assessment in prevention and care. *British Journal of Community Nursing*, 2003. 8(6): p. 256.
64. Whitehead, C., et al., Evidence-based clinical practice in falls prevention: a randomised controlled trial of a falls prevention service. *Australian Health Review*, 2003. 26(3): p. 88-97.
65. Sayers, J., S. Watts, and G. Bhutani, Specialist nursing. Early detection of mental health problems in older people. *British Journal of Nursing (BJN)*, 2002. 11(18): p. 1198-1203.
66. Meehan, L., J. Meyer, and J. Winter, Focus. Partnership with care homes: a new approach to collaborative working. *NT Research*, 2002. 7(5): p. 348-359.
67. Jiwa, M., et al., Preventing avoidable hospital admission of older people. *British Journal of Community Nursing*, 2002. 7(8): p. 426-431.
68. Etp, et al., Long-term effects of a group support program and an individual support program for informal caregivers of stroke patients: which caregivers benefit the most? *Patient Education & Counseling*, 2002. 47(4): p. 291-299.
69. Kasten, A.A., S. Wagner, and D. Kesler, RN role in disease management produces positive patient outcomes in an outpatient veteran's clinic. *Stat: Bulletin of the Wisconsin Nurses Association*, 2002. 71(5): p. 2-2.
70. Pickard, S. and C. Glendinning, Comparing and contrasting the role of family carers and nurses in the domestic health care of frail older people. *Health & Social Care in the Community*, 2002. 10(3): p. 144-150.
71. Quaglietti, S. and B. Anderson, Short communications. Developing the adult NP's role in home care. *Nurse Practitioner*, 2002. 27(3): p. 14.
72. Bonner, C.J. and B. Carr, Medication compliance problems in general practice: detection and intervention by pharmacists and doctors. *Australian Journal of Rural Health*, 2002. 10(1): p. 33-38.
73. Simon, C., The role of the primary care team in support of informal carers. *British Journal of Community Nursing*, 2002. 7(1): p. 6.
74. Reid, U.V. and J. Ploeg, An outpatient geriatric evaluation and management programme was more effective than usual care in preventing functional decline in high risk older adults. *Evidence-Based Nursing*, 2002. 5(1): p. 19-19.
75. Caine, N., et al., A randomised controlled crossover trial of nurse practitioner versus doctor-led outpatient care in a bronchiectasis clinic. *Health Technology Assessment*, 2002. 6(27): p. 1-82.

76. Steele, A., The role of preventative services for older people. *International Journal of Health Promotion & Education*, 2002. 40(3): p. 91-96.
77. Avlund, K., et al., Effects of comprehensive follow-up home visits after hospitalization on functional ability and readmissions among old patients. A randomized controlled study. *Scandinavian Journal of Occupational Therapy*, 2002. 9(1): p. 17-22.
78. Overland, J., D.K. Yue, and M. Mira, Use of Medicare services related to diabetes care: the impact of rural isolation. *Australian Journal of Rural Health*, 2001. 9(6): p. 311-316.
79. Geddes, J.M.L. and M.A. Chamberlain, Home-based rehabilitation for people with stroke: a comparative study of six community services providing co-ordinated, multidisciplinary treatment. *Clinical Rehabilitation*, 2001. 15(6): p. 589-599.
80. Houde, S.C., Age-related vision loss in the older adult: the role of the nurse practitioner in prevention and early detection. *Clinical Excellence for Nurse Practitioners*, 2001. 5(4): p. 185-196.
81. Quinn, D.C., et al., Overcoming turf battles: developing a pragmatic, collaborative model to improve glycemic control in patients with diabetes. *Joint Commission Journal on Quality Improvement*, 2001. 27(5): p. 255-264.
82. Macduff, C., B. West, and S. Harvey, Telemedicine in rural care part 1: developing and evaluating a nurse-led initiative. *Nursing Standard*, 2001. 15(32): p. 33-38.
83. Wagner, E.H., et al., Chronic care clinics for diabetes in primary care: a system-wide randomized trial. *Diabetes Care*, 2001. 24(4): p. 695-700.
84. Le Mesurier, N. and S. Cumella, The rough road and the smooth road: comparing access to social care for older people via area teams and GP surgeries. *Managing Community Care*, 2001. 9(1): p. 7-13.
85. Kuder, L.C., G.A. Gairola, and C.C. Hamilton, Development of rural interdisciplinary geriatrics teams. *Gerontology & Geriatrics Education*, 2001. 21(4): p. 65-79.
86. Netting, F.E. and F.G. Williams, Expanding the boundaries of primary care for elderly people. *Health & Social Work*, 2000. 25(4): p. 233-242.
87. Wieland, D., et al., Hospitalization in the Program of All-Inclusive Care for the Elderly (PACE): rates, concomitants, and predictors. *Journal of the American Geriatrics Society*, 2000. 48(11): p. 1373-1380.
88. Martin, K.E., Focus on primary care and underserved areas. A rural-urban comparison of patterns of physician assistant practice. *JAAPA: Journal of the American Academy of Physician Assistants*, 2000. 13(7): p. 49.
89. Sox, H.C., Independent primary care practice by nurse practitioners... Copyright © American Medical Association. *JAMA*, January 5, 2000-Vol. 283 No. 1 pages 106-7. *Academic Nurse*, 2000. 17(1): p. 18-19.
90. Ochs, R., Study touts nursing quality: practitioners called as effective as doctors... copyright © 2000 Newsday, Inc. *Academic Nurse*, 2000. 17(1): p. 22-22.
91. Ovhed, I., et al., A comparison of two different team models for treatment of diabetes mellitus in primary care. *Scandinavian Journal of Caring Sciences*, 2000. 14(4): p. 253-258.
92. Lim, J., Taking the lead in an ageing society. *Singapore Nursing Journal*, 2000. 27(1): p. 34-38.
93. Fillit, H.M., et al., Polypharmacy management in Medicare managed care: changes in prescribing by primary care physicians resulting from a program promoting medication reviews. *American Journal of Managed Care*, 1999. 5(5): p. 587-594.
94. Tierney, A.J. and J. Vallis, Multidisciplinary teamworking in the care of elderly patients with hip fracture. *Journal of Interprofessional Care*, 1999. 13(1): p. 41-52.

95. Reuben, D.B., et al., Primary care of long-stay nursing home residents: approaches of three health maintenance organizations. *Journal of the American Geriatrics Society*, 1999. 47(2): p. 131-138.
96. Farley, D.O., et al., Use of primary care teams by HMOS for care of long-stay nursing home residents. *Journal of the American Geriatrics Society*, 1999. 47(2): p. 139-144.
97. Britian, O., Integration of services for elderly people reduced costs and use of health services [commentary on Bernabei R, Landi F, Gambassi G et al. Randomized trial of impact of model of integrated care and case management for older people living in the community. *BR MED J* 1998;316(7141):1348-51]. *Evidence-Based Nursing*, 1999. 2(1): p. 20-20.
98. Smeenk, F.W.J., et al., Care process and satisfaction analysis of a transmural home care program. *International Journal of Nursing Studies*, 1998. 35(3): p. 146-154.
99. Norberg, A., G. Uden, and S. Andren, Physicians', registered nurses' and enrolled nurses' stories about ethically difficult episodes in the care of older patients. *European Nurse*, 1998. 3(1): p. 3-13.
100. Beck, A., et al., A randomized trial of group outpatient visits for chronically ill older HMO members: the Cooperative Health Care Clinic. *Journal of the American Geriatrics Society*, 1997. 45(5): p. 543-549.
101. Jones, D., J. Edwards, and C. Lester, The changing role of the practice nurse. *Health & Social Care in the Community*, 1997. 5(2): p. 77-83.
102. Eng, C., et al., Models of geriatrics practice: program of all-inclusive care for the elderly (PACE): an innovative model of integrated geriatric care and financing. *Journal of the American Geriatrics Society*, 1997. 45(2): p. 223-232.
103. Brown, M. and E.F. Olshansky, From limbo to legitimacy: a theoretical model of the transition to the primary care nurse practitioner role. *Nursing Research*, 1997. 46(1): p. 46-51.
104. Netting, F.E. and F.G. Williams, Case manager-physician collaboration: implications for professional identity, roles, and relationships. *Health & Social Work*, 1996. 21(3): p. 216-224.
105. Riddle, M.C. and D.M. Karl, Outcomes of patients with hypertension and non-insulin-dependent diabetes mellitus treated by different systems and specialties: results from the Medical Outcomes Study... commentary on Greenfield S, Rogers W, Mangotich M et al. *J AM MED ASSOC* 274:1436-44, 1995. *Diabetes Spectrum*, 1996. 9(3): p. 176-178.
106. Price, M.J., A nurse-coordinated intervention for primary care patients with non-insulin-dependent diabetes mellitus: impact on glycemic control and health-related quality of life... commentary on Weinberger M, Kirkman S, Samsa GP et al. *J Gen Intern Med* 10:59-66, 1995. *Diabetes Spectrum*, 1996. 9(3): p. 186-188.
107. Weinberger, M., et al., Assessing health-related quality of life in elderly outpatients: telephone versus face-to-face administration. *Journal of the American Geriatrics Society*, 1994. 42(12): p. 1295-1299.
108. Wiseman, R.G. and N.L. Hill, Acceptance of the nurse practitioner role by consumers in a rural community. *Nurse Practitioner*, 1994. 19(11): p. 24-25.
109. Winkley, G.P., J.O. Brown, and T.L. Stone, Interventions to improve oral care: the nursing assistant's role. *Journal of Gerontological Nursing*, 1993. 19(11): p. 47-48.
110. Stilwell, B., Assessing elderly people. *Nursing Standard*, 1993. 7(37): p. 3-13.
111. Azzarto, J., The socioemotional needs of elderly family practice patients: can social workers help? *Health & Social Work*, 1993. 18(1): p. 40-48.
112. Topp, R., Development of an exercise program for older adults: pre-exercise testing, exercise prescription and program maintenance. *Nurse Practitioner*, 1991. 16(10): p. 16.

113. Littlewood, J. and R. Scott, Screening the elderly. *Health Visitor*, 1990. 63(8): p. 268-270.
114. Richards, A., et al., Skill mix between nurses and doctors working in primary care-delegation or allocation: a review of the literature. *International Journal of Nursing Studies*, 2000. 37(3): p. 185-197.
115. Casas, A., et al., Integrated care prevents hospitalisations for exacerbations in COPD patients. *European Respiratory Journal*, 2006. 28(1): p. 123-130.
116. Sledge, W.H., et al., A randomized trial of primary intensive care to reduce hospital admissions in patients with high utilization of inpatient services. *Disease Management*, 2006. 9(6): p. 328-338.
117. Poskiparta, M., K. Kasila, and P. Kiuru, Dietary and physical activity counselling on Type 2 diabetes and impaired glucose tolerance by physicians and nurses in primary healthcare in Finland. *Scandinavian Journal of Primary Health Care*, 2006. 24(4): p. 206-210.
118. Milisen, K., et al., Process evaluation of a nurse-led multifactorial intervention protocol for risk screening and assessment of fall problems among community-dwelling older persons: A pilot-study. *Journal of Nutrition, Health & Aging*, 2006. 10(5): p. 446-452.
119. Perell, K.L., et al., Outcomes of a consult fall prevention screening clinic. *American Journal of Physical Medicine & Rehabilitation*, 2006. 85(11): p. 882-888.
120. Ho, J.M., et al., Fracture prevention strategies for older persons at risk of fragility fractures: A needs assessment and development of a comprehensive management plan. *Canadian Journal of Geriatrics*, 2006. 9(1): p. 8-15.
121. Sewitch, M.J., et al., Helping family doctors detect vulnerable caregivers after an emergency department visit for an elderly relative: Results of a longitudinal study.
122. Piepoli, M.F., et al., Multidisciplinary and multisetting team management programme in heart failure patients affects hospitalisation and costing. *International Journal of Cardiology*, 2006. 111(3): p. 377-385.
123. Shannon, G.R., K.H. Wilber, and D. Allen, Reductions in costly healthcare service utilization: Findings from the care advocate program. *Journal of the American Geriatrics Society*, 2006. 54(7): p. 1102-1107.
124. Phillips, G.A., et al., The effect of multidisciplinary case management on selected outcomes for frequent attenders at an emergency department. *Medical Journal of Australia*, 2006. 184(12): p. 602-606.
125. Austrom, M.G., et al., A care management model for enhancing physician practice for Alzheimer disease in primary care. *Clinical Gerontologist*, 2005. 29(2): p. 35-43.
126. Callahan, C.M., et al., Effectiveness of collaborative care for older adults with Alzheimer disease in primary care: A randomized controlled trial. *Jama*, 2006. 295(18): p. 2148-2157.
127. Street, J., et al., Compliance of an elderly hip fracture population with secondary preventative measures: Efficacy of a simple clinical practice intervention. *Acta Orthopaedica Belgica*, 2006. 72(2): p. 204-209.
128. Schraeder, C., et al., Managing elders with comorbidities. *Journal of Ambulatory Care Management*, 2005. 28(3): p. 201-209.
129. Toiviainen, L., Home care for older people. *Journal of the British Menopause Society*, 2005. 11(2): p. 57-60.
130. Cleland, J.G.F., et al., Noninvasive home telemonitoring for patients with heart failure at high risk of recurrent admission and death: The Trans-European Network-Home-Care Management System (TEN-HMS) study. *Journal of the American College of Cardiology*, 2005. 45(10): p. 1654-1664.
131. Tulloch, A.J., Effectiveness of preventive care programmes in the elderly. *Age & Ageing*, 2005. 34(3): p. 203-204.

132. Ryan-Woolley, B.M. and J.A. Rees, Initializing concordance in frail elderly patients via a medicines organizer. *Annals of Pharmacotherapy*, 2005. 39(5): p. 834-839.
133. Gaugler, J.E., et al., Early community-based service utilization and its effects on institutionalization in dementia caregiving. *Gerontologist*, 2005. 45(2): p. 177-185.
134. Davey, B., et al., Integrating health and social care: Implications for joint working and community care outcomes for older people. *Journal of Interprofessional Care*, 2005. 19(1): p. 22-34.
135. Scott, J.C., et al., Effectiveness of a group outpatient visit model for chronically ill older health maintenance organization members: A 2-year randomized trial of the Cooperative Health Care Clinic. *Journal of the American Geriatrics Society*, 2004. 52(9): p. 1463-1470.
136. Maislos, M. and D. Weisman, Multidisciplinary approach to patients with poorly controlled type 2 diabetes mellitus: A prospective, randomized study. *Acta Diabetologica*, 2004. 41(2): p. 44-48.
137. Gary, T.L., et al., A randomized controlled trial of the effects of nurse case manager and community health worker team interventions in urban African-Americans with type 2 diabetes. *Controlled Clinical Trials*, 2004. 25(1): p. 53-66.
138. Victor, C.R., F. Ross, and J. Axford, Capturing lay perspectives in a randomized control trial of a health promotion intervention for people with osteoarthritis of the knee. *Journal of Evaluation in Clinical Practice*, 2004. 10(1): p. 63-70.
139. Di Salvo, T.G. and L. Warner Stevenson, Interdisciplinary team-based management of heart failure. *Disease Management & Health Outcomes*, 2003. 11(2): p. 87-94.
140. Moscovitz, B., Bridging to family and community support for older adults and the Domain Management Model. *Topics in Stroke Rehabilitation*, 2002. 9(3): p. 75-86.
141. Graber, A.L., et al., Improving glycemic control in adults with diabetes mellitus: Shared responsibility in primary care practices. *Southern Medical Journal*, 2002. 95(7): p. 684-690.
142. Swerissen, H., et al., An evaluation of a shared care diabetes project. *Australian Journal of Primary Health - Interchange*, 2000. 6(2): p. 30-37.
143. Sommers, L.S., et al., Physician, nurse, and social worker collaboration in primary care for chronically ill seniors. *Archives of Internal Medicine*, 2000. 160(12): p. 1825-1833.
144. Grant, C., et al., A randomised controlled trial and economic evaluation of a referrals facilitator between primary care and the voluntary sector. *British Medical Journal*, 2000. 320(7232): p. 419-423.
145. Bogden, P.E., et al., Comparing standard care with a physician and pharmacist team approach for uncontrolled hypertension. *Journal of General Internal Medicine*, 1998. 13(11): p. 740-745.
146. Hawksworth, G.M. and H. Chrystyn, Clinical pharmacy domiciliary service: An extended role of the Community Pharmacist. *Journal of Applied Therapeutics*, 1997. 1(4): p. 325-329.
147. Radley, M., et al., Effectiveness of group anxiety management with elderly clients of a community psychogeriatric team. *International Journal of Geriatric Psychiatry*, 1997. 12(1): p. 79-84.
148. Schneider, J. and N. Barber, Provision of a domiciliary service by community pharmacists. *International Journal of Pharmacy Practice*, 1996. 4(1): p. 19-24.
149. Williams, A., et al., Domiciliary pharmaceutical care for older people - A feasibility study. *Pharmaceutical Journal*, 1996. 256(6879): p. 236-238.
150. Philp, I., et al., Community care for demented and non-demented elderly people: A comparison study of financial burden, service use, and unmet needs in family supporters. *British Medical Journal*, 1995. 310(6993): p. 1503-1506.

151. Coulter, A., et al., Effectiveness of health checks conducted by nurses in primary care: Final results of the OXCHECK study. *British Medical Journal*, 1995. 310(6987): p. 1099-1104.
152. Wood, D.A., et al., Randomised controlled trial evaluating cardiovascular screening and intervention in general practice: Principal results of British family heart study. *British Medical Journal*, 1994. 308(6924): p. 313-320.
153. Fuchs, Z., et al., Comprehensive individualised non-pharmacological treatment programme for hypertension in physician-nurse clinics: Two year follow-up. *Journal of Human Hypertension*, 1993. 7(6): p. 585-591.
154. Melin, A.L. and L.O. Bygren, Perceived functional health of frail elderly in a primary home care programme and correlation of self-perception with objective measurements. *Scandinavian Journal of Social Medicine*, 1993. 21(4): p. 256-263.
155. Giltinan, J.M. and K.T. Murray, Meeting the health care needs of rural elderly: Client satisfaction with a university-sponsored nursing centre. *Journal of Rural Health*, 1992. 8(4): p. 305-310.
156. Harrison, M.B., et al., Quality of life of individuals with heart failure: a randomized trial of the effectiveness of two models of hospital-to-home transition.[see comment]. *Medical Care*, 2002. 40(4): p. 271-82.
157. Masterson, A., Cross-boundary working: a macro-political analysis of the impact on professional roles. *Journal of Clinical Nursing*, 2002. 11(3): p. 331-9.
158. Horrocks, S., E. Anderson, and C. Salisbury, Systematic review of whether nurse practitioners working in primary care can provide equivalent care to doctors.[see comment]. *BMJ*, 2002. 324(7341): p. 819-23.
159. Swider, S.M., Outcome effectiveness of community health workers: an integrative literature review. *Public Health Nursing*, 2002. 19(1): p. 11-20.
160. Imamura, E., Amy's Chat Room: health promotion programmes for community dwelling elderly adults. *International Journal of Nursing Practice*, 2002. 8(1): p. 61-4.
161. Kernick, D. and A. Scott, Economic approaches to doctor/nurse skill mix: problems, pitfalls, and partial solutions. *British Journal of General Practice*, 2002. 52(474): p. 42-6.
162. Redworth, F., J. Atkin, and L. Jones-Tatum, District nurses and home carers 3: project evaluation. *British Journal of Community Nursing*, 2001. 6(2): p. 74-9.
163. Doran, T., Providing seamless community health and social services. *British Journal of Community Nursing*, 2001. 6(8): p. 387-93.
164. Houde, S.C., Men providing care to older adults in the home. *Journal of Gerontological Nursing*, 2001. 27(8): p. 13-9; quiz 54-5.
165. Simon, C., Informal carers and the primary care team. *British Journal of General Practice*, 2001. 51(472): p. 920-3.
166. Way, D., et al., Primary health care services provided by nurse practitioners and family physicians in shared practice. *CMAJ Canadian Medical Association Journal*, 2001. 165(9): p. 1210-4.
167. Waldorff, F.B., et al., Management of dementia in primary health care: the experiences of collaboration between the GP and the district nurse. *Family Practice*, 2001. 18(5): p. 549-52.
168. Renders, C.M., et al., Interventions to improve the management of diabetes in primary care, outpatient, and community settings: a systematic review.[see comment]. *Diabetes Care*, 2001. 24(10): p. 1821-33.
169. Nelson, J.M. and P. Arnold-Powers, Community case management for frail, elderly clients: the nurse case manager's role. *Journal of Nursing Administration*, 2001. 31(9): p. 444-50.

170. Mutch, C., et al., Improving community-based services for older patients with depression: the benefits of an educational and service initiative. *Australian & New Zealand Journal of Psychiatry*, 2001. 35(4): p. 449-54.
171. Moher, M., et al., Cluster randomised controlled trial to compare three methods of promoting secondary prevention of coronary heart disease in primary care.[see comment]. *BMJ*, 2001. 322(7298): p. 1338.
172. Allard, J., et al., Efficacy of a clinical medication review on the number of potentially inappropriate prescriptions prescribed for community-dwelling elderly people. *CMAJ Canadian Medical Association Journal*, 2001. 164(9): p. 1291-6.
173. Coleman, E.A., et al., Reducing emergency visits in older adults with chronic illness. A randomized, controlled trial of group visits.[see comment]. *Effective Clinical Practice*, 2001. 4(2): p. 49-57.
174. Barrow, C.R. and R.B. Graber, NP care vs. physician care: an analysis of recent outcomes research. *Advance for Nurse Practitioners*. 8(6): p. 16.
175. Setter, S.M., et al., Exploring the clinical pharmacist's role in improving home care for patients with diabetes. *Home Care Provider*, 2000. 5(5): p. 185-92.
176. Waszynski, C.M., W. Murakami, and M. Lewis, Community care management. *Advanced practice nurses as care managers. Care Management Journals*, 2000. 2(3): p. 148-52.
177. Hughes, S.L., et al., Effectiveness of team-managed home-based primary care: a randomized multi-center trial. *JAMA*, 2000. 284(22): p. 2877-85.
178. Wolfe, C.D., K. Tilling, and A.G. Rudd, The effectiveness of community-based rehabilitation for stroke patients who remain at home: a pilot randomized trial. *Clinical Rehabilitation*, 2000. 14(6): p. 563-9.
179. Sims, J., et al., Health promotion and older people: the role of the general practitioner in Australia in promoting healthy ageing. *Australian & New Zealand Journal of Public Health*, 2000. 24(4): p. 356-9.
180. Kardol, M. and H. Masselink, Caring for the elderly without residential care homes and nursing homes. *World Hospitals & Health Services*, 2000. 36(1): p. 9-13.
181. Rockwood, K., et al., A clinimetric evaluation of specialized geriatric care for rural dwelling, frail older people. *Journal of the American Geriatrics Society*, 2000. 48(9): p. 1080-5.
182. Anderson, D.M. and M.B. Hampton, Physician assistants and nurse practitioners: rural-urban settings and reimbursement for services. *Journal of Rural Health*, 1999. 15(2): p. 252-63.
183. Kerse, N.M., et al., Improving the health behaviours of elderly people: randomised controlled trial of a general practice education programme.[see comment]. *BMJ*, 1999. 319(7211): p. 683-7.
184. McInnes, E., et al., Can GP input into discharge planning result in better outcomes for the frail aged: results from a randomized controlled trial. *Family Practice*, 1999. 16(3): p. 289-93.
185. Berkman, P., et al., Supportive telephone outreach as an interventional strategy for elderly patients in a period of crisis. *Social Work in Health Care*, 1999. 28(4): p. 63-76.
186. Moyer, A., et al., A model for building collective capacity in community-based programs: the Elderly in Need Project. *Public Health Nursing*, 1999. 16(3): p. 205-14.
187. Calpin-Davies, P.J. and R.L. Akehurst, Doctor-nurse substitution: the workforce equation. *Journal of Nursing Management*, 1999. 7(2): p. 71-9.
188. Mahoney, D., et al., An automated telephone system for monitoring the functional status of community-residing elders. *Gerontologist*, 1999. 39(2): p. 229-34.

189. Powe, M.L. and N. Hughes, The role of physician assistants in the delivery of medical care. *Journal of Medical Practice Management*, 1999. 15(2): p. 73-6.
190. Guttman, R., Case management of the frail elderly in the community.[see comment]. *Clinical Nurse Specialist*, 1999. 13(4): p. 174-8; quiz 179-81.
191. Nikolaus, T., et al., A randomized trial of comprehensive geriatric assessment and home intervention in the care of hospitalized patients. *Age & Ageing*, 1999. 28(6): p. 543-50.
192. Landi, F., et al., Impact of integrated home care services on hospital use. *Journal of the American Geriatrics Society*, 1999. 47(12): p. 1430-4.
193. Oddone, E.Z., et al., Enhanced access to primary care for patients with congestive heart failure. Veterans Affairs Cooperative Study Group on Primary Care and Hospital Readmission. *Effective Clinical Practice*, 1999. 2(5): p. 201-9.
194. Kauffman, K.S. and A.R. Barlow, Population-focused care: a new rubric in the role definition for geriatric nurse practitioners in primary care practice? *Nurse Practitioner Forum*, 1999. 10(1): p. 4-7.
195. McCulloch, D.K., et al., A population-based approach to diabetes management in a primary care setting: early results and lessons learned. *Effective Clinical Practice*, 1998. 1(1): p. 12-22.
196. Davis, C., et al., Benefits to volunteers in a community-based health promotion and chronic illness self-management program for the elderly. *Journal of Gerontological Nursing*, 1998. 24(10): p. 16-23.
197. van Eijk, J.T. and M. de Haan, Care for the chronically ill: the future role of health care professionals and their patients. *Patient Education & Counselling*, 1998. 35(3): p. 233-40.
198. Wager, K.A., et al., An interdisciplinary educational approach to assessing the health care and health educational needs of the elderly in a South Carolina community. *Journal of Allied Health*, 1998. 27(4): p. 202-7.
199. Bailey, M.L., Care coordination in managed care. Creating a quality continuum for high risk elderly patients. *Nursing Case Management*, 1998. 3(4): p. 172-80.
200. Jenkins-Clarke, S., R. Carr-Hill, and P. Dixon, Teams and seams: skill mix in primary care. *Journal of Advanced Nursing*, 1998. 28(5): p. 1120-6.
201. Kinmonth, A.L., et al., Randomised controlled trial of patient centred care of diabetes in general practice: impact on current wellbeing and future disease risk. The Diabetes Care From Diagnosis Research Team.[see comment]. *BMJ*, 1998. 317(7167): p. 1202-8.
202. Monane, M., et al., Improving prescribing patterns for the elderly through an online drug utilization review intervention: a system linking the physician, pharmacist, and computer.[see comment]. *JAMA*, 1998. 280(14): p. 1249-52.
203. Brazil, K., et al., Substituting home care for hospitalization: the role of a quick response service for the elderly. *Journal of Community Health*, 1998. 23(1): p. 29-43.
204. Widen Holmqvist, L., et al., A randomized controlled trial of rehabilitation at home after stroke in southwest Stockholm.[see comment]. *Stroke*, 1998. 29(3): p. 591-7.
205. Harris, M.D., The home health aide as a member of the home healthcare team. *Home Healthcare Nurse*, 1997. 15(11): p. 773-5.
206. Fordyce, M., et al., Senior Team Assessment and Referral Program--STAR.[see comment]. *Journal of the American Board of Family Practice*, 1997. 10(6): p. 398-406.
207. Berry, R.A., A nurse practitioner-managed after-hours clinic for a Native American reservation. *Journal of the American Academy of Nurse Practitioners*, 1997. 9(4): p. 165-70.

208. Hamley, J.H., et al., Integrating clinical pharmacists into the primary health care team: a framework for rational and cost-effective prescribing. *Scottish Medical Journal*, 1997. 42(1): p. 4-7.
209. Moneyham, L. and C.B. Scott, A model emerges for the community-based nurse care management of older adults. *N & HC Perspectives on Community*. 18(2): p. 68-71.
210. Oberski, I., et al., Caring for older people in the community. *Nursing Standard*, 1997. 11(31): p. 32.
211. Hulscher, M.E., et al., Changing preventive practice: a controlled trial on the effects of outreach visits to organise prevention of cardiovascular disease. *Quality in Health Care*, 1997. 6(1): p. 19-24.
212. Bogden, P.E., et al., The physician and pharmacist team. An effective approach to cholesterol reduction.[see comment]. *Journal of General Internal Medicine*, 1997. 12(3): p. 158-64.
213. Barter, M., Unlicensed assistive personnel and lay caregivers in the home. *Home Care Provider*, 1996. 1(3): p. 131-3.
214. Banerjee, S., et al., Randomised controlled trial of effect of intervention by psycho-geriatric team on depression in frail elderly people at home.[see comment]. *BMJ*, 1996. 313(7064): p. 1058-61.
215. Lave, J.R., et al., Evaluation of a health promotion demonstration program for the rural elderly. *Health Services Research*, 1996. 31(3): p. 261-81.
216. Weinberger, M., E.Z. Oddone, and W.G. Henderson, Does increased access to primary care reduce hospital readmissions? Veterans Affairs Cooperative Study Group on Primary Care and Hospital Readmission.[see comment]. *New England Journal of Medicine*, 1996. 334(22): p. 1441-7.
217. Davis, J.M. and M. Farrell, Factors affecting the delegation of tasks by the registered nurse to patient care assistants in acute care settings. A selective review of the literature. *Journal of Nursing Staff Development*, 1995. 11(6): p. 301-6.
218. Freeborn, D.K. and R.S. Hooker, Satisfaction of physician assistants and other non-physician providers in a managed care setting. *Public Health Reports*, 1995. 110(6): p. 714-9.
219. Burton, L.C., et al., The effect among older persons of a general preventive visit on three health behaviors: smoking, excessive alcohol drinking, and sedentary lifestyle. The Medicare Preventive Services Research Team. *Preventive Medicine*, 1995. 24(5): p. 492-7.
220. Stuck, A.E., et al., Methodologic challenges of randomized controlled studies on in-home comprehensive geriatric assessment: the EIGER project. Evaluation of In-Home Geriatric Health Visits in Elderly Residents.[erratum appears in *Aging (Milano)* 1995 Aug;7(4):237]. *Aging-Clinical & Experimental Research*, 1995. 7(3): p. 218-23.
221. Bula, C.J., et al., Community physicians' cooperation with a program of in-home comprehensive geriatric assessment. *Journal of the American Geriatrics Society*, 1995. 43(9): p. 1016-20.
222. McKenna, H.P., Nursing skill mix substitutions and quality of care: an exploration of assumptions from the research literature. *Journal of Advanced Nursing*, 1995. 21(3): p. 452-9.
223. Kornowski, R., et al., Intensive home-care surveillance prevents hospitalization and improves morbidity rates among elderly patients with severe congestive heart failure. *American Heart Journal*, 1995. 129(4): p. 762-6.
224. Hummel, J., et al., Physician assistant training for Native Alaskan community health aides: the MEDEX Northwest experience. *Alaska Medicine*, 1994. 36(4): p. 183-8.

225. Shi, L., et al., A rural-urban comparative study of non-physician providers in community and migrant health centers. *Public Health Reports*, 1994. 109(6): p. 809-15.
226. Kravitz, R.L., et al., Geriatric home assessment after hospital discharge.[see comment]. *Journal of the American Geriatrics Society*, 1994. 42(12): p. 1229-34.
227. Wagner, E.H., et al., Preventing disability and falls in older adults: a population-based randomized trial. *American Journal of Public Health*, 1994. 84(11): p. 1800-6.
228. Rubenstein, L.Z., et al., A home-based geriatric assessment, follow-up and health promotion program: design, methods, and baseline findings from a 3-year randomized clinical trial. *Aging-Clinical & Experimental Research*, 1994. 6(2): p. 105-20.
229. Brunner, S.L., Collaborative efforts support poor elderly. A nursing center teams up with area churches to care for the elderly in their homes. *Health Progress*, 1994. 75(7): p. 46-8.
230. Brotman, S.L. and M.J. Yaffe, Are physicians meeting the needs of family caregivers of the frail elderly?[see comment][erratum appears in *Can Fam Physician* 1994 Jun;40:1093]. *Canadian Family Physician*, 1994. 40: p. 679-85.
231. Koch, M., et al., An impairment and disability assessment and treatment protocol for community-living elderly persons. *Physical Therapy*, 1994. 74(4): p. 286-94; discussion 295-8.
232. Rich, M.W., et al., Prevention of readmission in elderly patients with congestive heart failure: results of a prospective, randomized pilot study. *Journal of General Internal Medicine*, 1993. 8(11): p. 585-90.
233. Shiell, A., P. Kenny, and M.G. Farnworth, The role of the clinical nurse co-ordinator in the provision of cost-effective orthopaedic services for elderly people. *Journal of Advanced Nursing*, 1993. 18(9): p. 1424-8.
234. Gladman, J.R., N.B. Lincoln, and D.H. Barer, A randomised controlled trial of domiciliary and hospital-based rehabilitation for stroke patients after discharge from hospital. *Journal of Neurology, Neurosurgery & Psychiatry*, 1993. 56(9): p. 960-6.
235. Young, J. and A. Forster, Day hospital and home physiotherapy for stroke patients: a comparative cost-effectiveness study. *Journal of the Royal College of Physicians of London*, 1993. 27(3): p. 252-8.
236. Kimberlin, C.L., et al., Effects of an education program for community pharmacists on detecting drug-related problems in elderly patients. *Medical Care*, 1993. 31(5): p. 451-68.
237. Melin, A.L., S. Hakansson, and L.O. Bygren, The cost-effectiveness of rehabilitation in the home: a study of Swedish elderly. *American Journal of Public Health*, 1993. 83(3): p. 356-62.
238. Buchanan, L.C., A rehabilitation clinical nurse specialist: evaluation of the role in a home health care setting. *Holistic Nursing Practice*, 1992. 6(2): p. 42-50.
239. Harris, C., In-home respite care: a comparison of volunteers and paid workers. *Journal of Volunteer Administration*, 1991. 10(1): p. 1-14.
240. Iliffe, S., et al., Assessment of elderly people in general practice. 2. Functional abilities and medical problems. *British Journal of General Practice*, 1991. 41(342): p. 13-5.
241. Bernstein, L.H., P.E. Hankwitz, and J. Portnow, Home care of the elderly diabetic patient. *Clinics in Geriatric Medicine*, 1990. 6(4): p. 943-57.
242. Carpenter, G.I. and G.R. Demopoulos, Screening the elderly in the community: controlled trial of dependency surveillance using a questionnaire administered by volunteers. *BMJ*, 1990. 300(6734): p. 1253-6.
243. Edelman, P. and S. Hughes, The impact of community care on provision of informal care to homebound elderly persons. *Journal of Gerontology*, 1990. 45(2): p. S74-84.

244. Tache, S. and S. Chapman, The expanding roles and occupational characteristics of medical assistants: overview of an emerging field in allied health. *Journal of Allied Health*, 2006. 35(4): p. 233-7.
245. Giesen, P., et al., Patients evaluate accessibility and nurse telephone consultations in out-of-hours GP care: determinants of a negative evaluation. *Patient Education & Counselling*, 2007. 65(1): p. 131-6.
246. Warren, N., M. Markovic, and L. Manderson, Typologies of rural lay-health advocacy among rural women in Australia. *Women & Health*, 2006. 43(4): p. 27-47.
247. Dorr, D.A., et al., Productivity enhancement for primary care providers using multi-condition care management. *American Journal of Managed Care*, 2007. 13(1): p. 22-8.
248. Christensen, D.B. and K.B. Farris, Pharmaceutical care in community pharmacies: practice and research in the US. *Annals of Pharmacotherapy*, 2006. 40(7-8): p. 1400-6.
249. Stuck, A.E., et al., The PRO-AGE study: an international randomised controlled study of health risk appraisal for older persons based in general practice. *BMC Medical Research Methodology*, 2007. 7: p. 2.
250. Bond, G.E., et al., Preliminary findings of the effects of comorbidities on a web-based intervention on self-reported blood sugar readings among adults age 60 and older with diabetes. *Telemedicine Journal & E-Health*, 2006. 12(6): p. 707-10.
251. Goldschmidt, D., et al., Expectations to and evaluation of a palliative home-care team as seen by patients and carers. *Supportive Care in Cancer*, 2006. 14(12): p. 1232-40.
252. Pinelle, D. and C. Gutwin, A collaborative document repository for home care teams. *AMIA, 2005. Annual Symposium Proceedings/AMIA Symposium.*: p. 1082.
253. Harzheim, E., et al., Quality and effectiveness of different approaches to primary care delivery in Brazil. *BMC Health Services Research*, 2006. 6: p. 156.
254. Moore, S.M. and T. Primm, Designing and testing tele-health interventions to improve outcomes for cardiovascular patients. *Journal of Cardiovascular Nursing*, 2007. 22(1): p. 43-50.
255. Austin, L., K. Luker, and M. Ronald, Clinical nurse specialists as entrepreneurs: constrained or liberated. *Journal of Clinical Nursing*, 2006. 15(12): p. 1540-9.
256. Morgan, S., Orientation for general practice in remote Aboriginal communities: a program for registrars in the Northern Territory. *Australian Journal of Rural Health*, 2006. 14(5): p. 202-8.
257. Centre for Evidence-Based Nursing South, A., Nurse-led cardiac clinics for adults with coronary heart disease. *Australian Nursing Journal*, 2006. 14(6): p. 25-8.
258. Depledge, J. and F. Gracie, Developing a strategic approach for IV therapy in the community. *British Journal of Community Nursing*, 2006. 11(11): p. 462-8.
259. Habermann, B. and L.L. Davis, Lessons learned from a Parkinson's disease caregiver intervention pilot study. *Applied Nursing Research*, 2006. 19(4): p. 212-5.
260. Forslund, K., M. Kihlgren, and V. Sorlie, Experiences of adding nurses to increase medical competence at an emergency medical dispatch centre. *Accident & Emergency Nursing*, 2006. 14(4): p. 230-6.
261. Fornos, J.A., et al., A pharmacotherapy follow-up program in patients with type-2 diabetes in community pharmacies in Spain. *Pharmacy World & Science*, 2006. 28(2): p. 65-72.
262. Hersberger, K.E., et al., Sequential screening for diabetes--evaluation of a campaign in Swiss community pharmacies. *Pharmacy World & Science*, 2006. 28(3): p. 171-9.
263. Beland, F., et al., Integrated services for frail elders (SIPA): a trial of a model for Canada. *Canadian Journal on Aging*, 2006. 25(1): p. 5-42.

264. Mohiddin, A., et al., Sharing specialist skills for diabetes in an inner city: a comparison of two primary care organisations over 4 years. *Journal of Evaluation in Clinical Practice*, 2006. 12(5): p. 583-90.
265. Henderson, K., Tel-Emergency: distance emergency care in rural emergency departments using nurse practitioners. *Journal of Emergency Nursing*, 2006. 32(5): p. 388-93.
266. El Miedany, Y., et al., Outcomes of a nurse-led osteoporosis and falls assessment. *British Journal of Nursing*, 2006. 15(19): p. 1070-6.
267. Ulrich, C.M., et al., Ethical conflict in nurse practitioners and physician assistants in managed care. *Nursing Research*, 2006. 55(6): p. 391-401.
268. Tomlinson, M. and G. John Gibson, Obstructive sleep apnoea syndrome: a nurse-led domiciliary service. *Journal of Advanced Nursing*, 2006. 55(3): p. 391-7.
269. Doherty, D., Assessment of lymphoedema of the lower limbs by the community nurse. *British Journal of Community Nursing*, 2006. 11(10): p. S9-12.
270. Bakken, S., et al., Mobile decision support for advanced practice nurses. *Studies in Health Technology & Informatics*, 2006. 122: p. 1002.
271. Lawton, S. and S. Timmons, The relationship between technology and changing professional roles in health care: A case-study in tele-dermatology. *Studies in Health Technology & Informatics*, 2006. 122: p. 669-71.
272. Cutcliffe, J.R. and K. Hyrkas, Multidisciplinary attitudinal positions regarding clinical supervision: a cross-sectional study. *Journal of Nursing Management*, 2006. 14(8): p. 617-27.
273. Roth, A., et al., Teleconsultation for cardiac patients: a comparison between nurses and physicians: the SHL experience in Israel. *Telemedicine Journal & E-Health*, 2006. 12(5): p. 528-34.
274. Richards, D.A., et al., Developing a U.K. protocol for collaborative care: a qualitative study. *General Hospital Psychiatry*, 2006. 28(4): p. 296-305.
275. Edwards, D., T. Freeman, and A.M. Roche, Dentists' and dental hygienists' role in smoking cessation: an examination and comparison of current practice and barriers to service provision. *Health Promotion Journal of Australia*, 2006. 17(2): p. 145-51.
276. Lindenmeyer, A., et al., Interventions to improve adherence to medication in people with type 2 diabetes mellitus: a review of the literature on the role of pharmacists. *Journal of Clinical Pharmacy & Therapeutics*, 2006. 31(5): p. 409-19.
277. Anetzberger, G.J., et al., VNA HouseCalls of greater Cleveland, Ohio: development and pilot evaluation of a program for high-risk older adults offering primary medical care in the home. *Home Health Care Services Quarterly*, 2006. 25(3-4): p. 155-66.
278. Vinks, T.H., et al., Identification of potential drug-related problems in the elderly: the role of the community pharmacist. *Pharmacy World & Science*, 2006. 28(1): p. 33-8.
279. Hansen-Turton, T., et al., Insurers' contracting policies on nurse practitioners as primary care providers: the current landscape and what needs to change. *Policy, Politics, & Nursing Practice*, 2006. 7(3): p. 216-26.
280. Fretheim, A., et al., Rational prescribing in primary care (RaPP): a cluster randomized trial of a tailored intervention.[see comment]. *PLoS Medicine / Public Library of Science*, 2006. 3(6): p. e134.
281. Schoot, T., et al., Client-centered home care: balancing between competing responsibilities. *Clinical Nursing Research*, 2006. 15(4): p. 231-54; discussion 255-7.
282. Ashton, P.A., et al., The effect of link nurses on hospital readmission rates. *Nursing Times*, 2006. 102(42): p. 34-5.

283. Stolee, P., et al., Examining the nurse practitioner role in long-term care: evaluation of a pilot project in Canada.[see comment]. *Journal of Gerontological Nursing*, 2006. 32(10): p. 28-36.
284. Clarke-Moloney, M., N. Keane, and E. Kavanagh, An exploration of current leg ulcer management practices in an Irish community setting. *Journal of Wound Care*, 2006. 15(9): p. 407-10.
285. Bell, J.S., et al., A comparative study of consumer participation in mental health pharmacy education. *Annals of Pharmacotherapy*, 2006. 40(10): p. 1759-65.
286. Benedict, L., K. Robinson, and C. Holder, Clinical nurse specialist practice within the Acute Care for Elders interdisciplinary team model. *Clinical Nurse Specialist*, 2006. 20(5): p. 248-51.
287. Dunt, D., et al., The impact of standalone call centres and GP cooperatives on access to after hours GP care: a before and after study adjusted for secular trend. *Family Practice*, 2006. 23(4): p. 453-60.
288. Hollinghurst, S., et al., Comparing the cost of nurse practitioners and GPs in primary care: modelling economic data from randomised trials.[see comment]. *British Journal of General Practice*, 2006. 56(528): p. 530-5.
289. Shephard, M.D., et al., Results of an Aboriginal community-based renal disease management program incorporating point of care testing for urine albumin:creatinine ratio. *Rural & Remote Health*, 2006. 6(4): p. 591.
290. Larsen, T., T.S. Olsen, and J. Sorensen, Early home-supported discharge of stroke patients: a health technology assessment. *International Journal of Technology Assessment in Health Care*, 2006. 22(3): p. 313-20.
291. Smeulders, E.S., et al., Evaluation of a self-management programme for congestive heart failure patients: design of a randomised controlled trial. *BMC Health Services Research*, 2006. 6: p. 91.
292. Colon-Emeric, C., et al., Translating evidence-based falls prevention into clinical practice in nursing facilities: Results and lessons from a quality improvement collaborative. *Journal of the American Geriatrics Society*, 2006. 54(9): p. 1414-8.
293. Leff, B., et al., Satisfaction with hospital at home care. *Journal of the American Geriatrics Society*, 2006. 54(9): p. 1355-63.
294. Markle-Reid, M., et al., The effectiveness and efficiency of home-based nursing health promotion for older people: a review of the literature. *Medical Care Research & Review*, 2006. 63(5): p. 531-69.
295. Lapane, K.L. and C.M. Hughes, Pharmacotherapy interventions undertaken by pharmacists in the Fleetwood phase III study: the role of process control. *Annals of Pharmacotherapy*, 2006. 40(9): p. 1522-6.
296. Bowler, M., Use of community matrons for care of long-term conditions. *Nursing Times*, 2006. 102(33): p. 31-3.
297. Anderson, N.R., The role of the home healthcare nurse in smoking cessation: guidelines for successful intervention. *Home Healthcare Nurse*, 2006. 24(7): p. 424-31; quiz 432-3.
298. Leese, B., et al., A new role for nurses as Primary Care Cancer Lead Clinicians in Primary Care Trusts in England. *Journal of Nursing Management*, 2006. 14(6): p. 462-71.
299. Thomas, L.M., T. Reynolds, and L. O'Brien, Innovation and change: shaping district nursing services to meet the needs of primary health care. *Journal of Nursing Management*, 2006. 14(6): p. 447-54.

300. Zillich, A.J., et al., Utility of a questionnaire to measure physician-pharmacist collaborative relationships. *Journal of the American Pharmacists Association: JAPhA*, 2006. 46(4): p. 453-8.
301. Williamson, G.R., et al., Change on the horizon: issues and concerns of neophyte advanced healthcare practitioners. *Journal of Clinical Nursing*, 2006. 15(9): p. 1091-8.
302. Peltzer, K., et al., Training primary care nurses to conduct alcohol screening and brief interventions in South Africa. *Curatationis*, 2006. 29(2): p. 16-21.
303. Challis, D., et al., Care management for older people: does integration make a difference? *Journal of Interprofessional Care*, 2006. 20(4): p. 335-48.
304. Smith, J., R. Roberts, and S. Fahy, Use of study days to develop the healthcare assistant role. *Nursing Times*, 2006. 102(30): p. 34-5.
305. Hudson, A.J. and L.J. Moore, A new way of caring for older people in the community.[erratum appears in *Nurs Stand*. 2006 Sep 20-26;21(2):31]. *Nursing Standard*, 2006. 20(46): p. 41-7.
306. Schofield, I., Supporting older people to quit smoking. *Nursing Older People*, 2006. 18(6): p. 29-33; quiz 34.
307. Shojania, K.G., et al., Effects of quality improvement strategies for type 2 diabetes on glycemic control: a meta-regression analysis. *JAMA*, 2006. 296(4): p. 427-40.
308. Barnason, S., et al., Impact of a telehealth intervention to augment home health care on functional and recovery outcomes of elderly patients undergoing coronary artery bypass grafting. *Heart & Lung*, 2006. 35(4): p. 225-33.
309. Higuchi, K.A., et al., A new role for advanced practice nurses in Canada: bridging the gap in health services for rural older adults. *Journal of Gerontological Nursing*, 2006. 32(7): p. 49-55.
310. Tetz, K.B., et al., How frail elders evaluate their caregiver's role enactment: a scale to measure affection, skill, and attentiveness. *Journal of Family Nursing*, 2006. 12(3): p. 251-75.
311. Pratt, L.R., Long-term conditions 5: meeting the needs of highly complex patients. *British Journal of Community Nursing*. 11(6): p. 234-5.
312. Clegg, A., et al., Developing the nurse's role in the care of older people. *Nursing Older People*, 2006. 18(5): p. 26-30.
313. Evans, T.C., et al., Academic degrees and clinical practice characteristics: the University of Washington physician assistant program: 1969-2000. *Journal of Rural Health*, 2006. 22(3): p. 212-9.
314. Jeske, L., et al., Partnering with patients and families in designing visual cues to prevent falls in hospitalized elders. *Journal of Nursing Care Quality*, 2006. 21(3): p. 236-41.
315. Bird, D. and T. Morris, Using community matrons to target long-term conditions. *Nursing Times*, 2006. 102(23): p. 19-20.
316. Gitlin, L.N., et al., Effect of an in-home occupational and physical therapy intervention on reducing mortality in functionally vulnerable older people: preliminary findings. *Journal of the American Geriatrics Society*, 2006. 54(6): p. 950-5.
317. Runciman, P., et al., Community nurses' health promotion work with older people. *Journal of Advanced Nursing*, 2006. 55(1): p. 46-57.
318. Hughes, C.M., R.M. Wright, and K.L. Lapane, Use of medication technicians in US nursing homes: part of the problem or part of the solution? *Journal of the American Medical Directors Association*, 2006. 7(5): p. 294-304.

319. Westerlund, L.T. and H.T. Bjork, Pharmaceutical care in community pharmacies: practice and research in Sweden. *Annals of Pharmacotherapy*, 2006. 40(6): p. 1162-9.
320. Dobesh, P.P., Managing hypertension in patients with type 2 diabetes mellitus.[see comment]. *American Journal of Health-System Pharmacy*, 2006. 63(12): p. 1140-9.
321. George, K. and L. Bradshaw, An aged persons mental health service in remote Victoria. *Australasian Psychiatry*, 2006. 14(2): p. 202-5.
322. McKnight, J., Skill mix: in whose best interests? *Community Practitioner*, 2006. 79(5): p. 157-60.
323. Austin, L., K. Luker, and R. Martin, Clinical nurse specialists and the practice of community nurses.[see comment]. *Journal of Advanced Nursing*, 2006. 54(5): p. 542-50.
324. Allen, T., Improving housing, improving health: the need for collaborative working. *British Journal of Community Nursing*, 2006. 11(4): p. 157-61.
325. Palese, A., G. Pantali, and L. Saiani, The management of a multigenerational nursing team with differing qualifications: a qualitative study. *Health Care Manager*, 2006. 25(2): p. 173-83.
326. Hamrosi, K., S.J. Taylor, and P. Aslani, Issues with prescribed medications in Aboriginal communities: Aboriginal health workers' perspectives. *Rural & Remote Health*, 2006. 6(2): p. 557.
327. Crist, J.D., et al., Instrument development of the Confidence in Home Care Services Questionnaire for use with elders and caregivers of Mexican descent. *Public Health Nursing*, 2006. 23(3): p. 284-91.
328. Wertenberger, S., et al., Veterans Health Administration Office of Nursing Services exploration of positive patient care synergies fueled by consumer demand: care coordination, advanced clinic access, and patient self-management. *Nursing Administration Quarterly*, 2006. 30(2): p. 137-46.
329. Graham, L., et al., The effect of a primary care intervention on management of patients with diabetes and hypertension: a pre-post intervention chart audit. *Healthcare Quarterly*, 2006. 9(2): p. 62-71.
330. McNab, L., B. Smith, and H.A. Minardi, A new service in the intermediate care of older adults with mental health problems. *Nursing Older People*, 2006. 18(3): p. 22-6.
331. Sanders, K., Developing practice for healthy ageing. *Nursing Older People*, 2006. 18(3): p. 18-21.
332. Markle-Reid, M., et al., Health promotion for frail older home care clients. *Journal of Advanced Nursing*, 2006. 54(3): p. 381-95.
333. Brooten, D. and J.M. Youngblut, Nurse dose as a concept.[see comment][erratum appears in *J Nurs Scholarsh*. 2006;38(3):207]. *Journal of Nursing Scholarship*, 2006. 38(1): p. 94-9.
334. Heuer, L.J., C. Hess, and A. Batson, Cluster clinics for migrant Hispanic farmworkers with diabetes: perceptions, successes, and challenges. *Rural & Remote Health*, 2006. 6(1): p. 469.
335. Hall, J., J. Cantrill, and P. Noyce, Why don't trained community nurse prescribers prescribe? *Journal of Clinical Nursing*, 2006. 15(4): p. 403-12.
336. Ryan, T., P. Enderby, and A.S. Rigby, A randomized controlled trial to evaluate intensity of community-based rehabilitation provision following stroke or hip fracture in old age. *Clinical Rehabilitation*, 2006. 20(2): p. 123-31.
337. Schnipper, J.L., et al., Role of pharmacist counseling in preventing adverse drug events after hospitalization. *Archives of Internal Medicine*, 2006. 166(5): p. 565-71.

338. Rapley, P.A., P. Nathan, and L. Davidson, EN to RN: the transition experience pre- and post-graduation. *Rural & Remote Health*, 2006. 6(1): p. 363.
339. Cowan, M.J., et al., The effect of a multidisciplinary hospitalist/physician and advanced practice nurse collaboration on hospital costs. *Journal of Nursing Administration*, 2006. 36(2): p. 79-85.
340. Perez, M., et al., The impact of community health worker training and programs in NYC. *Journal of Health Care for the Poor & Underserved*, 2006. 17(1 Suppl): p. 26-43.
341. Mack, M., R. Uken, and J. Powers, People Improving the Community's Health: community health workers as agents of change. *Journal of Health Care for the Poor & Underserved*, 2006. 17(1 Suppl): p. 16-25.
342. Dearnley, C.A., Knowing nursing and finding the professional voice: a study of enrolled nurses converting to first level registration. *Nurse Education Today*, 2006. 26(3): p. 209-17.
343. Cramp, G.J., Development of an integrated and sustainable rural service for people with diabetes in the Scottish Highlands. *Rural & Remote Health*, 2006. 6(1): p. 422.
344. Weman, K. and I. Fagerberg, Registered Nurses working together with family members of older people. *Journal of Clinical Nursing*, 2006. 15(3): p. 281-9.
345. Woodward, V.A., C. Webb, and M. Prowse, Nurse consultants: organizational influences on role achievement. *Journal of Clinical Nursing*, 2006. 15(3): p. 272-80.
346. Redfern, S., Examining the effectiveness of the nurse consultant role. *Nursing Times*, 2006. 102(4): p. 23-4.
347. Wong, F.K. and L.C. Chung, Establishing a definition for a nurse-led clinic: structure, process, and outcome. *Journal of Advanced Nursing*, 2006. 53(3): p. 358-69.
348. Midlov, P., et al., Effects of educational outreach visits on prescribing of benzodiazepines and antipsychotic drugs to elderly patients in primary health care in southern Sweden. *Family Practice*, 2006. 23(1): p. 60-4.
349. Caplan, G.A., et al., Does home treatment affect delirium? A randomised controlled trial of rehabilitation of elderly and care at home or usual treatment (The REACH-OUT trial). *Age & Ageing*, 2006. 35(1): p. 53-60.
350. Ryan, R., R. Garlick, and B. Happell, Exploring the role of the mental health nurse in community mental health care for the aged. *Issues in Mental Health Nursing*, 2006. 27(1): p. 91-105.
351. Dickinson, J., Liberating the potential: the role of non-nurses in adding value to nurse education. *Nurse Education Today*, 2006. 26(1): p. 31-7.
352. Heartfield, M. and T. Gibson, Mentoring for nurses in general practice: national issues and challenges. *Collegian: Journal of the Royal College of Nursing, Australia*, 2005. 12(2): p. 17-21.
353. Logsdon, R.G., S.M. McCurry, and L. Teri, A home health care approach to exercise for persons with Alzheimer's disease. *Care Management Journals*, 2005. 6(2): p. 90-7.
354. Wilson, K., et al., Nurse practitioners' experiences of working collaboratively with general practitioners and allied health professionals in New South Wales, Australia. *Australian Journal of Advanced Nursing*, 2005. 23(2): p. 22-7.
355. Duffield, C., et al., Nursing skill mix and nursing time: the roles of registered nurses and clinical nurse specialists. *Australian Journal of Advanced Nursing*, 2005. 23(2): p. 14-21.
356. Pascoe, T., et al., The changing face of nurses in Australian general practice. *Australian Journal of Advanced Nursing*, 2005. 23(1): p. 44-50.
357. Canam, C., Illuminating the clinical nurse specialist role of advanced practice nursing: a qualitative study. *Canadian Journal of Nursing Leadership*, 2005. 18(4): p. 70-89.

358. Ellis, I., The clinical champion role in the development of a successful telehealth wound care project for remote Australia. *Journal of Telemedicine & Telecare*, 2005. 11 Suppl 2: p. S26-8.
359. Robinson, M. and D. Cottrell, Health professionals in multi-disciplinary and multi-agency teams: changing professional practice. *Journal of Interprofessional Care*, 2005. 19(6): p. 547-60.
360. Tang, P.L., W.L. Yuan, and H.F. Tseng, Clinical follow-up study on diabetes patients participating in a health management plan. *Journal of Nursing Research: JNR*, 2005. 13(4): p. 253-62.
361. Leff, B., et al., Hospital at home: feasibility and outcomes of a program to provide hospital-level care at home for acutely ill older patients.[see comment][summary for patients in *Ann Intern Med*. 2005 Dec 6;143(11):I56; PMID: 16330787]. *Annals of Internal Medicine*, 2005. 143(11): p. 798-808.
362. Campbell, L., Sustaining nurse-managed practice. *Nursing Clinics of North America*. 40(4): p. 739-45.
363. Hollis, V. and L. May, Managerial and professional collaboration in the provision of home care rehabilitation. *Healthcare Management Forum*, 2005. 18(3): p. 13-5.
364. Hertz, J.E., et al., Collaboration to promote best practices in care of older adults. *MEDSURG Nursing*, 2005. 14(5): p. 311-5.
365. Simpson, A., Community psychiatric nurses and the care co-ordinator role: squeezed to provide 'limited nursing'. *Journal of Advanced Nursing*, 2005. 52(6): p. 689-99.
366. Bajorek, B.V., et al., Optimizing the use of antithrombotic therapy for atrial fibrillation in older people: a pharmacist-led multidisciplinary intervention. *Journal of the American Geriatrics Society*, 2005. 53(11): p. 1912-20.
367. Chumbler, N.R., et al., Evaluation of a care coordination/home-telehealth program for veterans with diabetes: health services utilization and health-related quality of life. *Evaluation & the Health Professions*, 2005. 28(4): p. 464-78.
368. Allen, J. and A.M. Fabri, An evaluation of a community aged care nurse practitioner service. *Journal of Clinical Nursing*, 2005. 14(10): p. 1202-9.
369. Foust, J.B., et al., Opportunities for improving post-hospital home medication management among older adults. *Home Health Care Services Quarterly*, 2005. 24(1-2): p. 101-22.
370. Schmalenberg, C., et al., Excellence through evidence: securing collegial/collaborative nurse-physician relationships, part 1. *Journal of Nursing Administration*, 2005. 35(10): p. 450-8.
371. Goodman, C., et al., Partnership working by default: district nurses and care home staff providing care for older people. *Health & Social Care in the Community*, 2005. 13(6): p. 553-62.
372. Macduff, C., The progress of family health nursing in remote and rural Scotland. *British Journal of Community Nursing*, 2005. 10(12): p. 558-62.
373. Downie, J., S. Ogilvie, and H. Wichmann, A collaborative model of community health nursing practice. *Contemporary Nurse*, 2005. 20(2): p. 180-92.
374. Lenz, T.L. and J.A. Stading, Lifestyle modification counselling of patients with dyslipidemias by pharmacists and other health professionals. *Journal of the American Pharmacists Association: JAPhA*, 2005. 45(6): p. 709-13.
375. Leung, W.Y., et al., Effects of structured care by a pharmacist-diabetes specialist team in patients with type 2 diabetic nephropathy. *American Journal of Medicine*, 2005. 118(12): p. 1414.

376. McCabe, P.J., Spheres of clinical nurse specialist practice influence evidence-based care for patients with atrial fibrillation. *Clinical Nurse Specialist*, 2005. 19(6): p. 308-17; quiz 318-9.
377. Huynh, T. and C. Forget-Falcicchio, Assessing the primary nurse role in the wound healing process. *Journal of Wound Care*, 2005. 14(9): p. 407-9.
378. Seymour, E., Managing and promoting change: implementing the Leg Club model. *British Journal of Community Nursing*. 10(9): p. S16.
379. Hobbs, F.D., et al., A randomised controlled trial and cost-effectiveness study of systematic screening (targeted and total population screening) versus routine practice for the detection of atrial fibrillation in people aged 65 and over. The SAFE study. *Health Technology Assessment (Winchester, England)*. 9(40): p. iii-iv.
380. Martin, C.T., et al., Factors contributing to low weight in community-living older adults. *Journal of the American Academy of Nurse Practitioners*, 2005. 17(10): p. 425-31.
381. Bricon-Souf, N., et al., A distributed coordination platform for home care: analysis, framework and prototype.[see comment]. *International Journal of Medical Informatics*, 2005. 74(10): p. 809-25.
382. de Bijl, N.P., Legal implications of task rearrangement for nurses in the Netherlands. *Nursing Ethics: an International Journal for Health Care Professionals*, 2005. 12(5): p. 431-9.
383. Sturkey, E.N., et al., Improving wound care outcomes in the home setting. *Journal of Nursing Care Quality*, 2005. 20(4): p. 349-55.
384. Newman, D.M., A community nursing center for the health promotion of senior citizens based on the Neuman systems model. *Nursing Education Perspectives*, 2005. 26(4): p. 221-3.
385. Heartfield, M. and T. Gibson, Australian enrolled nurses have their say--Part 1: Teamwork and recognition. *Contemporary Nurse*, 2005. 19(1-2): p. 115-25.
386. Johnson, E.A., et al., A field-based approach to support improved diabetes care in rural states. *Preventing Chronic Disease*, 2005. 2(4): p. A08.
387. Coke, T., et al., The new role of physical therapy in home care. *Home Healthcare Nurse*, 2005. 23(9): p. 594-9.
388. Richards, D.A., et al., Home management of mild to moderately severe community-acquired pneumonia: a randomised controlled trial.[see comment]. *Medical Journal of Australia*, 2005. 183(5): p. 235-8.
389. Duffy, J.R., L.M. Hoskins, and S. Dudley-Brown, Development and testing of a caring-based intervention for older adults with heart failure. *Journal of Cardiovascular Nursing*, 2005. 20(5): p. 325-33.
390. Stewart, A. and R. Catanzaro, Can physician assistants be effective in the UK?[see comment]. *Clinical Medicine*, 2005. 5(4): p. 344-8.
391. Maunder, P.E. and D.P. Landes, An evaluation of the role played by community pharmacies in oral healthcare situated in a primary care trust in the north of England. *British Dental Journal*. 199(4): p. 219-23.
392. Larson, J., et al., The impact of a nurse-led support and education programme for spouses of stroke patients: a randomized controlled trial. *Journal of Clinical Nursing*, 2005. 14(8): p. 995-1003.
393. Kelley-Gillespie, N., Mobile medical care units: an innovative use of Medicare funding. *Journal of Health & Social Policy*, 2005. 20(2): p. 33-48.
394. Victor, C.R., et al., Lack of benefit of a primary care-based nurse-led education programme for people with osteoarthritis of the knee. *Clinical Rheumatology*, 2005. 24(4): p. 358-64.

395. Wilson, C., et al., Nurse case manager effectiveness and case load in a large clinical practice: implications for workforce development. *Diabetic Medicine*, 2005. 22(8): p. 1116-20.
396. Murchie, P., et al., Running nurse-led secondary prevention clinics for coronary heart disease in primary care: qualitative study of health professionals' perspectives. *British Journal of General Practice*, 2005. 55(516): p. 522-8.
397. Hegney, D., et al., Patient education and consumer medicine information: a study of provision by Queensland rural and remote area Registered Nurses. *Journal of Clinical Nursing*, 2005. 14(7): p. 855-62.
398. Woodward, V.A., C. Webb, and M. Prowse, Nurse consultants: their characteristics and achievements.[see comment]. *Journal of Clinical Nursing*, 2005. 14(7): p. 845-54.
399. Law, A.V., M.P. Okamoto, and P.S. Chang, Prevalence and types of disease management programs in community pharmacies in California. *Journal of Managed Care Pharmacy*, 2005. 11(6): p. 505-12.
400. Edwards, H., et al., Improved healing rates for chronic venous leg ulcers: pilot study results from a randomized controlled trial of a community nursing intervention. *International Journal of Nursing Practice*, 2005. 11(4): p. 169-76.
401. Hendrix, C.C. and C.W. Wojciechowski, Chronic care management for the elderly: an opportunity for gerontological nurse practitioners. *Journal of the American Academy of Nurse Practitioners*, 2005. 17(7): p. 263-7.
402. Mason, C.M., The nurse practitioner's role in helping patients achieve lipid goals with statin therapy. *Journal of the American Academy of Nurse Practitioners*, 2005. 17(7): p. 256-62.
403. Ragot, S., et al., Appraisal of the knowledge of hypertensive patients and assessment of the role of the pharmacists in the management of hypertension: results of a regional survey. *Journal of Human Hypertension*, 2005. 19(7): p. 577-84.
404. Nancarrow, S.A., et al., Support workers in intermediate care. *Health & Social Care in the Community*, 2005. 13(4): p. 338-44.
405. Holland, R., et al., Systematic review of multidisciplinary interventions in heart failure.[see comment]. *Heart*, 2005. 91(7): p. 899-906.
406. Adams, M.H. and C.S. Crow, Development of a nurse case management service: a proposed business plan for rural hospitals. *Lippincott's Case Management*, 2005. 10(3): p. 148-58.
407. Robbins, C.L. and J. Birmingham, The social worker and nurse roles in case management: applying the Three Rs. *Lippincott's Case Management*, 2005. 10(3): p. 120-7.
408. Lankshear, A.J., T.A. Sheldon, and A. Maynard, Nurse staffing and healthcare outcomes: a systematic review of the international research evidence. *Advances in Nursing Science*, 2005. 28(2): p. 163-74.
409. Jennings-Sanders, A., et al., How do nurse case managers care for older women with breast cancer? *Oncology Nursing Forum Online*, 2005. 32(3): p. 625-32.
410. Huffman, M.H., Disease management: a new and exciting opportunity in home healthcare. *Home Healthcare Nurse*, 2005. 23(5): p. 290-6; quiz 297-8.
411. Stebbins, M.R., D.J. Kaufman, and H.L. Lipton, The PRICE clinic for low-income elderly: a managed care model for implementing pharmacist-directed services.[see comment]. *Journal of Managed Care Pharmacy*, 2005. 11(4): p. 333-41.
412. Halcomb, E.J., et al., Nursing in Australian general practice: directions and perspectives. *Australian Health Review*, 2005. 29(2): p. 156-66.
413. Masters, K.R., A student home visiting program for vulnerable, community-dwelling older adults. *Journal of Nursing Education*, 2005. 44(4): p. 185-6.

414. Fisher, R., Relationships in nurse prescribing in district nursing practice in England: a preliminary investigation. *International Journal of Nursing Practice*, 2005. 11(3): p. 102-7.
415. Du Moulin, M.F., et al., The role of the nurse in community continence care: a systematic review. *International Journal of Nursing Studies*, 2005. 42(4): p. 479-92.
416. Laurant, M., et al., Substitution of doctors by nurses in primary care. *Cochrane Database of Systematic Reviews*, 2005(2): p. CD001271.
417. Sung, H.C., S.M. Chang, and C.S. Tsai, Working in long-term care settings for older people with dementia: nurses' aides.[see comment]. *Journal of Clinical Nursing*, 2005. 14(5): p. 587-93.
418. While, A., R. Shah, and A. Nathan, Interdisciplinary working between community pharmacists and community nurses: the views of community pharmacists. *Journal of Inter-professional Care*, 2005. 19(2): p. 164-70.
419. Schein, C., et al., The association between specific nurse case management interventions and elder health. *Journal of the American Geriatrics Society*, 2005. 53(4): p. 597-602.
420. Meng, H., et al., Effect of a consumer-directed voucher and a disease-management-health-promotion nurse intervention on home care use. *Gerontologist*, 2005. 45(2): p. 167-76.
421. Andrieu, S., et al., Changes in informal care over one year for elderly persons with Alzheimer's disease. *Journal of Nutrition, Health & Aging*, 2005. 9(2): p. 121-6.
422. Ward, S., H. Barnes, and R. Ward, Evaluating a respiratory intermediate care team. *Nursing Standard*, 2005. 20(5): p. 46-50.
423. McDonald, P.E., P.F. Brennan, and M.L. Wykle, Perceived health status and health-promoting behaviors of African-American and White informal caregivers of impaired elders. *Journal of National Black Nurses Association*, 2005. 16(1): p. 8-17.
424. Shane-McWhorter, L. and G.M. Oderda, Providing diabetes education and care to underserved patients in a collaborative practice at a Utah community health centre. *Pharmacotherapy*, 2005. 25(1): p. 96-109.
425. Clark, A., Improving the delivery of care for diabetes patients with a collaborative model. *Home Healthcare Nurse*, 2005. 23(3): p. 177-82.
426. Tierney, W.M., et al., Can computer-generated evidence-based care suggestions enhance evidence-based management of asthma and chronic obstructive pulmonary disease? A randomized, controlled trial.[see comment]. *Health Services Research*, 2005. 40(2): p. 477-97.
427. Strasser, D.C., et al., Team functioning and patient outcomes in stroke rehabilitation. *Archives of Physical Medicine & Rehabilitation*, 2005. 86(3): p. 403-9.
428. Witter, P., The district nurse's role in managing patients with heart failure. *Nursing Standard*, 2005. 19(24): p. 38-42.
429. Sol, B.G., et al., Vascular risk management through nurse-led self-management programs. *Journal of Vascular Nursing*, 2005. 23(1): p. 20-4.
430. Clarke, H.F., et al., Pressure ulcers: implementation of evidence-based nursing practice. *Journal of Advanced Nursing*, 2005. 49(6): p. 578-90.
431. Lindeke, L.L. and A.M. Sieckert, Nurse-physician workplace collaboration. *Online Journal of Issues in Nursing*, 2005. 10(1): p. 5.
432. Kleinpell, R. and A. Gawlinski, Assessing outcomes in advanced practice nursing practice: the use of quality indicators and evidence-based practice. *AACN Clinical Issues*, 2005. 16(1): p. 43-57.

433. Paulus, A.T., A. Raak, and F. Keijzer, Informal and formal caregivers' involvement in nursing home care activities: impact of integrated care. *Journal of Advanced Nursing*, 2005. 49(4): p. 354-66.
434. Ayers, N., Evaluating the effect of setting up a nurse-led heart failure service. *Nursing Times*, 2005. 101(2): p. 34-6.
435. Hendriks, M.R., et al., Effectiveness and cost-effectiveness of a multidisciplinary intervention programme to prevent new falls and functional decline among elderly persons at risk: design of a replicated randomised controlled trial [ISRCTN64716113]. *BMC Public Health*, 2005. 5: p. 6.
436. Thorsen, A.M., et al., A randomized controlled trial of early supported discharge and continued rehabilitation at home after stroke: five-year follow-up of patient outcome. *Stroke*, 2005. 36(2): p. 297-303.
437. Preen, D.B., et al., Effects of a multidisciplinary, post-discharge continuance of care intervention on quality of life, discharge satisfaction, and hospital length of stay: a randomized controlled trial. *International Journal for Quality in Health Care*, 2005. 17(1): p. 43-51.
438. Canzanello, V.J., et al., Improved blood pressure control with a physician-nurse team and home blood pressure measurement.[see comment]. *Mayo Clinic Proceedings*, 2005. 80(1): p. 31-6.
439. Wetta-Hall, R., et al., Community case management: a strategy to improve access to medical care in uninsured populations. *Care Management Journals*, 2004. 5(2): p. 87-93.
440. McWilliam, C.L., et al., Flexible client-driven in-home case management: an option to consider. *Care Management Journals*, 2004. 5(2): p. 73-86.
441. Jin, A.J., et al., Evaluation of a mobile diabetes care telemedicine clinic serving Aboriginal communities in Northern British Columbia, Canada. *International Journal of Circumpolar Health*, 2004. 63 Suppl 2: p. 124-8.
442. Hallberg, I.R. and J. Kristensson, Preventive home care of frail older people: a review of recent case management studies. *Journal of Clinical Nursing*, 2004. 13(6B): p. 112-20.
443. Keady, J., et al., Community mental health nursing and early intervention in dementia: developing practice through a single case history. *Journal of Clinical Nursing*, 2004. 13(6B): p. 57-67.
444. Pitsillides, B., et al., User perspective of DITIS: virtual collaborative teams for home-healthcare. *Studies in Health Technology & Informatics*, 2004. 100: p. 205-16.
445. Papazissis, E., Advanced technology permits the provision of advanced hospital care in the patients' homes. *Studies in Health Technology & Informatics*, 2004. 100: p. 190-9.
446. Wright, C., et al., A systematic review of home treatment services--classification and sustainability. *Social Psychiatry & Psychiatric Epidemiology*, 2004. 39(10): p. 789-96.
447. Drennan, V. and C. Goodman, Nurse-led case management for older people with long-term conditions. *British Journal of Community Nursing*, 2004. 9(12): p. 527-33.
448. Bliss, J., Effective team management by district nurses. *British Journal of Community Nursing*, 2004. 9(12): p. 524-6.
449. Andrews, J.O., et al., Use of community health workers in research with ethnic minority women. *Journal of Nursing Scholarship*, 2004. 36(4): p. 358-65.
450. Tidwell, L., et al., Community-based nurse health coaching and its effect on fitness participation. *Lippincott's Case Management*, 2004. 9(6): p. 267-79.
451. Fejzic, J.B. and S.E. Tett, Medication management reviews for people from the former Yugoslavia now resident in Australia. *Pharmacy World & Science*, 2004. 26(5): p. 271-6.

452. Hayes, N. and F. Martin, Supporting care homes: the older people's specialist nurse. *British Journal of Nursing*, 2004. 13(21): p. 1250-7.
453. Scott, L.D., K. Setter-Kline, and A.S. Britton, The effects of nursing interventions to enhance mental health and quality of life among individuals with heart failure. *Applied Nursing Research*, 2004. 17(4): p. 248-56.
454. Boter, H. and H.S. Group, Multicenter randomized controlled trial of an outreach nursing support program for recently discharged stroke patients. *Stroke*, 2004. 35(12): p. 2867-72.
455. Sorensen, L., et al., Medication reviews in the community: results of a randomized, controlled effectiveness trial.[erratum appears in *Br J Clin Pharmacol*. 2005 Mar;59(3):376]. *British Journal of Clinical Pharmacology*, 2004. 58(6): p. 648-64.
456. Lansley, P., C. McCreddie, and A. Tinker, Can adapting the homes of older people and providing assistive technology pay its way? *Age & Ageing*, 2004. 33(6): p. 571-6.
457. McAuley, W.J., et al., The influence of rural location on utilization of formal home care: the role of Medicaid. *Gerontologist*, 2004. 44(5): p. 655-64.
458. Webster, T.R., et al., The role of intended use on actual use of home care: is race a factor? *Home Health Care Services Quarterly*, 2004. 23(3): p. 57-68.
459. Murchie, P., et al., Effects of secondary prevention clinics on health status in patients with coronary heart disease: 4 year follow-up of a randomized trial in primary care. *Family Practice*, 2004. 21(5): p. 567-74.
460. Caplan, G.A., et al., A randomized, controlled trial of comprehensive geriatric assessment and multidisciplinary intervention after discharge of elderly from the emergency department--the DEED II study. *Journal of the American Geriatrics Society*, 2004. 52(9): p. 1417-23.
461. Guerriero Austrom, M., et al., Development and implementation of non-pharmacologic protocols for the management of patients with Alzheimer's disease and their families in a multiracial primary care setting. *Gerontologist*, 2004. 44(4): p. 548-53.
462. Farris, K.B., et al., Enhancing primary care for complex patients. Demonstration project using multidisciplinary teams.[see comment]. *Canadian Family Physician*, 2004. 50: p. 998-1003.
463. Coffey, A., Perceptions of training for care attendants employed in the care of older people. *Journal of Nursing Management*, 2004. 12(5): p. 322-8.
464. Hek, G., L. Singer, and P. Taylor, Cross-boundary working: a generic worker for older people in the community. *British Journal of Community Nursing*, 2004. 9(6): p. 237-44.
465. Wong, I., et al., Pharmaceutical care for elderly patients shared between community pharmacists and general practitioners: a randomised evaluation. RESPECT (Randomised Evaluation of Shared Prescribing for Elderly people in the Community over Time) [ISRCTN16932128]. *BMC Health Services Research*, 2004. 4(1): p. 11.
466. Codispoti, C., et al., The use of a multidisciplinary team care approach to improve glycemic control and quality of life by the prevention of complications among diabetic patients. *Journal - Oklahoma State Medical Association*, 2004. 97(5): p. 201-4.
467. Tibaldi, V., et al., A randomized controlled trial of a home hospital intervention for frail elderly demented patients: behavioral disturbances and caregiver's stress. *Archives of Gerontology & Geriatrics - Supplement*, 2004(9): p. 431-6.
468. Fabris, F., et al., Home care for demented subjects: new models of care and home-care allowance. *Archives of Gerontology & Geriatrics - Supplement*, 2004(9): p. 155-62.
469. Cucinotta, D., et al., The chronically ill elderly patients discharged from the hospital: interim report from a controlled study of home care attendance. *Archives of Gerontology & Geriatrics - Supplement*, 2004(9): p. 103-8.

470. Nancarrow, S., Dynamic role boundaries in intermediate care services. *Journal of Inter-professional Care*, 2004. 18(2): p. 141-51.
471. Bradley, E.H., et al., Intended use of informal long-term care: the role of race and ethnicity. *Ethnicity & Health*, 2004. 9(1): p. 37-54.
472. Maddigan, S.L., et al., Improvements in patient-reported outcomes associated with an intervention to enhance quality of care for rural patients with type 2 diabetes: results of a controlled trial. *Diabetes Care*, 2004. 27(6): p. 1306-12.
473. Krein, S.L., et al., Case management for patients with poorly controlled diabetes: a randomized trial.[see comment]. *American Journal of Medicine*, 2004. 116(11): p. 732-9.
474. Kalra, L., et al., Training carers of stroke patients: randomised controlled trial.[see comment]. *BMJ*, 2004. 328(7448): p. 1099.
475. Legg, L., P. Langhorne, and T. Outpatient Service, Rehabilitation therapy services for stroke patients living at home: systematic review of randomised trials.[see comment]. *Lancet*, 2004. 363(9406): p. 352-6.
476. Anderson, W., Specialist support teams: influencing the nursing care of older people. *Nursing Older People*, 2004. 16(1): p. 18-20.
477. Wermeille, J., et al., Pharmaceutical care model for patients with type 2 diabetes: integration of the community pharmacist into the diabetes team--a pilot study. *Pharmacy World & Science*, 2004. 26(1): p. 18-25.
478. Aigner, M.J., S. Drew, and J. Phipps, A comparative study of nursing home resident outcomes between care provided by nurse practitioners/physicians versus physicians only.[see comment]. *Journal of the American Medical Directors Association*, 2004. 5(1): p. 16-23.
479. Dyer, C.B., et al., Frail older patient care by interdisciplinary teams: a primer for generalists. *Gerontology & Geriatrics Education*, 2003. 24(2): p. 51-62.
480. Simmons, D., Impact of an integrated approach to diabetes care at the Rumbalara Aboriginal Health Service. *Internal Medicine Journal*, 2003. 33(12): p. 581-5.
481. Gorski, L.A. and K. Johnson, A disease management program for heart failure: collaboration between a home care agency and a care management organization. *Lippincott's Case Management*, 2003. 8(6): p. 265-73.
482. Warren, S., et al., The impact of adult day programs on family caregivers of elderly relatives. *Journal of Community Health Nursing*, 2003. 20(4): p. 209-21.
483. Smith, F., et al., A multi-centre survey among informal carers who manage medication for older care recipients: problems experienced and development of services. *Health & Social Care in the Community*, 2003. 11(2): p. 138-45.
484. Howard, M., et al., Collaboration between community pharmacists and family physicians: lessons learned from the Seniors Medication Assessment Research Trial. *Journal of the American Pharmacists Association: JAPhA*, 2003. 43(5): p. 566-72.
485. Young, W., et al., Evaluation of a community-based inner-city disease management program for postmyocardial infarction patients: a randomized controlled trial.[see comment]. *CMAJ Canadian Medical Association Journal*, 2003. 169(9): p. 905-10.
486. Bengtson, A. and E. Drevenhorn, The nurse's role and skills in hypertension care: a review. *Clinical Nurse Specialist*, 2003. 17(5): p. 260-8.
487. Neff, D.F., E. Madigan, and G. Narsavage, APN-directed transitional home care model: achieving positive outcomes for patients with COPD. *Home Healthcare Nurse*, 2003. 21(8): p. 543-50.
488. Oakeshott, P., et al., Is there a role for nurse-led blood pressure management in primary care? *Family Practice*, 2003. 20(4): p. 469-73.

489. Knol, H.R., L. Haken, and G.I. Kempen, Disablement process and the utilization of home care among non-institutionalized elderly people: contrasting results between cross-sectional and panel data. *Disability & Rehabilitation*, 2003. 25(15): p. 845-55.
490. Blenkinsopp, A., C. Anderson, and M. Armstrong, Systematic review of the effectiveness of community pharmacy-based interventions to reduce risk behaviours and risk factors for coronary heart disease. *Journal of Public Health Medicine*, 2003. 25(2): p. 144-53.
491. Windham, B.G., R.G. Bennett, and S. Gottlieb, Care management interventions for older patients with congestive heart failure. *American Journal of Managed Care*, 2003. 9(6): p. 447-59; quiz 460-1.
492. Ward, D., et al., Care home versus hospital and own home environments for rehabilitation of older people. *Cochrane Database of Systematic Reviews*, 2003(2): p. CD003164.
493. Timm, S.E., Effectively delegating nursing activities in home care. *Home Healthcare Nurse*, 2003. 21(4): p. 260-5.
494. Hourihan, F., I. Krass, and T. Chen, Rural community pharmacy: a feasible site for a health promotion and screening service for cardiovascular risk factors. *Australian Journal of Rural Health*, 2003. 11(1): p. 28-35.
495. Nikolaus, T. and M. Bach, Preventing falls in community-dwelling frail older people using a home intervention team (HIT): results from the randomized Falls-HIT trial. *Journal of the American Geriatrics Society*, 2003. 51(3): p. 300-5.
496. Brown, E.L., et al., Recognition of depression among elderly recipients of home care services.[see comment]. *Psychiatric Services*, 2003. 54(2): p. 208-13.
497. Nunez, D.E., et al., Community-based senior health promotion program using a collaborative practice model: the Escalante Health Partnerships. *Public Health Nursing*, 2003. 20(1): p. 25-32.
498. Fletcher, A.E., et al., The MRC trial of assessment and management of older people in the community: objectives, design and interventions [ISRCTN23494848]. *BMC Health Services Research*, 2002. 2(1): p. 21.
499. Modin, S. and A.K. Furhoff, Care by general practitioners and district nurses of patients receiving home nursing: a study from suburban Stockholm. *Scandinavian Journal of Primary Health Care*, 2002. 20(4): p. 208-12.
500. Campbell, R.K., Role of the pharmacist in diabetes management. *American Journal of Health-System Pharmacy*, 2002. 59 Suppl 9: p. S18-21.
501. Keough, M.E., T.S. Field, and J.H. Gurwitz, A model of community-based interdisciplinary team training in the care of the frail elderly. *Academic Medicine*, 2002. 77(9): p. 936.
502. Forti, E.M. and M. Koerber, An outreach intervention for older rural African Americans. *Journal of Rural Health*, 2002. 18(3): p. 407-15.
503. Byles, J.E., L. Francis, and M. McKernon, The experiences of non-medical health professionals undertaking community-based health assessments for people aged 75 years and over. *Health & Social Care in the Community*, 2002. 10(2): p. 67-73.
504. Jones, J.F. and P.F. Brennan, Telehealth interventions to improve clinical nursing of elders. *Annual Review of Nursing Research*, 2002. 20: p. 293-322.
505. Silver, H.J. and N.S. Wellman, Family caregiver training is needed to improve outcomes for older adults using home care technologies. *Journal of the American Dietetic Association*, 2002. 102(6): p. 831-6.
506. Coburn, A.F., Rural long-term care: what do we need to know to improve policy and programs? *Journal of Rural Health*, 2002. 18 Suppl: p. 256-69.

507. Crotty, M., et al., Early discharge and home rehabilitation after hip fracture achieves functional improvements: a randomized controlled trial. *Clinical Rehabilitation*, 2002. 16(4): p. 406-13.
508. Ritchie, C., et al., Coordination and advocacy for rural elders (CARE): a model of rural case management with veterans. *Gerontologist*, 2002. 42(3): p. 399-405.
509. Fletcher, D. and D. Rush, The role, responsibilities and educational needs of the non-nurse carer. *Br J Community Nurs*, 2001. 6(9): p. 452-8.
510. Tourangeau, A.E., et al., Evaluation of a partnership model of care delivery involving registered nurses and unlicensed assistive personnel. *Can J Nurs Leadersh*, 1999. 12(2): p. 4-20.
511. Badovinac, C.C., S. Wilson, and D. Woodhouse, The use of unlicensed assistive personnel and selected outcome indications. *Nurs Econ*, 1999. 17(4): p. 194-200.
512. Gould, R., et al., Redesigning the RN and NA roles. *Nurs Manage*, 1996. 27(2): p. 37, 40-1.
513. Jones, K.R., et al., Evaluation of the multifunctional worker role: a stakeholder analysis. *Outcomes Manag Nurs Pract*, 1999. 3(3): p. 128-35.
514. Russo, J.M. and D.R. Lancaster, Evaluating unlicensed assistive personnel models. Asking the right questions, collecting the right data. *J Nurs Adm*, 1995. 25(9): p. 51-7.
515. Legorreta, A., et al., Effect of a comprehensive nurse-managed diabetes program: an HMO prospective study. *Am J Man Care*, 1996. 2: p. 1024-30.
516. Fabacher, D., et al., An in-home preventive assessment program for independent older adults: a randomized controlled trial.[see comment]. *Journal of the American Geriatrics Society*, 1994. 42(6): p. 630-8.
517. McNeil, J.K., Effects of non-professional home visit programs for sub-clinically unhappy and unhealthy older adults. *Journal of Applied Gerontology*, 1995. 14(3): p. 333-342.
518. Nola, K.M., et al., Clinical and humanistic outcomes of a lipid management program in the community pharmacy setting.[see comment][erratum appears in *J Am Pharm Assoc (Wash)*. 2000 Sep-Oct;40(5):583]. *Journal of the American Pharmaceutical Association*, 2000. 40(2): p. 166-73.
519. Stein, G.H. and G.H. Stein, The use of a nurse practitioner in the management of patients with diabetes mellitus. *Medical Care*, 1974. 12(10): p. 885-90.
520. Sullivan, F.M. and A. Menzies, The costs and benefits of introducing a nurse-run diabetic review service into general practice. *Practical Diabetes*, 1991. 8(2): p. 47-50.
521. Williams, E.I., J. Greenwell, and L.M. Groom, The care of people over 75 years old after discharge from hospital: an evaluation of timetabled visiting by Health Visitor Assistants. *Journal of Public Health Medicine*, 1992. 14(2): p. 138-44.
522. Christine Branson, Beryl Badger, and Frank Dobbs, Patient satisfaction with skill mix in primary care: a review of the literature. *Primary Health Care Research and Development*, 2003. 4: p. 329-339.
523. The EROS Project Team, Training nurse practitioners for general practice. *British Journal of General Practice*, 1999. 49: p. 531-535.
524. Davies, C., Getting health professionals to work together. *BMJ*, 2000. 320(7241): p. 1021-1022.
525. Iliffe, S., Nursing and the future of primary care. *BMJ*, 2000. 320(7241): p. 1020-1021.
526. Karen Hassell, Philip Shann, and Peter Noyce, The complexities of skill mix in community pharmacy. *The Pharmaceutical Journal*, 2002. 269: p. 851-854.
527. Salvage, J. and R. Smith, Doctors and nurses: doing it differently. *BMJ*, 2000. 320(7241): p. 1019-1020.

528. Baran RW, C.K., Patterson H et al. , Improving outcomes of community-dwelling older patients with diabetes through pharmacist counselling. *Am J Health Syst Pharm.* , 1999. 56:: p. 1535-1539.
529. Blue L, L.E., McMurray JJ, Davie AP,McDonagh TA,Murdoch DR, et al, Randomized controlled trial of specialist nurse intervention in heart failure. *BMJ* 2001(8): p. 323:715.
530. Bozovich M, R.C., Edmunds J. , Effect of a clinical pharmacist-managed lipid clinic on achieving National Cholesterol Education Program low-density lipoprotein goals. *Pharmacotherapy.* , 2000. 20: p. 1375 – 1383.
531. Brown SA, G.D., A meta-analysis of nurse practitioners and nurse midwives in primary care. *Nurs Res*, 1995: p. 44:3328.
532. Cioffi ST, C.M., Kalus JS, Hill P, Buckley TE., Glycosylated hemoglobin, cardiovascular, and renal outcomes in a pharmacist-managed clinic. . *Ann Pharmacotherapy* 2004. 38: p. 771-5.
533. Cording MA, E.-Z.E., Pettit BJ, et al. , Development of a pharmacist-managed lipid clinic. . 2002. *Ann Pharmacother.*(36): p. 892-904.
534. Cranor CW, B.B., Christensen DB. , The Asheville Project: long-term clinical and economic outcomes of a community pharmacy diabetes care program. *J Am Pharm Assoc (Wash)*, 2003. 43: p. 173-184.
535. Fairbrother J, M.D., Williamson PM. , The doctor-pharmacist interface, a preliminary evaluation of domiciliary visits by a community pharmacists. *J Soc Admin Pharm*, 1993. 10: p. 85-91.
536. Hooker RS, M.L., Use of physician assistants and nurse practitioners in practitioners in primary care 1995-1999. *Health Affairs,,* 2001. 20:: p. 231-238.
537. Katon W, V.K.M., Lin E, Simon G. , Rethinking practitioner roles in chronic illness: the specialist, primary care physician, and the practice nurse. *Gen Hosp Psychiatry*, 2001. 23: p. 138-144.
538. Koperski M, R.S., Drennan V. , Nurse practitioners in general practice—an inevitable progression? *Br J Gen Pract* 1997. 47: p. 696-8.
539. McMullin ST, H.J., Ritchie DJ, Huey WY, Lonergan TP, Schaiff RA, et al. , A prospective, randomized trial to assess the cost impact of pharmacist-initiated interventions. *Arch Intern Med* 1999. 159: p. 2306-9.
540. Mound B, G.R., Kahn P & Goenng P (1991) The expanded role of nurse case managers *Journal of Psychosocial Nursing and Mental Health Services* 1991. 29(6): p. 18-22.
541. Munroe WP, K.K., Dalmady-Israel C et al. , Economic evaluation of pharmacist involvement in disease management in a community pharmacy setting. *Clinical Therapy.,* 1997. 19: p. 113-23.
542. New JP, J.M.M., N. Freemantle, S. Teasdale, L.M.Wong, N.J. Bruce, et al. . , Specialist nurse-led intervention to treat and control hypertension and hyperlipidemia in diabetics (SPLINT), . *Diabetes Care* 2003. 26(8): p. 2250–2255.
543. O'Donnell DC, C.N., Piziak VK, Goal attainment and maintenance of serum cholesterol level in a pharmacist-coordinated lipid clinic. . *Am J Health Syst Pharm.,* 2001. 58: p. 325-30.
544. Pine DA, M.-K.D., Sauser M. , Effectiveness of a nurse-based intervention in a community practice on patients' dietary fat intake and total serum cholesterol level. *Arch Fam Med*, 1997. 6: p. 129.
545. Rainville, E., Impact of pharmacist interventions on hospital readmissions for heart failure. *Am J Health Syst Pharm*, 1999 56: p. 1339–42.
546. Sidel VW, B.J., Lisi-Fazio D, Kleinmann K, Wenston J, Thomas C, et al., Controlled study of the impact of educational home visits by pharmacists to high-risk older patients. *J Community Health* 1990. 15: p. 163-74.

547. Simpson SH, J.J., Tsuyuki RT. *Pharmacotherapy*. , Economic impact of community pharmacist intervention in cholesterol risk management: an evaluation of the study of cardiovascular risk intervention by pharmacists. . 2001. 21(5): p. 627-35.
548. Vrijhoef H.J.M., D.J.P.M.S.C., Effects on quality of care for patients with NIDDM or COPD when the specialised nurse has a central role: a literature review. *Patient Education and Counselling*, 2000(41): p. 243-250.
549. Vrijhoef HJ, D.J., Spreeuwenberg C, Wolffenbuttel BH, van Wilderen LJ. ;(:, The nurse specialist as main care-provider for patients with type 2 diabetes in a primary care setting: effects on patient outcomes. *Int J Nurs Stud*, 2002. 39(4): p. 441-51.
550. Weinberger M, K.M., Samsa GP, et al. , A nurse-coordinated intervention for primary care patients with non-insulin-dependent diabetes mellitus: impact on glycemic control and health-related quality of life. *J Gen Intern Med.*, 1995. 10: p. 59-66.
551. Weinberger M, M.M., Marrero DG, Brewer N, Lykens M, Harris LE, et al. , Effectiveness of pharmacist care for patients with reactive airways disease: a randomized controlled trial. *JAMA*, 2002. 288: p. 1594-602.
552. Wilt VM, G.J., Ahmed OI, Moore LM. *Pharmacotherapy*. , Outcome analysis of a pharmacist-managed anticoagulation service. 1995. 15: p. 732-739.
553. Woollard J., B.L., Lord T., Puddey I., MacAdam D. & Rouse I., A controlled trial of nurse counselling on lifestyle change for hypertensives treated in general practice: preliminary results. *Clinical and Experimental Pharmacology and Physiology* 1995. 22(6-7): p. 466-468. .
554. McKenna, H.P. and Nursing skill mix substitutions and quality of care: an exploration of assumptions from the research literature. *J Adv Nurs* 1995. 21 (3): p. 452-9.
555. Ethnic communities council, ECCV Sub,ission to the Review of Subsidies and Services in Australian Government Funded Community Aged care Programs. 2007, State-wide resources centre: Melbourne.
556. Jill Exon, Culturally Equitable Gateway Strategy recruitment project. December 2005.
557. Business Work Ageing, Attracting and retaining older workers in the human services sector. 2005.
558. Drugay, M., Solutions to nurse shortage include 'role-appropriate' responsibilities. *Provider*, 1991. 17(1): p. 68, 66.
559. McMaster University, Actively Building Capacity in Long Term facilities. 2003. p. 77.
560. Community Services and Health Industry Skills Council Ltd, Submission to Productivity Commission: Healthy Workforce Paper 2005, Community Services and Health Industry Skills Council Ltd: Sydney.
561. Glasgow, N., B. Sibthorpe, and A. Gear, Primary Health Care Position Statement A scoping of the evidence. 2005: Canberra.
562. Britt, H., et al., General Practice Activity in Australia 2005-6, in General Practice Series no 19. 2007, Australian Institute of Health and Welfare: Canberra.
563. Health Workforce Australia, Training Pathways for medical and nursing workforce.
564. Australian Health Workforce Officials Committee, Health workforce Impact Checklist.
565. National Policy Office COTA Seniors partnership, Submission top Productivity Commission - The Health Workforce. 2005: Canberra.
566. Yong, C.S., Task substitution: the view of the Australian Medical Association. *Med J Aust*, 2006. 185(1): p. 27-8.
567. Kidd, M.R., et al., Principles for supporting task substitution in Australian general practice. *Med J Aust*, 2006. 185(1): p. 20-2.

568. Nancarrow, S.P.B.S.M., et al., The introduction and evaluation of an occupational therapy assistant practitioner. *Australian Occupational Therapy Journal*, 2005. 52(4): p. 293-301.
569. Dept Health and Human Services Victoria, Better skills best care-summary of pilot projects.
570. Peter Brooks, The Health Workforce of the future-partnerships in health care. *The Australian Health Consumer*, 2005-6. 2.
571. Australian Nursing Federation, Submission to Productivity commission on Health Workforce. 2005, Australian Nursing Federation: Canberra.
572. RACGP, Submission to the Productivity commission. 2005.
573. Hooker, R.S., Physician assistants and nurse practitioners: the United States experience. *Med J Aust*, 2006. 185(1): p. 4-7.
574. Cooper, R.A., Quality among a diversity of health care providers. Thirty years' experience in the US with non-physician clinicians shows they can deliver quality care. *Med J Aust*, 2006. 185(1): p. 2-3.
575. Stewart, A. and R. Catanzaro, Can physician assistants be effective in the UK? *Clin Med*, 2005. 5(4): p. 344-8.
576. Armitage, M. and S. Shepherd, A new professional in the healthcare workforce: role, training, assessment and regulation. *Clin Med*, 2005. 5(4): p. 311-4.
577. Vic Health, Redesigning roles-skills tool kit, DHS Victoria.
578. Weller, D.P., Workforce substitution and primary care. We must preserve the elements of our health care system that work well. *Med J Aust*, 2006. 185(1): p. 8-9.
579. Sibbald, B., M.G. Laurant, and D. Reeves, Advanced nurse roles in UK primary care. *Med J Aust*, 2006. 185(1): p. 10-2.
580. Paniagua, H. and A. Stewart, Medical care practitioners: introducing a new profession into the UK. *Br J Nurs*, 2005. 14(7): p. 405-8.
581. Murray, R.B. and I. Wronski, When the tide goes out: health workforce in rural, remote and Indigenous communities. *Med J Aust*, 2006. 185(1): p. 37-8.
582. Rural Doctors Association of Australia, New Ways to meet old objectives in Submission to Productivity Commission. 2005.
583. Buchan, J. and M.R. Dal Poz, Skill mix in the health care workforce: reviewing the evidence. *Bulletin of the World Health Organization*, 2002. 80: p. 575-580.
584. Duckett, S., The Australian health workforce: facts and futures. *Aust Health Rev*, 2000. 23(4): p. 60-77.
585. Buchan, J. and L. Calman, Skill Mix and Policy Change in the health workforce: Nurses in advanced roles, in *OECD Health Working Papers No 17*. 2005: Paris.
586. Jenkins-Clarke, S. and R. Carr-Hill, Changes, challenges and choices for the primary health care workforce: looking to the future. *Journal of Advanced Nursing*, 2001. 34(6): p. 842-849.
587. Canadian Health Services Research Foundation, Seeing a nurse practitioner instead of a doctor is second class care, in *Myth-busters*. 2002.
588. Working Group Aged Care Forum, A review of the current role of enrolled nurses in the aged care sector. 2001.
589. National Rural Health Alliance, Older people and Aged Care in rural, regional and remote Australia. July 2004.
590. Access Economics, Indigenous Health Workforce Needs, AMA, Editor. July 2004.

591. CHSIC, Source Document register, in ATSI Health worker National Competency standards. July 2006.
592. National Rural Health Alliance, ATSI Health Workers. July 2006.
593. Service, Q.A., Rural and remote Paramedics expanded scope of practice paramedic survey. Mar 2006.
594. Dept Health and Aging Australia, The community based aged care workforce-future projections. 2006.
595. National Rural Health Alliance and College of Medicine and Health Sciences ANU, The Health Workforce-Submission to Productivity Commission. 2005.
596. Bearing Point, Work Analysis Project ED/ICU/Radiology redesign roles, in Report for Dept Human Services. 2005.
597. Services, D.H., Better Skills Best care-DHS Workforce design strategy summary.
598. Productivity Commission, Australian Health workforce research report. 2005: Canberra.
599. Heartfield M, Specialisation and Advanced Practice Discussion Paper. 2006, National Nursing and Education Taskforce: Melbourne.
600. Australian Health Ministers' Advisory Council, Nurse Practitioners in Australia Mapping of State and territory Models. 2005.
601. Glenn Gardner, et al., Nurse Practitioner Standards Project. 2005, Queensland Institute of Technology.
602. NHS, Skill mix escalator diagram.
603. Jarvis, S., Skill mix in primary care-implications for the future. 2001, NHS Medical Practice committee.
604. Belinda Goodale and Ivan Lin, Therapy Assistant Project (2003-2004). 2005, WA Country Health Service Combined Universities of Rural health.
605. NHS Modernisation Agency, Improvement Leaders' Guide Redesigning roles Personal and organisational development. 2005, Department of Health Publications: London.
606. Luisa Abiuso, Workforce redesign: Better Skills Best Care. 2006, Allied Health and Innovation Service and Workforce Planning, Vic Health.
607. Aly Rashid, Andy Watts, and Christine Lenehan, Skill-mix in primary care: sharing clinical workload and understanding professional roles. *British Journal of General Practice*, 1996: p. 639-640.
608. Lesley J. Moore, Partnerships and work-based learning: an evaluation of an opportunity to pioneer new ways to care for the older people in the community. *Assessment & Evaluation in Higher Education*, 2007. 32(2): p. 61-77.
609. Royal College of Nursing and British Geriatrics Society, Older People's Specialist Nurse. 2001, British Geriatrics Society: London.
610. Torfrida Wainwright, Home Care Thoughts from Abroad. 2003, New Zealand Health Technology Assessment (NZHTA).
611. Department of Health, HR in the NHS Plan More staff working differently. 2002, Department of Health: London.
612. Queensland Aged Care Skill Ecosystem (Supply Chain) Project. St Andrew's War Memorial Pilot Site Report. 2006.
613. Ageing, DoHA., The Community-based aged care workforce: A desktop review of the literature. 2006, Department of Health and Ageing: Canberra.

614. Sibbald, B., J. Shen, and A. McBride, Changing the skill-mix of the health care workforce. *Journal of Health Services Research & Policy*, 2004. 9(Suppl 1): p. 28-38.