



**UNSW**  
THE UNIVERSITY OF NEW SOUTH WALES



**ANU**

THE AUSTRALIAN NATIONAL UNIVERSITY

**AUSTRALIAN PRIMARY HEALTH CARE  
RESEARCH INSTITUTE  
THE AUSTRALIAN NATIONAL UNIVERSITY (ANU) COLLEGE OF  
MEDICINE, BIOLOGY AND ENVIRONMENT**

**THE UNIVERSITY OF NEW SOUTH WALES  
CENTRE FOR PRIMARY HEALTH CARE AND EQUITY**

**APHCRI STREAM 13:  
OPTIMIZING ACCESS TO BEST PRACTICE PRIMARY  
HEALTH CARE: A SYSTEMATIC REVIEW**

**Associate Professor Elizabeth Comino  
Professor Mark Harris  
Associate Professor Marion Haas  
Dr John Furler  
Associate Professor Gawaine Powell Davies  
Dr Antony Raymont  
Professor Jane Hall  
Dr Yordanka Krastev  
Ms Bettina Christl**

**January 2010**

## **PREFACE**

This is the final report of a systematic review conducted as part of the Australian Primary Health Care Research Institute (APHCRI) Stream 13 funding. The aim of Stream 13 was to systematically identify, review, and synthesise knowledge about the drivers of successful primary health care service delivery in Australia and develop practical policy options fit for use in the Australian context.

## **THE RESEARCH TEAM**

This review was undertaken by the Centre for Primary Health Care and Equity (CPHCE), School of Public Health and Community Medicine, University of New South Wales (UNSW) in association with The Centre for Health Economics Research and Evaluation (CHERE), University of Technology Sydney, The University of Melbourne and Victoria University of Wellington. The researchers involved included: Associate Professor Elizabeth Comino (CPHCE), Professor Mark Harris (CPHCE), Associate Professor Marion Haas (CHERE), Dr John Furler (University of Melbourne), Associate Professor Gawaine Powell Davies (CPHCE), Dr Antony Raymont (University of Wellington), Professor Jane Hall (CHERE), Dr Yordanka Krastev (CPHCE), Ms Bettina Christl (CPHCE) and Dr Nighat Faruqi (CPHCE).

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

## **REFERENCE GROUP**

Ms Julie Bate – Commonwealth Department of Health and Aging

Dr Martin Mullane - Commonwealth Department of Health and Aging

Dr Judy Daniel – Commonwealth Department of Health and Aging

Prof Justin Beilby – Faculty of Health Science, University of Adelaide

Ms Belinda Caldwell – Australian Practice Nurse Association

Prof Gabrielle Cooper – University of Canberra

Dr Stephen Goodall – Centre for Health Economics Research & Evaluation (CHERE)

Dr Yun-Hee Jeon – Faculty of Nursing, University of Sydney

Dr Teri Snowdon – Royal Australian College of General Practitioners

Ms Cathrine Lynch – NSW Department of Health

Ms Julie Porritt – Australian General Practice Network

Mrs Robin Toohey – Consumers Health Forum of Australia

## **INTERNATIONAL/NATIONAL EXPERTS**

Prof Martin Gulliford – King's College London

Prof Helen Lester - University of Manchester

Professor Bonnie Sibbald - Director, National Primary Care R&D Centre

Dr Carolyn Chew-Graham - University of Manchester

Professor Hugh Gravelle - University of York

Professor Chris Salisbury - University of Bristol

Professor Maria Goddard - University of York

Professor Martin Roland - Oxford University

Dr Diane Watson - University of British Columbia, Canada

Professor Rosemary Knight – Department of Health and Aging

## ACKNOWLEDGMENT

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.

### **Suggested citation:**

Comino EJ, Harris MF, Haas M, Furler J, Powell Davies PG, Raymont A, Hall J, Krastev Y, Christl B. Optimizing access to best practice primary health care: A systematic review. Research Centre for Primary Health Care and Equity, UNSW 2009

Centre for Primary Health Care and Equity  
School of Public Health and Community Medicine  
University of New South Wales  
NSW 2052 Australia  
T: +61 2 9385 1547  
F: +61 2 9385 1513  
E: [cphce@unsw.edu.au](mailto:cphce@unsw.edu.au)  
W: [www.cphce.unsw.edu.au](http://www.cphce.unsw.edu.au)

Australian Primary Health Care Research Institute (APHCRI)  
ANU College of Medicine, Biology and Environment  
Building 62, Corner 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](mailto:aphcri@anu.edu.au)  
W: [www.anu.edu.au/aphcri](http://www.anu.edu.au/aphcri)

## LIST OF ABBREVIATIONS

- ABS – Australian Bureau of Statistics
- ANU – Australian National University
- APHCRI – Australian Primary Health Care Research Institute
- AHW – Aboriginal health worker
- 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
- CDM – Chronic disease management
- CHERE – Centre for Health Economics Research and Evaluation, University of Technology Sydney
- CHW – Community health worker
- CINAHL – Cumulative Index to Nursing and Allied Health Literature
- CPHCE - Centre for Primary Health Care and Equity
- DARE – Database of Abstracts of Reviews of Evidence
- EPC – Enhance Primary Care
- EPOC – Effective Practice and Organisation of Care
- GP – General practitioner
- HMO – Health Management Organisation
- ITS – Interrupted time series
- MBS - Medicare Benefits Schedule
- NHS – National Health Service UK
- PAP test – Papanicolaou test
- PHC – Primary health care
- PHCO – Primary health care organization
- PIP – practice incentive payment
- RCT – Randomised controlled trial
- SIP - Service incentive payment
- UNSW – University of New South Wales
- WHO – World Health Organisation

PREFACE .....	2
THE RESEARCH TEAM .....	2
REFERENCE GROUP.....	2
INTERNATIONAL/NATIONAL EXPERTS .....	2
ACKNOWLEDGMENT.....	3
LIST OF ABBREVIATIONS .....	4
LIST OF TABLES.....	6
LIST OF FIGURES.....	6
LIST OF APPENDICES .....	6
1. BACKGROUND & RATIONALE .....	7
1.1 INTRODUCTION.....	7
1.2 DEFINITIONS.....	7
1.3 ACCESS TO PHC IN AUSTRALIA .....	8
1.4 WHY ACCESS TO PHC IS IMPORTANT/RELEVANCE.....	9
1.5 RESEARCH AIMS & RESEARCH QUESTIONS.....	9
2. METHODS FOR THE REVIEW.....	10
2.1 SCOPE OF THE REVIEW .....	10
2.2 SEARCH STRATEGY .....	10
2.3 INCLUSION & EXCLUSION CRITERIA .....	11
2.4 SCREENING & DATA EXTRACTION.....	11
2.5 ASSESSMENT OF STUDY QUALITY .....	12
2.6 DATA ANALYSIS AND SYNTHESIS.....	12
2.7 LITERATURE REVIEWS .....	13
3. RESULTS.....	14
3.1 SEARCH RESULTS .....	14
3.2 WHAT FACTORS ARE ASSOCIATED WITH ACCESS TO BEST PRACTICE PHC? .....	15
3.3 WHAT INTERVENTIONS HAVE BEEN TESTED TO ADDRESS ACCESS TO BEST PRACTICE PHC? .....	19
3.4 HOW EFFECTIVE ARE INTERVENTIONS TO ENHANCE ACCESS TO BEST PRACTICE PHC?..	22
3.5 WHAT IS KNOWN ABOUT THE COST AND BENEFITS OF THESE INTERVENTIONS?.....	28
4. DISCUSSION .....	29
4.1 FACTORS THAT INFLUENCE ACCESS .....	29
4.2 EFFECTIVE INTERVENTIONS FOR IMPROVING ACCESS TO BEST PRACTICE PHC .....	32
4.3 COSTS OF STRATEGIES TO ADDRESS ACCESS TO BEST PRACTICE PHC .....	34
4.4 IMPLICATIONS FOR POLICIES & STRATEGIES IN THE AUSTRALIAN CONTEXT .....	34
4.5 METHODOLOGICAL ISSUES .....	35
4.6 CONCLUSION.....	36
5. REFERENCES.....	37

## LIST OF TABLES

Table 1: Inclusion criteria .....	11
Table 2: Frequency of identified studies stratified by country of origin and domain of care .....	15
Table 3: Factors associated with access to best practice PHC stratified by domain of care .....	16
Table 4: Impact of more commonly reported factors on access to best practice PHC .....	17
Table 5: Typology of strategies to enhance access to best practice PHC identified from intervention studies and stratified by domain of care .....	20
Table 6: Frequency of evaluated intervention studies stratified by number of strategies employed and domain of care .....	23
Table 7: Effectiveness by strategy type and domain of care .....	23
Table 8: List of most effective diabetes strategies and access outcomes .....	25
Table 9: List of most effective PAP strategies and access outcomes .....	26
Table 10: List of most effective episodic care strategies and access outcomes .....	27

## LIST OF FIGURES

Figure 1: Conceptual framework of access to 'best practice' PHC .....	8
Figure 2: Flowchart for diabetes, PAP testing and episodic care literature searches .....	14
Figure 3: Frequency of identified studies stratified by study type and domain of care .....	15
Figure 4: Access factors by domain of care .....	17
Figure 5: Access factors addressed in descriptive and intervention studies .....	19
Figure 6: Frequency of strategies to enhance access to best practice PHC stratified by domain of care .....	22
Figure 7: Factors influencing access (shaded boxes) and effective interventions to improve access (unshaded boxes) described in the literature .....	30

## LIST OF APPENDICES

Appendix 1: Search strategies	
Appendix 2: Black literature search results for all conditions	
Appendix 3: Organisations and web pages searched for grey literature	
Appendix 4: Factors influencing access	
Appendix 5: Characteristics of evaluated intervention studies by domain of care	
Appendix 6: Summary of evaluated intervention studies	
Appendix 7: Evaluated intervention studies and access outcomes by domain of care	
Appendix 8: Quality assessment of evaluated intervention studies	
Appendix 9: Studies which included information on costs, cost analysis or economic evaluation	
Appendix 10: Validation form	
Appendix 11: Data extraction form	
Appendix 12: Quality assessment tool	
Appendix 13: List of included studies	

## **1. BACKGROUND AND RATIONALE**

*'Ensuring that everybody can get access to effective and high quality health service is one of our most important priorities'(1).*

### **1.1 INTRODUCTION**

This document reports on a systematic review examining evidence about policy and practice interventions designed to influence access to 'best practice' primary health care (PHC). The review focused specifically on those interventions that were of relevance to the Australian PHC system.

Ensuring that Australians have access to health care is an integral component of Australian health care policy. Although Australia has had almost universal access to publicly funded medical, public hospital, and some community health services care under Medicare since 1984, the health system is still fragmented through multiple funding and service delivery mechanisms, the exclusion of many PHC services from Medicare funding and uneven distribution of services. Consequently there is unequal access to health care driven by factors such as out of pocket costs, availability of PHC and distribution of services. Growing awareness of the importance of PHC in delivering equitable and cost-effective care is creating interest in better understanding and addressing access to best practice PHC.

### **1.2 DEFINITIONS**

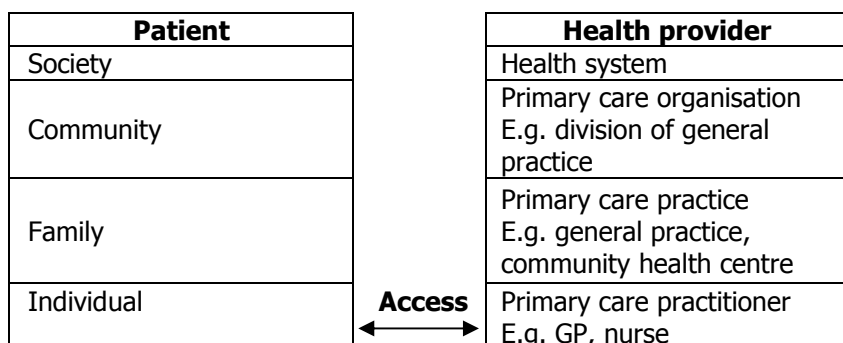
For the purpose of this review we conceptualised access as a balance between health service need (patient side) and health service use (provider side) (Figure 1). This definition of access enabled us to consider access to best practice PHC for populations as well as for individual patients. It highlights the dynamic nature of access which involves mutual adjustment between patient and provider about changing service need and priorities (2, 3). It also links access to utilisation of services, since interventions that impacted on access could be expected to result in measurable changes in the use of PHC. The definition reflects on those used by previous authors (4-6). For example, Penchansky and Thomas (1981) defined access as the 'degree of fit' between users and providers of health services (6).

In this review we defined health service need in terms of best practice PHC, which we took to be recommended processes of care according to widely accepted evidence based guidelines. PHC was defined as first contact, community based health care services, largely but not exclusively based in general practice (7). We selected three important domains of PHC (episodic care, prevention, and chronic disease management) and chose specific examples of these areas where there is agreement, based on research evidence, clinical and expert opinion and consensus, about what constitutes best practice (8-11). These represent conditions or elements of service provision that are broadly relevant in the community and are specific to PHC.

On both the patient- and provider-side, access to PHC is influenced by factors at different levels, from the health system as a whole to the individual service provider, and from society wide factors through to individual patient characteristics. We used an ecological model to highlight the interaction between these levels and how they impact on access (12) (Figure 1). Factors that influence access to best practice PHC can operate at all levels. This review will explore the influence of different factors at these different levels.

Access is often thought to involve different dimensions. One schema that has been widely used considers service availability, accessibility, accommodation, affordability, and acceptability (6). We adopted a schema based on aspects of the health system and groupings of factors that influence access to best practice PHC, categorised as financial, geographic, workforce, practice environment and personal factors (5).

**Figure 1: Conceptual framework of access to 'best practice' PHC**



This review will focus specifically on the PHC sector (7, 13, 14) which we have taken to include first contact community based health services including general practitioners (GPs), nurses, pharmacists and allied health professionals.

### 1.3 ACCESS TO PHC IN AUSTRALIA

Universal access to affordable health care is a fundamental principle underlying the Australian health care system. This system is based on a publicly-funded scheme, Medicare, which was introduced across Australia in October 1984 (15). This includes universal insurance for medical and some allied health services in the community and in private hospitals and funding for public community health and hospital services, which are free at the point of delivery. Thus Medicare ensures free or subsidised access at the point of care to most primary medical services (usually out of hospital services, including general practice). It also provides limited access to some nursing and allied health services including optometry and access to diagnostic services and subsidised prescription pharmaceuticals. This provides the basis for universal access to PHC where those services exist.

However access to Medicare funded or reimbursed services is not as universal or equal as one might expect. The lack of coherent policy or structure for PHC in Australia contributes to fragmentation of services and offers few incentives to encourage development of comprehensive PHC through integration or co-location of services and development of multidisciplinary PHC teams. There is limited coverage for PHC beyond private medical services and publicly funded community health services, which operate under fixed budgets. This means that there are few incentives to develop new approaches to delivering PHC. There is also substantial variation in availability of bulk billed GP services, where patients are not required to make a co-payment (15).

Recent policy and funding changes have extended Medicare fee for service rebates to other community based health professionals, including nurses and allied health professionals, to provide a restricted range of services to patients who meet certain criteria (15). Outside this, these services are available only through the state based community health system, or in the private sector, where only those with private health insurance have access to any rebates. Patients who are unable to afford additional services may have limited access to these services despite evidence of their benefits.

There are also distributional issues for PHC as Medicare policy has limited capacity to determine where health care providers practice, largely through providing extra support for practitioners in rural areas. Compared to people in urban regions, people who live in rural and remote areas are relatively underserved in terms of local availability of services, and are more likely to incur personal costs in getting to PHC and other health services (16-18). However, there are also distributional issues within urban areas depending on where people live and on social and cultural factors. Generally fewer GPs work in disadvantaged areas; practitioners in these regions provide more consultations, but fewer long consultations and a more limited range of services than do GPs working in more advantaged areas (19-22). These GPs may also have less capacity



to implement best practice PHC due to conflicting demands of patient load, and fewer opportunities to share care through involvement of nurses and other health professionals who may also be in short supply (21, 23).

Consequently fee for service arrangements favour patients who are able to seek out and pay for services that they require, and will disadvantage vulnerable patients who may need different types of care including outreach and multidisciplinary care. Consequently PHC in Australia as currently organised may not be well placed to address emerging health care needs of Australians and address growing differentials in access to many aspects of PHC.

## 1.4 WHY ACCESS TO PHC IS IMPORTANT/RELEVANCE

There is evidence that a strong PHC sector is essential to the health and welfare of populations (14), and that a strong PHC sector is associated with better population health, reduced costs of health care provision, and greater efficiency within the system (24). There is also evidence for the effectiveness of best practice PHC in a number of areas of PHC, including chronic disease management, prevention, and screening (8-11, 25).

Since 2007, the Australian Government has established a number of reviews of the health system, most importantly the National Health and Hospitals Reform Commission (1) and the National Preventive Health Taskforce (26), and developed a Primary Health Care Strategy (27), all of which have recently released reports. The key features of the recommendations of these reviews are a strengthening of PHC, through the development of services which provide multidisciplinary care and extended hours, enrolment of people with chronic conditions and young families with 'health care homes', and better integration with aged care and non-acute community services. Proposed funding changes would move all PHC funding responsibilities to the Australian government, and encourage the development of alternatives to fee-for-service. The Health and Hospitals Reform Commission has proposed immediate changes to the Commonwealth-State funding agreements to an activity based funding model, with clear performance targets (1)

State governments are interested in better understanding the role of PHC with a realisation that there are potential population health gains and cost advantages (particularly in reducing hospitalisation) in ensuring that people have access to good quality, timely, and effective PHC. New programs such as HealthOne in NSW are aimed at enhancing integration of primary and community health services through bringing together GPs and community health and other health professionals into multidisciplinary teams (28, 29). These services specifically aim to improve service access and health outcomes for disadvantaged and vulnerable groups.

## 1.5 RESEARCH AIMS AND RESEARCH QUESTIONS

This systematic review will examine evidence from the literature regarding access to 'best practice' primary health care (PHC) with a focus on interventions that are relevant to the Australian PHC system.

The review questions are:

1. What factors (barriers and facilitators) are associated with differences in access to 'best practice' PHC?
2. What interventions aimed at improving access to 'best practice' PHC have been tested?
3. How effective are these interventions in enhancing access to 'best practice' PHC and reducing differences in access across population groups?
4. What is known about the cost and benefits of these interventions?
5. What are the implications for policies and strategies in the Australian context?

The review is limited to three areas of PHC: episodic care, prevention (cervical cancer screening) and chronic disease care (diabetes). Where possible, information is presented about

priority groups relating to vulnerability, culture, ethnicity, and age. Integral to this review is concern about ensuring equitable distribution of health care across population groups.

## 2. METHODS FOR THE REVIEW

The research questions, scope and inclusion and exclusion criteria used in this review were refined in consultation with the research team, a project reference group and other interested key informants.

### 2.1 SCOPE OF THE REVIEW

The review examines Australian and international evidence on access to best practice primary health care. This includes evidence around barriers and facilitators to access as well as interventions and evaluations to enhance access to best practice PHC.

To illustrate a broad range of activities that occur in PHC, the review examines chronic, preventive and episodic care, with a focus on diabetes prevention and management, screening for cervical cancer PAP testing and access to timely care, after-hours care and continuity of care.

Diabetes and cervical cancer screening were selected, because both conditions have a high prevalence in the community, are largely managed in PHC setting and have clear, agreed, widely disseminated and accepted guidelines for their management or prevention in place (8-11) Episodic care was selected as it reflects the most common way of using primary health care.

The review did not seek to address access to best practice PHC for specific groups such as people living in rural and remote locations or for Aboriginal populations, although literature relevant to our inclusion criteria was included.

### 2.2 SEARCH STRATEGY

The literature was identified through several sources:

- 'Black' literature (primary research) search of peer reviewed literature using bibliographic databases
- 'Grey' literature (published but not necessarily peer-reviewed)
- Snowballing of references of relevant 'black' and 'grey' literature
- Consultation with key stakeholders

#### 'Black' literature

Primary research papers were identified by searching Medline, EMBASE, CINAHL, PubMed, APAIS Health (via Informit – e-library), Health & Society database (via Informit– e-library), from January 1989 to June 2009. Systematic reviews meeting the inclusion criteria were identified by searching the Cochrane Library, Database of Abstracts of Reviews of Evidence (DARE), and the Cochrane Effective Practice and Organisation of Care Group (EPOC).

Search terms relating to accessibility to health care, primary health care, and diabetes, PAP testing or episodic care were used. Medical Subject Headings (MeSH) were used in combination with relevant keywords. These MeSH search terms were modified to match coding frames used for the other databases. A detailed description of search terms used is included in Appendix 1.

Initially electronic databases were searched for 14 conditions across the 3 domains of care. The results are outlined in Appendix 2. In total 7,868 citations were identified across all black literature searches. We then scoped the review down to one example per domain of care; these were diabetes as an example for chronic disease management, PAP testing for preventive care and timeliness, after-hours care and continuity for episodic care.

#### 'Grey' literature

A pragmatic search for non-peer reviewed documents and reports (grey literature) was undertaken. These documents were identified through general search of websites of government departments, professional organisations, universities and other relevant organisations (Appendix 3). The members of the research team, reference group, and other key informants identified additional documents. Where specific research groups or programs were identified through peer reviewed literature and other sources a specific search of the relevant website was undertaken, and where necessary we approached the authors.

## Snowballing

We reviewed bibliographies of all primary research papers included in the review, relevant reports and systematic reviews to identify further documents.

## 2.3 INCLUSION AND EXCLUSION CRITERIA

Studies were included if they addressed the selected examples from the domains of chronic, preventive, and episodic care, measured access in terms of use of services, targeted adults aged 18 or older, and were published in English between 1989 and June 2009 in any countries of interest (Table 1).

Table 1: Inclusion criteria

Domain of care	<ul style="list-style-type: none"> <li>• Diabetes mellitus management and prevention</li> <li>• PAP testing</li> <li>• Episodic care (continuity, timely access, after-hours care)</li> </ul>
Access measure	<ul style="list-style-type: none"> <li>• Service use (including retention and return rates)</li> <li>• Receipt of recommended care processes (tests, examinations, medication, referrals to allied health and specialists, follow-up)</li> <li>• Continuity of care (being able to see the regular physician)</li> <li>• Waiting time (to next available appointment; in the practice), or</li> <li>• Patient delay in service use</li> </ul>
Countries	Australia, Canada, New Zealand, USA, UK and other western European countries
Study population	Adults 18 years or older
Publication period	1989 to June 2009
Language	English

The measures of access were related to aspects of service use. Thus, only indicators such as service use and receipt of recommended care processes were included. We excluded studies that only reported proxy indicators of access such as clinical patient outcomes, hospitalisation rates for ambulatory care sensitive conditions, perceived access, intention to use the service, awareness of the service, and patient satisfaction.

This review was not limited to randomised controlled trials in order to capture population based interventions which do not allow for randomisation or appropriate control groups.

## 2.4 SCREENING AND DATA EXTRACTION

All research articles identified through literature searches were included in an Endnote library database. Studies were selected for inclusion in three stages.

### Stage 1: TITLE and abstract screening

At this stage documents were excluded if:

- the title indicated no direct relevance to an aspect of access to 'best practice' PHC ,
- the abstract was missing and the title suggested no direct relevance to the review.

The project staff (YK, BC, NF) screened titles and abstracts (black and grey literature) using a validation form (Appendix 10). Where there was doubt a study was reviewed by other members of the research team (EC, GPD). All of the unsure articles and a subset of the excluded articles were screened independently by other members of the research team. Any disagreements were discussed within the group. Where there was insufficient information to make a decision, the article remained on the list.

## Stage 2: Verification & classification

Attempts were made to obtain full-text copies of all articles screened and included for further follow up. We used online sources, library visits, and inter-library loan requests to do this. In some cases the authors were approached for copies or for further information.

Stage 2 screening for the methods and results confirmed measures of relevance to access to health care. All unsure or excluded papers were checked by another member of the research team. Where there were differences in interpretation, these were discussed within the research team and agreement reached.

Identified studies were then categorised into descriptive studies and intervention studies. Descriptive studies provided information on the factors that influence access to best practice PHC (Question 1). Intervention studies included all studies that tested or evaluated interventions to enhance access to best practice PHC (Question 2). These studies were further differentiated to identify a subset of studies that evaluated the impact of an intervention on access using measures outlined in table 1 (evaluated interventions, Question 3).

## Stage 3: Data extraction

Data that was required to undertake the review was determined by the research group and a data extraction template was developed using MS Access. Data was extracted from all included 'black', snowballed and 'grey' citations by three reviewers (YK, BC, NF) directly into the database (Appendix 11). Data extraction for all articles that were included in this stage of the review was checked by independent members of the research team (including EC, GPD, MFH, JF, AR, MH).

Where a report described more than one study, separate records were created for each study. If several citations addressed the same study, the records were marked as linked. Further citations were excluded during this stage if eligibility for inclusion was questionable. The decision to exclude citations at this stage was made in discussion with the research team.

All additional articles and reports identified through examination of citation lists reported by included papers were subject to screening, verification, quality assessment, and data extraction processes described above.

## 2.5 ASSESSMENT OF STUDY QUALITY

The quality of the studies was assessed using the levels of evidence published by The Royal Melbourne Hospital (30) which is based on the NHMRC and the Oxford (CEBM) classification of levels of evidence as guidance to classify the study designs of included studies. The assessment of study designs was done by three researchers (YK, BC, and NF) and checked independently (EC, GPD).

We assessed the methodological rigor and quality of evidence of the evaluated intervention studies using the Quality Assessment Tool for Quantitative Studies, Effective Public Health Practice Project (See Appendix 12) (31). Every evaluated intervention study was given a quality score based on this assessment. The assessment was done by one researcher (EC).

## 2.6 DATA ANALYSIS AND SYNTHESIS

The data were analysed separately for questions 1, 2, and 3.

## **Question 1: What factors (facilitators and barriers) influence access to best practice PHC?**

Data for question 1 were derived from the 192 descriptive studies. The factors reported to be associated with access to best practice PHC were analysed qualitatively and categorized into five groups based on schema introduced by Gulliford (5): financial, geographical, organizational, workforce and patient factors. The categorization was done by one researcher (BC) and reviewed by the research team; any disagreement was resolved through discussion. Frequencies were tabulated for these factors across the three domains of care.

## **Question 2: What interventions have been tested to address differential access to 'best practice' PHC?**

Data for Q2 were obtained from 141 intervention or evaluation papers (121 studies). Where several multiple papers related to one study, only the paper best describing the intervention was included. Interventions were grouped into 8 broad categories with 37 subcategories. Frequencies were tabulated for domains of care and intervention types. Intervention types were classified matching the same five categories described above (YK) and reviewed by the research team; any disagreement was resolved through discussion. When studies used multiple strategies these were included in each of the relevant subcategories.

## **Question 3: What is the evidence of effectiveness of these interventions?**

This was based on evaluated interventions. Frequencies were tabulated for intervention types and types of outcome measures, noting the direction of the impact (positive, negative, mixed, no change). Effective, inconclusive and ineffective interventions were compared in regards to the types of intervention strategies used, their combination, the type of setting and provider, characteristics of the target population and at what level of the socio-ecological model (Figure 1) they were implemented. Intervention studies were also examined in regards to differential impacts for certain sub-populations as well as reported cost-effectiveness data.

## **2.7 LITERATURE REVIEWS**

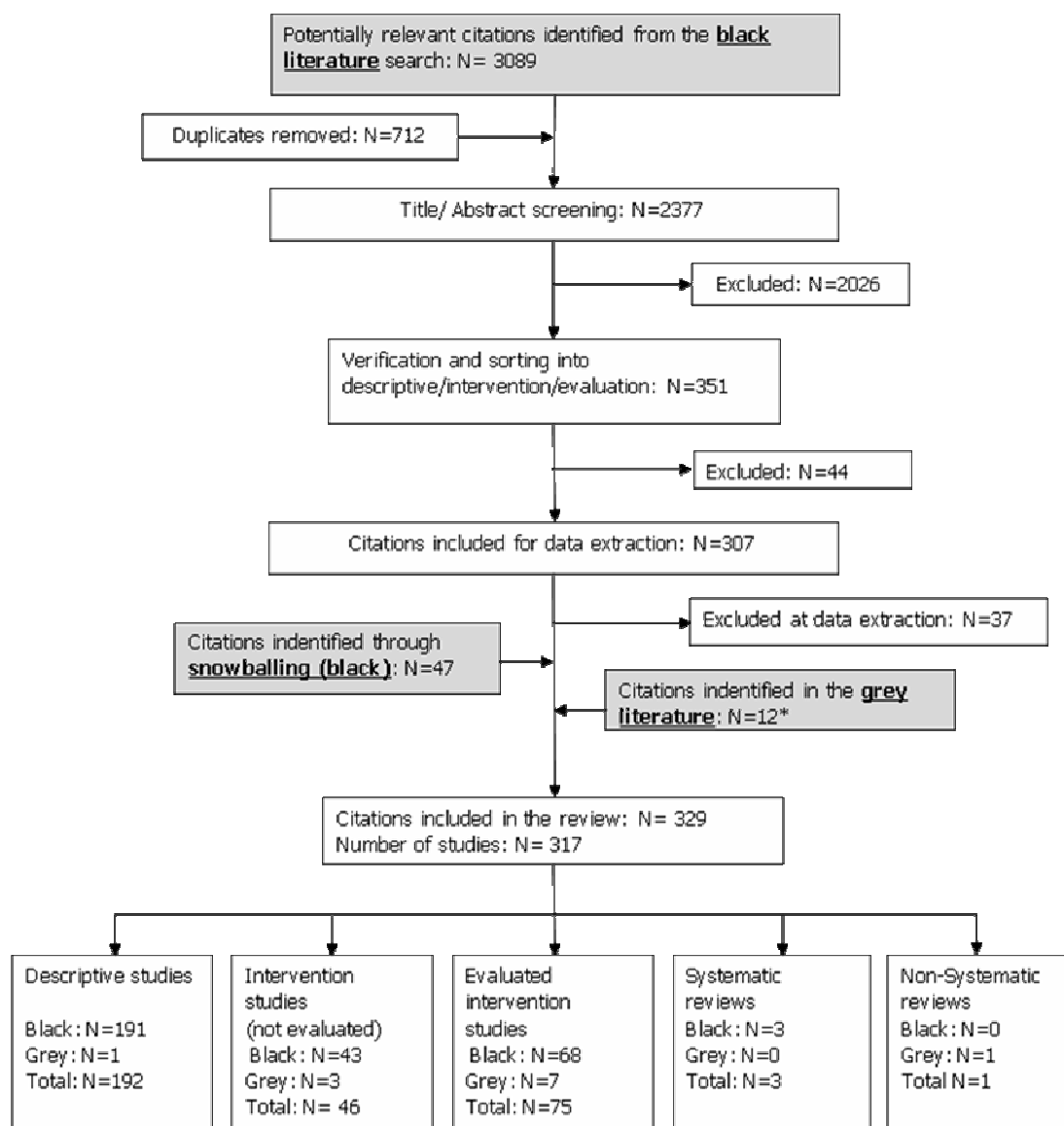
Systematic and non-systematic literature reviews were identified through the same search process. Three systematic reviews (1 for PAP testing, 2 for diabetes care) and two non-systematic reviews (diabetes care) were included in our review. We reviewed studies included in these reviews individually if they met the inclusion criteria.

### 3. RESULTS

#### 3.1 SEARCH RESULTS

The search and screening results across the three domains of care (diabetes, PAP testing, episodic care) are presented in Figure 2. Overall 329 citations were included in the review. These related to 317 studies.

Figure 2: Flowchart for diabetes, PAP testing and episodic care literature searches



*\*Note: One of the 11 reports identified from the grey literature described 5 different interventions and is, therefore, counted as 5 studies.*

Overall, 88 studies met the criteria for access to diabetes care, 171 for PAP testing, and 58 for episodic care. Studies from different countries tended to focus on different care domains (Table 2). United States of America (USA) studies were most often concerned with access to PAP testing (67.9%) and secondly, to diabetes care (24.7%), with few studies addressing episodic care (7.4%). Studies from the United Kingdom (UK) most frequently focused on access to episodic care (56.8%) such as Advanced Access and out-of-hours care, secondly on diabetes

care (31.8%), and infrequently on access to PAP testing (11.4%). In Australia and New Zealand (NZ), the literature covered the three care domains more evenly (Table 2).

Table 2: Frequency of identified studies stratified by country of origin and domain of care

Country	Australia/ NZ		UK		USA		Other		Total	
	n	%	n	%	n	%	n		n	%
<b>Diabetes</b>	23	38.3	14	31.8	40	24.7	11	20.0	88	100
<b>PAP testing</b>	22	36.7	5	11.4	110	67.9	34	61.8	171	100
<b>Episodic</b>	11	18.3	25	56.8	12	7.4	10	18.2	58	100
<b>Total</b>	60	18.7	44	13.7	162	50.5	55	17.1	321	100

Figure 3 shows that across all three domains of care, the majority of studies were descriptive. The ratio of evaluated intervention studies to intervention studies was much lower for diabetes (13% to 31%) than for PAP testing (26% to 6%) and episodic care (33% to 14%).

Figure 3: Frequency of identified studies stratified by study type and domain of care

▮

The reviews included three systematic and one non systematic review. The non-systematic review concerned barriers for multicultural communities to accessing diabetes care in NSW. The diabetes systematic reviews examined the impact of interventions to improve certain processes of care, while the PAP testing systematic review provided an overview of interventions to invite women to cervical cancer screening.

## 3.2 WHAT FACTORS ARE ASSOCIATED WITH ACCESS TO BEST PRACTICE PHC?

The majority of the 192 descriptive studies was of cross-sectional design (86.5%) and based on large population surveys or administrative data with sample sizes exceeding 100,000 in some studies.

Most studies described more than one factor influencing access (Appendix 4). Table 3 describes the factors that were identified as associated with access to best practice PHC; these are categorised according to our proposed schema and stratified by domain of care.



Table 3: Factors associated with access to best practice PHC stratified by domain of care

	Diabetes		PAP testing		Episodic care		Total	
	n	%	n	%	n	%	N	%
<b>Total number of studies</b>	<b>47</b>	<b>100</b>	<b>114</b>	<b>100</b>	<b>31</b>	<b>100</b>	<b>192</b>	<b>100</b>
<b>Patient factors</b>	<b>40</b>	<b>85.1</b>	<b>103</b>	<b>90.4</b>	<b>22</b>	<b>71.0</b>	<b>165</b>	<b>85.9</b>
Socio-demographic factors	22	46.8	59	51.8	10	32.3	91	47.4
Psychosocial factors	13	27.7	47	41.2	8	25.8	68	35.4
Special needs	11	23.4	30	26.3	2	6.5	43	22.4
Health factors	21	44.7	10	8.8	8	25.8	39	20.3
Behavioural factors	6	12.8	18	15.8	1	3.2	25	13.0
<b>Organisational factors</b>	<b>19</b>	<b>40.4</b>	<b>39</b>	<b>34.2</b>	<b>19</b>	<b>61.3</b>	<b>77</b>	<b>40.1</b>
Provider/Practice care continuity	4	8.5	24	21.1	3	9.7	31	16.1
Appointment system	1	2.1	3	2.6	12	38.7	16	8.3
Recall/reminder systems & information management	3	6.4	6	5.3	7	22.6	16	8.3
Type of care organisation	1	2.1	6	5.3	2	6.5	9	4.7
Practice work-/caseload	5	10.6	1	0.9	1	3.2	7	3.6
Practice size	3	6.4	1	0.9	1	3.2	5	2.6
Organisational culture	0	0.0	4	3.5	1	3.2	5	2.6
Accessibility of practice	1	2.1	1	0.9	2	6.5	4	2.1
Care coordination/ Comprehensiveness	0	0.0	3	2.6	0	0.0	3	1.6
Other	4	8.5	2	1.8	0	0.0	6	3.1
<b>Financial factors</b>	<b>14</b>	<b>29.8</b>	<b>32</b>	<b>28.1</b>	<b>5</b>	<b>16.1</b>	<b>51</b>	<b>26.6</b>
Insufficient or no health insurance	4	8.5	28	24.6	2	6.5	34	17.7
Cost to patients for service and for supplies and services	8	17.0	4	3.5	1	3.2	13	6.8
Inadequate provider remuneration	3	6.4	0	0.0	2	6.5	5	2.6
Other	2	4.3	1	0.9	0	0.0	3	1.6
<b>Workforce factors</b>	<b>12</b>	<b>25.5</b>	<b>21</b>	<b>18.4</b>	<b>5</b>	<b>16.1</b>	<b>38</b>	<b>19.8</b>
Technical skills, practice, knowledge	8	17.0	13	11.4	3	9.7	24	12.5
Social/cultural skills/ ability to connect to patient	3	6.4	10	8.8	0	0.0	13	6.8
Teamwork/ skill mix	5	10.6	1	0.9	1	3.2	7	3.6
Workforce shortage	1	2.1	2	1.8	1	3.2	4	2.1
<b>Geographical factors</b>	<b>8</b>	<b>17.0</b>	<b>2</b>	<b>1.8</b>	<b>7</b>	<b>22.6</b>	<b>17</b>	<b>8.9</b>
Distribution of services	4	8.5	1	0.9	5	16.1	10	5.2
Distance to service	3	6.4	0	0.0	2	6.5	5	2.6
Distribution of workforce	1	2.1	1	0.9	0	0.0	2	1.0

*\*Note: most studies describe more than one factor across and within categories, therefore, numbers do not add up to total and subtotals.*

Figure 4 demonstrates that patient factors were most commonly identified as being associated with access to best practice PHC (85.9% of total). Organisational factors were identified in 40.1% of studies; these were a particular issue for episodic care (61.3%). Financial factors and workforce factors were less common (26.6% and 19.8% of all descriptive studies) and geographic factors were most rarely reported (8.9%). Being mostly cross sectional, these studies could only indicate association and not causality; and none of the papers attempted to propose theoretical causal pathways.



Figure 4: Access factors by domain of care

▮

Table 4 demonstrates that many of the factors that were associated with access to best practice PHC could act as either barriers or facilitators (Table 4). Facilitators refer to factors that were associated with increased use of access and are indicated with an up-ward pointing arrow in the table. Barriers refer to factors that were associated with reduced access and are indicated with down-ward pointing arrows. Some factors could be facilitators and barriers depending on the situation.

Table 4: Impact of more commonly reported factors on access to best practice PHC

Factor type	Factor (# studies)	Association with Access		
		Diabetes care	PAP testing	Episodic care
Socio-demographic	Increasing age of patient (45)	↑ (very old patients↓)	↓	↓ same-day appointments and after-hours care
	Patient's ethnicity (31)	↓ receipt of recommended tests ↑ smoking assessment	↓ ↑ if living in a ethnic neighbourhood	↓ continuity of care
Health	Comorbidity / poor general health status (25)	↑ for some co-morbidities Patient perceived barrier	↓↑	↓ Same-day appointments, due to need for continuity.
Special needs	Low health literacy (27)	↓	↓	Not reported in literature
	Language barriers (14)	↓ receipt of care processes	↓ for some ethnic minorities	Not reported in the literature
Psycho-social	Social support (23)	↑	↑ across different ethnic groups	↓ attending without appointment
Organisational	Having a regular care provider (31)	↑	↑	↑ continuity and timely access, and lowers cost to patient
Financial	Insufficient or no health insurance (34)	↓	↓	↓ continuity of care
Workforce	Insufficient technical skill/ knowledge (24)	↓	↓ (No doctor's recommendation)	No association (1 study only)

## PATIENT FACTORS

Patient factors that influenced access to best practice PHC included socio-demographic factors, health factors, special needs, and psychosocial and behavioural factors (Table 3). Age and ethnicity were the most commonly described socio-demographic factors across the three domains of care. Table 4 shows how increasing age impacts on access differently between the three domains of care. For diabetes, studies found that increasing age was associated with increased receipt of recommended processes of PHC despite guidelines suggesting similar need independently of age. There were suggestions that age was associated with greater need for recommended care due to more advanced diabetes (32). For episodic care the associations with age were mixed, for example older people valued continuity of care, but were less concerned about access to out-of-hours care and same-day appointments.

Across the three domains, studies reported differences in access for different ethnic groups. Diabetes studies reported decreased likelihood of receiving recommended care processes for patients from ethnic minorities but increased likelihood of having their smoking status assessed, although without receiving smoking advice (33). In the PAP testing literature poorer access to PAP testing for ethnic minority populations was commonly described; although, this association was moderated if patients were born in the host country (34-38) or lived in a neighbourhood that had a high proportion of people with a similar ethnic background (39), or in an area with lower primary care physician supply (39, 40).

Overall, 13% of studies across the domains of care linked co-morbidity and patients' general health status to access to best practice PHC. However, evidence was mixed and, for access to PAP testing, even conflicting. Some studies suggested that co-morbidity was associated with increased likelihood of receiving recommended processes of care due to higher frequency of visits to the GP (41), while other studies reported that, where there were more complex care need, some processes of care were less likely to be provided (42-47). At the same time studies found that women who felt healthier were less likely to access PAP testing (48, 49).

Low health literacy, including alternative health beliefs, were associated with barriers to patients accessing diabetes care and PAP testing, while this aspect was not reported in episodic care literature.

Social support was associated with better access to best practice PHC. This factor was most frequently described in the PAP testing literature and was found to facilitate access across many ethnic groups. For PAP testing, having friends or family members who had participated in screening increased the rates of participation. For episodic care, lack of social support and marital problems were reported to be associated with higher likelihood for attending without appointment (50).

### ORGANISATIONAL FACTORS

Having a regular health care provider or a usual source of care was associated with better access to best practice PHC (Table 3). For episodic care, having a usual source of PHC was associated with better continuity of care; for diabetes care and PAP testing, having a usual source of care was associated with increased likelihood of receiving recommended care processes for diabetes and receipt of PAP testing.

### FINANCIAL FACTORS

Lack of health insurance or insufficient health insurance was described as a barrier to access to best practice PHC across all three domains of care; and was a particular issue for studies from the USA. For episodic care, evidence from the USA showed that people with health insurance value continuity of care more highly than those without, and that those who valued continuity were likely to see their usual physician (51). There is also evidence that out-of-pocket expenditure and co-payments for services, supplies and transport to services reduced access to recommended care across the domains of care (48, 52-54).

### WORKFORCE FACTORS

Insufficient technical skills and knowledge of health care providers as well as physician's oversight were factors that were associated with decreased likelihood of receiving recommended PHC (Table 3). Several studies reported that the lack of doctor's recommendation for testing was negatively associated with receipt of PAP testing.

### GEOGRAPHICAL FACTORS

A number of issues relating to distribution of services and workforce, and travel distance to PHC were described by only a few studies (Table 3). Unavailability of services and travel distance to services on a community level were reported as barriers to care, although geographical proximity lost its importance with increasing age for people living in rural areas (55).

## LITERATURE REVIEWS

A non-systematic literature about prevention of diabetes in culturally and linguistically diverse communities in NSW (56) found language and cultural beliefs, low education, low literacy level and low socio-economic status to be barriers to access to health information and preventive diabetes care. These findings are in line with the descriptive studies that found association between higher acculturation rates and better access to best practice primary health care.

### 3.3 WHAT INTERVENTIONS HAVE BEEN TESTED TO ADDRESS ACCESS TO BEST PRACTICE PHC?

Intervention studies reported to enhance access to best practice PHC were identified and analysed qualitatively. There were 141 papers that referred to 121 published studies of interventions. In addition, three systematic and one non-systematic reviews were included in the analysis. The interventions that were tested frequently included multiple strategies. Thirty seven different types of strategies were identified. These are summarised in Table 5 and are grouped according to our proposed schema and stratified by domain of care.

Figure 5 shows the distribution of the factors that were associated with differences in access to PHC classified according to our proposed schema in the descriptive literature and distribution of the factors classified according to the schema that were addressed by interventions to enhance access. While the majority of descriptive studies were concerned with patient-side issues, the majority of intervention studies reported strategies that addressed provider-side issues, most notably practice organisational issues.

Figure 5: Access factors addressed in descriptive and intervention studies

▮

Table 5: Typology of strategies to enhance access to best practice PHC identified from intervention studies and stratified by domain of care

Type of strategy	Diabetes		PAP testing		Episodic care		Total	
	N	%	N	%	N	%	N	%
<b>Patient support</b>	<b>12</b>	<b>31.6</b>	<b>37</b>	<b>66.1</b>	<b>2</b>	<b>7.4</b>	<b>51</b>	<b>42.1</b>
Raising awareness/patient education	9	23.7	19	33.9	2	7.4	30	24.8
Enhanced self-management	3	7.9	0	0	0	0	3	2.5
Culturally appropriate materials	2	5.3	15	26.8	0	0	17	14.0
Personalized invitation letter	0	0	5	8.9	0	0	5	4.1
Personal health book records	0	0	2	3.6	0	0	2	1.7
Telephone counselling	0	0	2	3.6	0	0	2	1.7
Help to get regular source of care	0	0	1	1.8	0	0	1	0.8
<b>Service organisation</b>	<b>28</b>	<b>73.7</b>	<b>27</b>	<b>48.2</b>	<b>18</b>	<b>66.7</b>	<b>73</b>	<b>60.3</b>
<b>Reorganisation of practice</b>	<b>15</b>	<b>39.5</b>	<b>5</b>	<b>8.9</b>	<b>17</b>	<b>63.0</b>	<b>37</b>	<b>30.6</b>
Group visits	4	10.5	0	0	0	0	4	3.3
Disease specific clinic	5	13.2	3	5.4	0	0	8	6.3
Multidisciplinary team	7	18.4	0	0	0	0	7	5.8
Change in appointment system	1	2.6	0	0	9	33.3	10	8.3
Telephone triage by GP	0	0	0	0	3	11.1	3	2.5
GP after hours clinic and services	0	0	0	0	4	14.8	4	3.3
Enhanced staff roles	3	7.9	2	3.6	5	18.5	10	8.3
Telephone consultations for follow up	0	0	0	0	3	11.1	3	2.5
<b>Systems to support practice</b>	<b>11</b>	<b>28.9</b>	<b>17</b>	<b>30.4</b>	<b>1</b>	<b>3.7</b>	<b>29</b>	<b>24.0</b>
Call/ recall system	6	15.8	9	16.1	0	0	15	12.4
Reminders for patient	0	0	6	10.7	1	3.7	7	5.8
Reminders for provider	3	7.9	6	10.7	0	0	9	7.4
Computerized monitoring system	2	5.3	0	0	0	0	2	1.7
Patient register	2	5.3	0	0	0	0	2	1.7
Decision support, e.g. flow charts	5	13.2	2	3.6	0	0	7	5.8
<b>External support for practice</b>	<b>2</b>	<b>5.3</b>	<b>5</b>	<b>8.9</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>5.8</b>
Disease specific register	2	5.3	4	7.1	0	0	6	5.0
Health professional support	0	0	1	1.8	0	0	1	0.8
<b>Financial support</b>	<b>6</b>	<b>15.8</b>	<b>3</b>	<b>5.4</b>	<b>4</b>	<b>14.8</b>	<b>13</b>	<b>10.7</b>
Practice incentive payment	3	7.9	0	0	0	0	3	2.5
Reduced cost/free service	3	7.9	1	1.8	3	11.1	7	5.8
Financial incentives for patients	1	2.6	2	3.6	1	3.7	4	3.3
<b>Workforce development</b>	<b>16</b>	<b>42.1</b>	<b>8</b>	<b>14.3</b>	<b>1</b>	<b>3.7</b>	<b>25</b>	<b>20.7</b>
Education of general practitioners	7	18.4	3	5.4	0	0	10	8.3
Education of other PHC providers	9	23.7	2	3.6	1	3.7	12	9.9
Training of non-health professionals	0	0	4	7.1	0	0	4	3.3
<b>Geographical strategies</b>	<b>8</b>	<b>21.1</b>	<b>11</b>	<b>9.6</b>	<b>15</b>	<b>55.6</b>	<b>34</b>	<b>28.1</b>
<b>Outreach service</b>	<b>8</b>	<b>21.1</b>	<b>11</b>	<b>9.6</b>	<b>2</b>	<b>7.4</b>	<b>21</b>	<b>17.4</b>
Screening in community setting	5	13.2	0	0	0	0	5	4.1
Specialist outreach service	1	2.6	0	0	0	0	1	0.8
Home visits and phone outreach	1	2.6	5	8.9	2	7.4	8	6.6
Workplace outreach service	2	5.3	0	0	0	0	2	1.7
Disease specific clinics run outside	0	0	6	10.7	0	0	6	5.0
<b>Other services to improve access</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>13</b>	<b>48.1</b>	<b>13</b>	<b>10.7</b>
Walk-in centres	0	0	0	0	4	14.8	4	3.3
NHS Direct and similar services	0	0	0	0	7	25.9	7	5.8
GP cooperative based in hospital	0	0	0	0	4	14.8	4	3.3

\*Note: most studies describe more than one intervention within categories, therefore numbers do not add up to total and subtotals

## **Service organisation**

Service organisation made up 60.3% of all intervention strategies and encompassed three main sub-categories: reorganisation of practice (30.6%), systems to support practice (24%) and external support for practice (5.8%). Within these categories the predominant strategies were implementation of call/recall systems, changes in appointment systems in the practice, enhanced involvement of nurses, generation of reminders for provider and patient, running diabetes and PAP test clinics.

## **Patient support**

Forty two percent of intervention strategies related to patient support to seek care. Raising awareness and patient education were the most frequently tested approaches across the three domains of care (24.8%) and included strategies such as mass media public education campaigns, use of educational materials (such as posters, leaflets, and brochures), and educational programs for patients. Strategies for provision of culturally appropriate materials and services such as multilingual fact sheets, pamphlets, and culturally appropriate educational programs were also frequently reported (14%). Other strategies such as personalised invitation letters, enhanced self management, and tailored telephone counselling were used in a limited number of studies.

## **Geographical strategies**

Twenty eight percent of strategies addressed the geographical distribution of services: Outreach services (17.4%) including home visiting and telephone outreach that aimed to prompt access to PHC follow up or care. They also included setting-up of specific clinics in PHC practices or in other community-based locations, such as multidisciplinary clinics to improve access to diabetes care or encourage uptake of PAP testing. There were a number of interventions that aimed to increase availability of services through establishment of new services to improve access, for example: walk-in centres, telephone triage, and GP cooperatives (10.7%).

## **Workforce development**

A number of strategies (20.7%) aimed to build workforce capacity to improve access to best practice PHC. These included educational programs for GPs and other health professionals to increase their knowledge and skills to deliver best practice PHC, and training of other health professionals and non-health professionals to undertake specific or general tasks relating to implementation of best practice PHC.

## **Financial support**

The least reported types of strategies across all domains of care were those for financial support of practice or patient (10.7% of the studies). These strategies included offer of reduced cost or free screening services (5.8%), vouchers or free transport services for patients (3.3%), and practice incentive payments for provision of best practice care (2.5%).

## **STRATEGY TYPE BY DOMAIN OF CARE**

The types of interventions tested to enhance best practice PHC varied by domain of care. This was reflected in the range of strategies that comprised the interventions (Figure 6).

Figure 6: Frequency of strategies to enhance access to best practice PHC stratified by domain of care

While strategies to enhance access to diabetes and episodic care were most commonly concerned with reorganisation of services, the strategies to do this differed between domains. Organisational strategies to enhance access to best practice PHC for patients with diabetes involved development of practice-based systems to enhance implementation of processes of care to identify, treat, and monitor the condition and prevent progression. Other reported strategies to enhance access to best practice PHC for patients with diabetes also included workforce development and patient support. The organisational strategies used to enhance episodic care concerned practice systems. Geographical strategies related to episodic care included establishing new services and improved distribution to ensure more timely access by patients should they require PHC services.

Strategies to enhance access to PAP testing most commonly aimed to enhance patient support to encourage positive decisions to obtain a PAP test. These were also concerned with the organisation of services to encourage access to testing by patients.

Strategies to address financial barriers to health care were infrequently reported across all three domains. In the episodic care domain, workforce development and patient support strategies were also infrequently reported.

### RESULTS FROM SYSTEMATIC REVIEWS

The diabetes systematic reviews examined the impact of interventions to improve certain processes of care and improvement of practice information systems. The PAP testing systematic review provided an overview of interventions for raising awareness and the provision of invitations to women to attend for cervical cancer screening.

## 3.4 HOW EFFECTIVE ARE INTERVENTIONS TO ENHANCE ACCESS TO BEST PRACTICE PHC?

### OVERVIEW

From the 121 intervention studies we identified 75 studies that evaluated the impact of the intervention on measures of access. The remaining 46 intervention studies were excluded from the effectiveness analysis as they were not meeting the inclusion criteria for appropriate measures of access. The proportion of intervention studies within the diabetes domain that evaluated impact on access was relatively low (28.9%) compared to PAP testing (80%) and episodic care (70%).

Frequencies of evaluated intervention studies by domain of care, country, care setting, provider, target population, and level of implementation are tabulated in Appendix 5. Detailed characteristics of each evaluated intervention study are presented in Appendix 6. Of the 75 evaluated intervention studies, 55 (73%) reported significant positive outcomes, 18 (24%) reported no change or inconclusive results, and a small number (n=2) showed significant negative results (Appendix 7).

Most evaluated intervention studies used more than one outcome measure of access. The most commonly reported was service use (90%), followed by receipt or delivery of recommended processes of care (15%), and use of other services (9%). Waiting time or timeliness of care was measured in 8% of studies (Appendix 7).

The quality of evaluated intervention studies was variable. Most commonly studies had before-after/time series designs or were randomized controlled trials (Appendix 6). Using the Quality Assessment Tool we classified the methodological rigor of studies as high (31%), moderate (61%), and low (8%) (31) (Appendix 8).

High quality studies (n=23) were identified only in the PAP testing domain. Thirteen of these studies used administrative data collections (such as PAP test registers) and often involved large patient samples, which improved opportunities for follow up of patients and limited drop

outs. The remaining high quality studies used non-administrative data with predominantly small sample sizes, but had strong study design (i.e. well designed RCT).

All of the effective evaluation studies (n=55) were of moderate or high scientific quality and more than a half (n=24) had before-after/time series or RCT designs. Intervention studies which showed inconclusive results (n=17) can be grouped into those that failed to show impact on access due to methodological issues (n=9), those that showed differential impacts for sub-groups of the study population (n=6), and studies that showed initial positive impact of the intervention but could not sustain this over a longer period of time (n=2).

### EFFECTIVENESS BY NUMBER OF STRATEGIES USED

Table 6 presents for each domain of care, the number of evaluated interventions that used one, two, or three and more strategies. The number of studies, which reported positive change in access (i.e. were effective), are presented in brackets. The remaining studies reported either inconclusive results or negative change in access. The results show that most evaluated interventions used a single strategy (61%), multi-strategy interventions were more likely to report positive results than single-strategy interventions, and almost all of the inconclusive studies employed single-strategy interventions (82%).

Table 6: Frequency of evaluated intervention studies stratified by number of strategies employed and domain of care

Domain of care	Number of strategies employed		
	One	Two	Three or more
Diabetes	4 (3+)	5 (4+)	2 (2+)
PAP testing	27 (15+)	13 (11+)	5 (5+)
Episodic care	15 (12+)	2 (1+)	2 (2+)
<b>All studies</b>	<b>46 (30+)</b>	<b>20 (16+)</b>	<b>9 (9+)</b>

(+): number of studies in the group that reported positive results

The most commonly evaluated multi-strategy interventions employed strategies to raise patient awareness, educate patients, provide culturally appropriate materials and services, and implement call/recall systems in PHC practice. Among interventions studies with three or more strategies, patient support strategies were used in all but one study; the most common configuration was patient support, workforce development and a geographical strategy. One PAP testing intervention combined patient support with geographical and service organisation strategies (57).

Three multi-strategy interventions showed inconclusive results (58, 59) and one reported significantly negative results (60).

### EFFECTIVENESS OF EVALUATED INTERVENTIONS BY STRATEGY TYPE

Table 7 shows the effectiveness of different strategies by domain of care. While the most common strategy types were service organisation and patient support, strategies employing workforce development, financial support and geographical intervention were most consistently associated with successful outcomes. The effectiveness of a strategy was measured by the proportion of all studies using that strategy and reporting access outcomes that found a significant positive result.

Table 7: Effectiveness by strategy type and domain of care

Strategy type	Diabetes		PAP testing		Episodic care		All studies	
	N (pos.)	%*	N (pos.)	%*	N (pos.)	%*	N (pos.)	%*
Patient support	2 (2)	100	26 (17)	62	1 (1)	100	29 (20)	69



Service organisation	8 (7)	88	25 (19)	76	10 (7)	70	43 (33)	77
Financial support	3 (3)	100	2 (2)	100	4 (3)	75	9 (8)	89
Workforce development	4 (3)	100	7 (7)	100	0	0	11 (10)	91
Geographical strategies	1 (1)	100	8 (7)	88	10 (7)	70	19 (15)	79
<b>All studies</b>	<b>11 (10)</b>	<b>91</b>	<b>45 (31)</b>	<b>69</b>	<b>19 (14)</b>	<b>74</b>	<b>75 (55)</b>	<b>73</b>

**Note:** most studies describe more than one strategy across and within categories, therefore, numbers do not add up to total and subtotals.

Pos.: significant positive results

\* The proportion of studies that reported significantly positive outcome

## Service organisation

Seventy-seven percent of studies employing service organisation strategies reported enhanced access. Service organisation included implementation of call/recall systems, patient and provider prompts and reminders, changes in the appointment system in the practice, enhanced staff roles in care provision, and conducting disease specific clinics. The majority were implemented at the practice or PHC organisation level. The PHC setting or type of provider did not differ between effective and ineffective service organisation strategies.

Five studies showed inconclusive results. Of these two PAP testing studies implementing patient and provider reminder systems showed differential outcomes for sub-groups of women (never screened, chronically ill) (61) or no change for some women (younger and previously screened) (62). These studies differed from successful reminder system interventions in being less personalised to the women’s needs. The remaining three inconclusive studies failed to show positive impact due to limitation of the study design (63-67).

Two evaluated studies reported negative results; both were of moderate scientific quality. The first involved the establishment of an open access appointment system and was not tailored to the needs of diabetic patients, thus it created barriers to access to recommended processes of care for those patients, while it improved general access(68). The second concerned an doctor-operated after-hours telephone triage system which led to decreased access to after-hours services due to misconception in the population about the role of the new service and how to access the existing after hours services (58).

## Patient support

Sixty-nine percent of studies using patient support strategies reported positive outcomes. Most of these studies originated from the PAP testing literature (26 studies); only 2 studies were from the diabetes and one from episodic care literature. Most of the effective patient support strategies aimed at raising awareness, educating patients, and providing culturally appropriate materials and services.

Eight studies reported inconclusive results for the effectiveness of patient support strategies. Three of these showed improvements only for certain sub-groups of the study population (59, 61, 62). Methodological issues prevented four studies to show impact of this strategy type on access (69-72). One study combined patient support with outreach (geographical strategy) but could not sustain the initially positive impact due to loss of community involvement and leadership (60).

## Geographical strategies

Geographical strategies were predominantly found in intervention studies from the episodic care and PAP testing domains; of these 79% showed significant improvements in access. Effective strategies included home visits, phone outreach, and telephone triage services such as NHS Direct.

Two single strategy interventions that introduced new services such as telephone triage services and walk-in clinics were inconclusive. One study showed that the introduction of NHS direct and walk-in clinics did not reduce the use of traditional services (73). The other study



failed to show any impact of a telephone triage system on services due to methodological issues (58). Another study introducing new after-hours services and a telephone triage system reduced access to after-hours care due to patients’ misconceptions about how to access after-hours care in the new system (58).

**Workforce development**

Workforce development strategies were reported in the diabetes and PAP testing domains only. Ten out of the eleven studies employing workforce development strategies demonstrated significant positive changes in access to care. These strategies included mainly education programs for nurses, Aboriginal health workers and other PHC staff, and GPs.

One study was inconclusive as the initial positive impact could not be sustained over time due to lack of resources and ongoing support (74)

**Financial support**

There were few evaluated interventions with financial support strategies (N=9). Eight of these studies showed a positive change in access; the strategies employed were reducing cost of service or offering free service and financial incentives for patients (i.e. transport vouchers) and providers (financial support for the practice).

One study that combined financial support and service organisation strategies showed decreased access to after-hours services (58) (see above).

**EFFECTIVENESS BY DOMAIN OF CARE**

The majority of the effective evaluated intervention studies originated from USA (n=17), Australia (n=16) and UK (n=13). In the diabetes domain in six studies significant positive change in access was reported in Australian and UK studies, in contrast with the one ineffective study that originated from USA. In the episodic care domain, mostly UK studies reported effectiveness in development of new appointment systems or services to support same day access, for example, triaging or walk-in centres. In the PAP testing domain most of the effective and ineffective strategies originated from USA and Australia.

**DIABETES**

In the diabetes domain most evaluated intervention studies reported strategies to change in service organization to better support implementation of care processes; 70% reported significant positive outcomes. The most effective strategies involved use of multidisciplinary teams, diabetes clinics, implementation of patient recall arrangements, decision support systems in the practice, provision for group’s visits for patients, and up skilling of PHC providers (Table 8). These strategies were implemented at primary health organization, community, and practice levels of the health system and it was difficult to conclude what role individual strategies had in the success of the intervention. A study which showed negative change in access involved a major change in practice appointment system that was not tailored to the need of diabetic patients and created additional barriers to access recommended processes of care (68).

Table 8: List of most effective diabetes strategies and access outcomes

<b>Strategy type</b>	<b>Effective Strategies</b>	<b>Access Outcomes</b>
<b>Service organisation (7)*</b>	Multidisciplinary team Disease specific clinic Group visits Call/ recall system Patient register Decision support, e.g. flow charts Computerized monitoring system	Care processes (6) Use of the service (3) Retention rate (1) Follow-up rate (1)

<b>Workforce development (4)*</b>	Education of other PHC providers, e.g. Nurse, AHW, CHW Education of general practitioners	Care processes (4) Use of the service (2) Retention rate (1)
<b>Financial support (3)*</b>	Reduced cost/free service Financial incentives for patients	Care processes (3) Use the service (1)
<b>Patient support (2)*</b>	Raising awareness/patient education Enhanced self-management	Use the service (2) Care processes (1) Follow-up rate (1)

*\* Number of studies*

## PAP TESTING

PAP testing intervention studies employed a variety of strategies and used them in a range of combinations. They targeted different population groups with variable reach, and used variable outcome measures. This made them difficult to compare.

Most studies employed a single strategy. Those studies reporting positive results involved raising patient awareness, using mass media campaigns, provision of bilingual health workers, educational programs targeting specific population groups, well designed culturally and linguistically appropriate strategies and services, and systems to support practice (Table 9).

Interventions using a combination of strategies demonstrated positive change in access. The most effective combinations were patient support plus service organisation strategies, and geographic intervention plus patient support.

Table 9: List of most effective PAP strategies and access outcomes

<b>Strategy type</b>	<b>Effective Strategies</b>	<b>Access Outcomes</b>
<b>Service organisation (19)*</b>	Call/ recall system Reminders for patient Reminders for provider Disease specific register	Use of the service (19) Patient delayed service use (1) Return rates (1)
<b>Patient support (17)*</b>	Raising awareness/patient education Culturally appropriate materials and services Personalized invitation letter	Use of the service (16) Return rates (1)
<b>Workforce development (7)*</b>	Training of non-health professionals Education of general practitioners	Use of the service (7)
<b>Geographical strategies (7)*</b>	Outreach disease specific clinic Home visits and phone outreach	Use of the service (7)

*\* Number of studies*

Higher intensity strategies and strategies using a higher extent of personalisation of interventions (i.e. personalised invitation letters) showed significant positive outcomes.

Effective and ineffective interventions did not differ in type of the provider or level of the health system where the intervention was implemented. However, a higher proportion of interventions implemented in practice setting reported no change in access to PAP testing compared to interventions implemented in a community setting. Overall 30% of evaluated intervention studies showed no change in access or the result was a combination of positive and negative changes in access.

Interventions studies that failed to show positive change in access to PAP tests were either using inappropriate methodology (no sub-group analysis of women with different screening status or needs), did not tailor the strategy to the preferences of the targeted population, or had little or no community involvement.

## EPISODIC CARE

Within the episodic care domain evaluated interventions reported strategies to improve access to same day appointments. These included implementation of advanced access (change in appointment system), implementation of telephone triage services such as NHS Direct and Health Connect, and implementation of walk-in centres (Table 10). Most were initiated through national policies and implemented at practice level. The setting and the type of the provider did not differ between effective and ineffective interventions. One study of an out-of-hours service reported negative outcomes as the service did not respond to the needs of the target population (58). None of the interventions employed workforce development strategies.

Table 10: List of most effective episodic care strategies and access outcomes

Strategy type	Effective Strategies	Access Outcomes
<b>Service organisation (7)*</b>	Change in appointment system Enhanced staff roles	Use of the service (6) Continuity (2) Waiting time (4)
<b>Geographical strategies (7)*</b>	NHS Direct and similar services Walk-in centres GP cooperative based in hospital Home visits and phone outreach	Use of the service (5) Use of other services (3) Waiting time (1)
<b>Financial support (3)*</b>	Reduced cost/free service Financial incentives for patients	Use of the service (3) Use of other services (2)

\* Number of studies

## EFFECTIVENESS BY PRIORITY GROUPS

To analyse how different strategies improve access for different priority groups we looked at intervention studies that either targeted specific population groups or that demonstrated differential impact of the intervention on specific sub-groups of the study populations. The findings are presented by domain of care.

### DIABETES

The majority of studies used blanket approaches targeting the general population. Only two studies of low quality examined the impact on access for sub-groups of the study population. A study introducing a diabetes information system to support a guideline-based integrated diabetes care program found that although overall access to recommended care improved, socio-economically disadvantaged patients were still less likely to use services or receive recommended care (75). A study about a free community diabetes screening program found that men were more likely to be referred to their GP for follow-up than women (76).

Only two studies targeted specific priority groups. An Australian study examined an intervention to support health staff of remote Aboriginal health centres in the use of guidelines and promote the employment of Aboriginal Health Workers (74, 77). Access to recommended processes of care increased but sustaining the positive outcome over a longer period of time proved difficult due to lack of resources. A US study examined the impact of culturally specific eye screening clinics for diabetic patients in urban African American communities and showed increased screening and follow-up rates in this traditionally underserved population group (78, 79).

### PAP TESTING

Most PAP testing intervention studies (n=30) targeted the general population; of these 21 studies reported differential impacts of their interventions on access for sub-groups of the study populations. Strategies to raise awareness of cervical cancer screening (such as media campaigns) showed the bigger improvements for unscreened (80) and older women (over 50 or 55 years old) (81, 82). While for invitation letters the evidence suggests that high risk groups are not always reached (83, 84) and that they have limited effectiveness for women from ethnic

minority groups (85) and those with inflexible time schedules (86). Other studies show that socio-economic differences in access will remain even after overall improvements in access (87-89)

Seventeen studies targeted interventions at specific priority groups such as Indigenous populations groups (n=3), ethnic minority groups (n=11), unscreened women (n=2), and women with abnormal PAP tests (n=1).

All three intervention studies targeting Indigenous women (Australia and US) showed improved access through culturally sensitive education and promotion activities (90, 91) or the establishment of culturally specific services(57).

Of the eleven intervention studies targeting ethnic minority women, only seven studies demonstrated a positive impact on access (92-97). All of them used patient strategies to educate women and promote PAP screening in culturally sensitive ways and 4 interventions combined these strategies with outreach or workforce development strategies. The interventions that were ineffective in improving access also used patient support strategies but mostly as stand-alone interventions. Compared to effective single strategy interventions using patient support these interventions had a lower level of intensity and personalisation (group-sessions instead of one-on-one contact, education without assistance to obtain test).

### EPISODIC CARE

All intervention studies targeted the general population, none targeted specific population groups. One study found that an out-of-hours primary care physician cooperative seem to be accessed especially by patients with skin- or musculoskeletal conditions which previously were attending emergency departments (98). Studies that evaluated telephone triage systems discussed that access could be difficult for people with language disabilities or for whom English is not their first language. However, none of the studies examined access to telephone triage by these groups.

## 3.5 WHAT IS KNOWN ABOUT THE COST AND BENEFITS OF THESE INTERVENTIONS?

Nine studies provided information on the costs and benefits of interventions designed to enhance access to best practice PHC (Appendix 9). Of these, none undertook a cost-effectiveness analysis of comparative interventions. Overall, the quality of the data collected on resource use was low. Only one study was set in the Australian context. This makes it difficult to generalise issues such as resource use (and therefore costs) which, due to differences in funding, reimbursement and delivery arrangements between jurisdictions, are highly dependent on the context. In general, evidence from UK and European studies on access are likely to be more applicable to the Australian setting as they are set in the context of a more or less universal health care system. In contrast, US studies on access concentrate on sub-populations of disadvantaged individuals who are the most likely to experience difficulties in accessing care in the US health system.

Seven of the nine studies investigated utilisation and costs at the practice level. One study (99), investigated whether having a GP was associated with lower total health care costs (in the context of the Belgian health care system), and one used sophisticated econometrics techniques to evaluate the impact of the PIP program on the quality of care for diabetes in Australia (100). From this study it can be said that the PIP has increased the probability of providing access to best practice diabetes care; at a higher rate for the Indigenous population compared to the population overall.

Overall, however, the information from this small sample of articles is not able to be used to draw any firm conclusions regarding the costs or cost-effectiveness of interventions, strategies, or policies designed to enhance access to primary care.

## 4. DISCUSSION

The focus of this review was access to best practice primary health care in the Australian health care system. This reflects a growing awareness of the importance of high quality PHC as evidenced through national and international strategies such as dissemination of best practice management guidelines, rewarding of evidence based care through the Quality and Outcomes Framework in the UK, and Service Incentive Payments for diabetes care and PAP testing in Australia. There is also ongoing concern about how widely and how equitably strategies are distributed.

Access is not well defined in the published literature; there is no agreed definition or conceptualisation, and access can be measured in many different ways (101). Our definition of access is: a balance between health service need and use of health services. This is a dynamic relationship where the way each side operates and presents influence the other. Since both parties are subject to shifting external influences, there is constantly changing relationship requiring continuing negotiation between parties. Figure 1 highlights the importance of factors operating on the patient- and provider-side of the model, and the interaction between them. We determined need in terms of recommended processes of care according to widely accepted evidence based guidelines (8-11). Taking a normative approach avoided the need to factor in different types of health care need (e.g. perceived and expressed), and made it possible to take a measure of health service use as a reasonable proxy for access.

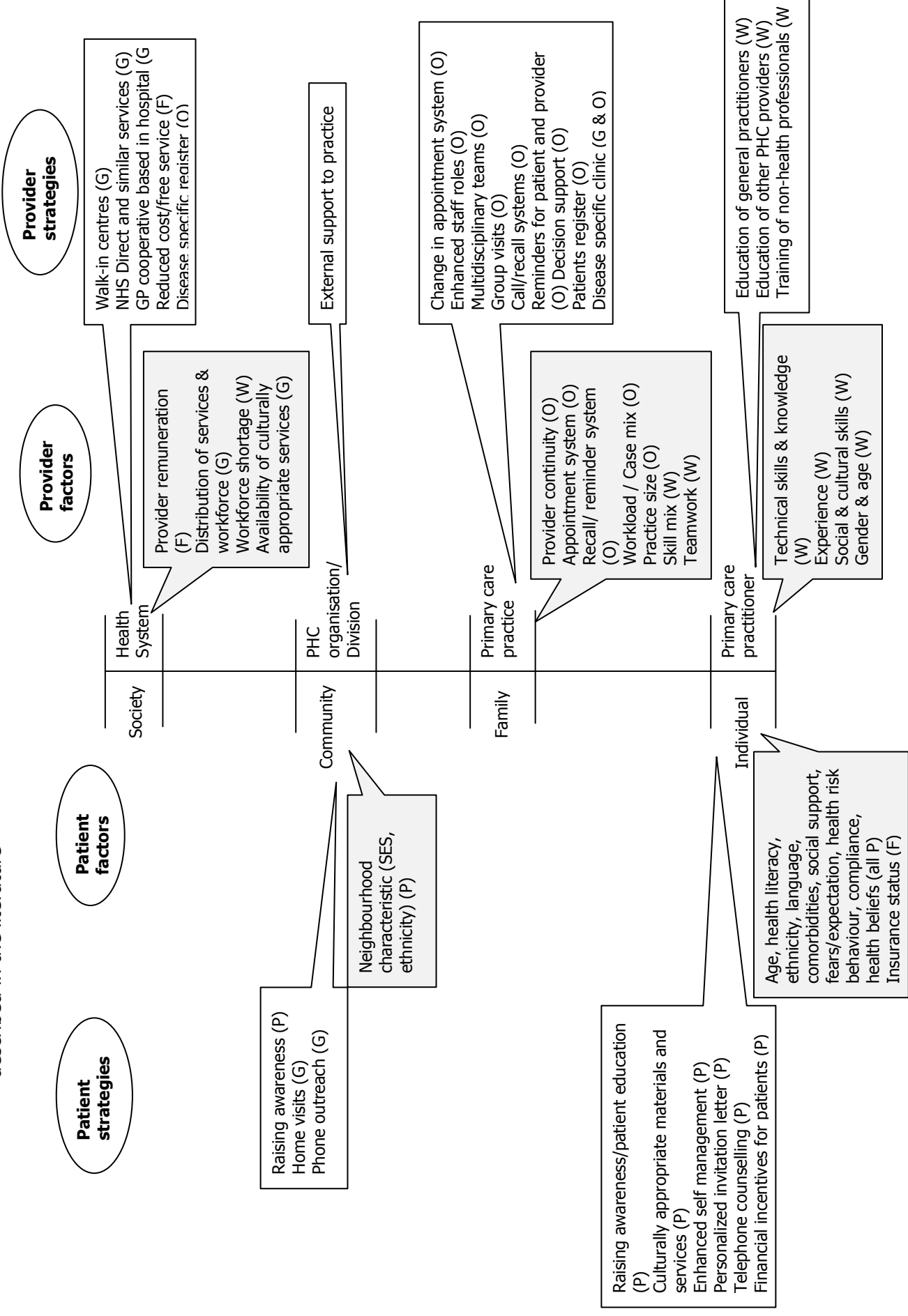
The review was limited to examples from each three domains of PHC: PAP testing from preventive care, management of diabetes mellitus from chronic disease management, and timely access with continuity of care for episodic care. These examples are common elements of PHC for which there are accepted best practice guidelines. We examined these within an ecological model which reflects the hierarchy of factors operating on both provider and patient sides and recognises the importance of system-wide and social phenomena, although these were rarely the focus of any interventions. The categories of factors that influence access to PHC and interventions adopted from Gulliford (financial, geographic, workforce, practice environment, and personal factors) fitted the data and corresponded to well established areas of policy concern (5).

The review was limited to studies from developed countries with generally similar approaches to health care to Australia although with different health insurance systems. It highlighted differences in concerns about access to PHC between countries and the significant impact of universal health insurance on access to PHC. Thus papers from the USA were concerned with access to procedures, such as PAP testing, and improving access to diabetes care for specific population groups including underinsured patients. The interventions were undertaken within managed care organisations where interest was on improving efficiency and reducing costs of care. This contrasted with the UK which has a system of universal access to free at the point of delivery PHC but issues in the availability of timely access to episodic care. Consequently the UK literature was primarily concerned with access to episodic care, such as same day appointment, and with systems to improve access to PHC, such as telephone triage and out-of-hours care, and secondly with improving access to systems and services relating to diabetes care. The literature from Australia and New Zealand reflected the complex mix of public and private provision and funding of PHC and was concerned with all three domains of care.

### 4.1 FACTORS THAT INFLUENCE ACCESS

Figure 7 shows the factors influencing access and interventions that were showed to be effective. The two inner columns show the factors for patients and providers and at different levels of the ecological model. The two outer columns show the strategies that have been shown to be effective in improving access to best practice PHC. The following sections discuss the factors, the strategies, and the relationship between them.

Figure 7: Factors influencing access (shaded boxes) and effective interventions to improve access (unshaded boxes) described in the literature



P = Patient factor/support; O = organisational factor/service organisation; W = workforce factor/development; F = Financial factor/support; G = geographical factor/strategy



The descriptive papers identified a wide range of factors. Most were reports from population based surveys and so were able to describe factors associated with access but not provide theoretical explanations for their importance or identify causal pathways underlying differences in access.

Very different factors were identified on the patient and provider sides of our model, predominantly patient and then organisational and workforce factors respectively. However there are strong links between the two sides. Individual and community patient factors such as socio-demographic issues, health status, and health literacy help define the need for technical, social, and cultural skills and providers of a particular gender and age. Community socio-demographic factors determine the need for culturally appropriate services. There were, of course, also issues such as service organisation which related only to the provider side and reflected the need to build capacity amongst service providers and within the health system as a whole to respond to patient and community needs.

Only financial factors appeared on both sides and applied across the three domains of care. On the patient-side, this related particularly to insurance status. While this issue was chiefly reported in the USA studies, it was also relevant to Australia, where those without private health insurance are less able to access private allied health providers, and gap payments (co-payments) for services attracting a Medicare rebate can be barrier. In 2007, a Commonwealth Fund survey found that 26% of Australians reported not having accessed needed health care in the past 12 months because of the cost of care (102). On the provider-side, financial factors related mostly to types of remuneration for PHC. Remuneration influences incentives for the provision of particular types of care, implementation of best practice guidelines, and possibly also arrangements for charging patients, including bulk billing in the Australian context.

The links between the two sides highlight the dynamic nature of access as a balance between the needs of patients and communities and the organisation, provision, and funding arrangements for services. Factors were identified at each level on the provider side. This illustrates the need for a well designed health system, for capable organisations, and technically and culturally appropriately skilled providers. Fewer factors were identified at PHC organisation level. Their influence is indirect and often not very visible, and indicates that this level of health service is not strongly developed, at least in Australia and the US. However the PHC organisation level also offers opportunities for systems and services to support individual practices and practitioners, and build systems for provision of comprehensive PHC and for facilitating access.

On the patient side there were notable gaps in the literature at both society and family level. Absent were issues such as social norms and prejudices which might be expected to have at least an indirect impact on an individual's access to services. While these may be seen as too distant from issues of individual access, they are likely to be particularly relevant to marginalised groups and stigmatised conditions such as mental illness. Potential family issues such as culture and expectation have been investigated at individual and community levels rather than at the family level, but one might expect some specific family issues such as the role of influential family members on decisions about health care to have an impact (103).

The impact of personal factors was often complex and differed across the domains of care: for example increasing age was generally a barrier to access except for diabetes, where access increased up to a certain age and declined thereafter. Age also interacted with the patient's trade-off between timeliness of care and provider continuity, with continuity becoming more important with increasing age. Ethnicity and co-morbidity could be a barrier unless these were specifically addressed, in which case access might be improved. This highlights the need to tailor services to groups of high need and poor access as well as make broad provision in generalist PHC services. Having a regular source of care or provider was seen as facilitating access across all domains. This is a particular issue for countries like Australia where systems for registering patients with particular service providers do not currently exist.

Some factors were both barriers to and facilitators of access to best practice PHC, and should be seen as factors to be considered in reducing barriers and improving access. This is a reminder that the contexts within which services are provided and used are difficult to

influence. These often have conflicting priorities and are subject to underlying constraints of cost, workforce, professional practices, and consumer preferences. This was particularly clear with advanced access, where systems which made access easy for episodic care sometimes made access more complex for those with chronic conditions (68). This complexity was rarely explored in the descriptive literature.

### 4.2 EFFECTIVE INTERVENTIONS FOR IMPROVING ACCESS TO BEST PRACTICE PHC

More successful interventions were identified for episodic care and PAP testing, where outcome measures tended to be related directly to access (uptake of processes of care, use of services, and reach), than to diabetes care, where outcome measures more often related to clinical measures of disease control rather than use of services.

The great majority of effective strategies were targeted at the provider-side, the arena in which providers can most directly intervene (Figure 7). The most widely used types of effective interventions involved strategies to encourage patients to attend services and providers to ensure that they received appropriate care when they attended. Interventions mostly targeted providers and their practice because at this level there is greater capacity to influence the acceptability and accessibility of services.

Effective interventions comprised reminder systems to recall patients for review or to prompt opportunistic completion of care processes; specific clinics with PHC, such as diabetes or PAP testing clinic; or appointment systems and outreach to ensure attendance for review. The specific practice strategies varied by domain of care: multidisciplinary teams and disease specific clinics for diabetes, call/recall and reminder systems for PAP testing, and changes in appointment systems and enhanced staff roles for episodic care. Many involved use of clinical information and practice systems to support timely follow up. This is consistent with current understanding of the importance of the practice environment for the delivery of best practice PHC. It also mirrors trends observed in the Australian policy context where efforts have focussed on organisational changes and re-structuring.

Strategies to support patients had a particular focus on providing education and information, enhancing access to PHC through development of culturally specific services in community settings frequented by priority groups, or providing outreach to engage hard to reach patients. Although targeting patients, these strategies usually were initiated in the PHC practice and involved changes in the delivery of services to encourage and enhance access for targeted patients.

Interventions were also concerned with workforce development strategies either singly or as part of multiple strategy interventions. This recognises the importance of a strong PHC workforce in delivery of best practice PHC through social and cultural competence and inter-professional collaboration. In relation to PAP testing and specific services such as screening for specific conditions, for example retinal screening, strategies involved extending the range of health care providers who provided care. Geographical strategies related to setting up new types of episodic care, for example walk-in clinics in the UK, involved major policy and services development initiatives. Smaller initiatives included outreach services, such as home visiting or establishing a diabetes risk factor clinic in a large work environment, that offer promise for harder to reach populations.

As is found in other areas of quality improvement, interventions comprising multiple strategies were more likely to be successful than those with a single strategy (104). Multiple strategies might include changes to practice systems to support patient care, workforce development, and patient support strategies such as scheduled appointments and proactive follow-up, addressing barriers on patient- and provider-sides. Strategies also involved multiple levels of the health care system usually in the form of funding policy at system level, and practice systems and support at practice level. Strategies were least reported at the PHC organisation level, reflecting the relative lack of development at this level of the PHC services. On the patient side, strategies usually targeted individual patients with some focus on communities. No successful strategies



were found at family or society level, but these may be addressed elsewhere: for example through family support services, or national programs such as those encouraging people with depression to seek help.

Overall, effective strategies addressed the factors identified as influencing access to best practice PHC (Figure 7). Patient support strategies targeted identified patient factors, workforce strategies addressed the gaps in technical skills, and organisational strategies broadly tackled issues identified in the literature. There were gaps in the literature in regard to interventions addressing insufficient cultural and social skills of providers as well as provider continuity, which was identified as important but addressed in only one un-evaluated study in the PAP testing literature (105). In addition strategies that addressed financial issues focused on quality improvement through provider incentives, but the literature did not address strategies to improve service affordability for patients. No studies identified strategies to enhance family access to PHC.

Interventions that did not show any change in access to best practice care tended to be single strategy interventions only, predominantly around patient support and geographical interventions (outreach). While patient support strategies seem to add value to multi-strategy interventions they do not show high effectiveness rates as stand-alone strategies for PAP testing interventions. All of the geographical interventions that were not effective in improving access were development of new services for episodic care.

The majority of the identified studies used approaches targeting the general population. Few studies were tailored towards specific ethnic, Indigenous or socio-economically disadvantaged populations, predominantly from the diabetes and PAP testing domains of care. All of them used patient strategies to educate or promote screening among these sub-groups. There was limited focus on targeting vulnerable or hard to reach populations in intervention studies in episodic care. Whether, and to what extent, the blanket approaches of episodic care interventions, reached disadvantaged vulnerable populations is not known.

Investigating three domains of care provided an opportunity to consider contrasting and potentially conflicting goals of the different domains. For example, while advanced access may seek to make episodic care more quickly and timely available through same day appointment systems, this may not be appropriate for providers of care to patients with chronic conditions such as diabetes who need to be able to schedule appointments ahead to ensure regular review and ensure continuity of care (67, 68). Practice and provider organisations face the challenge of improving access across the different domains of care and for a range of different patient and community groups. Solutions will vary, but will often include a generalist approach, which develops organisation and staff capacity to work across issues, with special arrangements for different domains and patient groups only where needed. The three domains of care studies also highlighted contrasting approaches for the three countries with the majority of papers were sourced: Australia, UK, and USA and suggests that the overall health system within countries impacts of issues relating to access to PHC. The focus in the USA on provision of services for under-insured patients reflects the importance of universal health care policies. Studies emerging from the UK reflected the presence of a free universal system with low rates of private health insurance; however studies addressed issues of waiting times and timely access to appointments, which reflects the issue of providing adequate services within a publicly funded system. In terms of issues of access to PHC, Australia's system of both public and private insurance resulted in interest in access to PHC across all three domains.

The primary focus of most interventions was general practice (primary medical care), sometimes in combination with other services or PHC professionals. This was not surprising, since general practice is often seen as the first point of contact for PHC, and the domains of care studied all have a strong general practice component. Inclusion of other services accessible through general practice or independently, will improve patient access to best practice PHC. Criteria for best practice PHC can be found for other areas such as early childhood services and dental screening services as well as other chronic conditions and screening tests.

In summary, identified effective interventions had the following elements: inclusion of multiple strategies (e.g. patient support, workforce development and a geographical strategy),

building strategies into usual practice (e.g. call/recall systems and outreach), financial support (e.g. reduced cost or free service and transport vouchers for patients), maintaining ongoing education and awareness.

### 4.3 COSTS OF STRATEGIES TO ADDRESS ACCESS TO BEST PRACTICE PHC

Although nine studies considered the costs and benefits of interventions, the quality of the data collected was low, none of the studies was set in the Australian context, and it was not possible to draw conclusions on the relative costs or cost-effectiveness of interventions to enhance access to best practice PHC.

The study by Scott and colleagues (100) is important for two reasons. First, it illustrates how advanced econometrics techniques can be used to evaluate programs such as the PIP by separating the effects of one policy change, (e.g. financial incentives) from others introduced at the same time (e.g. IT infrastructure, support and education regarding clinical guidelines etc). Second, it shows that the PIP has had a positive effect on the provision of best practice care for diabetes and that Divisions of General Practice played an important role in lowering the administrative costs of participating in the PIP. Thus, in terms of diabetes care, the PIP can be said to have increased access to best practice diabetes care; as the probability of providing best practice diabetes care increased at a higher rate for the Indigenous population compared to the population overall, the policy appears to have also increased equity of access.

Overall, however, the information from this small sample of articles was not able to be used to draw any firm conclusions regarding the costs or cost-effectiveness of interventions, strategies or policies designed to enhance access to primary care. Further research (particularly evaluative research) should consider the benefits to practice of including a rigorous economic analysis as part of any comparative analysis. Furthermore, commissioned evaluations of policies will be enhanced in terms of both their rigor and policy relevance by the use of econometric analysis.

### 4.4 IMPLICATIONS FOR POLICIES AND STRATEGIES IN THE AUSTRALIAN CONTEXT

The results of this review indicate a number of areas in which there would be scope for enhancing access to best practice PHC in Australia. The review showed that the most effective interventions used a range of combinations of different strategy types, often at various different levels of the system (Figure 7). The results suggest that changes to PHC to enhance access to best practice PHC work best when they build capacity to enhance access across a range of areas of care, target both patient- and provider-side issues, and link to policy initiatives and funding incentives. For example, improving the accessibility of diabetes education within general practices may need attention to workforce availability and skills. The current system for funding arrangements and organisational development within practices and through development of provider organisations with capacity to harness additional resources to support care provision, may also need attention. Finally, the focus should be on access for the population as a whole; research is needed to ensure that interventions are implemented in ways to ensure that different groups are able to access services in proportion to their need.

There were messages for development of PHC policy in this review in relation to:

Patient support - Patient support strategies were a key part of many effective interventions. One way this could be addressed is the currently renewed interest in health literacy (the ability to access, understand, and use information) (106) and its impact on people's ability to maintain their health, to negotiate within the health care system, to improve their self-management skills, and use services effectively. There may be scope for a range of programs, for example as part of people's contact with health services, or through schools, community organisations or public education.

Proactive care - This was a widely used and effective type of strategy and most frequently involved development of practice systems and resources to support patient recall and timely review. For example call/recall systems, changes in appointment systems in the practice, enhanced staff roles in care provision, and conducting disease specific clinics proved to be effective tools for increased access to best practice PHC. Generation of patient and provider prompts and reminders, provide opportunities to flag patients who are due for review or screening, to do this opportunistically, or to implement active follow up of particular patients, which may in some cases require outreach services.

Integrated PHC services - Use of multidisciplinary teams proved to be one of the effective strategies for improving chronic disease management (access to diabetes care). Integrated PHC services as envisaged in current PHC reform proposals would be well placed to improve access by developing strong links with other services and encouraging or facilitating development of multidisciplinary teams. However the current proposals are very unclear about how the funding and/or reimbursement arrangements would be integrated. The risk is that concentrating scarce allied health resources in specific services may reduce access for patients who do not use that service. It will be important to ensure that integrated services are able to be accessed more readily by PHC practitioners; hub and spoke arrangements may ensure more equitable integration of care while retaining integrity of individual practitioners and practices. Integrated PHC services may need to be tailored to the needs of specific population groups, including patients with chronic and complex health care needs and priority groups including young people, indigenous people, and disadvantaged groups such as the homeless.

Patient linkage - There was some evidence that linking patients to a consistent service provider was associated with better access to PHC (102). While most patients in Australia with a chronic condition receive care from a single provider, this is not underpinned by the clarity of role and responsibility that comes with formal patient registration. Voluntary registration as envisaged in proposed PHC reforms will provide an opportunity to test the benefits of this arrangement.

Some organisations have formal arrangements for allowing consumer feedback and input into planning. While we found no evidence concerning the effectiveness of this type of strategy, it may help link services to their communities and assist them to remove any cultural or other barriers to access.

Workforce - The review highlighted the importance of social and cultural skills in primary health care providers, as well as technical skills in health care. While many services are aware of the need for cultural competence in dealing with indigenous or CALD communities, there is less understanding of the needs of other groups who may be disadvantaged in using health care, including unemployed people and people with low SES or health literacy levels.

Financial - Although the MBS Chronic Disease Management items (which replaced the EPC program) makes the allied health components of best practice PHC more widely accessible than before, patients can still face significant gap payments. Better linkage of public and private PHC would enable public services to focus on those least able to access private services. Another way of reducing gap payments would be to explore alternatives to fee for service, particularly for predictable routine chronic disease care.

These are the key elements of a well functioning primary health care sector which have been identified through other research. Proposed PHC reforms could potentially provide some opportunities to address these issues. In particular the proposed primary health care organisations have potential to enhance opportunities for stronger links and working relationships between health professional groups, including general practice.

## 4.5 METHODOLOGICAL ISSUES

This review was not limited to randomised control trials. Our description of access to 'best practice' PHC and interest in exploring evidence for impact of interventions to address access to PHC for populations in terms of their impact on use of services did not favour traditional randomised trial designs. Access to best practice PHC for specific groups such as people living

in rural and remote locations, or Aboriginal populations, was not specifically explored, although literature relevant to our inclusion criteria was included.

Where the strategies used involved a national or regional change in delivery of services such as introduction of a national telephone triage system or population based recall system, there were limited opportunities to identify suitable comparison groups in evaluation. Consequently, many of the studies included involved group randomisation, quasi experimental, cohort or serial cross-sectional designs. However, many designs favoured studies with large numbers due to use of administrative data collections and registers for evaluation.

The literature was limited to developed countries with similar approaches to health care provision to Australia. However between countries differences in interest relating to access to PHC were observed. For example the USA literature was interested in achieving access to health care for underinsured patients due to lack of universal health insurance, whereas the UK literature was much more focused on timely availability of care reflecting previous under provision of services.

There are ongoing issues about how to best measure access to PHC. We were interested in use of services and use of recommended processes of care that were consistent with widely accepted evidence based guidelines. Consequently we limited the scope of the review to key domains of activity in PHC, and examples of conditions that are relevant to a significant proportion of the community, have clear agreed approaches to care with accepted recommended processes, and are largely the domain of PHC and general practice. Consequently a number of studies that purported to address access to PHC were excluded as they did not report outcome measures that were consistent with our definition of access.

## 4.6 CONCLUSION

This review provides an overview of factors associated with access to best practice PHC in Australia and effective strategies to enhance this. We identified a number of elements which were key components of successful strategies. This coincides with the key elements of well functioning primary health care system identified from other research. The review suggests that multiple strategies targeting different levels of the health care system are best placed to ensure changes in access to best practice PHC.

The proposed changes in the structure of PHC in Australia may provide some opportunities to better understand the factors that influence access to best practice PHC and implement effective strategies to address this.

The approach taken to define and describe access opens up new way of thinking about the balance between provision and use of health services. Access and its measurement need to be developed further. The increasing availability of electronic data collections, including Medicare data itself, population health surveys, and development of sophisticated data linkage facilities provide opportunities to further explore the factors that influence access to best practice PHC and to monitor the impact of policy strategies.

Ensuring that people have access to best practice PHC will continue to be an important goal for the Australian health system and cause for concern in some quarters.

### 5. REFERENCES

1. A healthier future for all Australians - Final Report of the National Health and Hospitals Reform Commission - June 2009. Canberra: Commonwealth of Australia; 2009.
2. Ricketts TC, Goldsmith LJ. Access in health services research: The battle of the frameworks. *Nursing outlook*. 2005;53(6):274-80.
3. Dowrick C, Gask, L, Edwards, S, Aseem, S, Bower, P, Burroughs, H., Catlin, A, Chew-Graham, C., Clarke, P, Gabbay, M, Gowers, S, Hibbert, D, Kovandzic, M, Lamb, J, Lovell, K., Rogers, A., Loyd-Williams, M, Waheed. Researching the mental health needs of hard-to-reach groups: managing multiple sources of evidence. *BMC Health Services Research*. 2009 December 2009;9:226.
4. Aday LA, Andersen RM. Equity of access to medical care: A conceptual and empirical overview. *Medical Care*. 1981;XIX(12, Supplement):4-27.
5. Gulliford M, Figueroa-Munoz J, Morgan M. Introduction: meaning of 'access' in health care. In: Gulliford M, Morgan M, editors. *Access to health care*. London and New York: Routledge; 2003.
6. Penchansky R, Thomas W. The concept of access. Definition and relationship to consumer satisfaction. *Medical Care*. 1981;XIX(2):127-40.
7. Australian Primary Health Care Research Institute. What is Primary Health Care? The Australian National University; 2009, [15 April 2008] October 2009. Available from: [http://www.anu.edu.au/aphcri/General/phc\\_definition.php](http://www.anu.edu.au/aphcri/General/phc_definition.php).
8. Harris P ML, Marshall P, Phillips P, Webster C. *Diabetes management in general practice* (14th edition). Diabetes Australia; 2008.
9. Harris MF. BJ, Del Mar C., Fasher M., Foreman L., Furler J., Johnson C., Joyner B. LJ, Mazza D., Smith J., Tomlins R., Bailey L., London J., Snowdon T.,. *Guidelines for preventive activities in general practice* (7th edition). Melbourne: The Royal Australian College of General Practitioners; 2009.
10. National Vascular Disease Prevention Alliance. *Guidelines for the assessment of absolute cardiovascular disease risk*. National Heart Foundation of Australia, 2009.
11. NHMRC. *Screening to Prevent Cervical Cancer: Guidelines for the Management of Asymptomatic Women with Screen Detected Abnormalities*. Canberra: Commonwealth of Australia 2005.
12. McLeroy KR, Bibeau D, Steckler A, Glanz K. An ecological perspective on health promotion programs. *Health Education Quarterly*. 1988;15(4):351-77.
13. Rogers W, Veale B National Information Service, Department of General Practice, Flinders Medical Centre. . *Primary health care and general practice: a scoping report*2000.
14. Starfield B, Shi LY, Macinko J. Contribution of primary care to health systems and health. *Milbank Quarterly*. 2005;83(3):457-502.
15. Medicare Australia. Medicare Australia. 2009, October 2009. Available from: <https://www.medicareaustralia.gov.au>.
16. Australian Institute of Health and Welfare. *Physiotherapy Labour Force*. Canberra: AIHW, 2000. AIHW cat. no. HWL 22.
17. Wakerman J, Humphreys JS. Rural Health: why it matters. *MJA*. [Editorial]. 2002;176(10):457-58.
18. Wilkinson D, Symon B. Inequitable distribution of general practitioners in Australia: estimating need through the Robin Hood Index. *Australian and New Zealand Journal of Public Health*. 2000;24(1):71-5.
19. Australian Institute of Health and Welfare. *Australia's Health 2008*. Canberra: AIHW, 2008. Cat. no. AUS 99.

20. Comino EJ, Hermiz O, Harris MF, Harris E. Evaluating access to and use of primary health care: Diabetes-related case study using the 2002/3 NSW health survey. *Australian Journal of Primary Health*. 2006;12(3):26-33.
21. Beilbey J, Furler J. General practitioner services in Australia: 2004. In: Department of Health and Ageing, editor. *General Practice in Australia*. Canberra 2005.
22. Furler J, Harris E, Chondros P, Powell Davies PG, Harris MF, Young DY. The inverse care law revisited: impact of disadvantaged location on accessing longer GP consultation times. *MJA*. 2002;177:80-3.
23. Turrell G, Stanley L, de Looper M, Oldenburg B. Health Inequalities in Australia: Morbidity, health behaviours, risk factors and health service use. *Health Inequalities Monitoring Series No 2*. Canberra: Queensland University of Technology and the Australian Institute of Health and Welfare; 2006.
24. Shi LY, Starfield B, Politzer R, Regan J. Primary care, self-rated health, and reductions in social disparities in health. *Health Services*. 2002;37(3):529-50.
25. Royal Australian College of General Practitioners. *Guidelines for preventive activities in general practice 7th edition*. RACGP, 2009.
26. Preventative Health Taskforce. *Australia: The Healthiest Country by 2020 - National Preventative Health Strategy - Overview*. Canberra: 2009.
27. Primary Health Care Reform in Australia. *Report to Support Australia's First National Primary Health Care Strategy*. Canberra: Commonwealth of Australia; 2009.
28. New South Wales Health Department. *HealthOne NSW*. 2009, October 2009. Available from: <http://www.health.nsw.gov.au/initiatives/healthonensw/index.asp>.
29. Powell Davies G, Perkins D., McDonald J., Williams A. Integrated primary health care in Australia. *International Journal of Integrated Care*. 2009 14 October 2009 Vol. 9.
30. The Royal Melbourne Hospital. *Evidence Direct - Levels of evidence*. Melbourne Health; 2008, [ 8 February 2008] 28 Oct 2009. Available from: [http://mh1.mh.org.au/library/eds/levels\\_of\\_evidence2.htm](http://mh1.mh.org.au/library/eds/levels_of_evidence2.htm).
31. Effective Public Health Practice Project. *Quality Assessment Tool For Quantitative Studies*. 1998, Available from: [www.ephpp.ca/index.html](http://www.ephpp.ca/index.html)
32. Beckles G, Englegau, M., Venkat Narayan, K., Herman, W., Aubert, R., Williamson, D. Population-Based Assessment of the Level of Care Among Adults With Diabetes in the U.S. *Diabetes Care*. 1998;21:1 4 3 2-1438.
33. Gray J, Millett C, Saxena S, Netuveli G, Khunti K, Majeed A. Ethnicity and quality of diabetes care in a health system with universal coverage: Population-based cross-sectional survey in primary care. *Journal of General Internal Medicine*. 2007 Sep;22(9):1317-20.
34. Goel MS, Wee CC, McCarthy EP, Davis RB, Ngo-Metzger Q, Phillips RS. Racial and ethnic disparities in cancer screening: the importance of foreign birth as a barrier to care. *J Gen Intern Med*. 2003 Dec;18(12):1028-35.
35. Hewitt M, Devesa S, Breen N. Papanicolaou test use among reproductive-age women at high risk for cervical cancer: analyses of the 1995 National Survey of Family Growth. *Am J Public Health*. 2002 Apr;92(4):666-9.
36. Owusu GA, Eve SB, Cready CM, Koelln K, Trevino F, Urrutia-Rojas X, et al. Race and ethnic disparities in cervical cancer screening in a safety-net system. *Matern Child Health J*. 2005 Sep;9(3):285-95.
37. Scarinci IC, Beech BM, Kovach KW, Bailey TL. An examination of sociocultural factors associated with cervical cancer screening among low-income Latina immigrants of reproductive age. *J Immigr Health*. 2003 Jul;5(3):119-28.



38. Tideman RL, Marks C, Knight VM, Berry G, Fethers K, Mindel A. Opting off the New South Wales Pap Test Register in a sexual health setting. *Aust N Z J Public Health*. 2001 Dec;25(6):501-4.
39. Green EH, Freund KM, Posner MA, David MM. Pap smear rates among Haitian immigrant women in eastern Massachusetts. *Public Health Rep*. 2005 Mar-Apr;120(2):133-9.
40. Coughlin SS, Leadbetter S, Richards T, Sabatino SA. Contextual analysis of breast and cervical cancer screening and factors associated with health care access among United States women, 2002. *Soc Sci Med*. 2008 Jan;66(2):260-75.
41. McIsaac WJ, Fuller-Thomson E, Talbot Y. Does having regular care by a family physician improve preventive care? *Can Fam Physician*. 2001 Jan;47:70-6.
42. Hippisley-Cox J, Yates J, Pringle M, Coupland C, Hammersley V. Sex inequalities in access to care for patients with diabetes in primary care: Questionnaire survey. *British Journal of General Practice*. 2006 May;56(526):342-8.
43. Leach CR, Schoenberg NE. The vicious cycle of inadequate early detection: a complementary study on barriers to cervical cancer screening among middle-aged and older women. *Prev Chronic Dis*. 2007 Oct;4(4):A95.
44. McLean G, Guthrie B, Sutton M. Differences in the quality of primary medical care services by remoteness from urban settlements. *Quality & Safety in Health Care*. 2007;16(6):446-9.
45. Simmons D, Lillis S, Swan J, Haar J. Discordance in perceptions of barriers to diabetes care between patients and primary care and secondary care. *Diabetes Care*. 2007;30(3):490-5.
46. Simmons D, Weblemoe T, Voyle J, Prichard A, Leakehe L, Gatland B. Personal barriers to diabetes care: Lessons from a multi-ethnic community in New Zealand. *Diabetic Medicine*. 1998;15(11):958-64.
47. Wu ZH, Black SA, Markides KS. Prevalence and associated factors of cancer screening: why are so many older Mexican American women never screened? *Prev Med*. 2001 Oct;33(4):268-73.
48. Glasgow RE, Whitlock EP, Valanis BG, Vogt TM. Barriers to mammography and Pap smear screening among women who recently had neither, one or both types of screening. *Ann Behav Med*. 2000 Summer;22(3):223-8.
49. Wu S. Sickness and preventive medical behavior. *J Health Econ*. 2003 Jul;22(4):675-89.
50. Virji A. A study of patients attending without appointments in an urban general practice. *BMJ*. [Comparative Study]. 1990 Jul 7;301(6742):22-6.
51. Nutting PA, Goodwin MA, Flocke SA, Zyzanski SJ, Stange KC. Continuity of primary care: to whom does it matter and when? *Annals of Family Medicine*. [Research Support, Non-U.S. Gov't Research Support, U.S. Gov't, P.H.S.]. 2003 Sep-Oct;1(3):149-55.
52. Karter AJ, Ferrara A, Darbinian JA, Ackerson LM, Selby JV. Self-monitoring of blood glucose: language and financial barriers in a managed care population with diabetes. *Diabetes Care*. 2000 Apr;23(4):477-83.
53. Karter AJ, Stevens MR, Herman WH, Ettner S, Marrero DG, Safford MM, et al. Out-of-pocket costs and diabetes preventive services: the Translating Research Into Action for Diabetes (TRIAD) study. *Diabetes Care*. [Multicenter Study Research Support, U.S. Gov't, P.H.S.]. 2003 Aug;26(8):2294-9.
54. Wong ST, Regan S. Patient perspectives on primary health care in rural communities: effects of geography on access, continuity and efficiency. *Rural & Remote Health*. [Research Support, Non-U.S. Gov't]. 2009 Jan-Mar;9(1):1142.

55. Humphreys JS, Mathews-Cowey S, Weinand HC. Factors in accessibility of general practice in rural Australia. *Medical Journal of Australia*. 1997 Jun 2;166(11):577-80.
56. Colagiuri R TMaBA NSW Department of Health. Preventing Type 2 Diabetes in Culturally and Linguistically diverse Communities in NSW. Sydney: Health NDo, 2007.
57. Hunt JM, Gless GL, Straton JA. Pap smear screening at an urban aboriginal health service: report of a practice audit and an evaluation of recruitment strategies. *Aust N Z J Public Health*. 1998 Oct;22(6):720-5.
58. Dunt D, Day S, van Dort P Commonwealth Australia. National evaluation: after hours. *Primary medical care trials* 2002.
59. Nygard JF, Skare GB, Thoresen SO. The cervical cancer screening programme in Norway, 1992-2000: changes in Pap smear coverage and incidence of cervical cancer. *J Med Screen*. 2002;9(2):86-91.
60. Grewal S, Bottorff JL, Balneaves LG. A Pap test screening clinic in a South Asian community of Vancouver, British Columbia: challenges to maintaining utilization. *Public Health Nurs*. 2004 Sep-Oct;21(5):412-8.
61. Burack RC, Gimotty PA, George J, McBride S, Moncrease A, Simon MS, et al. How reminders given to patients and physicians affected pap smear use in a health maintenance organization: results of a randomized controlled trial. *Cancer*. 1998 Jun 15;82(12):2391-400.
62. Byles JE, Sanson-Fisher RW. Mass mailing campaigns to promote screening for cervical cancer: do they work, and do they continue to work? *Australian & New Zealand Journal of Public Health*. 1996;20(3):254-60.
63. Hogg W, Lemelin J, Graham ID, Grimshaw J, Martin C, Moore L, et al. Improving prevention in primary care: Evaluating the effectiveness of outreach facilitation. *Family Practice*. 2008 Feb;25(1):40-8.
64. Kreuter M, Strecher V. Do tailored behavior change messages enhance the effectiveness of health risk appraisal? Results from a randomized trial. *Health Education Research*. 1996;11(1):97-105.
65. Salisbury C, Goodall S, Montgomery AA, Pickin DM, Edwards S, Sampson F, et al. Does Advanced Access improve access to primary health care? Questionnaire survey of patients. *Br J Gen Pract*. 2007 Aug;57(541):615-21.
66. Salisbury C, Montgomery AA, Simons L, Sampson F, Edwards S, Baxter H, et al. Impact of Advanced Access on access, workload, and continuity: controlled before-and-after and simulated-patient study. *Br J Gen Pract*. 2007;57 (541)(August 2007):608-14.
67. Salisbury C. BJ, Goodall S., Baxter H., Montgomery A., Pope C., Gerard K., Simons L., Lattimer V., Pickin M., Edwards S., Smith H., Boudioni M. University of Bristol. An evaluation of advanced access in general practice 2007.
68. Subramanian U, Ackermann RT, Brizendine EJ, Saha C, Rosenman MB, Willis DR, et al. Effect of advanced access scheduling on processes and intermediate outcomes of diabetes care and utilization. *J Gen Intern Med*. 2009;24(3):327-33.
69. Blumenthal DS, Fort JG, Ahmed NU, Semanya KA, Schreiber GB, Perry S, et al. Impact of a two-city community cancer prevention intervention on African Americans. *J Natl Med Assoc*. 2005 Nov;97(11):1479-88.
70. Larkey L. Las mujeres saludables: reaching Latinas for breast, cervical and colorectal cancer prevention and screening. *J Community Health*. 2006 Feb;31(1):69-77.



71. McAlister AL, Fernandez-Esquer ME, Ramirez AG, Trevino F, Gallion KJ, Villarreal R, et al. Community level cancer control in a Texas barrio: Part II--Baseline and preliminary outcome findings. *J Natl Cancer Inst Monogr.* 1995(18):123-6.
72. Newell SA, Sanson-Fisher RW, Girgis A, Davey HM. Can personal health record booklets improve cancer screening behaviors? *Am J Prev Med.* 2002 Jan;22(1):15-22.
73. O'Cathain A, Knowles E, Munro J, Nicholl J. Exploring the effect of changes to service provision on the use of unscheduled care in England: population surveys. *BMC Health Serv Res.* [Research Support, Non-U.S. Gov't]. 2007;7:61.
74. Bailie RS, Si D, Robinson GW, Togni SJ, d'Abbs PHN. A multifaceted health-service intervention in remote aboriginal communities: 3-year follow-up of the impact on diabetes care. *Medical Journal of Australia.* 2004 16;181(4):195-200.
75. Edwards R, Burns JA, McElduff P, Young RJ, New JP. Variations in process and outcomes of diabetes care by socio-economic status in Salford, UK. *Diabetologia.* 2003 01;46(6):750-9.
76. Hersberger KE, Botomino A, Mancini M, Bruppacher R. Sequential screening for diabetes - Evaluation of a campaign in Swiss community pharmacies. *Pharmacy World and Science.* 2006 Jun;28(3):171-9.
77. 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. *Med J Aust.* 2006 Jul 3;185(1):40-5.
78. Anderson RM, Musch DC, Nwankwo RB, Wolf FM, Gillard ML, Oh MS, et al. Personalized follow-up increases return rate at urban eye disease screening clinics for African Americans with diabetes: Results of a randomized trial. *Ethnicity and Disease.* 2003 Dec;13(1):40-6.
79. Anderson RM, Wolf FM, Musch DC, Fitzgerald JT, Johnson MW, Nwankwo RB, et al. Conducting community-based, culturally specific, eye-disease screening clinics for urban African Americans with diabetes. *Ethnicity and Disease.* 2002;12:404-10.
80. Hancock L, Sanson-Fisher R, Perkins J, Corkrey R, Burton R, Reid S. Effect of a community action intervention on cervical cancer screening rates in rural Australian towns: the CART project. *Prev Med.* 2001 Feb;32(2):109-17.
81. Shelley JM, Irwig LM, Simpson JM, Macaskill P. Evaluation of a mass-media-led campaign to increase Pap smear screening. *Health Educ Res.* 1991 Sep;6(3):267-77.
82. Young M, Trevan E. Pap smear usage in New South Wales--impact of active promotion. *Community Health Stud.* 1990;14(3):255-62.
83. Pierce M, Lundy S, Palanisamy A, Winning S, King J. Prospective randomised controlled trial of methods of call and recall for cervical cytology screening. *BMJ.* 1989;299.
84. Pritchard DA, Straton JA, Hyndman J. Cervical screening in general practice. *Aust J Public Health.* 1995 Apr;19(2):167-72.
85. Lancaster G, Elton P. Does the offer of cervical screening with breast screening encourage older women to have a cervical smear test? *Journal of Epidemiology & Community Health.* 1992;46(5):523-7.
86. Lantz P, Stencil D, Lippert M, Beversdorf S, Jaros L, Remington P. Breast and cervical cancer screening in a low-income managed care sample: the efficacy of physician letters and phone calls. *Am J Public Health.* 1995;85(6):834-6.
87. AIHW The Australian Institute of Health and Welfare and the Australian Government Department of Health and Ageing. *Cervical screening in Australia 2006-2007.* Canberra: 2009.

88. Burack RC, Gimotty PA, Simon M, Moncrease A, Dews P. The effect of adding Pap smear information to a mammography reminder system in an HMO: results of randomized controlled trial. *Prev Med.* 2003 May;36(5):547-54.
89. Ornstein SM, Garr DR, Jenkins RG, Rust PF, Arnon A. Computer-generated physician and patient reminders. Tools to improve population adherence to selected preventive services. *Journal of Family Practice.* 1991 Jan;32(1):82-90.
90. Dignan MB, Michielutte R, Wells HB, Sharp P, Blinson K, Case LD, et al. Health education to increase screening for cervical cancer among Lumbee Indian women in North Carolina. *Health Educ Res.* 1998 Dec;13(4):545-56.
91. Panaretto KS, Dallachy D, Manassis V, Larkins S, Tabrizi S, Upcroft J, et al. Cervical smear participation and prevalence of sexually transmitted infections in women attending a community-controlled Indigenous health service in north Queensland. *Aust N Z J Public Health.* 2006 Apr;30(2):171-6.
92. Bird JA, McPhee SJ, Ha NT, Le B, Davis T, Jenkins CN. Opening pathways to cancer screening for Vietnamese-American women: lay health workers hold a key. *Prev Med.* 1998 Nov-Dec;27(6):821-9.
93. Fernandez ME, Gonzales A, Tortolero-Luna G, Williams J, Saavedra-Embesi M, Chan W, et al. Effectiveness of Cultivando la Salud: a breast and cervical cancer screening promotion program for low-income Hispanic women. *Am J Public Health.* 2009 May;99(5):936-43.
94. McAvoy BR, Raza R. Can health education increase uptake of cervical smear testing among Asian women? *BMJ.* 1991;302(6780):833-6.
95. Mock J, McPhee SJ, Nguyen T, Wong C, Doan H, Lai KQ, et al. Effective lay health worker outreach and media-based education for promoting cervical cancer screening among Vietnamese American women. *Am J Public Health.* 2007 Sep;97(9):1693-700.
96. Taylor VM, Hislop TG, Jackson JC, Tu SP, Yasui Y, Schwartz SM, et al. A randomized controlled trial of interventions to promote cervical cancer screening among Chinese women in North America. *J Natl Cancer Inst.* 2002 May 1;94(9):670-7.
97. Yancey AK, Tanjasiri SP, Klein M, Tunder J. Increased Cancer Screening Behavior in Women of Color by Culturally Sensitive Video Exposure Preventive Medicine. 1995;24(2):142-8.
98. van Uden CJ, Winkens RA, Wesseling G, Fiolet HF, van Schayck OC, Crebolder HF. The impact of a primary care physician cooperative on the caseload of an emergency department: the Maastricht integrated out-of-hours service. *Journal of General Internal Medicine.* [Research Support, Non-U.S. Gov't]. 2005 Jul;20(7):612-7.
99. De Maeseneer JM, De Prins L, Gosset C, Heyerick J. Provider continuity in family medicine: does it make a difference for total health care costs? *Annals of Family Medicine.* [Research Support, Non-U.S. Gov't]. 2003 Sep-Oct;1(3):144-8.
100. Scott A, Schurer S, Jensen PH, Sivey P. The effects of an incentive program on quality of care in diabetes management. *Health Economics.* 2009.
101. Ansari Z. A review of literature on acces to primary health care. *Australian Journal of Primary Health.* 2007;13(2):80-95.
102. Schoen C, Osborn, R., Doty, M., Bishop M., Peugh, J., Murukutla N. Toward Higher-Performance Health Systems: Adults' Health Care Experiences In Seven Countries, 2007. *Health Affairs* 2007;26(6):w717-w34
103. Nguyen HH ML, Stollak GE. . Toward a more complex understanding of acculturation and adjustment: cultural involvements and psychosocial functioning in Vietnamese youth. *Journal of Cross-Cultural Psychology.* 1999;30 (1):5-31.

104. Grol R G, J. . From best evidence to best practice: effective implementation of change in patients' care. *Lancet* 2003. 2003;362:1225-30.
105. Gill JM, McClellan SA. The impact of referral to a primary physician on cervical cancer screening. *Am J Public Health*. 2001;91(3):451-4.
106. Nutbeam D. The evolving concept of health literacy. *Social Science and Medicine*. 2008;67(12):2072-8.