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Review Article

Barriers and enablers of health promotion, prevention and early intervention in primary care: Evidence to inform the Australian national dementia strategy

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A comprehensive literature review was undertaken to: (i) identify and summarise the research evidence regarding barriers and enablers of health promotion, prevention and early intervention (PPEI) in primary care to reduce the risk of chronic disease in the older population; and (ii) use this evidence to make recommendations to inform the Australian national dementia prevention strategy around the translation of evidence-based care into practice. PPEI activities in primary care have the potential to not only reduce the prevalence and impact of a number of chronic diseases, but may also prevent or slow the onset of dementia given the apparent overlap in risk factors. While sizeable gaps exist regarding the most effective ways to promote the adoption of these activities, limited evidence suggests that, to be effective, PPEI activities should be quick and easy to administer, have a sound rationale and be readily incorporated into existing work processes.

Key words: *chronic disease, dementia, health promotion, primary health care, primary prevention.*

Introduction

The World Health Organization (WHO) warns that the burden of disease imposed by chronic diseases including cardiovascular and cerebrovascular disease is increasing dramatically and that without action to address the causes, deaths from chronic disease will increase by 17% between 2005 and 2015 [1]. Similarly, the prevalence and incidence of dementia are predicted to increase substantially over the next 25 years, further adding to the disease burden [2]. If the impact of these conditions is to be minimised, immediate action is required.

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Conflict of Interest

None to declare.

Importantly, knowledge of the risk factors for cardiovascular and cerebrovascular disease has already been well established and includes a number of potentially modifiable lifestyle and biomedical factors including tobacco smoking, risky alcohol consumption, poor nutrition, inadequate physical activity, hypertension and dyslipidemia [3,4] (see Table 1). These risk factors have also been implicated as risk factors for cognitive decline and dementia suggesting possible targets for intervention [5–9].

The proportion of the Australian population with these risk factors is substantial with an estimated 97% of Australian adults having at least one modifiable risk factor and around 50% having two [10]. Thus, there is considerable potential for preventing chronic disease and minimising the associated burden through interventions aimed at identifying and modifying risk factors. The modification of these risk factors may also have a significant impact on preventing or delaying the onset of dementia, although there is no guarantee of this and no research has directly tested this hypothesis.

As around 85% of Australians visit their general practitioner (GP) annually, GPs are ideally placed to intervene through the early identification of risk factors and health problems and brief interventions [11]. Research has shown that brief interventions by primary practitioners can be effective in encouraging lifestyle change, and can prompt small, though positive changes in behaviour, at least over the short term [12]. Even modest reductions in the degree of risk when applied at the level of the whole population are likely to have a substantial impact in terms of minimising the impact of chronic disease.

However, encouraging GPs to change established behaviour is difficult and considerable gaps exist between the best available evidence and current clinical practice. Although tools to promote the uptake of best practice including clinical practice guidelines (CPGs) are widely available, including CPGs for chronic diseases, they are not implemented with any degree of uniformity or regularity across practices [13] and relatively little research has focused on strategies to ensure CPGs are implemented in the manner intended. Thus, a key aim of this review was to identify and summarise the current research evidence regarding barriers and enablers of the inclusion of health promotion, prevention and early intervention (PPEI) in primary practice. The second aim was to use this evidence base to inform the Australian national dementia

Table 1: Potentially modifiable risk factors for cardiovascular and cerebrovascular disease

Modifiable behavioural and social risk factors	Biomedical risk factors
Tobacco smoking	Stroke
Poor diet & nutrition	Diabetes mellitus
Physical inactivity	Obesity
Risky alcohol consumption	Hypertension
Social isolation	Dyslipidemia (disordered lipids, including elevated cholesterol)
	Impaired glucose tolerance
	Depression

strategy around the translation of evidence-based care into practice via the GP interface with patients and make recommendations for the inclusion of dementia risk reduction strategies into everyday clinical practice.

Search strategy

Research that examined barriers to, and enablers of evidence uptake in relation to PPEI in chronic disease conditions in primary practice, particularly those relevant to the older population was reviewed. While a comprehensive search of both the peer-reviewed and 'grey' literature was undertaken, this paper reports the results of the peer-reviewed literature search only, as results of the 'grey' literature search have been published elsewhere [14]. The literature was searched for English language articles published between 1997 and October 2007 using the electronic databases: MEDLINE, PubMed, PsycINFO, Health Source, CINAHL, Pre-CINAHL and the Cochrane library. Additional papers were identified by manually searching the reference lists of retrieved articles. Search terms included combinations of the keywords: dementia, chronic disease, mental disorders, neurology or geriatric, primary prevention, lifestyle modification/intervention, evidence based; one-to-one intervention, guideline and implementation strategies, prevention, preventive interventions, guideline, practice, change in behaviour, behavioural change, dissemination and implementation strategies.

Inclusion/exclusion criteria

Studies were included if the focus was the prevention of chronic disease, smoking, diabetes or mental health disorders through individual level risk factor management and strategies that focused either on physician implementation of preventive action or strategies to enable the successful transfer of knowledge of effective preventive actions from the research arena to the primary care setting, or identified barriers or enablers associated with the strategy. Studies were excluded if the intervention was group, population or community-based, if the health issue was not generalisable to the older population, or if the study focused on the management of a condition rather than risk reduction. The inclusion criteria were applied by one author (M. M. K.) and reviewed by a second author (C. T.), with any doubt concerning inclusions being resolved via group consensus.

Results

We identified 116 titles that appeared to meet the inclusion criteria and retrieved the abstracts of these articles. Of this number, 68 met the inclusion criteria fully and the full text of these papers was obtained and read independently by two authors (M. M. K., C. T.). Of these, no study examined barriers to, or facilitators of, the incorporation of dementia risk reduction strategies in primary care specifically, while there were 12 systematic reviews of such strategies, generally. Eleven of these reviews related to the implementation of preventive activities for chronic disease at the primary care level and were included in this review. Supplementary primary research (four papers) was included only in instances where systematic reviews for a topic were limited. Details of the 11 included systematic reviews are provided in Table 2.

Barriers to evidence uptake in primary care

Overall, research into barriers to the inclusion of PPEI activities into everyday clinical practice is limited. We identified one systematic review of barriers faced by physicians to adherence to CPGs including prevention guidelines [16] in which a barrier was defined as 'any factor that limits or restricts complete physician adherence to a guideline'. Only factors that were amenable to change through an intervention were included and thus, clinicians' personal characteristics were not considered nor was the physician's specialty. A total of 293 potential barriers were identified and classified according to whether the barrier influenced a physician's knowledge, attitude or behaviour in relation to guidelines. Factors considered to influence knowledge included a lack of awareness and a lack of familiarity with guidelines, while a lack of agreement, self-efficacy, motivation and outcome expectancy were considered to influence physician attitudes towards guidelines use. External barriers such as guideline characteristics, and patient and environmental factors including organisational and resource constraints, were thought to influence a physician's behaviour regarding the use of guidelines (see Table 3).

The voluminous amount of research and medical information published annually together with time constraints makes it very difficult for physicians to remain well-informed regarding CPGs [16]. Although the Internet has vastly increased the availability and accessibility of medical information including computerised CPGs, information overload, limited Internet access in some areas and a lack of training in the use of information management systems constitute barriers to its use [26]. Limited consultation time that is generally focused upon the patient's current medical concerns also impacts the capacity to implement preventive actions. Attitudinal factors towards CPGs include a lack of motivation to change well-established clinical practices, especially if the advantages of change are not clearly evident, or the belief that improved outcomes will not ensue. Physicians are also less likely to implement a guideline if there is uncertainty regarding the recommendations, if conflicting guidelines exist, or if there is inadequate evidence underpinning the

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Table 2: Summary of findings of systematic reviews

First author (publication year)	Scope of review	Characteristics	Results	Conclusion
Balas et al. [15]	Meta-analysis of prompts to physicians regarding the delivery of preventive services to patients.	33 Randomised Controlled Trials (RCTs)	Overall, prompting significantly increased preventive care by 13.1%, although the effect was variable (range 5.8–18.3%).	Prompting physicians is effective in improving preventive care actions.

Cabana et al. [16]	Barriers faced by physicians to adherence to CPGs	76 studies (71 surveys) that described at least one barrier to adherence to CPGs, practice parameters, clinical policies, national recommendations or consensus statements	293 potential barriers identified
			The most commonly investigated barriers were:
			awareness ($n = 46$);
			familiarity ($n = 31$);
			agreement ($n = 33$);
			self-efficacy ($n = 19$);
			outcome expectancy ($n = 8$);
			inertia of previous practice ($n = 14$);
			external barriers ($n = 34$).
				Barriers may influence a physician's knowledge, attitude or behaviour in relation to CPGs; Barriers present in one setting may not be present in another and all potential barriers may not have been identified;
				The relative importance of each barrier is not known;
				The effectiveness of educational materials is unclear.

Farmer et al. [17]	Printed educational materials on health care professionals' practice and patient outcomes	23 studies including 12 RCTs	Printed educational materials slightly improve process outcomes (median effect size for categorical outcomes = +4.3%) but not patient outcomes (median effect size for categorical outcomes = –4.3%).	
Giuffrida et al. [18]	Target payments on primary care physicians' professional practice and patient outcomes.	Two (one RCT)	Target payments were associated with an increase in immunisation rates; however, the effect was significant in only one of the two studies.	While there is some evidence to suggest that target payments increase immunisation rates, there is insufficient evidence to draw formal conclusions regarding the efficacy of target payments to improve primary care.
Jamtvedts et al. [19]	Effects of audit and feedback on health care professionals' practice and patient outcomes.	118 RCTs including 21 trials of preventive care.	Audit and feedback can be effective in improving health care professionals' practice. When effective, results are small to moderate and is more effective when baseline adherence to recommended practice is low and when feedback is delivered more intensively.	Audit and feedback may improve professional practice but effects are variable.
Kawamoto et al. [20]	Decision support systems (manual and computerised), to identify critical system features for improving clinical practice.	70 RCTs predominantly primary care settings with 81% focused either on the management of a chronic medical condition or preventive care.	Decision support systems significantly improved clinical practice in 68% of trials.	Decision support systems improve clinical practice. An effective system must minimise the effort required by physicians to receive and act on system recommendations.
Grimshaw et al. [21]	Guideline dissemination and implementation strategies	235 studies including 139 RCTs; predominantly primary care settings three studies focussed on prevention services	Single interventions (27% of studies) included evaluations of: • Reminders (38 comparisons) • Dissemination of educational materials (18 comparisons) • Audit and feedback (12 comparisons). Multifaceted interventions were evaluated in 73% of studies. No relationship was found between the number of component interventions and the effects of multifaceted interventions. The majority of interventions observed modest to moderate improvements in care.	The evidence is not conclusive regarding the effectiveness of guideline dissemination and implementation strategies. Further, it is unclear which are likely to be most effective in different situations.
Petersen et al. [22]	Explicit financial incentives on health care quality.	17 studies, of which 13 examined process-of-care quality measures, most of which were for preventive services.	There were some positive effects of financial incentives on some measures of quality. Effects were generally small.	There is limited evidence to draw firm conclusions regarding the impact of financial incentives upon health care. There may be unintended negative effects.

Table 2: *Continued*

First author (publication year)	Scope of review	Characteristics	Results	Conclusion
O'Brien et al. [23]	Educational meetings on health care professionals' practice and patient outcomes.	32 (30 RCTs), predominantly primary care settings; 10 focussed on preventive interventions	In a majority of cases, interactive workshops resulted in moderately large improvements in clinical practice; however, the effect of didactic presentations was generally not significant.	Interactive educational workshops can result in moderately large changes in professional practice. Lectures or presentations alone are unlikely to influence professional practice.
O'Brien et al. [24]	A systematic review of the effects of EOVs on health care professionals' practice or patient outcomes.	69 RCTs: 53 primary care or community settings; 11 preventive interventions.	Small, but consistently positive effects were found for prescribing patterns while the effects on other aspects of clinical practice were variable.	EOVs appear to improve patient care.
Shaw et al. [25]	Strategies tailored to address specific identified barriers to change in professional performance.	15 RCTS: seven conducted in primary care or community settings.	The results were inconsistent and effect sizes varied both across and within studies.	The effectiveness of tailored interventions remains unclear.

CPGs, clinical practice guidelines; EOVs, educational outreach visits.

Table 3: Barriers to guideline adherence by physicians†

Barrier	Factors that influence the barrier
Knowledge barriers	
Lack of awareness of a guideline	Volume of information
Lack of familiarity with the guideline	Time constraints Ease of accessibility
Attitudinal barriers	
Lack of agreement with a guideline	Interpretation of the evidence Applicability to the patient Not cost beneficial Lack of confidence in guideline developer
Lack of outcome expectancy	Belief that guideline recommendation will not lead to desired outcome
Lack of self-efficacy	Belief that physician cannot perform guideline recommendation
Lack of motivation	Inertia of established practice habit/ routines
Behavioural factors	
Patient factors	Irreconcilability of patient preferences with guideline recommendations
Guideline factors	Feasibility Credibility Accessibility and ease of use Attractiveness
Environmental factors	Time and resource constraints including personnel, referral resources and computerised information systems Organisational constraints including management support Financial arrangements

†Source: Cabana et al. [16].

recommendations or disagreement among physicians as to the most appropriate guideline to implement [16].

Guidelines that are complex, impractical or not well presented are also less likely to be implemented, as are guidelines that are difficult to access during consultation time, or formatted in such a way that it is difficult to identify target patients [27]. Furthermore, if the implementation of the guidelines do not integrate well within the clinic system, it is likely that physicians will find it difficult to maintain changes to their usual practice [13].

Difficulties specific to the implementation of evidence-based PPEI activities within particular population groups have also been identified. Within the Australian context these include issues specific to Aboriginal and Torres Strait Islanders, people from culturally and linguistically diverse backgrounds and those who are socio-economically disadvantaged. Barriers that restrict the access of Indigenous Australians to an equitable, high-quality health service include socio-economic barriers and structural barriers such as poor access, linkages and co-ordination across the health care system [28]. Difficulties also arise regarding the adequate availability and distribution of services, partly because of the geographic isolation of some communities and partly a consequence of workforce and capacity issues in primary care, generally. Cultural barriers include health service provider attitudes and practice, communication issues, mistrust of the system, poor cultural understanding and racism. Addressing these barriers, in particular the provision of culturally appropriate and adequately resourced health care services will be required if the needs of the Indigenous population are to be met and is a key factor in improving health outcomes [29].

Enablers of evidence uptake in primary care

The majority of research in relation to enablers of PPEI activities in primary care has tended to focus on interventions aimed at the individual health care provider including educational and behavioural approaches. Other strategies have targeted the patient, the organisation and wider health care system to promote change (see Table 4). The passive distribution of educational materials, printed or electronic, is the most widely used and least expensive strategy to increase physician knowledge and awareness, change attitudes, improve skills and behaviour, and ultimately patient out-

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Table 4: The effectiveness of dissemination and implementation strategies

Strategy	Effectiveness	Comments
Educational interventions		
Educational materials	Limited effectiveness	The provision of educational materials appears to be necessary, but not sufficient for the dissemination of information
Educational meetings	Didactic lectures are not effective; interactive small group sessions that provide practice opportunities appear to be the most effective	
Educational outreach (EOV or academic detailing)	Small to moderate effectiveness	EOV has demonstrated most effectiveness for prescribing practices
Audit and feedback	Small to moderate effectiveness	Audit & feedback is most effective in instances where adherence to recommendations is low
Prompts & reminders	Moderately effective	To be effective, the prompt needs to occur at the time of decision-making
Decision support including computerised systems (CDS)	Moderately effective	To be effective, CDS must be user-friendly and minimise physician effort
Financial incentives	Limited research has demonstrated small to moderate effectiveness	Australian studies has identified inadequate funding as an important barrier to PPEI for mental health
Multifaceted interventions	May be effective in some circumstances; not more effective than single interventions	Multifaceted interventions are more effective if barriers are identified and interventions specifically tailored to address those barriers
Tailored interventions	May be effective	The evidence base regarding tailored interventions is insufficient to draw definite conclusions regarding their effectiveness

EOV, educational outreach visits; PPEI, promotion, prevention and early intervention.

comes. It remains unclear, however, whether educational materials per se, influence clinician behaviour and in general, lectures and unsolicited printed material have been found to be relatively weak forms of continuing medical education with limited impact on process outcomes [17,21]. By comparison, small group interactive educational meetings that provide practice opportunities appear to be moderately effective in changing physician behaviour and sometimes, health care outcomes, while didactic sessions alone are unlikely to change professional practice [23]. The relative importance of various characteristics of the intervention such as group size, session length or the opportunity to practice skills, in determining effectiveness, however, is not known [23].

Educational outreach visits (EOVs), also known as academic detailing, offer a more proactive educational approach whereby a trained person visits health care professionals in their own setting. EOVs vary in content and technique and are predominantly used to improve prescribing practices and reduce adverse drug events. A recent systematic review of EOVs concluded that overall, EOVs appear to have modest effects in comparison with no intervention [24]. The majority of the included studies ($n = 69$) were randomised controlled trials conducted in primary care or community settings ($n = 53$) and 11 involved preventive care. Improvements in care delivery to patients were reported with small to moderate effects for preventive practices including the provision of screening tests, although the results varied widely [24].

The practice of auditing or reviewing a physician's performance, with or without the provision of feedback to improve guideline implementation or other aspects of clinical behaviour or health outcomes, also appears to result in modest improvements in comparison with no intervention, although results are variable [19,21]. When effective, the results have generally been of a small to moderate degree and auditing appears to be more effective when baseline adherence to recommended practice is low and feedback is delivered more intensively [19].

Prompts and reminders to physicians have also been found to be moderately effective in improving the provision of preventive care and care processes [21]. In their review of physician prompts and reminders, Balas and colleagues [15] concluded that prompts and reminders are an inexpensive and effective tool for improving performance in preventive care.

Decision support systems, both computerised and manual, have also been found to significantly improve clinical practice [20] and a number of important system features have been identified including:

- The automatic provision of decision support to clinicians as part of the workflow
- Computerised systems
- The provision of decision support at the time and location of decision-making
- Systems that provide recommendations.

It seems that to be effective, a decision support system must minimise the effort required by physicians and the equipment must be user-friendly.

It remains unclear whether financial incentives (e.g. in the form of pay-for performance schemes or target payments to primary care physicians for achieving pre-set targets) are effective in terms of improving health care quality. Although some studies of physician-led financial incentives and provider group–level financial incentives have found positive

effects of financial incentives on some measures of quality, most of the effect sizes were small [18,22].

Whether using more than one strategy to overcome one or more barriers (i.e. a multifaceted intervention) is more effective than single interventions has also been evaluated. In a systematic review of multifaceted interventions no relationship was found between the number of component interventions and the intervention effects [21]. The authors concluded that, overall, multifaceted interventions did not appear to be more effective than single interventions. When effective, however, key aspects for the success of multifaceted interventions appear to be the identification of barriers relevant to the target audience and the design of an intervention that specifically addresses those barriers, although such an approach is likely to be time-consuming and complex [25].

Similarly, there is little evidence that strategies specifically designed to address identified barriers to changing practitioner behaviour are effective. Authors of a recently reported systematic review of tailored interventions found the evidence base to be insufficient to draw conclusions regarding the effectiveness of tailoring and concluded that it remains unclear whether tailored strategies are more effective than non-tailored strategies or no strategy [25].

Discussion

Prevention and early intervention activities in primary care have the potential to reduce not only the prevalence and impact of a number of chronic diseases, but may also prevent or slow the onset of dementia, given there appears to be considerable overlap in their risk factors. Hence, it is important to identify strategies to improve the uptake of PPEI activities in primary care and a wide range of enablers of, and barriers to preventive care activities in primary care have been identified in the literature. Barriers include factors that influence a physician's knowledge of, and attitudes and behaviour regarding guidelines including factors intrinsic to the guidelines themselves. Additional barriers also arise at the level of the patient or the health care system or may be specific to certain population groups. Nevertheless, considerable gaps in our knowledge of this area remain and it is not known whether all relevant barriers have been identified nor which barriers pose the greatest difficulty. There are, however, unlikely to be any easy solutions to the challenge faced by practitioners of keeping abreast of an increasingly extensive scientific literature within the context of significant time constraints.

The majority of research into facilitators has focussed on interventions aimed at the individual health care provider including educational and behavioural approaches. While many interventions have demonstrated small to modest improvements, no intervention has consistently shown large improvements. Strategies that appear to be moderately effective include small group interactive educational meetings, audit and feedback, prompts and reminders to physicians, and computerised decision support systems while there is insufficient evidence to draw firm conclusions regarding the effectiveness of other strategies including financial incentives and tailored interventions (see Table 4). The evidence base, however, is not strong and considerable gaps exist regarding the most effective ways to promote the uptake of research in clinical practice and the adoption of PPEI activities. For instance, it is not known which factors promote which changes, in which target groups and in which settings [13] and strategies that are effective in one setting may not be useful in another setting [16]. Furthermore, there are limited data regarding the resource use and cost-effectiveness of guideline implementation strategies [30].

On the basis of the limited available research, we have made a number of recommendations regarding the incorporation of PPEI activities in primary care that target risk factors implicated for cognitive decline and dementia. In the first instance, the inclusion of these activities within primary care should be one part of a multifaceted strategy to reduce the level of overall risk in the community, as a multi-level approach is likely to be more effective than a single level approach. Other interventions include population-based approaches such as educational campaigns as well as strategies directed at the broader societal level.

It is further recommended that, in order to be effective, any PPEI activity including those aimed at reducing the risk of dementia, should be quick and easy to administer, have a sound rationale and be readily incorporated into existing work processes. We also recommend that GPs and other primary care practitioners be supported in their role as providers of PPEI through the support of key organisations such as the Australian General Practice Network and ensuring the adequate availability and dissemination of resources such as quality patient educational materials. Finally, it is recommended that CPGs for dementia risk reduction in primary care include characteristics shown to be important for effectiveness. These include clarity of presentation and purpose, simple concise language, practicality of use and recommendations, ready accessibility during consultation time as well as having a credible source and a sound evidence base.

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Key Points

- The evidence base regarding barriers and enablers to the inclusion of promotion, prevention and early intervention (PPEI) activities in primary care settings is limited.
- PPEI activities in primary care have considerable potential to reduce not only the prevalence and impact of a range of chronic diseases, but may also prevent or slow the onset of dementia.
- While a range of barriers to, and enablers of preventive activities in primary care have been identified, considerable gaps exist regarding the most effective ways to promote the adoption of PPEI activities.

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