Routine use of clinical management guidelines in Australian general practice

Mark F. Harris[A,C], *Jane Lloyd*[A], *Yordanka Krastev*[A], *Mahnaz Fanaian*[A],
Gawaine Powell Davies[A], *Nick Zwar*[B] *and Siaw-Teng Liaw*[B]

[A]Centre for Primary Health Care and Equity, 3rd Floor AGSM Building, University of New South Wales,
 NSW 2052, Australia.
[B]School of Public Health and Community Medicine, University of New South Wales, NSW 2052, Australia.
[C]Corresponding author. Email: m.f.harris@unsw.edu.au

Abstract. Significant gaps remain between recommendations of evidence-based guidelines and primary health care practice in Australia. This paper aims to evaluate factors associated with the use of guidelines reported by Australian GPs. Secondary analysis was performed on a survey of primary care practitioners which was conducted by the Commonwealth Fund in 2009: 1016 general practitioners responded in Australia (response rate 52%). Two-thirds of Australian GPs reported that they routinely used evidence-based treatment guidelines for the management of four conditions: diabetes, depression, asthma or chronic obstructive pulmonary disease and hypertension – a higher proportion than in most other countries. Having non-medical staff educating patients about self-management, and a system of GP reminders to provide patients with test results or guideline-based intervention or screening tests, were associated with a higher probability of guidelines use. Older GP age was associated with lower probability of guideline usage. The negative association with age of the doctor may reflect a tendency to rely on experience rather than evidence-based guidelines. The association with greater use of reminders and self-management is consistent with the chronic illness model.

Introduction

Internationally, the adoption of an evidence-based approach to clinical practice has been accompanied by an increase in the development of evidence-based guidelines over the past two decades. The use of guidelines is seen as an effective vehicle for ensuring evidence-based care (Prior *et al*. 2008; Lugtenberg *et al*. 2009). Best practice methods for developing guidelines have been agreed upon and are routinely practiced (National Health and Medical Research Council 1999). However, the uptake of guideline recommendations into routine practice is proving difficult. For example, in Australia evidence-based guidelines for the management of common chronic conditions such as diabetes, asthma, chronic obstructive pulmonary disease (COPD), hypertension and depression are readily available to GPs (Ellis and Royal Australian and New Zealand College of Psychiatrists Clinical Practice Guidelines Team for Depression 2004; National Health and Medical Research Council 2005; Abramson *et al*. 2006; National Asthma Council Australia 2006; National Vascular Disease Prevention Alliance 2009; beyondblue 2010; Abramson *et al*. 2011). These guidelines are well regarded by the general practice community and have been widely disseminated. However, in keeping with international trends, gaps remain between the recommendations in these guidelines and current practice in Australian primary health care (Heeley *et al*. 2010).

Barriers to taking up and using guidelines may vary with the guidelines, practitioners and organisations involved. Therefore analysing the particular barriers to the implementation of different guidelines is an important first step in improving quality of care (Cabana *et al*. 1999; Lugtenberg *et al*. 2009; Baker *et al*. 2010).

Guideline characteristics – The content of guidelines can influence guideline uptake. Less complex guidelines, which require less change in practice organisation, have been found to be more likely to be adhered to by clinicians (Francke *et al*. 2008). Guideline recommendations which are less dissonant with existing practice are more likely to be followed (Rashidian *et al*. 2008). Desirable attributes of guidelines include clinical applicability, clinical flexibility and clarity (Grimshaw *et al*. 2004).

Organisational characteristics – Overall, the practice culture and its openness to change have an impact on guideline use (Harris *et al*. 2005). Barriers include a lack of supportive organisational infrastructure such as information management systems, referral options and specific funding to support assessment (Baker *et al*. 2010). Elements of organisational culture such as leadership support, inter-professional collaboration and shared beliefs about the utility of guidelines also promote adherence to guideline recommendations (Dodek *et al*. 2010). These are consistent with the chronic illness model which identifies systems needed to underpin effective patient-centred

care for those with chronic disease in primary care (Wagner *et al*. 1996).

Practitioner and patient characteristics – Common reasons cited among GPs for failing to offer interventions to patients at high risk or with already developed chronic diseases include: clinical uncertainty, patient expectations, competing demands for GPs and patients, and time constraints (Abramson *et al*. 2006; Ayres and Griffith 2007).

Less is known about the impact that personal characteristics of providers, such as their age or proximity to retirement, have on guideline uptake and use. In addition, relatively little is known about the impact of non-medical providers in chronic disease management guideline use in Australian general practice. However, their importance in chronic disease care has been acknowledged in the recent health reform documents such as the Primary Health Care Strategy (Department of Health and Ageing 2010) and financial incentives are being trialled to promote evidence-based team care in Australian general practice (National Health and Hospitals Network 2010).

This study examines data from the 2009 International Survey of General Practitioners conducted by the Commonwealth Fund (Commonwealth Fund 2009). The Survey was run in 11 countries, including Australia, Canada, France, Germany, Italy, Netherlands, New Zealand, Norway, Sweden, UK and USA. It complements other surveys conducted by the Commonwealth Fund to compare the characteristics and performance of health systems across countries in order to stimulate innovative policies and practices. The aim of this research was to compare the self-reported adoption of guidelines by Australian GPs in comparison with their international counterparts and to evaluate practice and practitioner factors associated with the use of guidelines reported by Australian GPs.

Methods

Design

This was a secondary analysis of a cross-sectional survey of primary care practitioners.

Recruitment

The Australian sample was randomly drawn from a national list stratified by state. Oversamples were drawn to ensure adequate sampling from major cities, inner regional, outer regional and remote/very remote areas; 2025 doctors were phoned and the 1950 were contacted. After those who were ineligible and refusals were eliminated, 1620 surveys were mailed. In total, 1016 GPs completed the survey in Australia (a response rate of 52%). The response rate varied quite dramatically between countries, with an extremely poor response rate of 7% in France (Table 1).

Potential respondents were recruited and screened by phone (using a computer-assisted telephone interview) and asked to return the completed survey by mail. As part of the recruitment process, interviewers called GPs and confirmed that they were a GP, spending at least 50% of their time in direct patient care. Reminder telephone calls were made to non-responders after ~2 weeks. Respondents in Australia and in New Zealand were offered an incentive of AU$50.

Table 1. Response rate by country to the 2009 Survey of General Practitioners

Country	Completed	Sample	Response rate
Australia	1016	1950	52%
Canada	1493	4260	35%
France	502	7006	7%
Germany	723	1451	50%
Italy	844	1389	61%
Netherlands	614	1231	50%
New Zealand	500	1010	50%
Norway	774	1392	56%
Sweden	1450	2956	48%
UK	1062	5333	20%
USA	1492	3809	39%

Data collection

The survey was conducted in Australia and New Zealand from February to May, 2009.

Survey instrument

The survey overall examined how primary care doctors perceived the quality of care in their respective country and what factors they viewed as impeding or supporting high-quality, efficient, patient-centred care, including:

• use of multidisciplinary teams and impact on professional boundaries and roles;
• use of electronic medical records;
• quality improvement and professional career competency activities;
• clinical information capacity; and
• experience with payment incentives to improve quality, productivity and care coordination.

The questionnaire was four pages long taking ~20 min to complete (Commonwealth Fund 2009). With the exception of a few country-specific questions the surveys for all countries were identical. The questionnaire was translated into the official language for each country. General practitioners were asked whether their practice routinely used written evidence-based treatment guidelines to treat diabetes, depression, asthma or COPD, hypertension and attention-deficit hyperactivity disorder (ADHD). We conducted a secondary analysis of the data and focussed only on GPs' responses to their reported use in the four chronic conditions: diabetes, depression, asthma or COPD and hypertension. They were also asked whether their practice included any other health care providers (e.g. nurses, nurse practitioners, physician assistants, medical assistants or pharmacists) who share responsibility for managing patient care. In particular they were asked if any of these other staff helped manage patient care by:

• calling patients to check on medications, symptoms, or help coordinate care in-between visits;
• executing standing orders for medication refills, ordering tests or delivering routine preventive services;
• educating patients about managing their own care; and
• counselling patients on exercise, nutrition and how to stay healthy.

Data analysis

An 'a priori' framework and set of hypotheses guided the analysis (Fig. 1). These assumed that guideline use would be negatively associated with GP age and experience and positively associated with enabling factors in the practice based on elements of the chronic illness model, including multidisciplinary team work, support for self-management, use of information systems to improve care and performance incentives for improved quality of care (Wagner *et al.* 1996). All data analyses were performed using SPSS (SPSS Inc., Chicago, IL, USA). Records with missing values for either the outcome or any of the predictors were omitted from the logistic regression analysis.

Ethics

Univeristy of NSW Human Research Ethics Advisory Panel determined that ethics approval was not required for this secondary analysis of non-identifiable data.

Results

Variation in the use of guidelines between Australian GPs and their international counterparts

Analysis of the 2009 International Survey of General Practitioners revealed variations in the use of clinical practice guidelines by Australian GPs compared with their international counterparts. While primary health care providers in the UK were more likely to report using written guidelines than Australian GPs, Australia performed well compared with the international average. Australian GPs were more likely to report using written evidence-based treatment guidelines (67%) for all four conditions (diabetes, depression, asthma and hypertension) compared with their international counterparts (45%) (Table 2 and Fig. 2).

Variation in the use of guidelines according to different conditions

However, there was some variability between different conditions in the proportion of Australian GPs reporting that their practice routinely used written evidence-based treatment guidelines. Australian GPs reported use of guidelines for patients with diabetes (87%, 95% CI 84.9–89.6), asthma (85%, 95% CI 82.8–87.2) and hypertension (82%, 95% CI 79.6–84.4) was higher than their reported use of depression guidelines (70%, 95% CI 67.2–72.8). This is consistent with the international picture, where the use of depression guidelines was far lower at 49%

(compared with the other chronic conditions of diabetes (83%) asthma (80%) and hypertension (79%)). These findings confirm that there are variations in the uptake of guidelines depending on the guideline itself and across countries.

Association between guideline use and practice and practitioner characteristics

Univariate analysis revealed that there were associations between Australian GPs' reported guideline use and the age of the GP, their proximity to retirement and the location of their practice. GPs who were older, practised in rural areas or who planned to retire in the next 5 years were less likely to report routine use of all four guidelines. There were no associations with the gender of the GP, practice size or hours worked per week (Table 3).

Organisation of care which may underpin guideline use

There were associations between reported guideline use and practice organisation (Table 3). Australian GPs were significantly more likely to report routine use of guidelines if:
* non-doctor health professionals routinely called patients to check progress between visits (88%), counselled patients on exercise and nutrition (76%), and educated patients about self management (74%);
* their practice's overall electronic functioning was high (69%) and they used computers to generate reminders for preventive care (73%) or provided reminders for guideline-based intervention or screening (79%); and
* performance was annually reviewed against targets (72%).

There were no associations with audit of clinical outcomes, patient surveys or financial incentives (Table 4).

Multivariate analysis

In multivariate analysis, reported guideline use was positively associated with non-GP staff phoning to check on patients between visits, non-GP staff counselling patients on lifestyle changes and GPs receiving reminders for guideline-based interventions or screening. However, after adjusting for covariates, those whose practices provided self-management education by non-GPs were less likely to report using the guidelines. The multivariate analysis also revealed that GPs who were over 50 were less likely to report routine guideline use (Table 5).
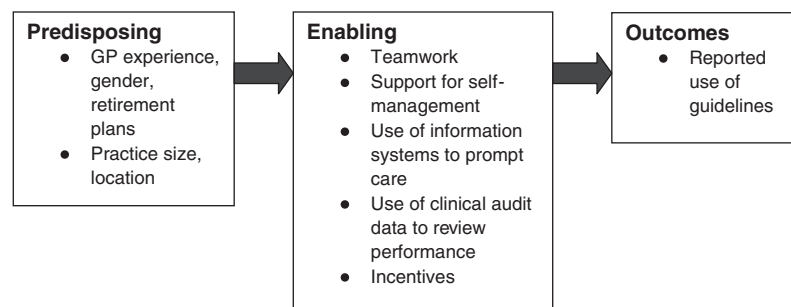

Fig. 1.   Theoretical framework for analysis.

Table 2. Effective system for use of evidence-based guidelines
Practice routinely used written evidence-based treatment guidelines for the following conditions (Q7), Australia and International

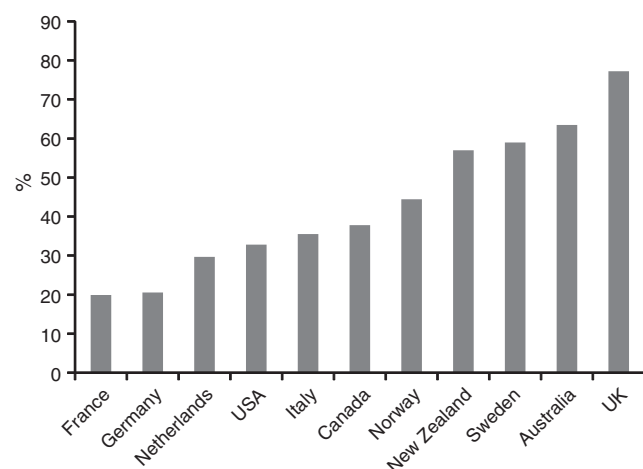| Condition	Australia			International		
	n	%	95% CI	*n*	%	95% CI
Diabetes	880	86.6	84.3–88.9	8587	83.2	82.4–84.0
Depression	713	70.2	66.8–73.6	5071	49.1	47.7–50.5
Asthma	862	84.9	82.5–87.3	8256	80.0	79.1–80.9
Hypertension	832	81.9	79.3–84.5	8122	78.7	77.8–79.6
All four conditions	680	67.0	63.5–70.5	4681	45.4	44.0–46.8

Fig. 2. Using written guidelines for all four conditions.

Table 3. Australian GP-reported routine use of all four guidelines by practice with practice and practitioner factors
FTE, full-time equivalent; NS, $P > 0.05$

	n	%	Significance
FTE GPs			
<5	390	65.4	NS
5 or more	290	69.0	
FTE non-GP			
<5	534	66.8	NS
5 or more	146	67.3	
Patients/week			
<120	192	63.0	NS
≥120	488	68.7	
% Retire in next 5 years			
N	640	69.0	$\chi^2 = 19.0, P < 0.001$
Y	40	45.5	
Practice rural area or small town			
N	562	69.3	$\chi^2 = 8.9, P < 0.01$
Y	119	58.0	
Age			
<50 years	374	73.2	$\chi^2 = 17.6, P < 0.001$
≥50 years	306	60.6	
Female	267	69.5	NS
Male	413	65.5	

Table 4. GP-reported routine use of guidelines by practice and practice systems

	n	%	Significance
Electronic functioning			
Low	67	47.9	$\chi^2 = 16.5, P < 0.001$
High	733	69.0	
Non-doctor health professionals routinely			
(a) Call patients to check between visits routinely			
No	234	52.1	$\chi^2 = 78.6, P < 0.001$
Yes	446	87.7	
(b) Educate patient about self-management			
No	216	55.2	$\chi^2 = 38.4, P < 0.001$
Yes	464	74.2	
(c) Counsel patients on exercise, nutrition			
No	221	53.9	$\chi^2 = 51.7, P < 0.001$
Yes	459	75.7	
Uses computer to			
(a) generate reminders for regular preventive or follow-up care routinely			
No	77	41.2	$\chi^2 = 67.7, P < 0.001$
Yes	603	72.8	
(b) provide reminder for guideline-based intervention or screening tests			
No	146	43.3	$\chi^2 = 125.7, P < 0.001$
Yes	535	78.7	
Practice routinely receives and reviews data on clinical outcomes			
No	518	67.4	NS
Yes	159	64.7	
Review clinical performance against targets annually			
No	301	61.9	$\chi^2 = 10.6, P = 0.005$
Yes	375	71.6	
Receive incentives for performance			
No	237	67.1	NS
Yes	444	66.9	

Table 5. Logistic regression of factors associated with routine use of all four guidelines
Values in bold are significant at $P < 0.05$

Variables	OR (95% CI)
Age 50+ years	**0.71 (0.51–0.96)**
Plan to retire in next 5 years	0.64 (0.39–1.07)
Rural area or small town	0.73 (0.51–1.03)
Electronic functioning high	0.88 (0.51–1.50)
Non-GP staff phone to check between visits	**2.67 (1.73–4.13)**
Non-GP staff provide self-management education	**0.34 (0.17–0.69)**
Non-GP staff counsel patients on lifestyle changes	**2.30 (1.23–4.30)**
Patients sent reminders for preventive/follow-up care	1.40 (0.90–2.18)
Receive reminder for guideline-based intervention or screening	**3.20 (2.28–4.50)**
Areas of clinical performance reviewed against targets annually	1.12 (0.80–1.56)

Discussion

Most Australian GPs reported using evidence-based guidelines for diabetes, depression, asthma or COPD and hypertension. This compared favourably with other countries participating in the survey. However, 33% of GPs were still not using guidelines for

all four conditions which is consistent with other research on quality of care in Australian clinical practice (Runciman *et al*. 2012). Guideline use for patients with depression was less frequent than for the other conditions. This may be related to several factors, including the guideline recommendations (which advocate the use of non-drug psychological interventions, especially in young people) and thus may be difficult to implement in practice, as well as the implementation process for the guidelines. In Australia, the National Health and Medical Research Council (NHMRC)-endorsed depression guidelines have been disseminated to GPs only for children and adolescents by bodies such as beyondblue (beyondblue 2010).

Older GPs reported using guidelines somewhat less frequently. This may be because they were already familiar with the recommendations or because they were more likely to rely on experience than the guidelines. The latter has been observed in other studies of guideline implementation (Saillour-Glenisson and Michel 2003).

In the final logistic regression model, GPs were more likely to report using all four guidelines in practices where non-GP staff followed-up patients between visits and provided lifestyle counselling. Sixty-five percent of GPs reported that non-GP staff provided at least one of the following activities:

- phoning to check progress between visits;
- counselling patients on exercise and nutrition; and
- educating patients about self-management.

These factors were highly correlated. If non-doctor health professionals conducted one of the above-mentioned tasks they were likely to do the other two tasks as well. Although GPs from practices where non-GP-provided self-management education were more likely to use the guidelines, this association was reversed when there was adjustment for other variables. It is unclear why this was so, especially given the support in many guidelines for active involvement and education of patients (National Health and Medical Research Council 2005; Abramson *et al*. 2011). The likely explanation is that this was due to the strong correlation between this variable and other variables strongly associated with reported guideline use. Further prospective research is needed to tease this out.

Practice care systems were associated with guideline use – notably involving other non-GP staff in calling patients between visits and counselling (team work) and using decision support systems (reminders for evidence-based care). Guidelines use in this study was more frequent in practices where GPs and/or patients reported receiving reminders for guideline-based intervention or screening. This is consistent with other research on guideline implementation (Prior *et al*. 2008). However, reported guideline use was not associated with receiving incentives or using data for quality assurance (reviewing outcomes and performance annually). This is despite Medicare incentives for quality delivering care for diabetes and asthma (Prior *et al*. 2008). This suggests that incentives for quality improvement in Australia may not be, as yet, sufficiently developed (relative to fee for service) to support more effective preventive care, as envisaged by the chronic illness model (Wagner *et al*. 1996).

The major limitation of this study is that it was based on self-report by GPs. Although this is likely to overestimate guideline use, the findings are broadly consistent with other research.

However, it is important not to infer causality from the associations in this cross-sectional study, as for example, it is possible that some associations may be coincidental or due to some third factor. Further research is needed to prospectively examine the influence of changes to these organisational factors on guideline use.

Conclusion

Australian GPs are relatively advanced in their adoption and use of evidence-based guidelines compared with their international counterparts. However, more support is required for GPs to use guidelines for particular conditions such as depression. This study confirms that the practitioner and practice characteristics and the care systems used by organisations play an important role in supporting the use of evidence-based guidelines. In addition to the proliferation of research on the need for interventions to facilitate the implementation of guidelines, further work is required to identify which providers and practices are going to need extra support to provide care in accordance with evidence-based guidelines.

Together with other research, this study confirms the importance of multidisciplinary team approaches and the use of information systems in supporting better care. Medicare Locals and other organisations concerned with improving quality in general practice have a key role in supporting both of these at the practice level. This support should be tailored to the individual characteristics of the practice and practitioner rather than a 'one size fits all' approach. Performance-based incentives are relatively weak within Australian general practice and require more development if they are to have a more significant impact on evidence-based practice.

Conflicts of interest

None declared.

Acknowledgements

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