



# Falling on stony ground? A qualitative study of implementation of clinical guidelines' prescribing recommendations in primary care

Arash Rashidian<sup>a,b,\*</sup>, Martin P. Eccles<sup>c</sup>, Ian Russell<sup>d</sup>

<sup>a</sup> Deputy Director for Research, Center for Academic and Health Policy (CAHP), Tehran University of Medical Sciences, Iran

<sup>b</sup> Honorary Lecturer, Department of Public Health and Policy, London School of Hygiene and Tropical Medicine, University of London, UK

<sup>c</sup> Institute of Health and Society, Newcastle University, 21 Claremont Place, Newcastle upon Tyne NE2 4AA, UK

<sup>d</sup> Institute of Medical and Social Care Research, University of Wales Bangor, Gwynedd LL57 2UW, UK

---

## Abstract

**Objectives:** We aimed to explore key themes for the implementation of guidelines' prescribing recommendations.

**Methods:** We interviewed a purposeful sample of 25 participants in British primary care in late 2000 and early 2001. Thirteen were academics in primary care and 12 were non-academic GPs. We asked about implementation of guidelines for five conditions (asthma, coronary heart disease prevention, depression, epilepsy, menorrhagia) ensuring variation in complexity, role of prescribing in patient management, GP role in prescribing and GP awareness of guidelines. We used the Theory of Planned Behaviour to design the study and the framework method for the analysis.

**Results:** Seven themes explain implementation of prescribing recommendations in primary care: credibility of content, credibility of source, presentation, influential people, organisational factors, disease characteristics, and dissemination strategy. Change in recommendations may hinder implementation. This is important since the development of evidence-based guidelines requires change in recommendations. Practitioners do not have a universal view or a common understanding of valid 'evidence'. Credibility is improved if national bodies develop primary care guidelines with less input from secondary care and industry, and with simple and systematic presentation. Dissemination should target GPs' perceived needs, improve ownership and get things right in the first implementation attempt. Enforcement strategies should not be used routinely.

**Conclusions:** GPs were critical of guidelines' development, relevance and implementation. Guidelines should be clear about changes they propose. Future studies should quantify the relationship between evidence base of recommendations and implementation, and between change in recommendations and implementation. Small but important costs and side effects of implementing guidelines should be measured in evaluative studies.

© 2007 Elsevier Ireland Ltd. All rights reserved.

**Keywords:** Clinical guideline implementation; General practice; Prescribing; Qualitative study; Theory of planned behaviour; Quality improvement; Primary care

---

\* Corresponding author at: Department of Health Economics and Management, School of Public Health, Tehran University of Medical Sciences, Poursina Avenue, Tehran 1417613191, Iran. Tel.: +98 21 88951391; fax: +98 21 88989129.

E-mail address: [arashidian@tums.ac.ir](mailto:arashidian@tums.ac.ir) (A. Rashidian).

## 1. Introduction

### 1.1. Changing prescribing behaviour

It took 50 years for the British navy and 120 years for the merchant fleet to use lemon juice for the prevention of scurvy [1]. Nowadays many innovations take much less to be implemented. Health professionals are keen to implement ‘new’ advances, but this often means using more expensive interventions with limited advantage or questionable effectiveness. The dilemma of evidence-based health care starts here: What are the best ways of helping health professionals keep abreast of new innovations, while doing it in a ‘conscientious, explicit, and judicious’ manner [2] i.e. avoiding innovations with questionable effectiveness and efficiency?

The WHO refers to the ideal state of prescribing and use of medicines as ‘rational use of drugs’:

*The rational use of drugs requires that patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time, and at the lowest cost to them and their community* (WHO conference of experts, Nairobi 1985, cited in [3]).

Inappropriate use of drugs can result from a variety of situations. Prescribed drugs may not be appropriate for the patients’ needs; they may be expensive; or may not be acceptable for personal, cultural or social reasons. Clinicians may prescribe medicines of no value because of perceived patient pressure or placebo effects [4]. They may also prescribe where medication does not provide any benefit over ‘wait and see’ approach. Irrational prescribing may also be the result of under prescribing of required medicines.

In the last two decades improving quality of prescribing has attracted a lot of interests, not least because an important fraction of health care resources were (and increasingly are) spent on it [5]. Prescribing costs have been growing 6–8% per year in the global context [3]. Most prescribing costs happen in primary care [6]. Soumerai et al. estimated that about 75% of visits to office-based doctors end up in prescribing [7]. In 1995, GP prescribing amounted to 11% of total NHS spending [8]. Focusing on quality and cost of prescribing in primary care is important and vital. In particular if one considers that inappropriate prescribing often results in

significant morbidities and costs for patients, societies and health systems.

### 1.2. Guidelines and behaviour change

Clinical guidelines are sought as tools for reducing variation in health care and cost [9,10] and improving quality of patient care [11] including prescribing behaviour. Increasingly the research findings are summarised in guidelines and a new industry has appeared concerned with guideline development and implementation [12]. The majority of guidelines have not been through rigorous production processes, making it more difficult for clinicians to follow their recommendations [13,14]. It is even claimed that the quality of guidelines is declining [15]. Even guidelines developed by the WHO may not have been rigorously produced [16]. Also where there are no effective intervention plans, even good quality guidelines are most likely to be ‘words without action’ [17]. In reality, many guidelines have no clear implementation plans [14]. Evaluation of guideline implementation programmes involves careful planning and requires dedicated resources. Multi-stage studies using qualitative and quantitative methods have been recommended [18].

Despite the phenomenal works conducted on understanding effective ways of changing provider behaviour [19] and use of clinical guidelines in behaviour change [20,21], our understanding of how to improve provider behaviour “*is still in its infancy*” [22]. For some generic questions, there may never be a concrete answer, e.g. what is the best method of implementing guidelines? Although it is argued for long that single strategies are less likely to change clinical practice [23], this is not much comfort. Multi-faceted interventions are costly and more difficult to implement. Why are some guidelines implemented more successfully than others? Is it because of the difference in quality of guidelines, settings, clinical conditions or dissemination strategies? Previous studies suggested that enthusiastic clinicians or ‘innovators’ achieved more with poor guidelines than what others achieved with better quality guidelines [24]. Also some dissemination strategies (e.g. educational outreach visits) work well in influencing prescribing in some settings [25] and not in other settings [26].

Many clinical guidelines fail to improve practice and a lot of inappropriate variation exists in cost and

quality of care. Despite the availability of evidence, changes in prescribing are delayed and require planning and investments. For example, clear-cut messages for antibiotic prescribing are still to be implemented [27] and although there are numerous studies on how to improve prescribing, all reasons behind ‘nonscientific prescribing’ are not known [28].

### 1.3. Understanding GP behaviour using qualitative research

Historically, little work has been done on how to influence general practitioners’ (GPs’) practice [29]. Most of behaviour change interventions are based on the naïve assumption that clinicians will change if they are given information (‘production-dissemination’ [30] or ‘information deficit’ [31,32] models). According to these models, interventionists endeavour to improve quality of care by providing more information on safety, efficacy and cost-effectiveness of intended behaviours. The inevitable outcome of this approach has featured in abundance of information delivered to medical practitioners [33].

While there is evidence that neither demographic and social characteristics [34] nor organisational variables [35] predict physician prescribing, few studies have tested the theoretical models that acknowledge psychological processes which precede behaviour [32,36]. Focus on GPs’ attitudes and personal beliefs may provide a better insight of prescribing. The importance of identifying underlying personal reasons for nonscientific prescribing is documented in the literature. A multi-centre trial studied physicians’ expressed reasons for nonscientific prescribing’ and concluded that ‘*greater attention must be paid to physicians’ attitudes and motivations concerning suboptimal prescribing if programmes are to succeed in replacing these practices with more rational clinical decision making*’ [31] (p. 577).

Underlying beliefs are better captured through qualitative studies [37]. Interviews could be particularly useful in identification of barriers to guideline implementation and in understanding how those barriers affect individual physicians [38]. A study found that GPs spoke freely of their prescribing and were ready to offer embarrassing observations during the interviews. They demonstrated that interviews were useful for studying prescribing in primary care. The study

identified three models of change in prescribing: accumulation model, challenge model and continuity model [39]. Another British study of GPs’ and consultants’ reasons for change in clinical practice found that education was important in changing prescribing [40]. A qualitative study of 24 Scottish GPs assessed statins prescribing using semi-structured interviews. It concluded that GPs rarely critically appraised trial results, but evaluated the results in terms of their social and economic implications [41]. It suggested that compiled sources of evidence (e.g. evidence-based guidelines) could play a useful role. It implied that GPs were likely to rely on the trustworthiness of the source of the guidelines, and that GPs considered the implications of implementing clinical guidelines. Another qualitative study of prescribing, performed on 17 GPs, tried to identify variables that explained prescribing variance [42] and concluded that consultant’s prescribing was among those variables. Salisbury and colleagues used qualitative and quantitative methods to audit three changes in prescribing (use of warfarin or aspirin for atrial fibrillation, angiotensin converting enzyme inhibitors for heart failure and substitution of trimethoprim for co-trimoxazole) and concluded there were no effects from clinical protocols [43]. They reported positive views of participants towards clinical protocols, but found that many did not use protocols [43].

There have been further qualitative studies to elicit broad issues such as ‘GPs views on use of guidelines’ or ‘their attitudes towards evidence-based medicine in general’ [44,45]. These issues are too broad and the researchers would be more likely to get general statements in response. In contrast others studied specific diseases [41,46,47] and hence lacked the spectrum to compare different clinical conditions, guidelines and implementation strategies.

### 1.4. Objectives of this study

The qualitative study reported in here was conducted as part of a multi-part project that also included a systematic review of effective interventions to improve prescribing in primary care, and two national surveys of GPs’ prescribing intentions and beliefs and their actual prescribing [48–50]. For the qualitative study we focused on a small set of clinical conditions. This selective approach could provide the opportunity of comparing different clinical conditions, clinical guide-

lines and dissemination strategies [51]. We aimed to explore key themes for the implementation of prescribing recommendations, GP attitudes and beliefs about guidelines, and barriers to and facilitators of implementation.

## 2. Methods

### 2.1. Participants

We interviewed a purposeful sample of 25 participants (74% response rate). We identified the participants in consultation with a GP trainer, two researchers and the interviewees. The participants were invited by letters or emails, explaining the objectives of the study and introducing the investigators, followed by telephone calls. Twelve participants were GPs (three female) all but one from two Primary Care Organisations in north east England ('practitioners', P). We invited GPs who had experience of guideline implementation or development, whether or not they agreed with the guidelines. Another 13 were academics of primary care (two female) from different parts of Britain. Among 'academics' (A), nine were also practising GPs and one was formerly a GP; and seven held chairs. We invited academics of primary care to ensure a more widespread account of the issue. The criteria for choosing this group were extended experience in development, implementation or evaluation of clinical guidelines.

### 2.2. Clinical conditions

We deliberately focused on five clinical conditions (Table 1). The conditions provided a suitable

combination of clinical guidelines: high awareness with complicated prescribing (asthma), high awareness with less complicated prescribing decisions (statins for CHD prevention), medium awareness with focus on diagnosis rather than treatment (depression) and conditions for which guidelines were not well publicised in primary care and GPs had varying degrees of responsibilities (menorrhagia and epilepsy). All those clinical conditions resembled each other in the fact that GPs prescribed medicines for their treatment at some stage of the disease.

### 2.3. Interviews

Eleven face-to-face and 14 telephone interviews were conducted in late 2000 and early 2001, tape-recorded and transcribed, each interview lasting 25–45 min. One author (A.R.) conducted all the interviews [52]. The interview questions were devised so that they captured opinions and beliefs of the GPs. The first three interviews were in-depth. The purpose of these exploratory interviews was to provide a better understanding of the context, to identify clinical conditions to focus on during the semi-structured interviews, and to prepare a suitable set of questions for the semi-structured interviews (Appendix A).

### 2.4. Analysis

We used the 'framework' method for the analysis, consisting of five steps of 'familiarisation', 'identifying a thematic framework', 'indexing', 'charting' and 'mapping and interpretation' [53]. This method has been specifically developed for the analysis of qualitative data for policy-oriented studies.

Table 1  
Clinical conditions and the reasons for their explicit inclusion in the study

Clinical condition	Priori reasoning for inclusion in the study
Asthma	Complex treatment with emphasis on prescribing; existence of nationally known clinical guidelines
Coronary heart disease (CHD) prevention	Prevention with emphasis on prescribing <sup>a</sup> ; existence of nationally known clinical guidelines
Depression	Complex treatment with limited role for prescribing
Epilepsy	Complex treatment with emphasis on prescribing; Limited role for GPs
Menorrhagia	Prescribing normally as the first line of treatment

<sup>a</sup> We focused on statins prescribing in the study.

A contact and content summary form was developed for each interview during ‘familiarisation’ [54]. We developed an initial thematic framework using the interviews, prior thoughts and literature. We used the Theory of Planned Behaviour (TPB) deductively in the process [55,56]. The TPB is a psychological elaboration of the behaviours of rational actors. Limited applications had suggested that the TPB was useful in understanding provider behaviour [57]. A preliminary framework was developed and then discussed in a series of iterative meetings between the researchers. Then the thematic framework was checked against the interviews through repeating the familiarisation process. One author initially (A.R.) indexed the transcribed interviews with codes linked to the thematic framework [53,56]. Sections of data were indexed with one or more codes (cross indexing) wherever appropriate [56]. Then the coded text was discussed with another author (I.R.) and coding was adjusted where appropri-

ate. This process was repeated several times for all the interviews. We produced one table for each ‘theme’ and assigned rows to interviewees and columns to sub-themes. We transferred data onto the tables to produce the analysis ‘chart’. We compared the views of each interviewee across different themes (looking across the rows) and the views of different interviewees about each theme (looking across the columns). The relationships between the sub-themes and the themes were also investigated. We consulted the transcribed interviews and added extracts to the chart wherever necessary. The ‘interpretation’ of the themes followed an iterative process similar to what explained for the indexing.

The thematic framework was updated in the process of the analysis [53]. The initial framework contained nine themes which were reduced to seven as the analysis developed. The process of refining the themes followed a non-strict adoption of the grounded theory [58]. We prioritised data over theory and literature

Table 2

Thematic framework: Factors explaining variation in implementation of guidelines’ prescribing recommendations in primary care (strong facilitators and barriers are highlighted in bold)

Facilitator	Facilitator and barrier	Barrier
<i>Theme I: credibility of content of clinical guideline</i>		
<b>Evidence-based</b>		Change in recommendations
<b>Flexible</b>		
<i>Theme II: credibility of source of clinical guideline</i>		
<b>National professional bodies</b>		<b>Secondary care</b> <b>Pharmaceutical industry</b>
<b>National governmental bodies</b>		
Published in respected sources		
<i>Theme III: presentation of clinical guidelines</i>		
<b>Simple</b>		
<b>Systematic presentation</b>		
<i>Theme IV: influential people in implementation</i>		
Practice nurses and primary care team	<i>Patients</i>	
Primary care organisations, pharmacists, prescribing advisers	<i>Consultants</i> <i>GP colleagues</i> <i>Drug companies and reps</i>	
<i>Theme V: organisational factors</i>		
Practice characteristics (mini-clinics)		<b>Time, workload, information overload</b> <b>Availability of required resources</b> <b>Cost and expenditure</b>
Information technology		
<i>Theme VI: disease characteristics</i>		
Rare or ‘simple’ disease		<b>Treatment is secondary care based</b> <b>Difficulty of diagnosis</b>
<i>Theme VII: dissemination strategy</i>		
<b>Ownership—local vs. national guideline</b>		Medico-legal issues
<b>Planning implementation</b>		
<b>Perceived need, first contact, knowledge</b>		
Enforced implementation Supporting implementation		

in the analysis (inductive approach) [56]. We obtained verbal consents from the participants and offered no honorarium.

### 3. Results

Seven themes and thirty sub-themes were identified (Table 2).

#### 3.1. Theme I: credibility of content

The interviewees insisted that guideline recommendations should be ‘evidence’-based as it influenced implementation: “*where the evidence isn’t excellent, it’s obviously more difficult to use a guideline*”(A11). Not all ‘evidence’ was seen as relevant, unless it originated from trials in primary care, including patients with co-morbidities [31,35,47]. In this context if GPs perceived ‘evidence’ as irrelevant or unconvincing, they concluded there was no evidence. GPs perceived many guidelines as unhelpful or useless, often because of weak evidence base.

Apparently some GPs adopted passive approach to the acquisition of guidelines. Hence, guideline developers or promoters were considered responsible for distributing guidelines and convincing GPs. Regardless of emphasis on evidence base, there were important exceptions as some guidelines [59] had been adopted despite the fact that some of their recommendations were not evidence based. “*The fact that [it] wasn’t evidence-based didn’t seem to make a lot of difference*”(A13). To practitioners, evidence was only one element among others [30].

Change in recommendations evoked scepticism and negatively influenced implementation. “*... and you then begin to wonder, how long before it changes again and for what reason?*”(P10). Noticeable changes in recommendations affected patient–doctor relationships as patients became sceptical of the quality of care they had received. GPs welcomed guidelines if there were changes in practice and they felt “*they need[ed] update on them*”(A5). Guidelines that reflected current state of practice or suggested minor changes found their ways into practices easier.

Some interviewees argued guidelines were not flexible enough to apply to individual patients [60]. While guidelines expected GPs to think in certain ways,

patient expectations were different. “*The [patient’s] top priority might be... to have a pain killer*”(A4). Guidelines were most useful where the clinical problem had not much variation. In practice many conditions were complicated.

#### 3.2. Theme II: credibility of source

The interviewees expected to receive advice from ‘reputable bodies’: widely known, authoritative and often national [41]. National bodies such as the National Institute for Clinical Excellence (NICE) and Scottish Intercollegiate Guidelines Network (SIGN) were perceived as credible. NICE was perceived as an authoritative body, which could ease the problem of multiple sources of information. “*That’s why actually the NICE guidelines are in a better way of doing it*”(P8). Some interviewees were unsure about the way the NICE guidance was produced or the topics were chosen. Publishing guidelines in respected sources enhanced credibility. The most credible source was the British National Formulary (BNF) [42]. GPs found it helpful that asthma and CHD prevention guidelines were included in the BNF. There was limited support for publications in other sources [39].

High representation of secondary care consultants in guideline development undermined credibility. Consultants saw ‘filtered’ patients and were unaware of patient–doctor communication in general practice. Despite this general view, some interviewees acknowledged that at least two guidelines [59,61] that were ‘successfully’ adopted in general practices had originated from secondary care. Sometimes consultants produced guidelines – of low quality [62] – to transfer workload to general practice. Consultants tried to improve GP behaviour, while “*they are even worse in following guidelines*”(P9). ‘Professional boundaries’ exaggerated these feelings. Pharmaceutical industry was not perceived as credible. The industry’s contribution to guideline development undermined credibility [63].

#### 3.3. Theme III: presentation of clinical guidelines

Strong and simple recommendations were more likely to be followed: “*a complicated piece of paper it’s no use to me. I’m a simple man and I need to have simple ideas*”(P5). GPs work in a complex environment

and guidance has to be clear. Complex guidelines may hinder understanding and be less persuasive [64] and hence difficult to implement [65]. Emphasis on simplicity may also reflect short consultation time. Simplicity, however, was not a simple concept. Guidelines seen as simple by some interviewees were considered difficult by others.

The interviewees supported systematic presentations in the CHD prevention and the BTS asthma guidelines as it helped ‘logical thinking’ [59,61]. The BTS guideline’s innovative stepped approach simplified classification and treatment of asthma, “because of the hierarchical nature of... mild, moderate, severe”(P9). Thus instead of a complicated disease with several treatment options (difficult), there were a few sub-diagnoses (‘steps’) with few treatment options (simple).

### 3.4. Theme IV: influential people in implementation

Patients influenced choice of drug preparation (e.g. generic versus non-generic). Guidelines helped doctors back their decisions and convince reluctant patients. This might be why guidelines recommending current practise could be beneficial. Guidelines informed patients of treatment options and increased expectations: “should I actually be taking something?”(A6). Some GPs were “very happy for every patient with a chronic disease to have a copy of an up-to-date guideline”(A3). Previous studies concluded that patient pressure was the main cause of ‘non-scientific prescribing’ [31,42]. Our findings did not support this. In fact, perceived patient pressure may be more important than actual pressure as suggested by the TPB [55]. Moreover, Little et al. found perceived pressure was the predictor of prescribing while actual patient expectation was not [4].

GP colleagues within practice were considered influential. The influence was variable and not always in line with guidelines. GPs used meetings to reach agreements with their colleagues, as they ‘shared’ patient care. The influence of GPs outside the practice was limited, unless from motivated colleagues.

Local consultants were generally perceived as influential [42]. The influence was exerted through letters and meetings and was dependent on local relationships. Consultants seldom recommended guidelines in their

letters, thus they could potentially hinder implementation: “you may end up prescribing the way they do instead of using the guidelines”(A11). Some interviewees thought that consultants’ influence was reducing. The diffusion of innovation theory [66] suggests consultants influence is limited: GPs seek information from ‘peers’, which may not include consultants.

The interviewees valued practice nurses’ roles in guideline implementation while running mini-clinics for chronic diseases [47,57]. Nurses informed GPs of new guidelines. Some guidelines specifically targeted practice nurses. One interviewee mentioned that disagreements between GPs and nurses negatively affected implementation. Practice managers and district nurses also influenced implementation.

Interviewees thought that Primary Care Organisations and prescribing advisers had limited influence on prescribing. Local formularies were not thought as helpful. Some interviewees felt too much information was delivered through the advisers and pharmacists. GPs disagreed with the advisers on what to prescribe. GPs might not prescribe cheaper alternatives because of minor side effects or number of times the drug should be taken. “I think it’s easy for a pharmacist to say prescribe four tablets a day”(A4). The social influence theory implies that advisers can influence GPs if they are known and respected by the GPs [67].

Interviewees acknowledged the role of drug company representatives in the implementation of BTS asthma guidelines and diffusion of CHD risk estimation charts. The influence of reps was perceived as limited [66]. Some GPs did not see representatives. Others thought that representatives indirectly influenced GPs by targeting consultants and nurses.

### 3.5. Theme V: organisational factors

Practice characteristics such as training status and mini-clinics (e.g. for asthma and CHD prevention) improved guideline implementation [68]. Lack of (access to) hardware or human resources hindered implementation. “Heart failure is a wonderful guideline, but how do you actually put it into practice if you can’t get open access to echocardiography”(A6). There was general support for the use of information technology in implementation. However, fruitful experiences were limited: risk calculation for primary CHD prevention, searching for guidelines and using computerised

patient records for proactive follow ups. Computerised decision systems were perceived useful for diseases with straightforward diagnoses and limited treatment options, but not for chronic diseases [69]. GPs sometimes found computerised systems ‘intrusive’.

There was a genuine belief that general practice was under increasing pressure. “If there are any guidelines to come, that’s not a good time. . .”(P3). “I think modern general practice requires you to be proactive, to be planning for staff, get involved in staff training, following guidelines. . . that influences my prescribing, because I don’t manage to prescribe very much because I’m always at meetings (laughing)”(P5). Reading, understanding, discussing and utilising guidelines and auditing implementation is time consuming. Many guidelines produced extra workload by advocating step-by-step treatment; i.e. start by the least expensive drug. This resulted in more patient appointments. Nonetheless, if there was perceived need for a guideline, then time would not be a major barrier. GPs worked ‘smarter’ [70]: shifted or changed priorities. GPs were frustrated of receiving many ‘unhelpful’ guidelines [33], from drug companies and others, that lacked relevance and quality [13,14,62]. Some GPs sent guidelines “straight in the bin”. Others tried to keep them, but failed: “you can’t have a guideline library”(P7). GPs tried to be selective, but there were no explicit criteria. Excessive production of guidelines may act as ‘noise’ factor in implementation, as it distracts GPs from evidence-based guidelines.

GPs were under scrutiny to prescribe within budget. This was difficult if guidelines requested initiation of new drugs without removing the need for others (e.g. statins). Primary Care Organisations were not perceived supportive if implementation increased expenditure. Guidelines were welcomed if they ‘justified’ additional prescribing cost. Some interviewees did not welcome cost-containing messages, especially if they could not see the justifications [71]. Cost-containment motives should be explicitly defined in the guidelines [45].

### 3.6. Theme VI: disease characteristics

Primary care guidelines were less likely to affect the quality of care for disease for which GPs had limited roles; e.g. “GPs initiate epilepsy treatment very rarely”(P11) [72]. Where the diagnosis was

problematic (e.g. depression), guidelines with emphasis on prescribing were not helpful. Concerns were expressed about the NICE’s guidance for treatment of influenza because of the difficulty of diagnosis. For some ‘simple conditions’ a short piece of evidence or recommendation might work better than a guideline; e.g. management of uncomplicated menorrhagia. Publications like the ‘Clinical Evidence’ could provide a proper answer to this need. IT was particularly useful when doctors sought guidelines for treatment of rare diseases; similarly patients could present guidelines in case of “*more obscure conditions*”(P12).

### 3.7. Theme VII: implementation strategies

“There is a [wrong] common view that the failure of guidelines is simply due to a resistance or the stupidity on the part of general practitioners”(A4). “You can’t sit down with a copy of the guidelines with a covering note saying please do this”(A13). Thinking “that the guidelines on their own would make a difference is probably naïve”(A12) as “guidelines are only part of this”(P2). Even when the change in prescribing was as a guideline recommended, it was not clear whether the change was due to the guideline. Generally non-academic GPs were more likely to think guidelines influenced prescribing. Careful planning of marketing, dissemination and implementation of guidelines could succeed even with guidelines that were not evidence-based (e.g. asthma).

Guidelines may help ‘change’ to stay longer in practice. They provide a milestone for reference and implementation. Respected guidelines transfer new evidence more easily into practice through update versions. Conversely, misunderstanding might cause actions contrary to recommendations. One interviewee reported that some GPs applied CHD primary prevention charts on patients who required secondary prevention [41]. Studies evaluating effectiveness of guideline implementation should consider these adverse outcomes.

“We as professionals want to know we are doing our best for our patients”(P2). Guidelines were more effective when GPs were aware of shortcoming in the care they provided. Perceived need helped GPs to be selective. It may explain why sometimes just mailing out guidelines is effective [21]. Targeting conditions with sub-optimal care could result in dramatic achievements. One interviewee reported 90% improvement in

prescribing when they introduced a guideline for sublingual analgesics. He believed this success was due to good communication and GPs readiness for adopting the guideline. Guidelines were sometimes used as sources of up-to-date knowledge. GPs also read guidelines to ‘confirm’ their practices. Some interviewees referred to reading guidelines as ‘using’ them. If a guideline was perceived non-helpful, more effort was required to convince GPs to read it again. Similar to social psychology, we called this phenomenon the first contact effect, implying the importance of the first encounter with guidelines [64].

GPs should be involved in the development or adaptation of guidelines for primary care. “*The biggest barrier, I think is not being locally owned*”(A8). Local adaptation could increase credibility, improve ownership, and improve understanding of recommendations and underlying justifications [67]. Adaptation might facilitate setting local targets and ‘translation of evidence’ [30].

National priorities in the NHS often emerge through the National Service Frameworks and NICE guidance, and are used to introduce performance indicators. Some interviewees thought performance indicators were not justified; others found them ‘insulting’. Although financial and managerial pressures achieve results, especially in short term, they cause negative reactions [45]. Enforcing should be limited to where other interventions are ineffective. According to the field theory enforcing without addressing barriers to change leads to increased tension with little or no gain [71,73].

Guidelines may be implemented to avoid potential medico-legal consequences of non-adherence. The interviewees did not perceive medico-legal liabilities (towards patients or authorities) a major source of discontent about guidelines. In the past guidelines were not used in British legal cases due to the Bolam test, suggesting that non-adherence was negligent only if no skilled professional failed to comply with the guideline [74]. Bolam test has been challenged in recent court rulings [75].

Persistent, non-conflicting and repeated exposure to recommendations was perceived an important facilitator. Interviewees thought that there were not enough supports for guideline implementation and financial incentives were inadequate. The effects of financial incentives on prescribing are uncertain [76]. Interviewees also thought that audit (and feedback) facilitated

implementation by informing GPs of their performance. Also distribution of audit results among local GPs encouraged implementation as GPs did not want “*to fail in front of [their] peers*”(P6).

#### 4. Further discussion

Four findings in this study are important. First, the study provides an illustrative framework for understanding why GPs may not implement clinical guidelines’ prescribing recommendations. Also, the views of the interviewees on the effectiveness of different interventions are summarised in Table 3. Second, the study suggests that change in recommendations may hinder implementation. This is extremely important since the development of evidence-based guidelines requires change in recommendations (because of change in evidence or our understanding of evidence). Third, the study supports the findings of some previous work that practitioners do not have a universal view or a common understanding of valid ‘evidence’. Fourth, the study suggests that despite the attention of academic guideline developers on the evidence base of guidelines, GPs use ‘old-fashioned’ approaches (e.g. credibility of source or view of influential others) to ascertain validity of guidelines.

Table 3  
Perceived effectiveness of interventions to implement guidelines’ prescribing recommendations in primary care<sup>a</sup>

Intervention	Perceived effectiveness (GP opinions)
Participatory guideline development	Effective
Audit and feedback	Effective
Patient mediated	Effective
Peer review	Effective
Local opinion leaders	Effective
Practice support	Effective
Rules, obligations	Effective/context specific
Inter-professional shared care	Effective/context specific
Reminder systems	Limited effect
Educational outreach	Limited effect
Financial incentives	Limited effect
Mailed printed material	Not effective

<sup>a</sup> Note that the views of the interviewees are not necessarily in line with evidence obtained through interventional studies.

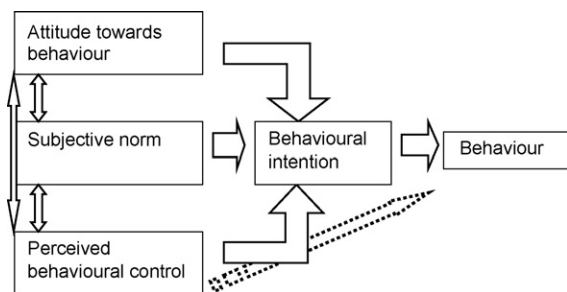


Fig. 1. Simplified presentation of the theory of planned behaviour (TPB).

#### 4.1. Thematic framework and the TPB

The thematic framework (Table 2) evolved during the analysis [53]. The themes were not exclusive. For example, we split items relevant to secondary care professionals between ‘credibility of source’ and ‘influential people’. Also we discussed ‘ownership’ among ‘dissemination strategies’. Although local ownership improved ‘credibility’, it was usually part of the dissemination process. Conversely, we discussed ‘publishing in respected sources’ under ‘credibility of source’.

The TPB asserts that individuals’ behavioural intentions are based on feelings towards the behaviour (attitude); perceived views of important others (subjective norm); and perceived ability to perform the behaviour (perceived control; Fig. 1) [55]. Theme ‘influential people’ correlated with TPB’s ‘subjective norm’. ‘Credibility of content’ and ‘source’ affected GP ‘attitudes’. ‘Presentation’, ‘organisational factors’ and ‘implementation strategies’ were related to ‘perceived control’. ‘Organisational factors’ and ‘disease characteristics’ directly affected implementation, reflecting the link between ‘perceived control’ and ‘behaviour’ in the TPB. The correlations between the themes and TPB constructs were not exclusive. For example, ‘credibility of source’ could also affect ‘subjective norms’. ‘Disease characteristics’ was also a screening theme. It could identify some circumstances where guidelines for GPs were not effective [51].

#### 4.2. Attributes of good guidelines

Several studies discussed attributes of good guidelines [13,77,78]. The Institute of Medicine identified

eight attributes: validity, reliability and reproducibility, clinical applicability, clinical flexibility, clarity, multidisciplinary process, scheduled review, and documentation [77]. Our study implied that GPs did not give equal weights to the attributes and this varied among GPs. We also identified one further attribute that is important for implementation. Guidelines should be clear about ‘changes’ they propose. This new attribute helps clinicians to understand better why a particular guideline is required. It also helps planning resources, time required for implementation, and actions in response to the guideline.

In reality, many attributes of good guidelines are more attractive to methodologists than to clinicians. GPs found it difficult to assess validity and reliability of guidelines. Instead, as our findings suggested, they used credibility of source or views of influential people to form their opinions. The AGREE instrument can help clinicians in appraising guidelines [78]. It considers some implementation issues and is relatively easy to administer.

#### 4.3. Limitations and strengths

We did not use ‘respondent validation’ [79]. Because of delays in preparation of the analysis report we assumed the respondents were likely to have forgotten or changed their views. Purposive sampling was the biggest threat to the validity as positive views might be over-represented. Random sampling could have improved generalisability [35]. The inclusion of academic GPs improved the comprehensiveness of the study. We looked for systematic differences between academics and non-academics. With the exception of whether guidelines resulted in change in practice, discordant views were not along the lines of the groups. There were also extreme views, e.g. one academic thought consultants should be kept out of guideline development for primary care. Obtaining views of practice nurses, consultants and practice managers might have improved the study. The framework method helped structuring the analysis process [53]. It enabled explicit incorporation of a priori reasoning into the analysis [56].

Previous qualitative studies of prescribing in British primary care focused on different issues such as change in prescribing [39,42], statins [41], antibiotics [28], antithrombotics [46], patient–doctor relationship [80]

and implementing guidelines [47,69]. We used a unique sampling approach in which both GPs and academics of primary care were included. We asked questions about implementing guidelines' prescribing recommendations for a priori and objectively defined set of five clinical topics, ensuring variation in complexity, role of prescribing in patient management, GP role in prescribing and GP awareness of guidelines (Table 1). We used these approaches to increase variability in responses and improve our understanding of implementing guidelines in primary care.

#### 4.4. Evidence and implementation

Wood et al noted 'one requires precision in talking about evidence' (p1735) [30]. Sometimes 'evidence' is a jargon that supports opposing positions about a specific phenomenon (e.g. a trial) depending on one's viewpoint. We noted GPs used other terms alongside evidence e.g. 'relevance' and 'usefulness'. Understanding what GPs mean by evidence is essential in implementation [31]. Participants had different views on what constituted the best evidence. Green noticed that professionals found 'evidence' less useful if its agenda was different from theirs [81]. She argued this was because evidence was 'constructed through professional practice'. In our study, however, GPs maintained different views despite sharing professional practice.

We found evidence base is only part of credibility of content [60] and should be complemented by 'flexibility' and 'change'. Uncertainty about what is the best evidence for primary care resembles difficulties of grading guideline recommendations in which the highest grades are assigned to recommendations based on meta-analyses of randomised trials. Our findings supported the use of other criteria such as balance of benefits and costs, and importance of recommendations for grading recommendations [82].

Our thematic framework improves understanding of observed variations in implementation, and design of models of implementing guidelines [51]. Future studies should attempt to quantify the relationship between evidence base of recommendations and implementation, and also between change in recommendations and implementation. Experimental designs as well as methods of measuring stated choice can be used for this purpose [83]. Small but important costs and side effects of implementing guidelines should be mea-

sured in evaluative studies. GPs views and concerns should be taken seriously to improve implementation. Interventions should be used that do not hamper long term objectives of improving quality in primary care.

#### Acknowledgments

We are grateful to those interviewed. AR received funding from the Iranian Ministry of Health and Medical Education. We thank Henry Smithson for support and encouragement, Jane Noyes for comments on the design of the study, Christine Godfrey and Nick Mays for comments on earlier drafts of the paper.

#### Appendix A. Semi-structured interviews' plan

- (a) Summarising statement about the project and the purpose of the interviews by the interviewer.
- (b) Clarifying that the interview will be tape-recorded (consent to record).
- (c) Questions: (use questions as a guide only):
  1. Thinking of clinical guidelines in primary care, can you tell me of examples where the guidelines were useful in drug prescription of general practitioners?
    - (a) *Probe: asking for specific guidelines*
    - (b) *Why do you think the guidelines were useful?*
  2. Thinking of clinical guidelines in primary care, can you tell me of examples where the guidelines were not useful in drug prescription of general practitioners?
    - (a) *Probe: asking for specific guidelines*
    - (b) *Why do you think the guidelines were not useful?*

The next set of questions asks about your opinions on clinical guidelines that have been developed for specific clinical conditions.
  3. Asthma: Among clinical guidelines for the treatment of asthma in adult patients, which guidelines are more likely to be followed in general practice?
    - (a) Why do you think some guidelines were adopted in general practice rather than others? How did those guidelines influence prescribing for asthma?

4. Statins: How do you think of the advantages of clinical guidelines for the use of statins? What are the possible results of adherence to guidelines for the use of statins?
5. Depression: Are you familiar with any guideline for the treatment of depression in primary care? Is it likely to be followed in general practice? Why?
6. Epilepsy: Are there any clinical guidelines that you use in the treatment of epilepsy? Why?
7. Menorrhagia: Which guidelines, if any, do you use in the treatment of menorrhagia? What influences has it made on your prescribing patterns?
8. Who else might influence GPs' adherence to any of the guidelines, which have been mentioned in the interview so far?
  - (a) Probe: does it differ for different guidelines?
9. Barriers: What are the barriers of the clinical guidelines' implementation in your practice?
  - (a) The guidelines can be mentioned specifically again, if necessary
10. Facilitators: What do you think are the factors that encourage you to use those clinical guidelines in every-day practice?
11. Is there anything else I should have asked you?

## References

- [1] Haines A, Jones R. Implementing findings of research. *British Medical Journal* 1994;308:1488–92.
- [2] Sackett DL, Rosenberg WMC, Gray JAM, Haynes RB, Richardson WS. Evidence based medicine: what it is and what it isn't. *British Medical Journal* 1996;312:71–2.
- [3] Le Grand A, Hogerzeil HV, Haaijer-Ruskamp F. Intervention research in rational use of drugs: a review. *Health Policy and Planning* 1999;14:89–102.
- [4] Little P, Dorward M, Warner G, Stephens K, Senior J, Moore M. Importance of patient pressure and perceived pressure and perceived medical need for investigations, referral, and prescribing in primary care: nested observational study. *British Medical Journal* 2004;328:444–6.
- [5] Donaldson LJ, Donaldson RJ. The National Health Service. In: *Essential Public Health*. 2nd ed. Plymouth: Petroc Press; 2003. pp. 169–235.
- [6] Chrischilles EA, Gondek K. Do practice guidelines augment drug utilisation review? *Pharmacoeconomics* 1997;12:648–66.
- [7] Soumerai SB, McLaughlin TJ, Avorn J. Improving drug prescribing in primary care: a critical analysis of the experimental literature. *Millbank Quarterly* 1989;67:268–317.
- [8] Majeed A, Evans N, Head P. What can PACT data tell us about prescribing in general practice? *British Medical Journal* 1997;315:1515–9.
- [9] Borowitz M, Sheldon T. Controlling health care: from economic incentives to micro-clinical regulation. *Health Economics* 1993;2:201–4.
- [10] O'Brien JA, Jacobs LM, Pierce D. Clinical practice guidelines and the cost of care: a growing alliance. *International Journal of Technology Assessment in Health Care* 2000;16:1077–91.
- [11] Feder G, Eccles M, Grol R, Griffiths C, Grimshaw J. Clinical guidelines: using clinical guidelines. *British Medical Journal* 1999;318:728–30.
- [12] Freemantle N, Eccles M, Mason J, Thomson MA, Wolf FM, Wood J. Research implementation methods. In: Black N, Brazier J, Fitzpatrick R, Reeves B, editors. *Health services research: a guide to best practice*. 1st ed. London: British Medical Journal Books; 1998. p. 237–46.
- [13] Grilli R, Magrini N, Penna A, Mura G, Liberati A. Practice guidelines developed by specialty societies: the need for a critical appraisal. *Lancet* 2000;355:103–6.
- [14] Graham ID, Beardall S, Carter AO, Glennie J, Hébert PC, Tetroe JM, et al. What is the quality of drug therapy clinical practice guidelines in Canada? *Canadian Medical Association Journal* 2001;165:157–63.
- [15] Hasenfeld R, Shekelle PG. Is the methodological quality of guidelines declining in the US? Comparison of the quality of US Agency for Health Care Policy and Research (AHCPR) guidelines with those published subsequently. *Quality and Safety in Health Care* 2003;12:428–34.
- [16] Oxman AD, Lavis JN, Fretheim A. Use of evidence in WHO recommendations. *Lancet* 2007;369:1883–9.
- [17] Lomas J. Words without action? The production, dissemination, and impact of consensus recommendations. *Annual Review of Public Health* 1991;12:41–65.
- [18] Campbell M, Fitzpatrick R, Haines A, Kinmonth AL, Sandercock P, Spiegelhalter D, Tyrer P. Framework for the design and evaluation of complex interventions to improve health. *British Medical Journal* 2000;321:694–6.
- [19] Grimshaw JM, Shirran L, Thomas R, Mowatt G, Fraser C, Bero L, Grilli R, Harvey E, Oxman A, O'Brien MA. Changing provider behaviour: an overview of systematic reviews of interventions. *Medical Care* 2001;39:II2–45.
- [20] Grimshaw JM, Russell IT. Effect of clinical guidelines on medical practice: a systematic review of rigorous evaluations. *Lancet* 1993;342:1317–22.
- [21] Grimshaw JM, Thomas RE, MacLennan G, Fraser C, Ramsay CR, Vale R, et al. Effectiveness and efficiency of guideline dissemination and implementation strategies. *Health Technology Assessment* 2004;8(6):1–72.
- [22] Coiera E. Maximising the uptake of evidence into clinical practice—an information economics approach. *Medical Journal of Australia* 2001;174:467–70.
- [23] Stocking B. Promoting change in clinical care. *Quality in Health Care* 1992;1:56–60.
- [24] North of England Study of Standards and Performance in General Practice. Medical audit in general practice. I. Effects on doctors' clinical behaviour for common childhood conditions. *British Medical Journal* 1992;304:1480–4.
- [25] Avorn J, Soumerai SB. Improving drug-therapy decisions through educational outreach: a randomized controlled trial

- of academically based 'detailing'. *New England Journal of Medicine* 1983;308:1457–63.
- [26] Freemantle N, Nazareth I, Eccles M, Wood J, Haines A. A randomised trial of the effect of educational outreach by community pharmacists on prescribing in UK general practice. *British Journal of General Practice* 2002;52:290–5.
- [27] McEwen L, Farjo R, Foxman B. Antibiotic prescribing for cystitis: how well does it match published guidelines? *Annals of Epidemiology* 2003;13:479–83.
- [28] Kumar S, Little P, Britten N. Why do general practitioners prescribe antibiotics for sore throat? Grounded theory interview study. *British Medical Journal* 2003;326:138–41.
- [29] Horder J, Bosanquet N, Stocking B. Ways of influencing the behaviour of general practitioners. *Journal of Royal College of General Practitioners* 1986;36:517–21.
- [30] Wood M, Ferlie E, Fitzgerald L. Achieving clinical behaviour change: a case of becoming indeterminate. *Social Science and Medicine* 1998;47:1729–38.
- [31] Schwartz RK, Soumerai SB, Avorn J. Physician motivation for nonscientific drug prescribing. *Social Science and Medicine* 1989;28:577–82.
- [32] Marteau T, Sowden A, Armstrong D. Implementing research findings into practice: beyond the information deficit model. In: Haines A, Donald A, editors. *Getting research findings into practice*. 2nd ed. London: British Medical Journal Books; 2000. p. 68–76.
- [33] Hibble A, Kanka D, Pencheon D, Pooles F. Guidelines in general practice: the new Tower of Babel? *British Medical Journal* 1989;317:862–3.
- [34] Soumerai SB, Avorn J. Predictors of physician prescribing change in an educational experiment to improve medication use. *Medical Care* 1987;25:210–21.
- [35] Dowswell G, Harrison S, Wright J. Clinical guidelines: attitudes, information processes and culture in English primary care. *International Journal of Health Planning and Management* 2001;16:107–24.
- [36] Grol R. Beliefs and evidence in changing practice. *British Medical Journal* 1997;315:418–21.
- [37] Comaroff J. A bitter pill to swallow: placebo therapy in general practice. *Sociology Review* 1976;24:79–96.
- [38] Pathman DE, Konard TR, Freed GL, Freeman VA, Koch GG. The awareness-to-adherence model of the steps to clinical guideline compliance. *Medical Care* 1996;34:873–89.
- [39] Armstrong D, Reyburn H, Jones R. A study of general practitioners' reasons for changing their prescribing behaviour. *British Medical Journal* 1996;312:949–52.
- [40] Allery LA, Owen PA, Robling MR. Why general practitioners and consultants change their clinical practice: a critical incident study. *British Medical Journal* 1997;314:870–4.
- [41] Fairhurst K, Huby G. From trial data to practical knowledge: qualitative study of how general practitioners have accessed and used evidence about statin drugs in their management of hypercholesterolemia. *British Medical Journal* 1998;317:1130–4.
- [42] Carthy P, Harvey I, Brawn R, Watkins C. A study of factors associated with cost and variation in prescribing among GPs. *Family Practice* 2000;17:36–41.
- [43] Salisbury C, Bosanquet N, Wilkinson E, et al. The implementation of evidence-based medicine in general practice prescribing. *British Journal of General Practice* 1998;48:1849–52.
- [44] Langley C, Faulkner A, Watkins C, Gray S, Harvey I. Use of guidelines in primary care - practitioners' perspectives. *Family Practice* 1998;15:105–11.
- [45] Mayer J, Piterman L. The attitudes of Australian GPs to evidence-based medicine: a focus group study. *Family Practice* 1999;16:627–32.
- [46] Howitt A, Armstrong D. Implementing evidence based medicine in general practice: audit and qualitative study of antithrombotic treatment for atrial fibrillation. *British Medical Journal* 1999;318:1324–7.
- [47] Cranney M, Warren E, Barton S, Gardner K, Walley T. Why do GPs not implement evidence-based guidelines? A descriptive study. *Family Practice* 2001;18:359–63.
- [48] Rashidian A. Study of Adherence to Guidelines and Evidence (SAGE): Theory-based analyses of beliefs, attitudes and prescribing outcomes in British primary care. PhD Thesis: University of York, UK; 2004.
- [49] Rashidian A, Miles J, Russell D, Russell I. Sample size for regression analyses of theory of planned behaviour studies: case of prescribing in general practice. *British Journal of Health Psychology* 2006;11:581–93.
- [50] Rashidian A, van der Meulen J, Russell I. Differences in the contents of two surveys of general practitioners' prescribing intentions affected response rates. *Journal of Clinical Epidemiology* 2007; [submitted].
- [51] Rashidian A, Russell IT. Towards better prescribing – a model for implementing clinical guidelines in Primary Care Organisations in the NHS. *Clinical Governance an International Journal* 2003;8:26–32.
- [52] Morse JM, Field PA. Principles of data collection. In: *Nursing research: the application of qualitative approaches*. 2nd ed. London: Chapman and Hall; 1996. p. 72.
- [53] Ritchie J, Spencer L. Qualitative data analysis for applied policy research. In: Bryman A, Burgess R, editors. *Analysing qualitative data*. London: Routledge; 1994. p. 173–94.
- [54] Miles MB, Huberman AM. *Qualitative data analysis: an expanded sourcebook*. 2nd London: Sage; 1994.
- [55] Ajzen I. The theory of planned behavior. *Organisational Behavior and Human Decision Processes* 1991;50:179–211.
- [56] Pope C, Ziebland S, Mays N. Analysing qualitative data. *British Medical Journal* 2000;320:114–6.
- [57] Puffer S, Rashidian A. Practice nurses intentions to use clinical guidelines. *Journal of Advanced Nursing* 2004;47:500–9.
- [58] Barbour RS. Checklists for improving rigour in qualitative research: a case of the tail wagging the dog? *British Medical Journal* 2001;322:1115–7.
- [59] British Thoracic Society and National Asthma Campaign. Asthma in adults and school children. *Thorax* 1997; 52:S1–21.
- [60] Kravitz RL, Duan N, Braslow J. Evidence-based medicine, heterogeneity of treatment effects, and the trouble with averages. *Milbank Quarterly* 2004;53:949–54.
- [61] British Cardiac Society, British Hyperlipidaemia Association, British Hypertension Society, and endorsed by the British Diabetic Association. Joint British recommendations on prevention

- of coronary heart disease in clinical practice. *Heart* 1998; 80:S1–29.
- [62] Bowens A, McDonald R, Ayres P, Robinson M. The processes and costs of local guideline development. *British Journal of Clinical Governance* 2001;6:159–65.
- [63] Choudhry NK, Stelfox HT, Detsky AS. Relationships between authors of clinical practice guidelines and the pharmaceutical industry. *JAMA* 2002;287:612–7.
- [64] Raven BH, Rubin JZ. *Social psychology*. 2nd ed. New York: John Wiley; 1983.
- [65] Grilli R, Lomas J. Evaluating the message: the relationship between compliance rate and the subject of a practice guideline. *Medical Care* 1994;32:202–13.
- [66] Rogers EM. Lessons for guidelines from the diffusion of innovations. *Joint Commission Journal on Quality Improvement* 1995;21:324–8.
- [67] Mittman B, Tonesk X, Jacobson P. Implementing clinical practice guidelines: social influence strategies and practitioner behavior change. *Quality Review Bulletin* 1992;18: 413–22.
- [68] Murchie P, Campbell NC, Ritchie LD, Simpson JA, Thain J. Secondary prevention clinics for coronary heart disease: four year follow up of a randomised controlled trial in primary care. *British Medical Journal* 2003;326:84–7.
- [69] Rousseau N, McColl E, Newton J, Grimshaw J, Eccles M. Practice based, longitudinal, qualitative interview study of computerised evidence based guidelines in primary care. *British Medical Journal* 2003;326:314–8.
- [70] Poplin C. Productivity in primary care: work smarter, not harder. *Archives of Internal Medicine* 2000;160:1231–3.
- [71] Raisch WD. A model of methods for influencing prescribing. Part II. A review of educational methods, theories of human inference, and delineation of the model. *DICP-The Annals of Pharmacotherapy* 1990;24:537–42.
- [72] Davis J, Roberts R, Davidson DL, Norman A, Ogston S, Grimshaw JM, et al. Implementation strategies for a Scottish national epilepsy guideline in primary care: results of the Tayside Implementation of Guidelines in Epilepsy Randomized (TIGER) trial. *Epilepsia* 2004;45:28–34.
- [73] Lewin K. *Field theory in social science*. New York: Harper Row; 1951.
- [74] NHS Centre for Reviews and Dissemination. *Implementing clinical practice guidelines: can guidelines be used to improve clinical practice?* *Effective Health Care* 1994; Bulletin No 8.
- [75] Samanta A, Samanta J. Legal standard of care: a shift from the traditional Bolam test. *Clinical Medicine* 2003;3:443–6.
- [76] Rashidian A, Black N, Russell I. Financial incentives and quality improvement. *Quality and Safety in Health Care* 2005;14:227.
- [77] Field MJ, Lohr KN. *Clinical practice guidelines: directions for a new program*. Washington: National Academies Press; 1990.
- [78] The AGREE collaboration. Development and validation of an international appraisal instrument for assessing the quality of clinical practice guidelines. *Quality and Safety in Health Care* 2003;12:18–23.
- [79] Mays N, Pope C. Assessing quality in qualitative research. *British Medical Journal* 2000;320:50–2.
- [80] Britten N, Stevenson FA, Barry CA, Barber N, Bradley CP. Misunderstandings in prescribing decisions in general practice: qualitative study. *British Medical Journal* 2000;320:484–8.
- [81] Green J. Epistemology, evidence and experience: evidence based health care in the work of Accident Alliances. *Sociology of Health & Illness* 2000;22:453–76.
- [82] GRADE Working Group. Grading quality of evidence and strength of recommendations. *British Medical Journal* 2004;328:1490–94.
- [83] Louviere JJ. *Analyzing decision making: metric conjoint analysis*. Newbury Park, CA: Sage; 1988.