A study of general practitioners' reasons for changing their prescribing behaviour

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Abstract

Objectives - To explore general practitioners' reasons for recent changes in their prescribing behaviour.

Design - Qualitative analysis of semistructured interviews.

Setting - General practice in south east London.

Subjects - A heterogeneous sample of 18 general practitioners.

Results - Interviewees were able to identify between two and five specific changes that had occurred in their prescribing in the preceding six months. The most frequently mentioned changes related to fluoxetine, angiotensin converting enzyme inhibitors, and the antibiotic treatment of *Helicobacter pylori*. Three models of change were identified: an accumulation model, in which the volume and authority of evidence were important; a challenge model, in which behaviour change followed a dramatic or conflictual clinical event; and a continuity model, in which change took place against a background of willingness to change, modulated by other factors such as cost pressures and the comprehensible therapeutic action of a drug. Behaviour change was reinforced and sustained by experiences with individual patients.

Conclusions - Multiple factors are involved in general practitioners' decisions to change their prescribing habits. Three models of change can be identified which have important implications for the design and evaluation of interventions aimed at behaviour change.

Introduction

The current emphasis on a scientific basis for health services¹ and the recent emergence of evidence based medicine^{2,3} have placed the problem of changing clinical behaviour firmly on the research agenda.⁴ Clinical effectiveness is usually assessed using experimental designs, and a similar approach has been applied to evaluating interventions, such as educational inputs and clinical guidelines, that attempt to change behaviour in clinicians.^{5,6} The problem with this experimental hypothesis testing approach is that the researcher has to guess in advance which interventions are most likely to succeed before testing them.

An alternative research strategy is to define the nature of the problem before starting to evaluate solutions. Instead of a hypothesis testing experimental design, this approach requires hypothesis generating qualitative methods; these allow clinicians' own understandings and explanations of their changes in clinical behaviour to become the focus of the research.

In this study we asked a sample of general practitioners to identify recent changes in prescribing behaviour and then to reflect on how and why the changes occurred.

Methods

General practitioners working in south east London were invited to be interviewed about their prescribing. The sample was selected to include general practitioners who differed in age, sex, and ethnic group and who worked in different circumstances, including different sized partnerships and deprived areas. During the interview general practitioners were asked to identify any changes in their prescribing practice that had occurred over the previous six months. Each of these changes was then considered separately and questions asked about the factors the general practitioner could identify that had brought about each change. Whenever a factor was mentioned the interviewer sought clarification to identify the context and, in turn, any other factors further back in the "causal chain."

The interviews were conducted by experienced departmental interviewers, including two of the authors (DA and HR). Because we expected that some of the reasons for change might be sensitive for individual general practitioners we did not tape record the interviews but kept detailed notes during the interview, which were written up immediately afterwards.

The sets of notes from each interview were then examined for specific changes and the types of explanation advanced, and a set of codes was derived. These codes were then examined across the interview notes for common patterns of types of change.

Results

Nineteen general practitioners took part in the study. They ranged in age from 30 to 59; seven were women, three were from ethnic minorities, and two were single-handed. None were from fundholding practices. All but one seemed to be happy to talk about changes and reasons for them, many offering self critical examples. One interviewee (No 9) was more defensive and simply offered a list of drugs he had switched to in order to reduce his high prescribing costs. He did not want "people coming in and telling me I must be writing this and that." Our results are based on the views of the remaining 18 general practitioners.

All general practitioners identified two to five specific changes in prescribing they had made in the previous six months. Three types of drugs stood out because of the frequency of their mention—namely, fluoxetine (Prozac) eight times, angiotensin converting enzyme inhibitors six times, and antibiotic treatment of *Helicobacter pylori* six times.

For most changes several determining factors could be identified: these tended not to reveal a single trigger to behaviour change but rather an accumulation of cues that change was possible, desirable, and worth while. These cues came mainly from reading and from professional colleagues, both consultants and fellow general practitioners.

THE ACCUMULATION MODEL OF CHANGE

Reading seemed to be an important source of accumulated weight, but few could recall a specific

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article. One general practitioner (No 11) reported reading about the value of angiotensin converting enzyme inhibitors in arresting early diabetic nephropathy, but he was unable to say where. "I read it in several places but couldn't tell you where. The message has been pounded in over the last year...reading it again and again, so it must be true." Another general practitioner (No 2) remembered a *BMJ* editorial on aspirin in cardiovascular disease that had added to his accumulated reading. A review in *Update* of the management of *H pylori* was found to support other articles and hospital policy for one general practitioner (No 7), but it was only when the local hospital started offering open access breath tests that this new treatment became routine for him.

The accumulation model depended on two factors: one was the sheer weight of pressure in a certain direction—articles, talks, consultants' letters, etc; the other was the relative authority of these various sources. For example, the *BMJ* was mentioned several times as providing good information, but it was the *Drug and Therapeutics Bulletin* that tended to be supported by statements about its independence: "It has no axe to grind; it is honest, has no drug company influence, and no research interest to serve" (No 13).

Mention of a consultant as influencing a particular change in behaviour was often followed by a description of that particular consultant as "trusted" or "respected" or having a "good reputation." Similar descriptors were used for practice partners who were reported to be influential in prescribing. New partners in particular seemed to be influential because they were seen as closer to hospital practice and therefore more "up to date." One general practitioner (No 7) started using cephalosporins after observing a new partner whose clinical judgment and recent hospital experience he respected.

Nevertheless, new partners could also introduce a sense of insecurity in established prescribing patterns. One new partner gave prolonged high dose penicillin to "avoid scarlet fever": this caused the interviewed general practitioner (No 14) to be worried about missing rheumatic heart disease, so he too started prescribing more penicillin and taking throat swabs, but because he was unsure of this new policy he reported that his prescribing in the area remained erratic.

One of the most authoritative sources of influence was the general practitioner's personal experience of a drug or illness. Use of acyclovir for shingles by a general practitioner (No 5) was suggested at a clinical meeting and reinforced by a virologist whom she met on a course, but it was her own experience of the unpleasantness of the illness that gave these cues greater weight. Another general practitioner (No 10) who had prescribed diclofenac as just another non-steroidal anti-inflammatory drug found it very effective for relieving her own postnatal pain and on her return to work started prescribing it more regularly. Another female general practitioner (No 13) read in the *Drug and Therapeutics Bulletin* that routine prophylactic iron in pregnancy was unnecessary. Her own dislike of taking iron in pregnancy convinced her to stop prescribing it (and she persuaded the local community midwives, though not her partners, to follow suit).

THE CHALLENGE MODEL OF CHANGE

While most changes came at the end of a gradual accumulation of cues, some shifts were brought about by a more immediate challenge. This mechanism worked differently from the slow adaptation of cue accumulation in that it was the very lack of preparedness that caused the rapid reassessment of prescribing policy. The most obvious examples were "clinical disasters," of which two examples emerged from

these general practitioners, both concerning deaths from amitriptyline overdose. Similarly, telephone calls from pharmacists averted two potential disasters. The local pharmacist phoned one general practitioner (No 3) to tell of a potentially dangerous interaction between erythromycin and theophylline. In the second case the general practitioner (No 5) had prescribed a dangerously large dose of amiodarone (by repeating the loading dose of the hospital).

A less dramatic but still effective challenge to traditional prescribing was reported by two general practitioners who returned from maternity leave to find that their locum had changed the prescriptions of many of their patients. One of the general practitioners (No 12) referred to the locum's "audacity," and it was only when she observed similar prescribing behaviour in a second long term locum that she began to believe that they were practising modern mainstream medicine. A second general practitioner (No 13) had returned from maternity leave to find that the locum had switched her hypertensive patients from nifedipine to amlodipine. As he was more recently trained, she thought that he must be up to date and followed his example. She commented that the return from maternity leave had made her realise that she must get more up to date with prescribing.

Another example of how a challenge could change clinical behaviour was the unexpected success of a treatment. A general practitioner (No 12) who had a strong belief in the value of counselling and life change for depression was surprised to discover a patient whose life had been dramatically changed by being given fluoxetine at the local hospital. She then tried it on two middle aged, articulate middle class women and found again that fluoxetine completely changed their lives: "I know that it is not supposed to happen. It is too good to be true."

THE CONTINUITY MODEL OF CHANGE

The general patterns of, on the one hand, cue accumulation and on the other, of a direct challenge to normal prescribing might suggest a relative resistance to change among these general practitioners. However, some general practitioners reported rapid changes that seem to have been based on a pre-existing preparedness to change. At its simplest this was illustrated by a general practitioner (No 15) who reported starting to use an anti-fungal shampoo after seeing a distinctive advertisement showing a man with mushrooms growing from the top of his head. But he explained that he had been looking out for an antifungal shampoo to prescribe and this was the first time he realised that one was available.

In general, preparedness to change seemed to depend largely on a congruence between the possible change and a general practitioner's approach to practice. This took a number of forms. First was the "world view," in which a change fitted in with general behaviour patterns. One general practitioner (No 4) who was strongly sceptical about the drug industry was motivated to change his prescribing by a TV documentary on the history of *H pylori* because it showed a "small guy in the outback pitted against the establishment." Another general practitioner (No 3), impressed by the drug industry's record, reported being influenced by drug company representatives. He cited his shift to omeprazole as being brought about by the advice of a representative who clearly "knew his stuff."

A second form of preparedness to change was a responsiveness to cost pressures. Few general practitioners actually mentioned cost as a trigger for changing prescribing, though several reported it as a general context for thinking about prescribing. A general practitioner (No 15) who had always tried to keep his antibiotic prescribing under a tight rein was pleased to find out from partners, journals, and a talk he attended that very

short courses of antibiotics (for urinary tract infections and otitis media) could be just as effective as longer ones. An important reason for trying to eradicate *H pylori* for several general practitioners was its potential for reducing prescribing costs.

The third contextual factor in facilitating change was whether or not a new drug "made sense." One general practitioner (No 11) observed that she had read several articles about acarbose in overweight diabetic patients but was particularly impressed by the apparent mode of action: "the physiology sounds right." As the drug worked on the gut she reasoned that, other than the possibility of flatulence and diarrhoea, there should be minimal side effects: "I'm not sure if all that is true but it feels like it is because it acts on the gut. It makes sense, doesn't it?"

MAINTAINING THE CHANGE

Most general practitioners seemed to try out the new prescription tentatively while looking for reinforcement of their behaviour. The most common reinforcement was patient feedback. A patient's positive report reinforced the behaviour change, but a negative result such as a major side effect was often enough to stop the experiment. The typical positive feedback loop is illustrated by the general practitioner (No 5) who first recalled reading a review article in *MIMS Magazine* on reduced mortality with angiotensin converting enzyme inhibitors. Shortly afterwards she noticed that hospital doctors were using these drugs more often, then she discussed these drugs with a general practitioner friend she respected, and then she tried the drug on one patient, "with very impressive results." The patient was pleased, the doctor's experiment had worked, and the drugs were then prescribed regularly.

A contrary example is afforded by the general practitioner (No 6) who, despite his scepticism, tried prescribing fluoxetine after reading an editorial and summaries in the *BMJ* as well as hearing the views of a respected local psychiatrist. But on this occasion he had "very little positive feedback from patients." Accordingly, he was reverting to his former sceptical position. Another general practitioner (No 10) had also been persuaded to try fluoxetine as a result of the accumulation of evidence from hospital doctors, media hype, patient pressure, the *BMJ* saying that it was safer than older tricyclic drugs, and an article in the *Guardian* claiming that it was effective for eating disorders with depression. Her first prescription was not a particularly conscious decision but "when the patient is in front of you, you decide it is one of your range of options. Then you get used to writing the prescription." But since then she had read letters in the *BMJ* on unpleasant side effects and had had a mixed response from patients, one of whom had suffered a dystonic reaction that she reported to the Committee on Safety of Medicines. Her interest in prescribing the drug was waning.

Discussion

Earlier work on changes in prescribing in general practice has used quantitative methods to identify specific influences on prescribing.⁷ The alternative method we used of asking general practitioners to reflect on recent changes seemed to work well. All interviewees could recall events and their circumstances. Moreover, most of the general practitioners seemed to speak freely of these changes, often offering potentially embarrassing observations on their own naivety. Inevitably, the reasons that general practitioners advanced for their changes in prescribing habits were post hoc, and some may have been rationalisations for events and circumstances since forgotten or poorly recalled. Nevertheless, their accounts "made sense,"

Key messages

- Individual general practitioner prescribing is relatively stable over time, with perhaps three or four changes over a six month period
- General practitioners respond to different types of cue to change their prescribing
- Many change agents seem to have their power through surprise or conflict and it may be possible to simulate therapeutic challenges together with appropriate educational support
- The traditional agencies of change—clinical meetings, journal editorials, and so on—cannot be expected to bring about change on a large scale; at best they can help prepare the ground
- Change is initially precarious and needs reinforcement if it is to be maintained

and they seem to contain pointers for future interventions to change behaviour.

What is perhaps most impressive about these accounts is the picture of stability, of non-change, that they afford. Despite daily contact with potential change agents such as journal articles, consultants' letters, and postgraduate and practice meetings, the general practitioners in this study recalled making very few changes in their prescribing in the period under review. Moreover, the changes that were made tended to be restricted to a limited range of drugs, suggesting that change interventions may need to be carefully timed to target the most receptive period.

Some changes occurred quite rapidly because the general practitioner was prepared to change and needed only a single prompt to do so. But arguably even these apparently specific changes represented more a process of continuity with past behaviour than a radical new departure. Most changes, we found, did need a period of preparation, usually through a process of accumulation of cues. The final group of changes were those that occurred after a challenge to usual routines; by definition these challenges could not easily be dismissed but called for a reassessment of past behaviours.

EFFECTING AND REINFORCING CHANGE

The three models of change identified from these accounts have important implications for the design of interventions to effect change in prescribing behaviour. Firstly, it is clear that general practitioners differ and they respond to different types of cue. This means that one particular intervention is unlikely to work with all general practitioners: their individual styles will need separate targeting. Secondly, many change agents seem to have their power through surprise or conflict, and, while this may be difficult or even unethical to replicate in clinical practice, it may be possible to simulate therapeutic challenges together with appropriate educational support. Thirdly, the traditional agencies of change—clinical meetings, journal editorials, and so on—cannot be expected to bring about change on a large scale; at best they can help prepare the ground. Better understanding of this process may help those responsible for continuing education to manage their input accordingly.

Perhaps the most important finding is that for all general practitioners it seemed that the initial change was precarious and needed reinforcement if it was to be maintained. For the most part this support—or lack of it—came from the effect of the drug on a few chosen patients. It seems ironic that evidence based medicine emphasises the importance of proving effectiveness in large enough numbers of patients, yet the implementation of those new behaviours is highly dependent on the

effect on a handful of patients, even a solitary case. This points to the challenge not only of bringing about change in clinical behaviour but of devising appropriate reinforcements to ensure that the new behaviour is maintained.

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A method of creating a death register for general practice

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Registers of deaths, kept by general practices, are important for audit and research, to improve the care of dying patients, for planning services for terminally ill patients, and to improve the care of recently bereaved patients.^{1,2} A critical analysis of deaths in whole populations can also identify changes that are needed in the work and organisation of primary care teams.³ Although many general practitioners are interested in receiving a confidential list of deaths for their practice, only a few general practitioners maintain a death register.²

To create a death register general practitioners need accurate, up to date information about their patients' deaths. However, general practitioners complete only 30% of death certificates themselves, and, although registration of death is a statutory obligation, they have considerable difficulty obtaining prompt and accurate information about their other patients who die.^{1,2} The cause of death of patients who die in hospital is not always available,⁴ and coroners do not routinely provide reports to general practitioners unless they are requested. Some coroners' offices charge to supply the reports. An audit in our practice showed that our method of maintaining the death register was inadequate. I describe a simple system that was introduced following this audit for maintaining an accurate death register.

Methods and results

My five doctor training practice in inner city Leicester has 9800 patients. The first audit was carried out on patients who had died between 1 April 1992 and 31 March 1993. Of the 131 deaths that occurred in the 12 months the cause of death was known for only 95 (73%) patients. Twelve (9%) patients were known to have been referred to the coroner. A system was therefore set up to ensure that the cause of death was recorded on the practice computer for each patient before the notes were returned to the family health services authority. The secretary automatically requested information from hospitals if the patients had died in hospital but the surgery had not been told the cause of death and sent a letter to the coroner's office requesting the post-mortem findings every time a patient was referred to the coroner. The second audit was carried out by looking at all the deaths that had occurred from 1 April 1993 to 31 March 1994.

Of the 126 deaths the cause was known for 125 (99%). The remaining patient had died abroad and the cause of death could not be established. Nineteen (15%) of the patients had been referred to the coroner. Table 1 shows that the numbers of deaths from respiratory and neoplastic causes changed very little between the audits. The deaths missed at the first audit were

Table 1—Results of audits of death register. Values are numbers (percentages) unless specified otherwise

	First audit	Second audit
Number of deaths	131	126
Crude death rate (per 1000 population)	13.6	13.1
Sex distribution:		
Men	54 (41)	49 (39)
Women	77 (59)	77 (61)
Average age in years (range)	75.7 (5-99)	77.6 (40-99)
Cause of death recorded	95 (73)	125 (99)
Referred to coroner	12 (9)	19 (15)
Died in hospital	Not known	47 (37)
Died in own home or residential or nursing home	Not known	78 (62)
Causes of death:		
Coronary artery diseases	28 (21)	47 (37)
Respiratory diseases	28 (21)	24 (19)
Neoplastic disorders	26 (20)	26 (21)
Cerebrovascular disorders	7 (5)	20 (16)
Others	10 (8)	8 (6)
Not known	32 (24)	1 (0.8)

probably due to cerebrovascular and cardiovascular events—which are usually the causes for sudden unexpected events that lead to hospital or coroner intervention.

Comment

In general practice the only records of death are the counterfoils in the books of Medical Certificates of Cause of Death which general practitioners complete themselves. A system that can maintain a death register has been described,¹ but this relies on information being supplied by district health authorities and family health services authorities. Our system is simple and could easily be adopted by any general practice. It relies on preventing notes being returned to the family health services authority without the cause of death being recorded on the practice computer, but maintaining a death register would be much easier if hospitals and coroners routinely forwarded postmortem reports to general practitioners.

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