Family Practice Vol. 20, No. 1 © Oxford University Press 2003, all rights reserved. Printed in Great Britain

Influences on GPs' decision to prescribe new drugs—the importance of who says what

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Prosser H, Almond S and Walley T. Influences on GPs' decision to prescribe new drugs—the importance of who says what. *Family Practice* 2003; **20:** 61–68.

Objectives. The aim of this study was to understand the range of factors that influence GPs' uptake of new drugs

Methods. A total of 107 GPs selected purposively from high, medium and low new drug prescribing practices in two health authorities in the north west of England were interviewed using the critical incident technique with semi-structured interviews. Interview topics included reasons for prescribing new drugs launched between January 1998 and May 1999; reasons for prescribing the new drug rather than alternatives; and sources of information used for each prescribed drug.

Results. Important biomedical influences were the failure of current therapy and adverse effect profile. More influential than these, however, was the pharmaceutical representative. Hospital consultants and observation of hospital prescribing was cited next most frequently. Patient request for a drug, and patient convenience and acceptability were also likely to influence new drug uptake. Written information was of limited importance except for local guidelines. GPs were largely reactive and opportunistic recipients of new drug information, rarely reporting an active information search. The decision to initiate a new drug is heavily influenced by 'who says what', in particular the pharmaceutical industry, hospital consultants and patients. The decision to 'adopt' a new drug is clinched by subsequent personal clinical experience.

Conclusions. Prescribing of new drugs is not simply related to biomedical evaluation and critical appraisal but, more importantly, to the mode of exposure to pharmacological information and social influences on decision making. Viewed within this broad context, prescribing variation becomes more understandable. Findings have implications for the implementation of evidence-based medicine, which requires a multifaceted approach.

Keywords. General practice, information sources, prescribing influences, prescription drugs.

Introduction

Choosing a medicine for a patient is a key task for doctors. Why doctors decide to adopt a new medicine is often unclear. Many new drugs are not therapeutic innovations but merely "me too" extensions to the range of similar drugs already available. UK doctors are said to be therapeutically conservative, and uptake of new drugs is slower in the UK than in other European countries, a matter of praise by some[1] and criticism by others.[2]

Received 25 February 2002; Revised 26 July 2002; Accepted 9 September 2002.

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Most attempts to explain decision making in prescribing have been based on information processing,[3] considering drug attributes and outcomes, while overlooking the importance of psychosocial influence. These factors, such as doctor characteristics,[4] hospital consultants,[5] the pharmaceutical industry[6] and patient factors,[7] lie behind much of that variation in prescribing among GPs which is not explained by morbidity.[8]

Much prescribing research has been quantitative, but recent qualitative research has helped our understanding by identifying the factors that GPs report as important.[9] A recent study has focused specifically on new drugs, comparing influences on GP and consultant prescribing.[10] This found GP prescribing to be influenced by factors previously identified, i.e. hospital doctors, the pharmaceutical industry and patients. By focusing on a specific range of new drugs, the aims of this study are 2-fold: to document the factors that influence GPs to prescribe a new drug for the first time; and to explore the

nature and underlying processes of decision making in new drug prescribing.

Methods

A list of new drugs launched between January 1998 and May 1999 and which might be used in primary care was compiled (see Table 1).

Sample

To ensure a range of high to low new drug prescribers, GP practices in two health authorities were selected purposively, stratified by rates of prescribing of new 'black triangle' medicines from PACT data. The intention was to interview as many GPs as possible from each chosen practice. All GPs from identified practices were invited to participate by letter and followed-up with a telephone call 1–2 weeks later. Towards the end of interviewing, no new themes emerged, indicating that a comprehensive spectrum of factors had been identified.

Interviews and analysis

The method involved a 'triangulation' strategy in which both qualitative and quantifiable data were collected and analysed in order to address the two different kinds of question. A semi-structured interviewing approach was adopted in order to understand the decision-making process from the GPs' perspective. One researcher (HP) conducted interviews between August 1999 and February 2000. The critical incident technique[11] was used to encourage doctors to give factual accounts of prescribing events and to describe why they had prescribed a new drug. For each drug prescribed, doctors were asked about:

(i) The context in which the drug was prescribed;
(ii) Information acquisition and factors influencing prescribing; and
(iii) Reasons for prescribing the new drug rather than alternatives.

Interviews were tape-recorded and transcribed. Content analysis with systematic and comprehensive coding was first employed to identify categories of reasons for prescribing. The data were examined repeatedly until all cited influences were coded in terms of these categories. This gave an indication of the relative frequency of factors influencing new drug initiation. Secondly, a grounded analytical approach to analysis was employed in order to further define influences and illuminate the underlying processes and reasoning of GPs' decision making. Transcripts were analysed independently by the three researchers, who then compared emergent themes and

TABLE 1 *Frequency with which indexed new drugs were prescribed by GPs*

Drug	Date of introduction	Indication	No. of GPs (%)	Free choice (%)	Proxy prescribing (%)
Grepafloxacin (Raxar)	Jan 1998	Antibiotic	0	0	0
Lercanidipine (Zanidip)	Feb 1998	Hypertension	19 (18)	17 (89)	2 (11)
Montelukast (Singulair)	Feb 1998	Asthma	72 (67)	63 (88)	9 (12)
Levofloxacin (Tavanic)	April 1998	Antibiotic	11 (10)	10 (91)	0
Salmeterol xinafoate + fluticasone dipropionate (Seretide)	April 1998	Asthma	65 (61)	58 (89)	7 (11)
Tolterodine (Detrusitol)	April 1998	Incontinence	81 (76)	60 (74)	21 (26)
Azelastine (Optilast)	May 1998	Hayfever	8 (7)	8 (100)	0
Cefprozil (Cefzil)	June 1998	Antibiotic	0	0	0
Dipyridamole and aspirin (Asasantin retard)	June 1998	Antiplatelet	20 (19)	13 (65)	7 (35)
Carvedilol (Eucardic)	Aug 1998	Hypertension	14 (13)	2 (14)	12 (86)
Rizatriptan (Maxalt)	Aug 1998	Migraine	29 (27)	28 (97)	1 (3)
Zarfirlukast (Accolate)	Aug 1998	Asthma	32 (30)	26 (81)	6 (19)
Orlistat (Xenical)	Oct 1998	Obesity	70 (65)	61 (87)	9 (13)
Raloxifene (Evista)	Oct 1998	Post-menopausal osteoporosis	52 (47)	42 (81)	10 (19)
Rabeprazole (Pariet)	Nov 1998	Dyspepsia	73 (68)	68 (93)	5 (7)
Sildenafil (Viagra)	Nov 1998	Erectile dysfunction	90 (84)	89 (99)	1 (1)
Dihydroergotamine mesylate (Migranol)	Jan 1999	Migraine	0	0	0
Imidapril HCL (Tanatril)	April 1999	Hypertension	3 (2.8)	3 (100)	0
Rofecoxib (Vioxx)	May 1999	Antirheumatic	80 (76)	67 (84)	13 (16)

categories. Discrepancies were discussed before final categorization and conceptualization was agreed.

Results

A total of 107 GPs (76 male and 31 female) from 54 practices were interviewed, a participation rate of 73% of GPs and 77% of practices contacted. Eleven GPs practised single handedly and eight were from dispensing practices. Of the 19 drugs that fitted the criteria, three had not been prescribed by any GP. Only one GP had not prescribed any of the drugs. Factors influencing the decision to prescribe a drug were categorized broadly into:

(i) 'Proxy' prescribing—incidents where a new drug initiation was based on others' decisions, e.g. direct recommendation from a hospital doctor. These were not analysed further.
(ii) Internal choice—incidents wherein the prescribing was not initiated by a third party. These were the subject of the present analysis.

There were 721 critical incidents: 104 'proxy' prescribing incidents and 616 internal choices. The number of 'internal choices' per GP ranged from 0 to 15.

Factors influencing the prescribing of new drugs by GPs

Awareness

The significant first stage in the decision-making process is awareness of a new drug. The most important sources (Table 2) were the pharmaceutical industry, in particular the company representative, non-peer-reviewed literature, the mass media (largely the reporting of sildenafil) and, to a lesser extent, hospital colleagues. Peer-reviewed literature or independent drug information sources were rarely significant at this stage.

TABLE 2 *Initial information sources for new study drugs*

Information source	*n* (%)
Pharmaceutical industry	49%
Advertising/mailshots/promotional literature	94 (15%)
Pharmaceutical representative	202 (33%)
Pharmaceutical industry-sponsored meeting	7 (1%)
Professional	13%
Hospital doctors—discharge letters/patients	49 (8%)
Hospital doctors—meetings	9 (2%)
GP colleagues	9 (1%)
Nurse colleagues	12 (2%)
Pharmacist	1
Health Authority/PCG	5
Professional/post-graduate meetings/conferences	5
Local prescribing meeting	1
Academic and professional literature	17%
Medical peer-reviewed journals	5 (1%)
Non-peer-reviewed medical literature, e.g. *Pulse*, *GP*, *BNF*, *MIMS*	97 (16%)
Therapeutics literature (national and local), e.g. HA newsletters, MEREC, Drug and Therapeutics Bulletin	1
Media	0
Patient	101 (16%)
	18 (3%)

Influences on decision to prescribe (Table 3)

Most prescribing decisions were multifactoral. The most frequently cited biomedical influences were the failure of current therapy and adverse effect profile of alternative medicines. Decisions to initiate a new drug were influenced by its perceived economic or pharmacological advantages (216 reasons) over alternatives; however, in 157 incidents, the new drug was prescribed because treatment with first-choice drugs in a patient had been

TABLE 3 *Classification framework of GPs' reasons for initiating a prescription for a new drug based on 616 critical incidents*

Factor influencing new drug uptake	% of critical incidents in which influence was attributed[a]
Pharmaceutical industry	
Pharmaceutical representative	39
Adverts/mailings	4
Drug samples	0.5
Post-marketing surveillance trials	0.2
Professional colleagues	
Hospital colleague endorsement	15
Hospital colleague prescribing	7
Meeting or conference addressed by consultant speaker	8
Hospital colleague observation	8
Sought hospital colleague advice	2
Consultant written newsletter	0.2
Nurse	5
GP colleague/practice discussion	4
PCG/HA	3
Dietician	0.2
Patient contexts	
Patient request for drug	22
Convenience and patient acceptability	20
Patient mediated	4
Educational written information	
Local and national prescribing guidelines	15
GP press	6
Peer-reviewed journal articles	4
Reference: *BNF*/*MIMS* (19)/*SPC* (2)	3
Internet	0.2
Biomedical and pharmacological factors	
Suboptimal effectiveness/adverse effects of current therapy	25
Side effect profile	17
Cost	13
New class of drug/novel drug	11
Patient's medical history, co-morbidity	8
Improved effectiveness	5
Other influences	
Curiosity	3
Self-medication/anecdotal reporting of self-medication	1

[a] Prescribing decisions were often influenced by more than one factor.

suboptimal. Mentioned more frequently, however, was the pharmaceutical industry, specifically the representative. Colleagues, especially in hospital, and also nurses were next most important. Patients were also a significant influence, in particular a patient's request for a drug, patient convenience and acceptability. Written information was of limited importance except for local guidelines.

In 389 cases, initial information was considered inadequate and the GP used additional evidence or opinion before prescribing. However, exposure to new drug information tended to be reactive, implicit and *ad hoc.* GPs undertook an active search for information on new drugs in only 33 (5%) incidents. Furthermore, in 227 cases (37%), the initial informant was both the only information source and the major prescribing influence. The pharmaceutical industry was the prime mover here in 208 incidents, especially the representative (179 incidents).

Although the availability of new cheaper alternatives influenced prescribing, the relatively high cost of some new drugs militated against it, so GPs often adopted a stepwise approach, trying familiar cheaper alternatives first, and only using new more expensive drugs if this failed or caused adverse effects. However, GPs did not hesitate to use a more costly drug perceived to have significant clinical advantage, or in response to patient requests.

Domains of evidence

Although biomedical and pharmacological criteria are evaluated within decision making, it is the form and route of information transfer and, in particular, social and interpersonal influences that have a decisive impact on GPs' assessment of evidence, decision strategy and subsequent practice. We identified three domains of evidence that GPs considered in evaluating new drugs: (i) information source, i.e. what is conveyed; (ii) the credibility of the communicator, i.e. who says it; and (iii) their own personal clinical experience.

Information source

The pharmaceutical industry was the most frequently used information source and there was an evident association between the evidence distilled from representatives and prescribing initiation. Ninety-two of the GPs saw representatives, and most (70%) regarded representatives as an expedient means of acquiring and processing drug information and keeping up to date with new products. Although GPs questioned the objectivity of the industry, they generally considered its information to be factually accurate, if selective. A recurring theme was 'separating the wheat from the chaff', and GPs felt able to separate credible information from the misleading.

Of particular note is the lack of recourse to scientific research and evidence-based sources. Peer-reviewed medical journals were influential for only 18 (17%) GPs, and in 4% of critical incidents. Non-peer-reviewed journals (e.g. *Pulse*) were used more frequently. GPs cited lack of time, information overload, difficulty in interpretation and comprehension, irrelevance and the importance of clinical experience as constraints to accessing scientific literature.

Source credibility

Those GPs who used them rated peer-reviewed medical journals as very creditable information sources. In a greater number of incidents, however, GPs drew instead on the opinions and prescribing behaviour of colleagues, especially hospital consultants [involved in 152 (25%) of incidents and mentioned by over two-thirds of GPs]. In 91 incidents, perceived consultant endorsement of a new drug was the main influence for GP initiation. GPs rarely acquired actual pharmacological information from hospital doctors, the influential factor being the status of the communicator (i.e. who said it). Not all consultants were equal in this: 'respected' consultants known to GPs were seen as authoritative leads and used as reference points for determining prescribing, thereby minimizing the perceived risk of new drugs. Several GPs were reluctant to prescribe new drugs unless respected consultants were using them. The communication flow from hospital to GP was top down through written correspondence, whilst negotiation or exchange of information was rare. In only 10 incidents had GPs specifically sought advice from a hospital doctor.

Despite GPs' concern regarding commercial information, a long-standing and trusted relationship with a company or representative led to accepting drug information, and reduced the perceived risk.

Box 1 *Factors influencing prescribing: properties of the drug*

Pharmacological factors
"It became unrealistic to expect people to take oxubutynin in such doses required to control symptoms because the adverse effects were so great, so I thought there was sufficient weight on the side of the scale to persuade me to try it." (GP88; tolterodine)

Cost
"It was cheaper than the other proton pump inhibitors and one thing that we are finding is that our spending on proton pump inhibitors is moving up substantially, so I thought it was useful to try." (GP11; rabeprazole)

Cost as an inhibitor
"And the cost is a big issue, they're £30-odd a month so, you know, if at all possible I use cheaper alternatives." (GP71; tolterodine)

GP colleagues had less influence (26 prescribing incidents) and GPs reported little specific discussion of new drugs within practices; prescribing was often influenced by implicit communication from seeing one another's patients. Primary Care Groups and their prescribing advisers seemed to be emerging as influencers, especially in relation to drug costs. Practice nurses were mentioned in 34 (6%) incidents and their influence derived from professional respect or trust based on experience. In 12 cases, the nurse had heard of a new drug first, apparently from the representative.

Experiential knowledge

In 51 incidents, prescriptions followed a successful outcome when a drug had been initiated by hospital doctors for another patient. GPs were generally hesitant to make a generalized switch from a former favourite to a new drug. Personal 'trialling' was the crucial end stage that determined whether a new drug would become part of established prescribing practice. If the initial outcome was successful, hopes and expectations were reinforced and led to repeat prescribing. A poor outcome reduced the likelihood of similar prescribing. However, even when initial trialling was successful, subsequent reading of scientific peer-reviewed articles and hospital-based opinion could also influence whether the drug ultimately was adopted. Occasionally, prescribing to patients followed GP self-medication (sometimes from samples supplied by representatives) or anecdotal accounts of self-medication from colleagues or friends.

Although GPs may trial a new drug because of an emerging preference for it, new drugs were sometimes prescribed as a 'one-off' (42 incidents) under pressure or because of desperation. Failure of current therapy, adverse effects of alternatives and direct patient request were key drivers here.

Patient contexts

GPs also considered individual patient contexts. In addition to patient convenience and acceptability ($n = 123$, 20%), a significant recurring stimulus was the 'suboptimal effectiveness' of previous treatment, implicated in 157 (25%) incidents and cited by 81 (76%) GPs. By definition, the drugs prescribed were not the GP's first choice, but were used when preferred alternatives had been exhausted in specific patients. The theme of patient-centredness and matching the patient to a particular drug underpinned some of these decisions, but in a number of situations the drug was prescribed out of a sense of desperation—a 'suck it and see' approach—since these GPs subscribed to the view that doing something was better than doing nothing.

Patient requests for drugs were a powerful influence, 88 GPs reporting 134 incidents, involving eight drugs (especially sildenafil, orlistat and rofecoxib). GPs also prescribed new drugs to patients who expressed a strong desire to try an alternative to current or proposed treatment (patient mediated). Requests were even granted when at variance with the GP's preferred drug choice or when the drug was considered unlikely to be useful and there was evident tension between doctor and patient preferences. Motives for conceding to patient requests included time constraints, the desire to treat patients poorly controlled on current treatment, preserving the doctor–patient relationship, avoiding conflict and acknowledging patients' rights to be involved in decision making.

Personal behaviour

Lastly, there were a few prescribing decisions ($n = 16$) that were clearly experimental, and the drug 'trialled' because of clinical curiosity and the hope for improved effectiveness, e.g. "Oh again, why not, it's a new product, let's see how effective it is." (GP71; tolterodine)

Discussion

This study adds to previous research that conceptualizes clinical practice within a biopsychosocial framework.[12] Decision making is dynamic, with social, situational and psychological variables converging with clinical and pharmacological factors. However, although pharmacological criteria are clearly important in the decision to prescribe, findings show that it is the mode of communication, social and interpersonal factors together with experiential knowledge that have crucial bearing on how each new drug is evaluated and subsequently initiated by GPs. Viewed within this context, prescribing variation becomes more understandable. This raises important concerns over the process of communicating evidence-based medicine in primary care. We draw four key points from this study.

First, GPs are largely reactive recipients, rather than active searchers of new drug information, and mention little reference to objective, scientific drug information. Information acquisition for new drugs is opportunistic rather than based on an explicit process of evidence gathering. However, systematic new drug evaluation may be compromised by a lack of independent scientific sources, which tend to lag behind the promotions of the pharmaceutical industry, and reliance on the pharmaceutical industry and hospital colleagues for prescribing impetus probably reflects GPs' foremost opportunities for the assessment and interpretation of evidence.[13] Although in the majority of critical incidents GPs considered initial information inadequate and used further evidence or colleague opinion before prescribing, in many incidents GPs relied heavily on the pharmaceutical industry as the major information source. This is disquieting since information from representatives may be misleading, biased, contain inaccuracies that doctors fail to recognize[14] and encourage less rational prescribing.[15]

Box 2 *Factors influencing new drug uptake: domains of evidence*

A Information source

Pharmaceutical industry
"Purely heard of that from the rep, but purely on the data that they presented to me on its effectiveness across a range of organisms." (GP76; levofloxacin)

Separating the wheat from the chaff
"I suppose most of the information is company biased, so you've got to develop a healthy scepticism and a way of reading reports that can skim through all the bias. That's part of evidence-based practice." (GP76)

Reasons given for not reading scientific journal papers
"I mean, we're faced with information overload. It really is a problem." (GP58)

"I can't read proper research papers. I'd have to sit down and study it, read it properly. I'll read digests of them, but not proper research papers because they're not really relevant . . . I think I have a kind of sixth sense about which drugs are sensible to use. I wouldn't admit, I mean, I know it's not politically correct, but I don't think I would go through evidence-based medicine procedures to determine whether or not I would prescribe a drug or not. It's much more intuitive than that." (GP70)

"I'm not a researcher, so I wouldn't know whether a piece of research was good, bad or indifferent. There's no easy way round it." (GP48)

"It doesn't really matter one bit what happens with other people, it matters what happens with your patients, if your patients are feeling better on a drug and not having side effects of a drug, it really doesn't matter what the journals say." (GP39)

B Source credibility

Hospital endorsement and consultants as trusted sources of information
"We're very lucky to have such good clinicians and consultants at [hospital] and whatever they prescribe I feel, well, you know, if it's good enough for my patient in hospital, it's good enough for my patient in the community."(GP4)

"I trust my colleagues. If it had been a rheumatologist from [names another hospital] who I don't know, I might have felt different." (GP79)

"If the consultants who I perceive to be the better consultants are actively prescribing something then that would influence me. Occasionally, there may be a negative influence—someone who you don't feel is that on the ball or someone who you know is maybe influenced by pharmaceutical companies." (GP106)

Lack of information exchange between hospital and GPs
"The letters from the hospital don't often explain very much, they just say, 'I've decided to give Mrs So-and-so . . .' or rather they're telling us to prescribe X for Mrs So-and-so. They don't put in a logical argument as to why they want you to prescribe that drug." (GP62)

Industry/rep credibility
"It came from a reputable company who I felt that a new product from them would probably not kill the patients off, at least not immediately." (GP43)

"I think if you see a rep who you know well . . . it's the same rep who you've seen for several years, they don't try and pull the wool over your eyes. They know that if they tell you lies you'll be seeing them again in six months and you'll find them out." (GP102)

GP colleagues
"My female partner had started to use it, so we'd started to use it as a practice, so basically I just followed suit and started to prescribe it." (GP14)

"As a practice we don't communicate that well, we don't have enough time to talk about these sorts of things. Occasionally because ultimately we see others' patients. I think that's the main reason about the vioxx because I know both the other partners have used it." (GP89)

Practice nurse
"Seretide because we had an asthma nurse who recommended it for patients. The way that works is that she runs the asthma clinic and if she recommends a change in medication, we more or less rubber-stamp it." (GP27)

PCG
"We've had a pharmacist attached to us to look at our prescribing and rationalization, and he looked at some of the patients . . . our costs were the main drive and he pointed us in the direction of Seretide." (GP72)

C Experiential knowledge

Observation of hospital practice
"They [hospital colleagues] had initiated the Detrusitol, so having found it successful in a few people, I decided to give it a whirl." (GP48)

Post-prescribing evaluation—'trialling'
"You sort out whether it works or not by experience." (GP23)

"I start off in a small group of patients and then just gradually work your way up. Most new drugs it takes me about six months, a year, perhaps, before I really use them first line." (GP39)

"Evista and Maxalt that was initially a rep thing I think but I've not found it that helpful and I don't prescribe them now." (GP68)

Influence of hospital after initial successful trialling
"I thought it [asasantin] was quite a nice drug but I had a bit of a negative response from the hospital, so I've gone back to using it separately [Dipyridamole and aspirin]." (GP32)

Box 3 *Patient contexts*

Compliance/convenience
"It was people with severe intractable migraine early on who couldn't manage to give enough warning to take an ordinary tablet so it was the dissolvable in the tongue variety which I was prescribing to get round the problem of vomiting." (GP8; rizatriptan)

Suboptimal efficacy
"I think the people that I have put on it have actually had quite a lot of TIAs and strokes despite being on aspirin, it was a case of we need to do something else." (GP53; asasantin retard)

Desperation
"Maxalt—that was referred on through a drug rep. I've probably used it once or twice, an act of desperation more than anything, nothing else would work. There's this new one, let's try that, people with migraine are willing to try anything you want to throw at them." (GP23)

Patient pressure
"I prescribed it on one occasion only after much pressure from patients. I don't like it, I don't like prescribing it, but after much pressure I prescribed it." (GP39; xenical)

Patient mediated
"Well it was a patient saying, 'I don't want to be taking all these steroids but I want my asthma to be under control', so I said, 'Oh well, try these, see if they'll make any difference'." (GP53; montelukast)

Conceding to patient requests

Time constraints
"It often then requires you to explain your reasoning why you are or why you aren't prescribing something a lot more because you've got a better informed patient who's asking more questions, so it takes more time." (GP31)

Patients poorly managed on current therapy
"I can think of one person with Xenical who really has forced us into prescribing it for her really, you know, she's on multi-medication, she's one of those patients. I wouldn't prescribe it to anybody else." (GP63)

To maintain the doctor–patient relationship
"The patient insisted that I prescribe it. Strictly I should not prescribe just according to patient demand. I wasn't convinced it was a useful drug to prescribe . . . I feel annoyed because patients hear about so-called revolutionary medicine and the lay press get hold of it. It's the *Daily Mail* syndrome. You have a group of articulate, half informed, half knowledgeable patients who can be very pushy. They put their hands in their pockets and pull out a newspaper clipping about a drug they feel they should have. I know I'm doing it against my better judgement, but I'm doing it for the doctor–patient relationship." (GP12; xenical)

Avoidance of conflict
"She wanted it and she's a very forceful patient, you know, so she got what she wanted because I wasn't going to argue with her." (GP62; rofecoxib)

Acknowledgement of patients' rights to be involved in decision making
"If they fulfilled the requirements and they've asked for it and you've explained how it works and if they say, but I still want it, I think it's quite hard not to prescribe it." (GP17)

The newly created National Institute for Clinical Excellence (NICE) was not an influence at the time of this study (1999–2000) but, given the use of local guidelines in our study and the threat of clinical governance, could become powerful. While peer-reviewed written sources may have theoretical influence, our findings were in agreement with other studies that found that, in practice, 'opinion leadership' and personal contact provide the real stimulus.[13] These findings reinforce the suggestion that multifaceted approaches to changing practice are more likely to influence prescribing than passive dissemination methods (e.g. research papers, mailings). A key issue is the provision of reliable, easy to digest independent assessments of new drugs, communicated by a trusted source who also considers implementation. The active support of Primary Care Trust prescribing advisers may be an important strategy in facilitating acquisition and appraisal of new drug information. Given the success of the pharmaceutical representative, this may be assisted through adaptation of commercial marketing methods. The primary care prescribing advisors might fit this role, but their impact requires further research.[16]

Secondly, consistent with other studies, new drug prescribing frequently followed that initiated by hospital colleagues.[5,10] Respected consultants were very influential as prescribing leads, reducing uncertainty and risk in GPs' eyes. GPs used this device to simplify decision rules, especially when judgement is difficult and complex. A joint approach to new drug introduction across primary and secondary care should be a priority for Primary Care Groups and Trusts.

Thirdly, patients' requests often led to uncomfortable decisions about prescribing and the choice of drug.[17] This may become more important with increased patient empowerment and education, and direct to consumer advertising.[18] Conceding to an individual patient's demand does not necessarily change doctors' attitudes to the drug

or their more general prescribing behaviour, but experience of using a drug once could be a powerful driver to repeated use.

Fourthly, new drug adoption frequently is clinched by experience with the drug, a finding again compatible with recent research on new drug prescribing[10] and other research highlighting the importance attached to personal and professional experience in clinical practice.[19]

A limitation of this study is that we relied on GPs' subjective recall of prescribing events. Their disclosure of contributory factors may perhaps be prejudiced by social desirability bias. Nevertheless, this is somewhat overcome by the validity of the critical incident technique which uses specific factual prescribing contexts, an interview structure that is probing and interactive and a list limited to recently launched drugs.

Most new drug initiations were influenced by a combination of factors, some of which will be more important than others. We did not try to study the interdependency of factors. Further studies could provide more insight into this question. The study also demonstrates that decision making is diffused across different individuals, i.e. it is not a unitary act, but indicates a sequence of decision making.

In summary, prescribing of new drugs is not simply related to biomedical evaluation and critical appraisal but, more importantly, to the mode of exposure to pharmacological information and social influences on decision making. Understanding new drug prescribing from the perspective of GPs is crucial in the analysis of prescribing variation, and any attempt to inform policy around methods to improve the quality of prescribing, change practice and control spending should take account of this.

Acknowledgements

We would like to thank all GPs who generously gave up their time to participate in this study. We would also like to thank Clare Dutton and Clare Bottomley, Health Authority pharmaceutical advisors, for providing prescribing data.

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