

## General practitioners' perceptions of the route to evidence based medicine: a questionnaire survey

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### Abstract

**Objectives:** To determine the attitude of general practitioners towards evidence based medicine and their related educational needs.

**Design:** A questionnaire study of general practitioners.

**Setting:** General practice in the former Wessex region, England.

**Subjects:** Randomly selected sample of 25% of all general practitioners (452), of whom 302 replied.

**Main outcome measures:** Respondents' attitude towards evidence based medicine, ability to access and interpret evidence, perceived barriers to practising evidence based medicine, and best method of moving from opinion based to evidence based medicine.

**Results:** Respondents mainly welcomed evidence based medicine and agreed that its practice improves patient care. They had a low level of awareness of extracting journals, review publications, and databases (only 40% knew of the *Cochrane Database of Systematic Reviews*), and, even if aware, many did not use them. In their surgeries 20% had access to bibliographic databases and 17% to the world wide web. Most had some understanding of the technical terms used. The major perceived barrier to practising evidence based medicine was lack of personal time. Respondents thought the most appropriate way to move towards evidence based general practice was by using evidence based guidelines or proposals developed by colleagues.

**Conclusion:** Promoting and improving access to summaries of evidence, rather than teaching all general practitioners literature searching and critical appraisal, would be the more appropriate method of encouraging evidence based general practice. General practitioners who are skilled in accessing and interpreting evidence should be encouraged to develop local evidence based guidelines and advice.

### Introduction

Evidence based medicine is being promoted in general practice as throughout the NHS. General practitioners can attend workshops on how to practice and teach it, research networks promote its use, the Cochrane Library has an increasing number of systematic reviews relevant to general practice, and the journal *Evidence-Based Medicine* regularly contains summaries

of general practice topics. Books on evidence based medicine present common general practice questions, show how to critically appraise papers, and to evaluate different sorts of evidence. Critical appraisal is now part of the MRCGP exam. Recent papers have highlighted the need for evidence based general practice,<sup>1,2</sup> the role of evidence based guidelines in the management of conditions common to general practice,<sup>3-5</sup> and the estimated proportion of interventions in general practice that are based on evidence.<sup>6</sup> One paper has described the problems that may arise in general practice from overreliance on evidence based medicine.<sup>7</sup> These included the potential lack of applicability of the biomedical perspective and the role of opinion in tailoring evidence to a patient's context and preferences.

In the United Kingdom, however, very little is known about general practitioners' attitudes towards evidence based medicine, the extent of their skills to access and interpret evidence, the barriers to moving from opinion based to evidence based practice, and the additional support necessary to incorporate evidence based medicine into everyday general practice. The objectives of this study were to determine the attitude of general practitioners towards evidence based medicine and their related educational needs. Postgraduate tutors, health authorities, and the Wessex Primary Care Research Network (WReN) required this information to inform local strategies aimed at encouraging general practitioners to implement evidence based medicine. Early approaches used in Wessex included workshops on critical appraisal and evidence based medicine and training in performing literature search as part of courses on research methods. After initial local enthusiasm, however, it had become harder to recruit general practitioners to such training events.

To fulfil the objectives of the study we set out to identify general practitioners'

- Attitude towards evidence based medicine
- Awareness and perceived usefulness of relevant extracting journals, review publications, and databases
- Ability to access relevant databases and the world wide web
- Understanding of technical terms used in evidence based medicine
- Views on the perceived major barriers to practising evidence based medicine
- Views on how best to move from opinion based to evidence based medicine.

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Survey questionnaire appears on our website

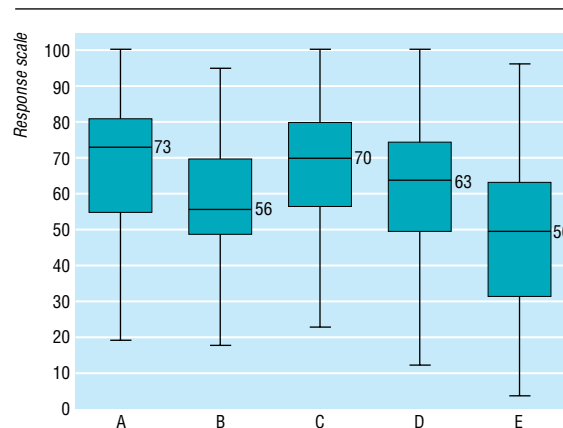
## Subject and methods

In April 1997 we sent a questionnaire to 452 general practitioner principals in the former Wessex region in south England. These represented 25% of all Wessex general practitioner principals obtained from a national database,<sup>8</sup> who were randomly selected by means of random numbers generated by Microsoft Excel with supervision from a statistician.

The covering letter for the questionnaire included a definition of evidence based medicine as the “conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients. Its practice means integrating individual clinical expertise with the best available external clinical evidence from systematic research.”<sup>9</sup>

The questionnaire consisted of

- Visual analogue scales to determine the general practitioners’ attitudes towards evidence based medicine
- Closed questions to assess their awareness of and perceived usefulness of extracting journals, review publications, and databases relevant to evidence based medicine; their ability to access Medline or other bibliographic databases and the world wide web; their



Attitudes of 293 general practitioners towards evidence based medicine: (A) attitude towards current promotion of evidence based medicine (100=extremely welcoming, 0=extremely unwelcoming); (B) perceived attitude of colleagues towards evidence based medicine (100=extremely welcoming, 0=extremely unwelcoming); (C) practising evidence based medicine improved patient care (100=strongly agree, 0=strongly disagree); (D) perceived usefulness of evidence based medicine in day to day management of patients (100=extremely useful, 0=totally useless); (E) estimated percentage of respondent’s clinical practice that is evidence based. Box plots show maximum and minimum values, median, and first and third quartiles

**Table 1** Characteristics of 302 respondents\* and 148 non-respondents to postal questionnaire of general practitioners in former Wessex region. Values are numbers (percentages) of subjects unless stated otherwise

	Respondents	Non-respondents	P value of difference
<b>Personal characteristics</b>			
Men	210/301 (70)	103/141 (73)†	0.48
MRCGP	183/298 (61)	35/148 (24)	<0.0001
Full time principals	242/300 (81)	Unavailable	
<b>Practice characteristics</b>			
WReN member‡	41/302 (14)	5/148 (3)	<0.05
Undergraduate teaching practice	185/297 (62)	81/148 (55)	0.13
Postgraduate training practice	154/299 (52)	Unavailable	
Practice size less than 5000	61/299 (20)	Unavailable	
Mean No of full time equivalent partners	4.7	Unavailable	
Fundholding practice	165/298 (55)	Unavailable	
<b>Setting:</b>			
Rural	56/300 (19)	Unavailable	
Urban	129/300 (43)	Unavailable	
Mixed	115/300 (38)	Unavailable	

\*Some respondents did not answer all the questions.

†We were unable to determine the sex of some of the non-respondents.

‡Wessex Primary Care Research Network.

**Table 2** Awareness of 302 general practitioners\* of extracting journals, review publications, and databases relevant to evidence based medicine and their usefulness. Values are numbers (percentages) of subjects who ticked each response

Publication	Unaware	Aware but not used	Read	Used to help in clinical decision making
<i>Bandolier</i> (published in Oxford)	141/294 (48)	49/294 (17)	55/294 (19)	49/294 (17)
<i>Evidence-Based Medicine</i> (BMJ publishing group)	83/287 (29)	132/287 (46)	52/287 (18)	20/287 (7)
<i>Effective Health Care Bulletins</i> (Universities of Leeds and York)	115/287 (40)	48/287 (17)	81/287 (28)	43/287 (15)
<i>Cochrane Database of Systematic Reviews</i> (part of <i>Cochrane Library</i> )	169/284 (60)	89/284 (31)	15/284 (5)	11/284 (4)
<i>Database of Abstracts of Reviews of Effectiveness</i> (part of <i>Cochrane Library</i> )	231/283 (82)	43/283 (15)	7/283 (2)	2/283 (1)
<i>Evidence-Based Purchasing</i> (South and West R&D)	232/283 (82)	36/283 (13)	12/283 (4)	3/283 (1)

\*Some respondents did not answer all the questions.

understanding of technical terms; and their views on how best to move from opinion based practice to evidence based medicine

- A free text section to determine their views on the major barriers to practising evidence based medicine in general practice. These brief statements were coded and grouped by AMcC. (For details of the questionnaire, see copy included in this article on the *BMJ* website [www.bmj.com](http://www.bmj.com)).

We sent reminders to non-respondents in June and July 1997, and data on non-respondents were collected by AMcC from teaching and research networks and the 1997 *Medical Directory*.<sup>10</sup>

We entered the data into a spreadsheet. We initially identified 38 categories, but these were grouped into broader categories during the analysis. We analysed data from the visual analogue scales using SPSS for Windows 6.1.2 and analysed the other data using Microsoft Excel 5.0. We compared differences between respondents and non-respondents using the  $\chi^2$  test.

## Results

Of the 452 questionnaires we sent out, two were returned because the general practitioners had retired. We received 302 replies (67%) to the remaining 450 questionnaires. Table 1 compares the characteristics of the respondents and non-respondents.

*Attitudes towards evidence based medicine*—The figure shows the responding general practitioners’ attitudes towards evidence based medicine. Most were welcoming towards the current promotion of evidence based medicine (A), although colleagues were perceived to be less welcoming (B), and most agreed that practising evidence based medicine improved patient care (C) and that research findings were useful in the day to day management of patients (D). The median value for the estimated percentage of the respondents’ clinical practice that was evidence based was 50% (E).

*Awareness and perceived usefulness of relevant information sources*—Table 2 shows that the doctors had a low level of awareness of extracting journals, review publications, and databases relevant to evidence based medicine. Only 40% of respondents were aware of the *Cochrane Database of Systematic Reviews*, 52% of *Bandolier*, and 60% of *Effective Health Care Bulletins*.

*Access to relevant databases and the world wide web*—Only 20% (41/220) of respondents had access to Medline or other bibliographic databases at their surgery while 76% (173/227) had access at their local library and 21% (45/219) at their home. They also lacked access to the world wide web: only 17% (40/236) had access at their surgery, 41% (73/178) at their local library, and 29% (71/247) at their home. In the previous year 51% (102/201) had used Medline or another database for literature searching or had asked someone to do a search on their behalf, and 12 had searched on more than 10 occasions. Of these 102 doctors, 28 reported having had some training in literature searching, while a total of 16% (47/297) had received formal training in search strategies. At least 11 of those trained had not made a literature search in the previous year. Those trained in searching were more likely to have access to Medline or another database in their home (30% (14/47) v 11% (27/250)) and in their surgery (32% (15/47) v 12% (29/250)).

*Understanding of technical terms used in evidence based medicine*—Most of the respondents had some understanding of the technical terms used in evidence based medicine, and a third felt able to explain to others the meaning of some of these terms (table 3). However, only 15% (44/290) understood publication bias and could explain it to others. A considerable proportion who did not understand the terms expressed a desire to understand (9-48%). In total 39% (115/297) had received formal training in critical appraisal.

*Views on major barriers to practising evidence based medicine*—The main perceived barrier to practising evidence based medicine in general practice was a lack of personal time (table 4).

*Views on how best to move from opinion based to evidence based medicine*—Most of the respondents (57%) thought that the most appropriate way to move from opinion based practice to evidence based medicine was “using evidence based guidelines or protocols developed by colleagues for use by others,” while 37% thought it should be by “seeking and applying evidence based summaries” and only 5% by “identifying and appraising the primary literature or systematic reviews” (table 5).

## Discussion

### Methodological issues

A response rate of 67% is a considerable achievement as response rates to questionnaire surveys among general practitioners are dropping.<sup>11</sup> Respondents were more likely to be members of the Royal College of General Practitioners and the Wessex Primary Care Research Network. Other questionnaire studies have suggested that members of the royal college are more innovative<sup>12</sup> and more “enthusiastic” to participate in quality assessment<sup>13</sup> than non-members. The difference between the respondents’ attitude and their perception of their colleagues’ attitudes could be explained by a

**Table 3** Understanding of 302 general practitioners\* of technical terms used in evidence based medicine. Values are numbers (percentages) of subjects who ticked each response

Term	It would not be helpful for me to understand	Don't understand but would like to	Some understanding	Understand and could explain to others
Relative risk	7/291 (2)	31/291 (11)	157/291 (54)	96/291 (33)
Absolute risk	7/291 (2)	40/291 (14)	153/291 (53)	91/291 (31)
Systematic review	8/288 (3)	55/288 (19)	160/288 (56)	65/288 (23)
Odds ratio	27/289 (9)	138/289 (48)	92/289 (32)	31/289 (11)
Meta-analysis	12/291 (4)	63/291 (22)	120/291 (41)	96/291 (33)
Clinical effectiveness	5/290 (2)	27/290 (9)	165/290 (57)	93/290 (32)
Number needed to treat	6/288 (2)	54/288 (19)	126/288 (44)	102/288 (35)
Confidence interval	17/290 (6)	90/290 (31)	124/290 (43)	59/290 (20)
Heterogeneity	20/289 (7)	124/289 (43)	116/289 (40)	29/289 (10)
Publication bias	21/290 (7)	88/290 (30)	133/290 (46)	44/290 (15)

\*Some respondents did not answer all the questions.

more positive attitude of respondents towards evidence based medicine than non-respondents.

Our subjects were general practitioners rather than primary healthcare teams. Our narrow focus was partly due to the availability of an adequate sampling frame, but we are sending a similar questionnaire to practice nurses to widen our understanding of evidence based health care in primary care.

### Interpretation of findings

*Attitudes towards evidence based medicine*—Although most of the respondents agreed that practising evidence based medicine improved patient care, the median value for the estimated percentage of their clinical practice that was evidence based was 50%. However, this was a self reported question, and it had limitations. This estimate was considerably less than one from a retrospective review of case notes, which concluded that over 80% of interventions in general

**Table 4** Perceived major barriers to practising evidence based medicine in general practice reported by 242 general practitioners\*

Perceived barrier	No of responses
Lack of personal time	171
Context of primary care:	62
Personal and organisational inertia	35
Morale in general practice	6
Lack of investment by health authorities and trusts	4
Difficulties in involving whole practice	5
No financial gain in using evidence based medicine	8
Closed lists	4
The evidence itself:	59
Lack of hard evidence	20
Evidence not related to context of primary care	16
Too much evidence	9
Availability and access to information	14
Attitudes of patients:	44
Patients' expectations	23
Patients demanding ineffective treatment	11
The need for lengthy discussions with patients	6
An ignorant media	4
General practitioners themselves:	35
Attitudes of colleagues	29
Lack of critical appraisal skills	2
Evidence based medicine seen as threat	4
Others	3

\*Only 80% of the 302 respondents answered these questions. Respondents gave more than one answer

**Table 5** Views of 302 general practitioners\* on ways of moving from opinion based practice to evidence based general practice. Values are numbers (percentages)

Method of moving towards evidence based medicine	Method currently using	Method of interest for future use	Most appropriate method
a) Learning the skills of evidence based medicine	84/297 (28)	101/296 (34)	15/281 (5)
b) Seeking and applying evidence based summaries	215/297 (72)	229/296 (77)	105/281 (37)
c) Using evidence based practice guidelines or protocols	249/297 (84)	230/296 (78)	161/281 (57)
<b>Doctors currently using method (a)—Learning the skills of evidence based medicine</b>			
a) Learning the skills of evidence based medicine	—	62/84 (74)	12/84 (14)
b) Seeking and applying evidence based summaries	67/84 (80)	64/84 (76)	28/84 (33)
c) Using evidence based practice guidelines or protocols	69/84 (82)	64/84 (76)	39/84 (46)
<b>Doctors currently using method (b)—Seeking and applying evidence based summaries</b>			
a) Learning the skills of evidence based medicine	67/215 (31)	82/215 (38)	11/215 (5)
b) Seeking and applying evidence based summaries	—	191/215 (89)	96/215 (45)
c) Using evidence based practice guidelines or protocols	174/215 (81)	170/215 (79)	96/215 (45)
<b>Doctors currently using method (c)—Using evidence based practice guidelines or protocols</b>			
a) Learning the skills of evidence based medicine	69/249 (28)	82/249 (33)	8/249 (3)
b) Seeking and applying evidence based summaries	174/249 (70)	194/249 (78)	80/249 (32)
c) Using evidence based practice guidelines or protocols	—	200/249 (80)	146/249 (59)

\*Some respondents did not answer all the questions. In the questionnaire, method (a) was described as "by learning the skills of evidence-based medicine i.e. to identify and appraise the primary literature or systematic reviews oneself"; method (b) was "by seeking and applying evidence-based summaries, which give the clinical 'bottom line.' Such summaries may be obtained from abstracting journals"; and method (c) was "by using evidence based practice guidelines or protocols developed by colleagues for use by others." Respondents were allowed more than one response when asked what methods they were currently using and would be interested in using in the future but only one response when asked which of these methods they thought was most appropriate in general practice.

practice were evidence based.<sup>6</sup> The methods used were criticised, as the quality of evidence was not reviewed and non-experimental evidence was included.<sup>14 15</sup> The case notes may not have been representative of typical consultations, as only recorded consultations with a primary diagnosis and intervention were used and in general practice patients rarely enter the consulting room with a discrete, one dimensional problem.<sup>15 16</sup> Other reviews have suggested that evidence based medicine is less relevant to general practice than other specialties because it mainly addresses the biomedical perspective of diagnosis from a doctor centred paradigm<sup>7</sup> and does not integrate quantitative and qualitative research, epidemiology, and psychology and the skills of public health and family medicine.<sup>17</sup>

*Awareness of relevant information sources*—Respondents showed a low level of awareness of extracting journals, review publications, and databases relevant to evidence based medicine. Attempts have been made to find out who uses the Cochrane Database<sup>18</sup> and whether obstetricians and gynaecologists were aware of and used it,<sup>19</sup> but there have been no such studies of general practitioners. The practice of evidence based medicine involves integrating individual clinical expertise with the best available external clinical evidence from systematic research.<sup>9</sup> Much of this clinical evidence in primary care has already been identified, critically appraised, and packaged in extracting journals and databases.<sup>2</sup>

Health authorities in Wessex send *Effective Health Care Bulletins* to every general practice, and *Bandolier* and *Evidence-Based Purchasing* are available to general practitioners on request without charge. Respondents may not have been aware of the formal title of some of these publications despite having read them and so we may have underestimated awareness. Of the general practitioners who were aware of these sources, 13-46% did not use them. Further studies with interviews are needed to understand why this is so. Without current best evidence, medical practice risks becoming out of date, to the detriment of patients.<sup>9</sup>

*Access to relevant databases and the world wide web*—Less than a fifth of the respondents had access to a relevant database or world wide web in their surgeries. Although almost all general practices have computers, access to the internet cannot be available on machines that hold patient data. Sackett suggested that, to improve efficiency, evidence must travel to general practitioners' surgeries as they can spend twice as long travelling to a medical library as reading in it.<sup>20</sup> The respondents thought that 75% of their local libraries had access to Medline or other relevant databases and that only 42% had access to the world wide web. In reality all 12 libraries had access to Medline, and 10 had access to the world wide web (J Stephenson, personal communication). The resource implications of advertising and improving access to evidence, at local libraries and in doctors' surgeries, should be considered. Primary care research networks may have a role in this, as shown by Starnet in the South Thames region.<sup>21</sup>

*Understanding of technical terms*—Our respondents showed a partial understanding of the technical terms used in evidence based medicine. Interpretation of evidence is a key element in practising evidence based medicine, and this partial understanding could hinder interpretation and make cascading of evidence to other members of the primary care team more difficult.

*Views on major barriers to practising evidence based medicine*—The barriers described in this study are more pragmatic than some of those identified in other papers.<sup>7 17</sup> Lack of personal time was the main perceived barrier. There are ways of increasing the time available for practising evidence based medicine.<sup>2 20</sup> This time could be spent more efficiently by changing the emphasis of postgraduate education away from lectures and toward training in accessing and interpreting evidence and then spending time putting these skills into practice. Two general practitioners in a Southampton pilot project receive postgraduate education payments for preparing summaries of evidence based medicine for their practices. Dawes suggested that a general practitioner who spent an hour a week searching and reading would make huge strides in implementing evidence.<sup>2</sup>

A considerable proportion of respondents perceived personal and organisational inertia and the attitudes of colleagues as a major barrier. Tensions between doctors in general practices may lead to difficulties in investing in technology to access evidence and in failures to agree practice policies on clinical management that are evidence based. However, the attitudes of patients were also seen as a barrier.

*Views on how best to move to evidence based medicine*—The focus of workshops on critical appraisal and evidence based medicine in Wessex has been on training healthcare workers to identify and appraise primary literature or systematic reviews. However, few respondents thought that this was the most appropriate way to move from opinion based to evidence based medicine. Most thought that the best way was by using evidence based guidelines or protocols developed by colleagues for use by others. Only 14% of those currently identifying and appraising primary literature or systematic reviews thought this was the best method.

## Conclusions

Postgraduate tutors, health authorities, and primary care research networks are attempting to encourage

general practitioners to implement evidence based general practice. They should refocus their efforts on promoting and improving access to summaries of evidence. They should also encourage local general practitioners working in localities or commissioning groups, who are themselves skilled in accessing and interpreting evidence, to develop local evidence based guidelines and advice. This may be a more effective approach to harness the interest and welcoming attitude of general practitioners towards evidence based medicine than trying to teach all general practitioners skills in search and critical appraisal.

We thank the Wessex general practitioners who took part in this survey.

Contributors: HS developed the original idea and questionnaire. AMcC, HS, PW, and JF refined the questionnaire and jointly wrote the paper. Chris Spencer-Jones, Paul Roderick, and Ruairidh Milne gave advice on the questionnaire. AMcC co-ordinated the distribution and follow up of the questionnaire, coded the free text sections, and performed the data analysis. Wendy Davis coded the rest of the questionnaire and provided administrative support. Mark Mullee advised on the random sampling. AMcC is guarantor for the paper.

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Conflict of interest: None.

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**Key messages**

- Despite considerable variation in 302 general practitioners' attitudes to the promotion of evidence based medicine, most were welcoming and agreed that it improved patient care
- There was a low level of awareness of extracting journals, review publications, and databases relevant to evidence based medicine, and the major perceived barrier to its practice was lack of personal time
- In their surgery only 20% of general practitioners had access to Medline or other bibliographic databases and 17% had access to the world wide web
- Most had some understanding of the technical terms used in evidence based medicine, but less than a third felt able to explain to others the meaning of these terms
- Respondents thought that the best way to move from opinion based practice towards evidence based medicine was by using evidence based guidelines or protocols developed by colleagues

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## Physicians' attitudes toward evidence based obstetric practice: a questionnaire survey

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Evidence based medicine integrates the best available data from clinical research into clinical practice to enhance the quality of clinical decisions and achieve the best possible outcome.<sup>1,2</sup> With a lack of awareness of relevant research, a substantial part of clinical practice in reproductive health relies on practitioners' personal experience, resulting in large variations in practice between healthcare workers.<sup>3</sup> The precise role of evidence based medicine is being debated; we therefore examined the awareness and views of medical practitioners with special emphasis on obstetric practice.

### Subjects, methods, and results

We mailed an anonymous, self administered, two page questionnaire to a random sample of 190 practitioners

in obstetric practice between March and May 1996. The response rate of family physicians (120/154, 78%) and obstetricians (28/36, 78%) was similar, as were the demographic characteristics of the urban and rural practitioners who responded. As expected, there were similar numbers of urban (63) and rural (57) family physicians, but only six rural obstetricians compared with 22 urban practitioners.

Overall, 113 (76%) of the 148 respondents were aware of evidence based medicine. However, 75 (51%) indicated that, when faced with a difficult clinical problem, they consulted a respected authority, 55 (37%) used a textbook or clinical practice guidelines, while only 12 (8%) conducted Medline literature searches. Fewer family physicians used Medline than did obstetricians (4 (3%) v 8 (29%),  $P < 0.001$ ). Forty (27%)

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