

# Practising GPs teaching medical students evidence based medicine

## A questionnaire survey

### BACKGROUND

The characteristics of practising general practitioners who teach evidence based medicine (EBM) during their clinical work – and their attitudes toward it – are poorly known.

### METHODS

One hundred and twenty-two Canberra GPs who previously had medical students attend their practice were sent a questionnaire on their education, experience, knowledge, confidence, and attitudes toward teaching EBM.

### RESULTS

Eighty-three (68%) GPs responded, 13% had postgraduate EBM training, and 20% taught EBM. A further 28% of GPs denied they were teachers of EBM but had asked students to find evidence to answer questions about patient care. Seventy-six percent of GPs could understand and explain at least one EBM term, and 17% over five terms. Most GPs welcomed EBM into their clinical work and agreed EBM improved students' learning. Barriers to teaching included a perceived lack of time, staff support, and the need for more EBM teacher training.

### DISCUSSION

Although few GPs had trained in EBM, many were teaching it. University teaching programs should build on GP confidence in EBM teaching.

**Evidence based medicine (EBM) is generally taught to medical students in the preclinical component of their curriculum.<sup>1</sup> It is only recently that the application of EBM has been formally taught during clinical attachments, including general practice.<sup>2</sup>**

Educational theory emphasises the importance of students being able to apply their learning to a relevant context.<sup>3–5</sup> One New Zealand study has shown that academic clinical teachers encourage students to achieve integration of EBM with clinical practice through modelling both its desirability and applicability,<sup>2</sup> but little else is known on the subject.

This study aims to describe the characteristics of practising general practitioners who teach EBM during their clinical work, and their attitudes toward it.

### Subjects and methods

In April 2005 we sent a questionnaire to 122 GPs from the

urban Canberra region in the Australian Capital Territory who had medical students attend their general practice within the previous 5 years. All students had been required to perform an EBM assignment as part of their community rotation of the Faculty of Medicine, University of Sydney program. The GPs had been provided with a handbook describing the EBM learning task, but did not receive training in EBM teaching.

### Questionnaire design

The anonymous questionnaire was derived from a previous New Zealand study.<sup>2</sup> It consisted of closed questions about the respondents' personal characteristics, whether they had formal training in EBM (including postgraduate courses, diplomas, or degrees) and how they taught EBM to students. Visual analogue scales were used to determine their attitudes and confidence in teaching EBM, their knowledge of EBM terms, and their perceived barriers and virtues of teaching EBM. Open

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ended questions explored any other barriers and virtues of teaching EBM. Scales were analysed using SPSS and compared differences between categories using the Chi squared test or the Mann-Whitney test, where appropriate. A content analysis of the responses to the open ended questions was performed in order to identify themes.

## Definitions

An 'implicit teacher of EBM' was defined as a GP who would deny teaching EBM, but was actually doing EBM teaching activity with students. An 'explicit teacher of EBM' was defined as a GP who agreed that they taught EBM. Neither the covering letter nor the questionnaire included a definition of EBM and how it might be taught. There was one reminder letter sent.

## Results

### Response

Of the 122 GPs contacted, 11 had left general practice, 28 did not respond, and 83 (68%) were still in Canberra and responded to the questionnaire. Eleven (13%) GPs had received postgraduate training EBM.

### Explicit teaching of EBM

General practitioners were asked: 'Have you been involved in teaching EBM to medical students?' Seventeen (20%) GPs stated they had been involved in such teaching. Five GPs had taught EBM for 1 year, five for 2–4 years, and five for 5 or more years. Twelve GPs taught EBM on a one-to-one basis in their clinics, three in seminars, and one had lectured a medical class.

General practitioners who had previous postgraduate training in EBM were more likely to teach EBM to students than those who did not have such training (55% vs. 15%, Chi squared test 6.784, df=1,  $p=0.008$ ).

### Students assisting in EBM

General practitioners were asked: 'How often in the previous year have you asked a medical student to assist you in finding evidence to answer a clinical question where you did not know the answer?' Fourteen (17%) GPs had worked with one student on this task, 14 with 2–4 students, and six with five or more students.

### Implicit teaching of EBM

There were 23 GPs who stated 'no' to: 'Have you been involved in teaching EBM to medical students?' but had performed the EBM task as asked in the second question with one or more students. These GPs did not differ from the GPs who explicitly affirmed they taught EBM by whether they had EBM training (Fishers exact = 0.0532).

### Confidence in teaching EBM skills

A visual analogue scale (where 100 = strongly agree, and 0 = strongly disagree) was used for each question to measure the confidence 30 GPs had toward teaching aspects of EBM in general practice. All 17 explicit GP teachers of EBM answered questions about how confident they were, compared to four implicit GP teachers of EBM (21%), and nine GPs

**Table 1. Understanding of terms used in EBM teaching by 78 GPs**

EBM 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
Absolute risk	3%	9%	62%	27%
Clinical effectiveness	1%	14%	57%	27%
Confidence interval	5%	23%	52%	19%
Heterogeneity	5%	54%	27%	14%
Number needed to treat	4%	8%	42%	46%
Meta-analysis	5%	12%	50%	33%
Odds ratio	6%	41%	38%	14%
Publication bias	5%	35%	40%	21%
Relative risk	1%	9%	62%	28%
Systematic review	4%	16%	55%	26%
Coincidence bias*	8%	56%	29%	8%
Inverse interval*	8%	79%	13%	0%

\* Fictitious terms

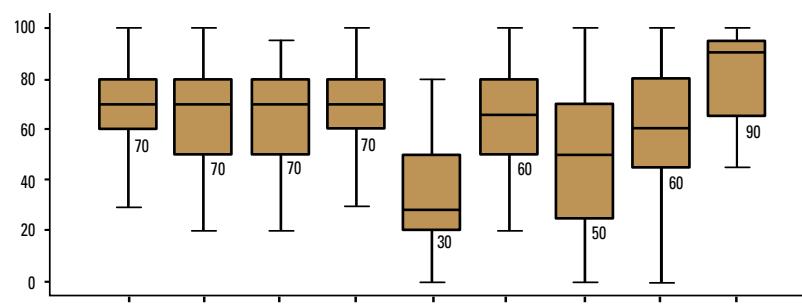


Figure 1. Attitudes of 83 GPs toward teaching EBM. A visual analogue scale was used for each question. Box plots show maximum and minimum values, median, first and third quartiles. Scales A and B 100 = extremely welcoming, 0 = extremely unwelcoming; scales C to I 100 = strongly agree, 0 = strongly disagree; scale D 100 = extremely useful, 0 = totally useless

- (A) How welcoming the GP was on the current promotion of EBM in medical education
- (B) How welcoming the GP thought colleagues were towards teaching EBM to medical students
- (C) How much the GP agreed or disagreed that practising EBM improved a medical student's ability to learn about patient care
- (D) The GP rated the usefulness of EBM in the day-to-day management of patients
- (E) There is not much evidence in my discipline on which to teach EBM
- (F) There is no staff support available for me to teach EBM to students
- (G) There is not much time to teach students EBM in clinical practice
- (H) Teaching students the art of bedside clinical experience is more important than teaching them EBM
- (I) I need more training to be an EBM teacher

(21%) who had not taught EBM to students. A mean (interquartile range) of 50% (55%) GPs were confident in asking an EBM question following a student's encounter with a patient; 50% (60%) were confident helping a student to find relevant articles in PubMed, MEDLINE, or other databases; 50% (45%) were confident helping a student to critically review article(s); 50% (46.5%) were confident helping a student apply the results of their critique of article(s) to patient care; and 50% (60%) were confident evaluating a student's EBM skills.

### Knowledge of EBM terms

*Table 1* shows the understanding 78 GPs had about the terms used in EBM teaching. Seventy-six percent of GPs could understand and explain at least one term to others, and 17% could explain five or more terms. Six GPs claimed they could explain one of the fictitious terms.

More GPs with postgraduate training in EBM (80%) could understand and explain at least one term to others than GPs who did not have such training (60%) (*Fishers exact* = 0.0002).

### Attitudes about teaching EBM

*Figure 1* shows that most GPs had a positive attitude to EBM in their clinical work and its use in teaching medical students about patient care. Most GPs disagreed that there is not much evidence in their discipline on which to teach EBM (scales A to D, G, and H). Most GPs found there was not enough time (scale E) nor enough support staff (scale F) available to teach EBM to students. The majority of GPs felt they need more training to be an EBM teacher (scale I).

There were no differences in these attitudes (scales A to H) between GPs who did or did not have training for EBM or if they were explicit or implicit teachers of EBM. However, GPs who taught EBM were more likely to agree that there was not enough time to teach EBM than those who did not teach it (*Mann-Whitney U test* = 485,  $p=0.014$ ).

### Qualitative analysis

Thirty-nine GPs (47%) wrote comments about the barriers and/or virtues of teaching EBM. *Table 2* shows the categorised themes

reiterated the attitudinal issues listed above and that a few GPs cast doubts on the philosophy behind the principles of EBM and teaching it.

### Discussion

This study found that 48% of GPs taught EBM to medical students and most were positive in their attitudes to teaching EBM, although only 13% had postgraduate training in EBM. General practitioners with EBM training were more likely to be involved in teaching it.

None of the Canberra GPs had been trained by the university to assist students in their EBM learning task on answering questions about patient care in general practice. Despite this, 20% of GPs explicitly affirmed they were teachers of EBM. Arguably, another 28% of GPs were implicit teachers of EBM because they were involving students in the EBM learning process.<sup>6</sup> The implicit GPs did not differ from the explicit GPs in their postgraduate EBM training or knowledge of EBM terms. However, these GPs were less likely to answer questions about their confidence in teaching specific aspects of EBM.

**Table 2. Qualitative comments by 39 GPs about the virtues and barriers of teaching EBM to medical students**

Comments	Percent (n=39*)	Example comments
More emphasis should be given to students gaining clinical experience rather than learning about EBM	33%	'Students can learn EBM from text books but most of my potentially live saving, critical decisions are based on experience which is only gained in clinical practice'
Supportive of EBM teaching	15%	'It seems that there are no major barriers to the teaching of EBM to medical students and they all seem to embrace it and are generally comfortable with the concepts of EBM'
GP knew nothing about EBM	15%	'I have no knowledge of EBM teaching or language'
Lack of time to teach EBM in general practice	13%	'I have no time in general practice to teach EBM'
GP needed more training in teaching EBM	13%	'As a GP I would like to be taught the EBM protocols and then would be happy to include this in teaching clinical attachments'
Doubt about the philosophy behind teaching the principles of EBM	10%	'I am not personally convinced of the value of EBM in many GP situations and therefore find it hard to be enthusiastic about teaching'

\*Respondents could make more than one comment

General practitioners in this study were similar to a previous New Zealand study of academic teachers of EBM in that few had postgraduate training in EBM, many wanted further training in EBM teaching, and many were implicit teachers of EBM.<sup>2</sup> Furthermore, both were positive about teaching EBM but found the lack of time and availability of support staff to be barriers to teaching. Canberra GPs differed from New Zealand academic teachers in that fewer GPs had asked a student to assist in finding an answer to a clinical question (41 vs. 47%).<sup>2</sup> General practitioners were neutral about how confident they were in teaching specific skills of EBM, whereas academic teachers were more confident. Finally, few GPs thought there was a lack of evidence available in general practice on which students could learn EBM, whereas more academic teachers thought this was a problem.

Educational theory emphasises the importance of students being able to apply their learning to a relevant context.<sup>3–5</sup> A positive attitude to EBM is likely to achieve the desired integration of EBM with clinical practice through modeling both its desirability and applicability.<sup>2,6</sup> The GPs' level of confidence in teaching EBM in this study was neutral and did not differ between those GPs who had or had not received postgraduate training in EBM.

In conclusion, although few were trained in EBM, these urban GPs were teaching students to use EBM for patient care. University undergraduate EBM teaching programs should include teacher training that builds on GP confidence to ask students to find answers to questions generated during patient consultations.

## Implications for general practice

- Medical students will continue to arrive at general practices with the educational task of learning the EBM process on patients they encounter in consultation.
- GPs will enhance their techniques for enabling students to find evidence to answer questions about patient care.
- University teaching programs should build on GP confidence in EBM teaching.

Conflict of interest: none declared.

## References

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