

# Continuing medical education: an opportunity for bringing about change in clinical practice

## Introduction

As the Continuing Medical Education (CME) programme of the Royal College of Obstetricians and Gynaecologists (RCOG) reaches the halfway point of its first five year plan, it is timely to review some of the current issues relating to the need for CME and the nature of CME itself. The practice of medicine over the last century has been in the process of moving, in terms of knowledge, from anecdote to evidence. This development has accelerated remarkably in recent years, with an ever-increasing number of research papers being published in an ever-increasing number of journals<sup>1</sup>.

However, the translation of research into clinical practice is somewhat of a 'holy grail'. In obstetrics there are clear examples of both inappropriate treatments being used long after they should have been discontinued, as well as appropriate treatments not being widely used after their benefits had been clearly proven. Diethylstilboestrol (DES) was used for 30 years in the belief that it would prevent a number of adverse outcomes. However, even after strong evidence became available in the mid 1950s that DES was not as effective as claimed, obstetricians continued to prescribe it until the 1970s<sup>2</sup>. Antenatal corticosteroids used prior to anticipated preterm delivery have been proven to reduce the neonatal morbidity and mortality<sup>3</sup>. As a result of influential reviewers repeatedly making false positive and false negative inferences about the effects of administering corticosteroids, there was a resultant delay in their widespread use in clinical practice leading to thousands of preterm babies suffering and dying unnecessarily<sup>4</sup>. Until recently many units were still not routinely giving antenatal steroids in high risk cases<sup>5</sup>. There is welcome evidence that this situation is, at last, changing with a recent survey in Scotland (Scottish Obstetric Guidelines and Audit Project, personal communication) demonstrating a major improvement in policy. The ventouse has been shown in a number of randomised controlled studies to be safer for mothers and therefore the instrument of choice for assisted vaginal delivery<sup>6</sup>. It is encouraging to see that UK obstetricians are changing their clinical practice and a recent survey in this *Journal*<sup>7</sup> has demonstrated a move towards the vacuum extractor. This view is not shared by obstetricians at all levels and reflects a will-

ingness to be largely influenced by tradition and selective review of the literature<sup>8</sup>.

## Why postgraduate education?

The problems associated with keeping up to date are widely recognised. They have been neatly summarised by Sackett: 'We may do a good job of teaching our students and house-officers the best medical practice available today, we do a poor job of helping them how to decide when what they learned from us is no longer good enough and needs to be changed. We do not teach them how to keep up to date. Thus, clinicians continue to mimic their teachers even decades after completing training, and tend not to alter their previously learned diagnostic behaviour and treatment decisions, even when evidence dictates they should'<sup>9</sup>.

In an ideal world all doctors graduating from medical schools would have the skills to assess new evidence and implement changes to their practice that would improve patient outcomes. Thus evidence from new research with clear patient benefit would be routinely incorporated, whilst practices without evidence of benefit would fall from practice.

However, even if one were to make undergraduate teaching ideal, the reality of the situation in the UK at present requires emphasis at postgraduate level. Obstetricians in teaching and district general hospitals have the most influence on daily clinical practice, and should appraise their practice in the light of evidence. Translating research into practice at a more junior level is complicated by the necessity of competing in a hierarchical system of training. As long as progress is dependent on patronage, the junior doctor will conform to the traditional teaching and practice of senior clinicians.

Consultant obstetricians themselves should understand the importance of evaluating evidence to assist their practice and share this knowledge with their colleagues in order to bring about change.

## Evaluating the evidence

The problem of the increasing volume of material that any individual would need to read and understand to remain up to date has been noted<sup>10</sup>. The

skills necessary to appraise research material critically must be learnt, and although incorporated into some medical school curricula<sup>11</sup>, these may not have been part of most consultants' training. Training in these areas is now available to all health personnel with the Critical Appraisal Skills Programme (CASP, R. Milne, Oxford) and Teaching Evidence Based Medicine (Centre for Evidence Based Medicine, D. Sackett, Oxford). The importance of improving the critical evaluation of research has been recognised by the Royal College of General Practitioners and the Royal College of Surgeons.

To some extent the problems of the increasing number of publications and critical appraisal can be overcome by systematic reviews, such as the Cochrane Collaboration Module on Pregnancy and Childbirth (CCPC)<sup>12</sup>, but this database is limited to randomised controlled trials, and many forms of obstetric practice are not included in it. Obstetricians will have to evaluate other forms of research such as papers published in journals, conference presentations and information posted on the Internet.

### Bringing about change

Changing practice can be instituted in a number of ways and at a number of levels, from national recommendations to individual clinical practice, or merely by increasing public awareness<sup>13</sup>. Deciding upon the most appropriate level to target depends upon the nature of the change required. In the UK each consultant is an independent practitioner in that they are not usually clinically responsible to a chief or head of department, and in most instances this will be the most appropriate level, not only to ensure that trainees are properly trained, but more importantly to ensure that women receive the best care. The difficult task of altering established practice in individual obstetricians is compounded by the need to co-ordinate practice amongst the consultant members of a unit. In the UK obstetricians in a maternity unit may have difficulty in reaching agreement on basic procedures.

Behaviour is a complicated phenomenon and defining the science of changing behaviour is no less complicated. Three categories of factors contributing to changing behaviour are described in the PRECEDE framework of Green *et al.*<sup>14</sup> as 1. predisposing factors, 2. enabling factors, and 3. reinforcing factors.

#### 1. Predisposing factors

These relate to the motivation of the individual and include knowledge, attitudes, beliefs, values and per-

ceptions. Although knowledge is the foundation upon which all other actions should be based, merely publishing knowledge (the 'passive diffusion' theory) is ineffective in changing practice<sup>11,12,16</sup>. Even if an individual could read all the published material, it would take too long to appraise the information critically and apply it to clinical practice. It appears that clinicians prefer summaries to full publications of original research, and that only 30% of practitioners even examine (never mind critically appraise) the methods used in the research studies they do read<sup>17</sup>.

There is thus a role for organisations to collect, collate, synthesise and disseminate research information, along with implications for clinical practice (the 'active diffusion' theory). Within obstetrics, the Effective Care in Pregnancy and Childbirth (ECPC) database has been available since 1989, and this is now available on disk as the Cochrane Collaboration Module on Pregnancy and Childbirth (CCPC), which has been updated twice yearly, with an increasing number of reviews being incorporated in the Cochrane Database of Systematic Reviews (CDSR)<sup>12</sup>. However, even with this more convenient form of information, there is no evidence of any beneficial effect on clinical practice. A survey in 1993 of teaching hospitals together with a sample of district general hospitals in England showed that only 62% of the teaching hospitals and 16% of the district general hospitals had a copy of CCPC<sup>18</sup>.

Other groups are pursuing a similar approach to influence clinical practice, by means of synthesising data and producing clinical practice guidelines. The hope is that obstetricians will follow the recommendations in the guidelines and thus promote effective practice whilst reducing inappropriate practice. There has been a proliferation in the number of guidelines in recent years on both sides of the Atlantic<sup>19</sup>. The American Medical Association has listed over 1200 practice guidelines and the list is growing at over 300 per year<sup>17</sup>.

The acid test of the value of guidelines is whether they change clinical outcomes. In general clinical practice guidelines have been remarkably unsuccessful in this regard<sup>20</sup>. In the United States the dedicated efforts of the National Institutes of Health (NIH) to affect clinical practice through a consensus conference approach failed to produce any change in clinical care<sup>21</sup>. In Canada a consensus statement, produced by a process similar to that used by the NIH, recommended a reduction in the caesarean section rates<sup>14</sup>. Although most obstetricians were aware of and agreed with the recommendations contained in the consensus statement, and even reported changing their practice as a consequence, the actual rate of caesarean section was unchanged. The authors sug-

gested that guidelines for clinical practice may predispose clinicians to consider changing their practice but are unlikely to effect change in actual practice.

Although guidelines themselves may not change practice, providing them to opinion leaders—people nominated by their peers as trustworthy sources of information—may be effective in altering practice to improve the quality of care<sup>22</sup>. The literature is somewhat sparse in this area, but this approach may be valuable where there is a clinical director or chief responsible for clinical practice in a unit. This approach has not been studied so far in the UK. Owing to the organisation of our medical services, it may be difficult to identify an obstetrician in a maternity unit with sufficient authority to ensure that his colleagues adhere to clinical guidelines. On the other hand, opinion leaders can prevent or delay the process of achieving change by the diffusion process by withdrawing their support from the proposed changes<sup>18</sup>. How many maternity units have to wait for the retirement of an influential senior colleague before change can occur?

Direct attempts to influence the beliefs and clinical behaviour of clinicians have long been used by pharmaceutical companies. Unremarkably, there is no evidence of the value of this approach, though one would suppose that it has commercial value. A similar approach—educational outreach or academic detailing—has been used to alter clinicians' prescribing practices. In the United States this method has successfully reduced inappropriate prescribing as well as unnecessary health expenditure<sup>24,25</sup>. There are a number of problems with applying this means of changing practice to more general clinical scenarios. Knowledge of the usual prescribing practices of the individual must be ascertained, a relatively straight forward procedure using the Medicaid prescription claims database, but infinitely more difficult when applied to a clinical procedure where data is not routinely collected by the individual practitioner. The motivating factors for each clinician must then be ascertained by conducting one-to-one interviews. Again, this would involve considerable time and cost. The costs of collecting information on usual practice, let alone interventions, may be prohibitive, and the costs of health care may rise should the intervention result in more appropriate but more expensive behaviour. Although pharmaceutical companies target clinicians by post, there is little evidence of the value of this approach to changing practice. Although short term behaviour may be influenced, there seems to be no long term effect on physician's knowledge<sup>26</sup>.

Feedback of information on clinical practice has been used successfully to change clinical practice. In

Saskatchewan a consensus committee defined appropriate indications for hysterectomy and then provided information on the appropriateness of the hysterectomies performed; this procedure resulted in a reduction in the number of inappropriate hysterectomies<sup>27</sup>. An educational programme to reduce inappropriate X-ray pelvimetry resulted in a significant reduction in those hospitals who first received an educational visit followed by monthly reports of their use of x ray pelvimetry<sup>28</sup>.

Information on individual performance improved the quality of cervical smears where a large number of smears is performed but not where a small number is performed, probably due to the larger amount of information on performance received by those carrying out many smears<sup>29</sup>. This would be a valuable intervention if a small number of clinicians performed the majority of smears but if each clinician performed fewer smears then any improvement in practice would be unlikely. Information on individual performance is most likely to change practice in those clinicians who had already decided to review their practice<sup>30</sup>.

The influence of public pressure in changing clinical practice has received little formal study. In terms of cost per clinician influenced a public information campaign could compare favourably with programmes directed at individual clinicians, with the possible advantage that both doctor and patient will have been exposed to the same information. A public information campaign in the media successfully reduced the rate of hysterectomies in a Swiss canton<sup>13</sup>.

## 2. Enabling factors

Undergraduate and postgraduate training bodies have a duty to ensure that the individual clinician has the necessary skills, and the health care provider must ensure that the necessary resources are available to enable those skills to be practised in a safe and effective manner.

One means of ensuring the availability of clinically effective treatments is through the purchasing process. The NHS Executive has recommended to purchasers that clinical effectiveness and guidelines should be taken into account in contracting, though the complexities of implementing this recommendation have been recognised<sup>31</sup>. The concept of protocols being purchased rather than activity has been suggested<sup>32</sup>. From the purchasers' perspective guidelines will increase the amount of effective care whilst reducing costs. This premise only holds true if the result of implementing the guideline is to reduce the level of unnecessary treatments. Conversely, if imple-

menting the recommendations contained in guidelines increases the number of appropriate treatments then overall costs may rise. At best purchasing guidelines are a crude method of changing practice, but probably of value as part of a package aimed at improving the quality of health care.

Financial rewards or penalties have been employed to alter clinicians' practice, but often to contain costs rather than to promote evidence based medicine. Observational studies from the United States suggest that physicians change their practice in response to financial incentives directed at both the individual and the hospital<sup>20</sup>. In the UK there was a striking increase in the rate of voluntary sterilisation once supplementary payment was introduced<sup>33</sup>. Although rewarding those providing appropriate care could be achieved relatively easily in a fee-for-service system, implementing this in a salaried system could be much more difficult and costly.

Legislation will also change clinical practice and has distinct value in particular circumstances, for example the practice of termination of pregnancy; however, legislation for all the complex and changing practices in medicine is clearly impracticable.

### 3. Reinforcing factors

The attitudes and behaviour of peers, employers and purchasers of health care all contribute towards initiating and maintaining changes in practice. Unfortunately, the factors that will reinforce a positive change are often the same that cement the position of current practices. Most physicians share a common cultural, intellectual and professional heritage and medical activities take place within this framework<sup>23</sup>. Local professional communities, in spite of their wider links in medicine, behave as closed systems which are sceptical about published research, doctors in the group turn instead to their colleagues for advice<sup>34</sup>. Opinions are formed by discussion amongst members of the group, which may include the local 'opinion leader', providing a stamp of approval or even delay or prevent the introduction of change. Clinicians rely on a local consensus producing an 'orthodoxy' which supports each member<sup>34</sup>. A consequence of this behaviour is that when a practice is perceived as being the standard (even if there is no supporting evidence for its use) the onus shifts to the critics to prove its lack of value rather than on its supporters to prove its value<sup>18</sup>.

This system may be one of the larger barriers to achieving change in obstetrics and gynaecology where many standard practices have never been subjected to a randomised trial. The effect of personal beliefs was highlighted in a recent survey of female

British obstetricians in which 31% would choose an elective caesarean section rather than labour if they had an uncomplicated singleton cephalic presentation at term<sup>35</sup>. This large difference between clinical practice and guidelines and obstetricians' personal views needs to be considered when attempting to change clinical practice.

Another approach to ensuring the maintenance of clinical standards is by making continuing education part of the re-licensing process of clinicians. Since the mid-1980s the licensing authorities in the Canadian provinces of Quebec, Ontario and Manitoba have introduced programmes to assess the clinical skills and abilities of physicians with suspected deficiencies<sup>36</sup>. Quebec and Ontario have a peer review process to identify those physicians with deficiencies requiring correction. All three provinces have a physician assessment and improvement programme which involves continuing education specific for the individual physician. These are effective in improving clinical competence, although the cost is high. The potential loss of a licence to practice medicine is a very strong motivating factor for a physician.

### Continuing medical education

Continuing medical education programmes have developed in the past few decades as a formal means of ensuring that clinicians' knowledge is regularly brought up to date. Although a more recent innovation in this country<sup>37</sup>, it is now a major industry in its own right in the United States and Canada and there is a large experience from which we can judge its effectiveness in changing clinical practice.

One of the problems with CME is that different programmes encompass a wide range of activities. A review of studies of CME published in the 1970s suggested that CME can result in changes to physicians' performance<sup>38</sup>. The authors noted that very few descriptions of CME activity were based on the four major elements of the learning process: identification of needs, objectives, methods and evaluation. Although physicians' performance could be improved there was no mention of the effect on patient outcome. A systematic review of the literature from 1970–1983 found 248 studies of CME interventions of which 13% described randomized trials, and 7% assessed patient outcomes<sup>39</sup>. A similar review of the years 1975–1991 found 777 CME studies of which 50 were randomised controlled trials<sup>15</sup>. Seven of these 50 trials evaluated patient outcomes. The most recent review, covering 1975–1994 found over 6000 articles on CME, of which 99 were randomised controlled trials which assessed objectively

physicians' performance or patient outcome<sup>40</sup>. Single interventions achieved a change in 60% of the trials and successful methods included academic detailing, opinion leaders, patient mediated methods and physician reminders. Relatively short (1 day or less) formal CME events such as courses and conferences generally effected no change. When effective single interventions are combined positive changes generally result. Multiple interventions, usually three or more interventions, were successful in 79% of these studies.

## Conclusion

Bringing about changes in clinical practice that result in improvements in patient outcome is a complicated and difficult process. There is no one approach that can be successfully applied in all situations. There are no magic bullets<sup>41</sup> for improving the quality of health care, though current literature does offer some suggestions. The reasons for suboptimal performance together with the barriers to change must first be identified before the interventions most likely to be effective can be selected and applied. A successful programme is likely to require a range of interventions.<sup>42-44</sup> and be part of a continuing programme to maintain and improve standards of care. In the UK the most effective level of intervention in terms of improved patient outcome and cost is the individual consultant.

Medical colleges are ideally situated to be at the centre of an effective CME programme that 1. identifies substandard care and the reasons for this; 2. defines and applies effective interventions; and 3. is able to reinforce the interventions. A comprehensive and accurate database of clinical activity is the fundamental requirement, and it is well within current technological capability to have each units' clinical database linked to a central database at the college. Amongst other functions this would enable a CME programme to be targeted at those clinicians providing substandard care, but tailored to their individual needs and objectives. It would provide the means of evaluating the effectiveness of any CME intervention, and also to define the minimal standards of care expected of specialists. Those persistently unable to maintain a minimum standard of care could easily be identified and measures taken to improve their practice. Conversely those achieving the highest standard of care could be identified and their efforts recognised.

Although such a central database has connotations of 'Big Brother', without such information medical colleges are unable to pass any meaningful comment on standards of care in clinical practice. It is in the interest of all practising clinicians that it is

the colleges and not other organisations that are collecting and using this information to maintain and improve the quality of care provided to patients.

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