Consulting the oracle: a Delphi Study to determine the content of a postgraduate distance learning course in therapeutics

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Aims To determine the content of a distance learning course in therapeutics for general practitioners (GPs).

Methods This paper reports the results of a three-round Delphi study. The respondent group comprised 21 GPs who were expert in their field. In the first round, the experts were interviewed to determine the knowledge, skills, competencies and attitudes required by GPs to prescribe effectively; the justification for, and scope of a distance learning course; and the preferred learning methods, format and methods of assessment. The first round generated 251 statements, which were collapsed into 108 statements covering thirteen domains. In the second and third rounds, a questionnaire was posted to the GPs. 95% responded to the second round questionnaire and agreed upon 86 statements, which were then collated into four domains. In the third round, 19 GPs rated each of the 86 statements on a five point scale. Consensus was reached for 99% of statements: 40 on the aims, design, format, organization and assessment of the course; and 45 on the knowledge and skills to be acquired by GPs who complete the course.

Results The results revealed a consensus in favour of:

- modules at regular intervals
- some flexibility in meeting deadlines
- interaction among students for mutual support
- easy access to course tutors
- some face-to-face contact to complement distance learning material
- clear guidance on effective and safe prescribing
- emphasis on importance of 'people skills'

Conclusions The Delphi process can be used to determine the competencies required for continuing medical education in therapeutics.

Keywords: Delphi, therapeutics, distance learning, general practice, course development, continuing medical education (CME)

Introduction

Continuing medical education (CME) not only enhances the knowledge and performance of physicians, [1] but also improves health care outcomes [2]. Professionals are more likely to take part in continuing education if they perceive it to be relevant to their work [3]. Educational strategies directed towards general medical practitioners (GPs) should:

- empower the GP to provide a higher standard of medical care
- facilitate collaboration between the GP and the primary care team
- identify and implement research findings
- take account of the time limitations imposed by the GPs' pattern of work [4]

The case for CME in the field of therapeutics is compelling, chiefly because of the continual additions of new drugs and formulations to those already available for

use, but also because of the recurring need for doctors to review the competing priorities of benefit, risk and cost when prescribing medicines.

Most doctors would admit that their understanding of pharmacology has not kept pace with advances in therapeutics. They have little or no formal training in therapeutics beyond the undergraduate pharmacology course and the teaching of therapeutics is often left largely to the idiosyncratic personal preferences of clinical teachers [5]. Once basic and vocational medical training are complete, further training is dependent on individual initiative, and relies heavily on information made available directly or indirectly by the pharmaceutical industry. Independent published guidance for prescribers (e.g. British National Formulary, Drug and Therapeutics Bulletin, Prescribers' Journal, MeReC Bulletin) is uncoordinated and used more for reference than as a source of education. It may enhance knowledge, but does not develop prescribing skills.

One way to ensure that CME is relevant to practice is to produce an educational programme that is competency-based. The Delphi process [6] is a reliable way to determine what competencies are required [7, 8], and has frequently

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been used in curriculum planning [9] and development [10, 11]. We chose to use the Delphi process to consult a group of experienced GPs about the knowledge base and skills considered essential for everyday prescribing, and the optimal design of a distance learning course that would allow their acquisition.

Methods

We asked a professor in general practice to produce a list of well-qualified and experienced general practitioners who had an active interest in CME in primary care. Twenty-three were identified and all received a letter, explaining the nature of the study, the selection procedure used, the extent of their involvement, and an invitation to take part in the Delphi process. Twenty-one (91%) agreed to take part, a suitable number for a Delphi study [6].

The Delphi process

The Delphi process is a systematic attempt to produce a consensus, by collecting statements from a panel of experts on a specific issue. The anonymity of panel members and their statements is guaranteed, so that members do not confer with each other. This process assesses the extent of agreement among the panel by collating the statements and sending them to each expert, who is asked to reconsider his position and respond by post. All opinions are again collated and this process is repeated until a consensus is reached.

The interview schedule

A loosely structured interview schedule was developed. This consisted of very broad questions, designed to encourage respondents to put forward their own ideas, views and opinions without any encouragement or restrictions. The interview schedule was piloted on two GPs, whose responses were included in the final study, as no further modification proved necessary.

The interviews were carried out by two social science research fellows, who have extensive experience in interview techniques, during the period August–November 1995. All were tape recorded and partially transcribed to facilitate analysis.

The interviews aimed to determine:

- a comprehensive list of the areas of knowledge, skills, competencies and attitudes required by GPs to prescribe effectively in general practice
- the justification for a distance learning course in therapeutics for GPs
- the scope of a distance learning course in therapeutics that would encompass topics relevant to everyday general practice
- the preferred learning methods, course format, length, and method of assessment

Results

Profile of the expert group

In order to provide a profile of the expert group, the GPs were asked to fill in a questionnaire. All 21 (17 male and 4

female) completed it. They had been qualified for between 3 and 39 years, with a mean of 17.33 (s.d. = 8.34) years, and were all in regular clinical practice. They all had postgraduate qualifications and 15 (71%) had obtained the MRCGP (Membership of the Royal College of General Practitioners) diploma. None had a postgraduate qualification in pharmacology or therapeutics. Thirteen (62%) had a formal academic commitment, for example to a university department; 15 (71%) were involved in providing continuing education for qualified GPs; 12 (57%) provided education to other doctors (not GPs); and 8 (38%) provided education to other health professionals, such as practice nurses.

Nine (43%) practiced in an urban setting, two (9%) in a rural one, and 10 (48%) straddled both. Eleven (52%) were fundholders and 14 (67%) worked in training practices.

A three-round Delphi process was used to identify and prioritize the design, content and layout of the course.

The first round

The first round interviews generated a list of 251 statements. These were analysed, categorized and collapsed by the authors into a shorter list of 108 statements, which was then divided by content into thirteen domains for the next round. The domains are shown in Table 1.

The second round

In the second round, the GPs were sent a list of the 108 statements and asked whether they agreed or disagreed with each. For example, '*A postgraduate diploma programme should be PGEA [Postgraduate Education Allowance] accredited*'. They were also given the opportunity to add any elements that had not been suggested already, but which they thought, on further reflection, to be worthwhile.

Twenty (95%) GPs responded to this questionnaire. No further elements were added. Statements were removed from the list if more than two-thirds of the GPs disagreed with them: 22 statements were removed in this way, leaving 86 that were collated into four headings: Course Set-Up and Content; Location, Structure and Format, Assessment and Communication; Knowledge Of Disease Management, Prescribing Issues and Monitoring Prescribing; Prescribing Skills, Communication Skills, Use of Information Sources and Management.

Table 1 Domains identified from the interviews.

1 Therapeutics and disease management
2 Prescribing issues
3 Monitoring prescribing
4 Prescribing skills
5 Communication skills
6 Information and management
7 Course admission and accreditation
8 Duration of course
9 Course content
10 Location of course
11 Course structure and format
12 Assessment
13 Communication and support

The third round

In the third round, the GPs were asked to rate each of the 86 statements on a five-point scale ranging from *Definitely necessary* to *Definitely unnecessary*. They were given the opportunity to provide reasons for their choice. Nineteen (90%) of the GPs responded to the third round questionnaire. Consensus was defined as agreement (*Definitely necessary*; *Important*; or *Worth considering*) among at least two-thirds (66.67%) of respondents. Using this criteria, consensus was reached for 99% of statements and these are shown in Appendix 1. Consensus could not be reached on one statement: *Use recorded audio tapes as the predominant teaching tool* (63.7%). It was decided that this lone disagreement did not merit a fourth round.

Discussion

Needs assessment is one of the most difficult aspects of CME and is often omitted or carried out inadequately. However, it is one of the most important components of CME planning [12]. The Delphi process is recognised as one of the most valuable ways to determine competencies required by professionals in practice [8]. We could have used other methods, such as critical incident analysis [13] and behavioural event interview [14], but we decided that the Delphi process had the advantage that interviewees were not known to those analysing the results, and were also unaware of each others' identities, so that no bias was introduced by conferring.

Although it has been shown that doctors who are willing to participate in expert panels are representative of their colleagues [15], the exact composition of the group may affect the outcome [16]. The fact that the expert group did not include any representatives from the target learner group, for example GP registrars, could be viewed as a weakness. This was deliberate; the Delphi process relies on the general expertise and experience of leading members of the profession. However, no member of the expert group had a postgraduate qualification in pharmacology or therapeutics, so the opinions of the group, about the knowledge and skills that should be acquired from the course, are likely to be compatible with those of the ultimate learners. Moreover, the course that emerges from this study will be subjected to the opinions of potential users during its development.

The validity of the Delphi process has been questioned [1]. In any study that requires interpretation of a recorded conversation, the subjective nature of the process used can introduce bias. We took great care to avoid this. Apart from a number of key headings, the interviewers started with a blank sheet of paper to elicit the views of the expert group. The interviewers were 'naive', in that they knew little about the topic and so were not in a position to lead the interviewees in their responses, or to bias the interpretation. To rationalize the responses into a form suitable for the questionnaire in the second round of the study, some statements with a common theme from the first round were merged. This interpretation stage involved researchers other than the interviewers to ensure that the statements were valid and reliable.

We should consider whether it is valid to group together those who opted for the response '*Worth considering*' with those who agreed more positively with the statements in the third round. One could argue that the interpretation of '*Worth considering*' may have varied between members of the expert group. However, we do not believe that this response was viewed as a 'don't know' option in the context of this study. If experts thought that any aspect was worth considering, we felt it would be unwise to ignore this, and took the view that it would be easier to omit than to add items at a later stage in the development of the course.

Points of particular interest which emerged included the consensus against the incorporation of a final examination and the low interest shown in the use of delivery systems other than text. It is perhaps not surprising that the examination did not find favour—no-one likes to sit an exam if it can be avoided. However, given that the majority of the expert group had experience of providing postgraduate education, and that they were fully aware of an intention to deliver the course by distance learning, we were surprised that they did not feel it essential to test individuals in person, rather than entirely through assessment completed in their own time. One criticism that can be levelled at distance learning courses is that one cannot be completely sure that the student has performed all the course assessments personally. An examination is probably the only tool that course organizers and academic institutions have to attempt to validate this, and its inclusion in the proposed course is likely to be mandatory.

The low level of interest shown in delivery systems other than text may reflect the shortage of time available to the potential learner group; text can be read quickly and skimmed, if necessary, whereas other modes of delivery such as audio, video and computer-based learning packages do not offer this flexibility. Video recorders and computers are also fixed objects and do not have the portability of text. It is also likely that those experienced educators in the group were aware of the relative costs of producing material on various media and opted for the cheaper alternative to keep course fees to a minimum. If we do decide to use media other than text in the course, this will be only where the alternative can deliver the learning material more effectively than text alone.

We have found no evidence of similar research in this area. However, a recent study that examined the experiences of postgraduate education found distance learning to be the least preferred method of learning [17]. Our expert group gave no indication that this was the case, and the consensus was that the course should be provided largely at a distance with only occasional face-to-face sessions.

This study has provided invaluable information and guidelines for a new course in therapeutics and prescribing. The course team will now go on to develop the course based on the inferences drawn from information shown in the appendices. For example, the course will be designed to:

- be taught using distance learning material, with some face-to-face contact
- offer some flexibility in meeting deadlines, without being open ended

- provide modules at regular intervals rather than at the request of individual students
- provide easy access to support from course tutors and personal supervisors
- encourage interaction among students for mutual support
- provide clear guidance on effective and safe prescribing
- emphasize the importance of 'people skills' when prescribing in a primary care setting

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Appendix 1

The aims and design of the course

<i>A Postgraduate Diploma Programme Should:</i>	<i>% Agreement</i>
1. Be designed to cater for trainee GPs as well as qualified GPs	73.7
2. Offer exemptions for parts of the course based on individual qualifications	84.2
3. Be PGEA accredited	94.7
4. Provide credits which could be transferred to other courses	94.7
5. Offer some degree of flexibility with respect to the time permitted to complete the course, but not open-ended	100
6. Be relevant to general practice and prescribing	100
7. Be flexible enough to meet the needs of all GPs	100
8. Have a strong clinical orientation with a good scientific basis	100
9. Have a strong clinical orientation with a good practice basis	100
10. Be practical and not too academic in content	100
11. Be written by an appropriate clinical specialist with input from GPs	84.2
12. Be piloted and evaluated by GPs before being made generally available	94.7
13. Include a reference list	100
14. Include a suggested reading list	100
15. Provide review articles e.g. the Effective Health Care Bulletins	94.7

The Format, Organisation and Assessment of the Course

<i>A Postgraduate Diploma Programme Should:</i>	
1. Be provided largely by correspondence/at a distance	89.5
2. Incorporate small group work at the university at regular intervals	89.5
3. Incorporate small group work within the students' locality at regular intervals	94.7
4. Provide a detailed list of objectives at the start of the course	100
5. Provide a structured approach to guided self-learning	100
6. Provide set modules at regular intervals	94.7
7. Provide set modules on the basis that only when one is completed will the next be issued	84.2
8. Be based on relevant articles from appropriate journals identified by course organisers	89.5
9. Use real-life cases as its main teaching method e.g. critical incidents from one's own experience	89.5
10. Use the printed word as the predominant teaching tool	78.9
11. Use video/audio, where appropriate	89.5
12. Be attractive and eye catching with regard to presentation e.g. professionally designed and printed	83.3
13. Be easy to use and follow	100
14. Include multiple choice questions in the assessment process	94.4

Appendix 1 (*continued*)

	% Agreement
15. Include short answer questions in the assessment process	100
16. Include a project in the assessment process	94.4
17. Include some element of self-assessment e.g. multiple choice questions with answers and references	94.4
18. Use continuous assessment as the main method of assessment	100
19. Incorporate easy access to tutors	94.4
20. Not incorporate a final examination	83.7
21. Incorporate regular contact with a personal supervisor	100
22. Incorporate a personalized feedback mechanism for work submitted for assessment	100
23. Have a good communications network e.g. freepost envelopes, telephone helpline	100
24. Incorporate a general feedback mechanism for all students e.g. via a regular course bulletin	100
25. Have a facilitation plan to help students contact each other e.g. 'buddy pair' plan	88.9

The Knowledge Acquired By GPs Who Have Completed the Course

GPs who have completed the course should:

1. Know the difficulties inherent in making accurate diagnoses e.g. where non-specific symptoms are presented by the patient	100
2. Have an up-to-date knowledge of the major areas of therapeutics and disease management	100
3. Have a clear understanding of which treatment to choose and why	100
4. Have a clear understanding of the efficacy of each treatment	100
5. Have a clear understanding of the dosage regimens associated with each treatment	100
6. Have a clear understanding of the duration of action associated with each treatment	100
7. Have a clear understanding of the potential drug interactions associated with each treatment	100
8. Have a clear understanding of the side-effects associated with each treatment	100
9. Have a clear understanding of the contraindications associated with each treatment	100
10. Have a clear understanding of the disease processes that are affected by each treatment	100
11. Be able to distinguish between those drugs used for acute disease and those for longer term use	94.7
12. Have a sound knowledge of the pharmacology of current treatments available	94.7
13. Have a sound knowledge of the differences between drug groups, and among drugs within one therapeutic group	100
14. Have a working knowledge of pharmacokinetics and how this can help in the prescribing decision-making process	100
15. Know those areas of therapeutics and disease management where expert opinion varies or is divided	100
16. Be able to give guidance to patients regarding those medicines available over-the-counter, without a prescription	100
17. Have a working knowledge of alternative, non-pharmacological treatments and therapies, and when to use them e.g. homeopathy, aromatherapy	78.9
18. Know the limitations of drug treatment	94.7
19. Know when advice and education may be the preferred option e.g. lifestyle advice	100
20. Have a good understanding of the ethical issues influencing the decision to prescribe or not	100
21. Know what is meant by rational prescribing	100
22. Know how to achieve rational prescribing	100
23. Know the common pitfalls associated with prescribing	100
24. Know how to handle difficult prescribing issues effectively	100
25. Know of the different prescribing behaviours, and different attitudes to prescribing, which exist in general practice	94.7
26. Know how prescribing in the secondary care setting can affect prescribing in primary care	89.5
27. Understand how economic considerations e.g. cost-effectiveness, value for money should influence the prescribing process	100
28. Be up-to-date with developments in information technology that could be of use in the prescribing process	100
29. Know how to construct a log of prescribing activity	100
30. Know how to carry out an audit of prescribing practice	100
31. Know how to use a computer to access electronic information	94.7

The Skills Acquired By GPs Who Have Completed The Course

GPs who have completed the course should:

1. Be able to make a rational decision about when to prescribe	100
2. Be able confidently to choose between different treatments on the basis of documented evidence of clinical efficacy	100
3. Have the confidence to use knowledge gained from personal experience of prescribing from within a small personal formulary of drugs	100
4. Demonstrate flexibility when prescribing and avoid prescribing by habit	100
5. Have an open mind to new therapies and developments in disease management	100
6. Be able to use prescribing guidelines and policies effectively	94.7
7. Be confident to know when, and how, to deviate from/breach prescribing guidelines and policies	100
8. Be competent to communicate with patients—listening, explaining, negotiating, dealing with patient pressure etc.	100
9. Be competent to develop the doctor-patient relationship e.g. knowing the patient and his/her needs and wants	100
10. Be competent to disseminate information appropriate to the patient's needs	100
11. Be able to develop a patient management plan	100
12. Be able to use, to their best advantage, all the different sources of information of use in the prescribing process e.g. BNF, Drug Information Bulletins, appropriate journals	100
13. Be able to use the pharmaceutical company drug representative to their advantage	84.2
14. Be able to use the expertise of other members of the health care team, e.g. nurse, pharmacists, to their advantage	100