RESEARCH PAPER

A study of smoking and smoking cessation on the curricula of UK medical schools

E Roddy, P Rubin, J Britton, on behalf of the Tobacco Advisory Group of the Royal College of Physicians

Objective: To identify current practice in teaching on smoking and smoking cessation in UK medical schools, and establish whether newly qualified UK doctors feel prepared to deliver smoking cessation interventions.

Design: Search of published curricula from all UK medical schools; questionnaire surveys of all UK medical school deans and UK qualified pre-registration house officers (PRHOs).

Participants: Deans or nominated representatives from all 24 UK medical schools with current undergraduates, and all UK qualified PRHOs.

Main outcome measures: Inclusion and organisation in curriculum of 15 predefined core topics related to smoking (deans); perceived readiness to deliver smoking cessation interventions (PRHOs).

Results: There was no mention of smoking or smoking cessation in the published curriculum material of 10 (42%) medical schools. Deans reported compulsory teaching on a mean (SD) of 9.5 (2.8) core topics, while PRHOs recalled compulsory teaching in only 6.6 (3.2). Training in clinical aspects of smoking cessation was particularly neglected, with 60% of PRHOs reporting that they graduated unable to deliver smoking cessation interventions in accordance with national guidelines. Only 17% of PRHOs felt well prepared to deliver advice on using nicotine replacement therapy, and 5% on bupropion.

Conclusions: Teaching on smoking cessation in UK medical schools is inadequate.

Cigarette smoking is the most important public health problem in Britain and every year accounts for over 117,000 deaths, the loss of more than half a million years of life, over 300,000 hospital admissions, and over 380,000 general practitioner consultations. Smoking cessation interventions using behavioural support, nicotine replacement therapy (NRT), bupropion, and other pharmacotherapies are widely available and rank among the most cost effective interventions available in medicine. There is good evidence that advice from a physician acts as a catalyst for change, and that training physicians to deliver smoking cessation interventions can increase overall quit rates. The importance of delivering smoking cessation interventions in the promotion of health and prevention of disease has now been recognised by the UK government, and is to become a routine component of health care delivery as part of the National Health Service (NHS) plan. However, despite the importance of cigarette smoking as a public health problem and in contrast to other major aspects of preventive medicine, there is concern that few UK medical students and staff have been trained in the science of nicotine addiction or the implementation of smoking cessation techniques in a clinical setting.

A failure to teach doctors to recognise smoking as a medical problem translates into an inadequate approach to engaging with smoking in their practice. In primary care, recent data demonstrate that less than one in three smokers consulting their general practitioner (GP) in the UK recalls receiving any advice to stop smoking, and that GPs themselves admit that they are reluctant to discuss smoking with their patients unless they present with a smoking related problem. This study was carried out to establish whether newly qualified doctors in the UK feel well equipped by the teaching that they have received to deliver smoking cessation interventions in their clinical practice, and to provide baseline data against which to assess the effect of future changes in teaching practice.

METHODS

Data on UK medical school undergraduate curriculum content were collected by searching the published material of each UK medical school for the 2001–2002 academic year, including information on the websites and networked learning environments of each medical school where available, for all statements relating to smoking and smoking-related disease. We also wrote to the dean of each UK medical school, asking them or a nominated deputy to complete a brief questionnaire on undergraduate curriculum content. The questionnaire was adapted from those used in previous US and worldwide surveys and addressed the inclusion of 15 basic and clinical science topics in the curriculum (table 1) identified as topics that doctors would be expected to cover in the delivery of smoking cessation interventions.

For the survey of newly qualified doctors, UK postgraduate deans’ offices were contacted and asked to forward an anonymous questionnaire to all pre-registration house officers (PRHOs)—doctors in their first year after qualification—within their deanship. The precise method of achieving this varied between deaneries—some were able to send the questionnaires out directly to PRHOs, while others sent them via hospital postgraduate education centres. The brief

Abbreviations: GP, general practitioner; NHS, National Health Service; NRT, nicotine replacement therapy; PRHO, pre-registration house officers
questionnaire asked about recollections of tobacco teaching during the undergraduate course, and covered the topic areas listed in the questionnaire to deans (table 1), and PRHOs’ preparedness to deliver smoking cessation interventions, using phrasing derived from a survey of US physicians.17 We also assessed PRHO personal smoking history, using questions taken from the Office for National Surveys 1998 teenage smoking attitudes questionnaire,16 a reproducible, simple to complete questionnaire used for annual surveys of young smokers. Questionnaires were distributed with a reply paid envelope for confidential reply. Return of a completed questionnaire was regarded as indication of consent to participate in the study. In accordance with UK data protection law we did not have access to individual PRHO names and contact details and were therefore unable to identify or follow up non-responders. Multi-centre ethics committee approval was obtained before commencing the study.

Analysis
Data were analysed using the Statistical Package for Social Sciences (SPSS), summarising course content and PRHO perceptions of teaching in relation to the specified outcome criteria listed above, as well as PRHO demographics and PRHO smoking behaviour. Correlations between responses from deans’ offices and responses from PRHOs were analysed using Spearman rank testing.

RESULTS
Website search
Of 24 UK medical schools with current students, 14 schools made some reference to smoking or smoking cessation in their published curriculum material, mostly related to the importance of taking a smoking history, and to the occurrence of tobacco related disease. However, 10 (42%) made no reference to smoking or smoking cessation in their published curriculum material. Four medical schools (17%) offered optional modules in smoking related issues, five included management of nicotine addiction as part of psychology, public health or respiratory medicine modules, and one included a practical role playing smoking cessation session. No references were found to teaching on the pharmacology of nicotine addiction.

Questionnaire to deans
We received replies from 23 out of 24 medical schools in the UK that graduated students in 2002 (96% response rate). Two of these respondents did not complete the questionnaire. The 21 remaining questionnaires were completed by the dean or sub-dean (5), senior teaching personnel (7), clinical teaching staff (5), and non-clinical teaching staff (4). Only seven schools (29%) reported providing teaching on all nine listed basic science topics, with a mean (SD) of 7.4 (1.9) of these topics as a required part of the course in all responding medical schools. In contrast, of the six clinical science topics, a mean of only 2.2 (1.5) were reported to be a required part of the course, and four (19%) medical schools reported no compulsory teaching on any of them. Most respondents to the deans’ questionnaire found it difficult to quantify the amount of teaching provided on smoking, and which departments were responsible for it (table 2), but the majority of teaching occurred during the first three years of medical school, predominantly in the pre-clinical years (table 3). The main obstacles to more extensive teaching cited by medical schools were lack of space on an already crowded curriculum, and uncertainties over who should teach the subject (table 4).
Results from PRHOs
A total of 1121 questionnaires were returned (26.5% of those distributed), 1095 of which were from newly qualified UK graduates and have been used in the following analysis. The mean age (SD) of respondents was 24 years (2.18), 60% of them were female, and most (82.3%) had graduated from medical school in 2001. Almost half of respondents (42.1%) had never smoked, 40.1% had smoked “once or twice”, 10% were ex-smokers most of whom had quit in the last two years, and only 8% of respondents reported that they were current smokers.

A mean (SD) of 5.2 (2.2) of the nine basic science topics were recalled as a compulsory part of the undergraduate course, with inclusion of all nine topics reported by only 84 (8%) of respondents. Of the six clinical science content areas, the results were skewed with a median of only one topic recalled as compulsory, 34% of PRHOs recalling no compulsory teaching in any of the six clinical areas (table 1).

Although the majority of respondents felt well prepared to deliver advice on the health risks of smoking, only 10% felt ready to deliver practical guidance on smoking cessation in accordance with national guidelines. Less than 20% felt well prepared to deliver advice on NRT and only 5% felt able to deliver good advice on the use of bupropion for smoking cessation (table 5).

For those medical schools providing a formal answer to the questionnaire we correlated median number of topics recalled by graduates from that medical school as compulsory, against the median number of subjects reported as compulsory by the dean of that medical school. There was little correlation between these measures for either basic science ($r = 0.37$) or clinical ($r = 0.16$) topics. There was a negative though non-significant correlation ($r = -0.3$) between the number of topics taught at each medical school and the prevalence of smoking in graduates from the school.

**DISCUSSION**
To our knowledge, this is the first comprehensive UK wide survey of medical school tobacco curriculum content. Our study shows that smoking is addressed in most medical schools only in the preclinical years, and that the great majority of UK graduates receive little or no training in the practical delivery of smoking cessation interventions. In these respects it appears that UK medical graduates are not alone; only about 11% of European medical schools participating in a worldwide survey in 1995 reported that they included a specific teaching module on tobacco issues in their undergraduate curriculum, and the majority did not provide any teaching in smoking cessation techniques. More recent data from the USA demonstrate that in 1997 only 55% of US medical schools addressed all six primary tobacco curriculum content areas drawn from US National Cancer Institute and the Agency for Health Care Policy and Research guidelines in their basic science teaching, and only 5% reached equivalent

<table>
<thead>
<tr>
<th>Department</th>
<th>Teach</th>
<th>Examine</th>
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<tbody>
<tr>
<td>Public health</td>
<td>12 (48)</td>
<td>10 (40)</td>
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<td>General practice</td>
<td>8 (32)</td>
<td>8 (32)</td>
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<tr>
<td>Clinical medicine</td>
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<td>10 (40)</td>
</tr>
<tr>
<td>Pharmacology</td>
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<td>4 (16)</td>
</tr>
<tr>
<td>Pathology</td>
<td>8 (32)</td>
<td>9 (36)</td>
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<tr>
<td>Psychology/psychiatry</td>
<td>4 (16)</td>
<td>-</td>
</tr>
<tr>
<td>Other</td>
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<td>2 (9)</td>
</tr>
<tr>
<td>Other (specified)</td>
<td>Basic medical sciences, biomedical sciences, “medical education”, child health</td>
<td>Respiratory module year 1, phase 2 integrated exams (years 3 and 4)</td>
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</tbody>
</table>

Numbers add up to >100% as most medical schools report teaching and examination within more than one department.

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
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<td>2</td>
<td>1</td>
<td>4</td>
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<td>1–3 hours</td>
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<td>9</td>
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<tr>
<td>3–5 hours</td>
<td>3</td>
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<td>3</td>
<td>2</td>
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<tr>
<td>&gt;5 hours</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Not stated (no response or “don’t know”)</td>
<td>10</td>
<td>11</td>
<td>9</td>
<td>13</td>
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<table>
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<td>-</td>
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targets for smoking cessation in their clinical curriculum. A recent survey conducted in the USA by Spangler et al. confirms that gaps in training persist despite recommendations of earlier studies.

Assessing medical school curriculum content on any subject is difficult, since published materials do not necessarily include a comprehensive list of course content, published curricula on the internet may be incomplete or out of date, and much learning may be self-driven and independent from defined curriculum content. Deans or their representatives may not be fully aware of all the teaching that is delivered in their course, while the recollections of newly qualified doctors may also be inaccurate and/or biased towards the later years of their course. Also, our findings are qualified by the low response rate to the PRHO questionnaire, which were unable to redress because of logistic constraints arising from restrictions imposed by the need to preserve anonymity in accordance with UK data protection legislation. It is therefore not clear whether PRHOS who responded to the questionnaire were more likely to have an interest in smoking cessation, to be non-smokers, or to have biased recall about tobacco teaching at medical school. The poor correlation between what deans say is being taught and what students remember being taught confirms that planned, delivered, and experienced curricula are very different things and raises concerns that even where medical schools feel that they are giving the topic prominence, students do not perceive it as a priority topic.

However, it seems unlikely that any of these factors entirely accounts for the very low levels of reporting of clinical topic teaching, either in absolute terms, or in relation to basic science teaching. The more likely explanation for our findings is that smoking and smoking cessation, particularly in clinical practice, are inadequately covered in UK medical schools. This is surprising given the public health importance of the topic and the highly cost effective nature of smoking cessation interventions, particularly in relation to other interventions (for example, thrombolysis in the treatment of myocardial infarction) that are widely taught. Until the importance of this topic is recognised at undergraduate level, doctors will not perceive it as a priority.

We conclude that the pharmacology and determinants of nicotine addiction, and practical training in the delivery of effective smoking cessation interventions, receive little attention in UK undergraduate medical curricula. It is likely that this is one major reason why doctors who feel ill-equipped to deal with smoking and nicotine addiction in their patients, and generally tend not to intervene. This situation needs to change.

<table>
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<th>Excellent or good</th>
<th>Fair</th>
<th>Poor or non-existent</th>
</tr>
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<td>28</td>
<td>3</td>
</tr>
<tr>
<td>Smoking cessation techniques in accordance with national guidance</td>
<td>11</td>
<td>31</td>
<td>58</td>
</tr>
<tr>
<td>Advice on nicotine replacement therapy</td>
<td>17</td>
<td>41</td>
<td>42</td>
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<tr>
<td>Advice on bupropion for smoking cessation</td>
<td>5</td>
<td>12</td>
<td>83</td>
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</table>

**References**

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