the journal from advertisements. Quality productions are expensive and advertising revenue has never completely covered all costs of production and distribution. The council of the institute make no charge for the journal and circulate 1500 copies to members and friends of the institute and other postgraduate centres and medical schools. A financial loss is a cost to the institute and must be made good from an endowment fund. This jars the nerve endings of an editor and business manager but is a useful and maturing exercise in the politics of compromise. I would suggest that it is implicit in such ventures that he who pays the piper does not select the tune, may not like the melody, but has a chance to say so, since the editor is ultimately and properly responsible to council.

It is not easy to represent all interests justly or dispassionately in the proportions they deserve. The journal does, however, invite contributions from all societies, records their proceedings, and helps to construct an architecture of the medical life in the

district. It is generally well received by its readers, and it is healthy to record as a sign of vitality that some readers express categorical views on its shortcomings. Some critics argue that parochialism, which is inherent in such journals, diminishes their genuine value, and are reluctant to contribute work that might be placed to better advantage elsewhere. This opinion is understandable, but fails to take account of one essential and unique property of a publication from a postgraduate centre: a capacity to foster a common identity, sense of purpose, coherence, and unity in the restless will-o'-the-wisp that is the spirit of any community.

Reference

¹ Aber, G M, *et al*, *British Medical Journal*, 1972, **1**, 619.

(Accepted 15 January 1979)

Medical Education

What shall we teach undergraduates?

V WRIGHT, R HOPKINS, K E BURTON

British Medical Journal, 1979, **1**, 805-807

Summary and conclusions

The opinions of 600 randomly selected doctors on what should be taught to undergraduates in clinical years were analysed. The respondents gave a high priority to general medicine, paediatrics, general surgery, casualty, and gynaecology, but a low priority to forensic medicine, plastic surgery, radiotherapy, anaesthetics, radiology, and rehabilitation medicine. Doctors thought that these should be taught to postgraduates. The two major groupings of doctors—general practitioners and consultants—gave essentially the same priorities.

Undergraduate curricula cannot include all major specialties, so the results of this analysis may provide a useful basis for selecting the most suitable subjects. Criteria for including other specialties might be the ability and enthusiasm of the teachers and well-thought-out and academically sound teaching programmes.

Introduction

There is constant pressure to include more in the medical curriculum, particularly in clinical years. Each specialty sees instruction in its own subject as mandatory. Nevertheless, the curriculum is already too crowded for the hapless medical

student. So who is to decide what must be jettisoned to make room for a given specialty? The student knows what is palatable, but not always what is nutritious. Academic staff, who normally make the decisions, may be accused of living in ivory towers. We therefore analysed the opinions of 600 randomly selected doctors.

Method

In a pilot study we questioned 20 medical practitioners, selected at random from the *Medical Directory*. The respondents emphatically pointed out a few glaring omissions in this first questionnaire. We then prepared a more comprehensive questionnaire, which was circulated to 800 doctors randomly selected from the *Medical Directory*. They were asked to say whether 28 specialties (including general medicine and general surgery) placed in alphabetical order should receive "high," "moderate," or "low" priority for separate teaching in the undergraduate curriculum, or whether they should be confined to postgraduate study. The respondents were also asked whether the subject had been taught separately at their medical schools, and whether they had received postgraduate instruction in it. They were invited to add any comments they wished. The doctors did not know that a rheumatologist had prepared the questions. The doctor's sex, time elapsed since qualification, type of practice, and medical school were noted.

Results

Out of 800 questionnaires circulated, 697 replies were received. Six of the doctors had died and 84 had moved elsewhere, the envelope being returned marked "gone away." Seven questionnaires were so inadequately completed that they were discarded. The opinions of 600 were, therefore, available for analysis. The ratio of men to women was 3:1 (442:158). Most had qualified in London medical schools (267; 45%). Other English medical schools accounted for 226 (37%), Scottish schools 99 (17%), and the Welsh School of Medicine 7 (1.1%); there was a solitary soul from Belfast. Fewer than five years

Rheumatism Research Unit, University Department of Medicine, General Infirmary, Leeds

V WRIGHT, MD, FRCP, professor of rheumatology
R HOPKINS, SRN, research metrologist
K E BURTON, BSC, research fellow in psychology

Results of questionnaire on undergraduate clinical education. Figures are numbers (%) of doctors (n = 600)

Specialty	Priority			Postgraduate study only	No answer	Taught separately (to respondent)			Postgraduate instruction received		
	High	Moderate	Low			Yes	No	No answer	Yes	No	No answer
Anaesthetics	48 (8)	150 (25)	258 (43)	132 (22)	12 (2)	444 (74)	84 (14)	72 (12)	144 (24)	354 (59)	102 (17)
Cardiology	220 (37)	238 (40)	77 (13)	53 (9)	12 (2)	186 (31)	348 (58)	66 (11)	162 (27)	324 (54)	114 (19)
Casualty	403 (67)	164 (27)	19 (3)	2 (0.3)	12 (2)	322 (54)	213 (36)	66 (11)	234 (39)	258 (43)	108 (18)
Community medicine	108 (18)	222 (37)	192 (32)	60 (10)	18 (3)	234 (39)	294 (49)	72 (12)	120 (20)	372 (62)	108 (18)
Dermatology	233 (39)	299 (50)	53 (9)	3 (0.5)	12 (2)	495 (83)	40 (7)	66 (11)	156 (26)	330 (55)	114 (19)
Ear, nose, and throat	125 (21)	256 (43)	167 (28)	40 (7)	12 (2)	486 (81)	48 (8)	66 (11)	120 (20)	372 (62)	108 (18)
Forensic	18 (3)	126 (21)	366 (61)	78 (13)	12 (2)	426 (71)	108 (18)	66 (11)	34 (6)	448 (75)	118 (20)
Gastroenterology	156 (26)	276 (46)	96 (16)	60 (10)	12 (2)	79 (13)	449 (75)	72 (12)	114 (19)	366 (61)	120 (20)
General medicine	575 (96)	12 (2)	1 (0.2)	12 (2)	12 (2)	497 (83)	30 (5)	72 (12)	387 (65)	112 (19)	101 (17)
General practice	328 (55)	160 (27)	53 (9)	47 (8)	12 (2)	170 (28)	363 (60)	66 (11)	222 (37)	264 (44)	114 (19)
General surgery	442 (74)	131 (22)	12 (2)	3 (0.5)	12 (2)	504 (84)	24 (4)	72 (12)	277 (46)	222 (37)	101 (17)
Geriatrics	230 (38)	254 (42)	79 (13)	25 (4)	12 (2)	110 (19)	418 (70)	72 (12)	126 (21)	360 (60)	114 (19)
Gynaecology	370 (62)	191 (32)	24 (4)	3 (0.5)	12 (2)	528 (88)	12 (2)	60 (10)	252 (42)	240 (40)	108 (18)
Infectious diseases	167 (28)	298 (50)	120 (20)	3 (0.5)	12 (2)	442 (74)	94 (16)	66 (11)	90 (15)	396 (66)	114 (19)
Neurology	84 (14)	282 (47)	168 (28)	54 (9)	12 (2)	323 (54)	211 (35)	66 (11)	126 (21)	354 (59)	120 (20)
Obstetrics	381 (64)	165 (28)	30 (5)	12 (2)	12 (2)	528 (88)	12 (2)	60 (10)	288 (48)	204 (34)	108 (18)
Ophthalmology	126 (21)	276 (46)	162 (27)	24 (4)	12 (2)	495 (83)	40 (7)	66 (11)	101 (17)	385 (64)	114 (19)
Orthopaedics	108 (18)	270 (45)	162 (27)	48 (8)	12 (2)	430 (72)	99 (17)	72 (12)	160 (27)	328 (55)	114 (19)
Paediatrics	501 (84)	81 (14)	3 (0.5)	3 (0.5)	12 (2)	516 (86)	24 (4)	60 (10)	240 (40)	252 (42)	108 (18)
Plastic surgery	1 (0.2)	30 (5)	311 (52)	246 (41)	12 (2)	85 (14)	443 (74)	72 (12)	66 (11)	426 (71)	108 (18)
Psychiatry	336 (56)	186 (31)	54 (9)	12 (2)	12 (2)	510 (85)	30 (5)	60 (10)	166 (28)	322 (54)	112 (19)
Radiology	36 (6)	198 (33)	246 (41)	108 (18)	12 (2)	161 (27)	367 (61)	72 (12)	83 (14)	399 (67)	118 (20)
Radiotherapy	6 (1)	64 (11)	280 (47)	238 (40)	12 (2)	108 (18)	420 (70)	72 (12)	60 (10)	427 (71)	114 (19)
Rehabilitation	54 (9)	180 (30)	240 (40)	114 (19)	12 (2)	30 (5)	497 (83)	72 (12)	72 (12)	420 (70)	108 (18)
Respiratory	168 (28)	246 (41)	120 (20)	54 (9)	12 (2)	126 (21)	402 (67)	72 (12)	127 (21)	361 (60)	112 (19)
Rheumatology	176 (29)	272 (45)	109 (18)	31 (5)	12 (2)	148 (25)	382 (64)	70 (12)	114 (19)	372 (62)	114 (19)
Urology	83 (14)	292 (49)	154 (26)	59 (10)	12 (2)	162 (27)	372 (62)	66 (11)	106 (18)	380 (64)	114 (19)
Venereology	54 (9)	274 (46)	232 (39)	29 (5)	12 (2)	456 (76)	84 (14)	60 (10)	80 (13)	404 (67)	116 (19)

had elapsed since qualifying for 54; 6-10 years for 89; 11-20 years for 165; 21-30 years for 179; 31-40 years for 105; and over 40 years for 8. General practitioners formed the biggest group (246). Consultants numbered 123; registrars 53; medical officers of health 34; academic staff (professors and lecturers) 24; clinical assistants 18; and senior house officers 9. There was a miscellaneous group of 35; 11 had retired; and no data were recorded for 47.

The results are shown in the table. "High" priority was given to general medicine, paediatrics, general surgery, casualty, and gynaecology. When "high" and "moderate" priorities were grouped together these still remained the top six. Rheumatology, which is our particular interest, was 13th of 28 specialties. When "high" and "moderate" priorities were grouped rheumatology was 11th. A "low" priority was given to forensic medicine, plastic surgery, radiotherapy, anaesthetics, radiology, and rehabilitation medicine. Orthopaedic surgery was considerably less favoured than was rheumatology.

The subjects that were thought most suitable for postgraduate rather than undergraduate instruction were plastic surgery, radiotherapy, anaesthetics, rehabilitation, radiology, and forensic medicine. Fifteen specialties were confined to postgraduate teaching before rheumatology was reached. Postgraduate instruction had been most often received in general medicine, obstetrics, general surgery, gynaecology, paediatrics, and casualty. Subjects least favoured were forensic medicine, radiotherapy, plastic surgery, rehabilitation, venereology, and radiology.

The two major groupings of doctors—"general practitioners" and "consultants"—were analysed separately. Spearman's rank correlation coefficient was used to determine the measure of association between the groups in terms of their responses to undergraduate teaching disciplines. Little difference was found in their choice of priorities and of subjects that they would prefer to see taught to postgraduates. General practitioners had attended significantly more postgraduate courses ($P < 0.01$) in community medicine, general practice, gynaecology, infectious diseases, and ophthalmology. Significant sex differences were few, except that women (especially general practitioners) gave a higher priority to the teaching of venereology. Relatively more men had done postgraduate courses, except in community medicine and general practice.

Many of the respondents added comments. Several emphasised the importance of pathology, which was not included, since the questionnaire dealt only with clinical subjects. Opinion was divided on whether it was best to study only the core disciplines, with specialties as elective subjects or included in postgraduate courses, or to have a taste of everything. An anaesthetist summarised the all-embracing approach: "All subjects should be introduced to students so that at least they know as much as the *Reader's Digest* about it. A graduate should still be able to practise basic medicine—he'll have to on his family at least." Several were appalled at the time wasted hanging around operating theatres. General practitioners emphasised

the value of ophthalmology, ENT, dermatology, and psychiatry. At the same time there were heartfelt cries from those in poorly staffed specialties such as anaesthetics and radiotherapy, who suggested that staff shortages might be remedied by exposing undergraduates more to these subjects. Subjects specially mentioned by some were considered unsuitable for teaching at undergraduate level by others—for example, geriatrics and rehabilitation. Family planners were incensed that family planning was omitted from the list of specialties.

Many of the respondents emphasised the importance of communication and relationships, and a medical registrar commented: "Emphasis should be made that patients are human; that they do feel pain, and don't like to sit endless hours on a trolley waiting to be seen; that they have relatives who are concerned and are not necessarily thick; that they (the patients) have eyes to see (what doctors wear) and noses to smell (what doctors drink)." A retired industrial medical officer added: "Having been a patient in hospital last year for four months, the most urgent need for training appears to me to be that of good manners."

Discussion

Despite being asked to give 85 answers, the respondents completed the forms carefully and many added comments. As a possible guide to committees that consider what to include (or, more importantly, exclude) in the undergraduate curriculum, this questionnaire gives the opinions of a large number of randomly selected medical practitioners. As a sample of practising doctors, it might be thought that their opinions were as good as many and better than most. Understandably, some gave preference to their own specialty, but by no means all did so. The fact that consultants and general practitioners gave essentially the same priorities, despite differences in their practices and in the postgraduate courses they had attended, suggests that their answers were fairly objective. The classical "big three" topped the polls—general medicine, general surgery, and gynaecology. Interestingly, they were joined and, except for general medicine, outstripped by paediatrics. Casualty was also rated highly. On the other hand, some subjects that not only take up time in the curriculum but figure in examinations received a low priority. These included radiotherapy, forensic medicine, anaesthetics, rehabilitation, radiology, and plastic surgery. Predictably, these were thought most suitable for postgraduate instruction. Nevertheless, these options were seldom taken up after qualification—they were the least subscribed of the postgraduate courses.

It might be argued that the undergraduate needs exposure to all disciplines to make him a sound doctor. The unpalatable truth is that this is not possible. On the assumption that not everything can be included in the curriculum, our findings would form a useful basis for selection. An exception might be a subject that is taught enthusiastically and well—students would obtain wider educational benefits from such a stimulus. Anaesthetics is an example in our own school. When I mentioned to the very able chairman of the fourth-year curriculum committee (who happens to be the professor of anaesthetics) that his subject received a low rating in the undergraduate priority stakes, he was quick to point out that his department concentrated much more on resuscitation than on traditional anaesthetics. A keen department had obviously tailored its teaching to the needs of students and taught the relevant aspects. Another example is rehabilitation, which was given a low priority, and is rarely considered after graduation. Yet at the University of Southampton it is one of the most popular

elective courses for students, and is of obvious benefit. Dedicated teaching has swept away traditional apathy.

Perhaps the appropriate starting point in designing a clinical curriculum would be to include the big five. After that every other specialty would have to show in its teachers ability and enthusiasm, and in its programme a well-thought-out structure and academic soundness before it could be considered for inclusion. At the end of each year these aspects would be reviewed by the students and the curriculum committee independently. If it did not come up to scratch the specialty might be omitted. After three years of being "rested" the teachers could apply for re-election to the league.

We thank the 600 doctors who took the trouble to complete this time-consuming questionnaire.

Karen E Burton acknowledges the financial support of the Medical Research Council.

(Accepted 23 January 1979)

I have long found it possible to culture infused tea on blood agar. Why, then, is it fit for human consumption?

Tea, like spices and other natural vegetable products, contains many bacterial spores derived from the environment of the growing plant. The spores are resistant to desiccation and to moderate heat and many will survive exposure to boiling water as in tea-making, and if the infusion is cultured under appropriate conditions many spores will germinate and give rise to bacterial colonies. Tea drinkers suffer no ill effect because the bacteria in the infusion are not pathogenic to man and are at the time of drinking present in small numbers.

What are the risks of spread of tinea and virus infection by ice-skate boots?

The risks are real but small, providing the borrower/hirer uses his own (intact) socks. The use of protective footwear such as Plastsoks (elasticated cotton socks with bonded plastic feet: supplied by Carita House, near Holywell, Flintshire) could be helpful. Gentles *et al*¹ showed that after the use of 1% tolnaftate powder by bathers at a swimming pool in the West of Scotland the incidence of tinea pedis fell from 8.5% to 2.1% over three-and-a-half years. Surprisingly, the incidence of foot warts also declined, from 4.8% to 2.1%, perhaps because of increased foot care and screening rather than any direct antiviral action of the powder. It would seem reasonable to apply similar methods here, either by sprinkling such a powder in the boots or by issuing individual sachets to the hirers. Apart from this, I know of no practical method that will sterilise the boots in regard to both fungal and viral organisms and yet not (a) ruin the boot or (b) expose subsequent wearers to the risks of sensitisation or chemical irritation.

¹ Gentles, J C, *et al*, *British Medical Journal*, 1974, **2**, 577.

Why is oxygen given to patients who have had a coronary occlusion? If a patient does not die immediately or almost immediately, would some pulmonary disease, which might interfere with oxygenation, such as emphysema, jeopardise recovery in patients who survive for several days only?

It was observed that patients with acute myocardial infarction often have low arterial oxygen levels, even in the absence of overt left ventricular failure. For this reason, many doctors gave 100% oxygen to their patients after myocardial infarction. Early reports, mostly anecdotal, appeared to show benefit in man. The results of research in animals also appeared to back up the experience in man. When animals undergo coronary artery ligation, 100% oxygen may reduce the size of the resultant infarct. Sadly, however, initial clinical enthusiasm was not followed by proved evidence of benefit. Not until 1976 was a proper controlled trial conducted, and this showed no benefit from giving 100% oxygen.^{2,3} So often clinicians' early enthusiasm is replaced by disappointing results from well-conducted trials; would that these trials were conducted earlier! There is, however, some evidence that marginal benefit may follow the use of hyperbaric oxygen for myocardial infarction.⁴ This needs confirming.

As the questioner implies, 100% oxygen would be hazardous in patients who also have chronic lung disease, and this is an added reason for not using it.

¹ *Annals of Internal Medicine*, 1975, **83**, 897.

² *British Medical Journal*, 1976, **1**, 731.

³ Rawles, J M, and Kenmore, A C, *British Medical Journal*, 1976, **1**, 1121.

⁴ Thurston, J G, *et al*, *Quarterly Journal of Medicine*, 1973, **42**, 751.

Is it reasonable to treat someone with either Crohn's disease or ulcerative colitis with a combination of gentamicin and cloxacillin intramuscularly and nystatin by mouth once every three weeks?

Neither Crohn's disease nor ulcerative colitis is thought to be due primarily to an infection likely to be sensitive to any of these three antibiotics. Nor does secondary bacterial infection seem to be a predominant reason for exacerbations of the diseases. No benefit on these diseases has been observed from administering systemic antibiotics (though in severe relapse antibiotics are sometimes given systemically because septicaemia may occur). In Crohn's disease bacterial proliferation may occur proximal to strictures in the small intestine, producing diarrhoea and malabsorption because of bile salt deconjugation. This may be controlled by oral antibiotics which diminish the bacterial flora. Metronidazole and tetracycline are particularly used for this purpose.

How unusual is it for the cervix to close after the delivery of the first baby in a twin pregnancy?

Virtually always the cervix closes down a little after delivery of the first twin, but because little delay is nowadays allowed in delivering the second one there is usually no problem in the cervix opening up once more to let the baby through. It is well known, however, that in less interventionist times the second twin could be retained for many hours and even days, and the cervix might then contract right down to a prelabour state. Labour will then supervene in its own time. But this tends not to suit the modern obstetrician, who gets anxious, and when delay in delivery of the second twin has led to closure of the cervix he may feel constrained to perform caesarean section, and many such cases are known. It was because of such occurrences that the notion of superfetation arose. It was believed that a woman could be impregnated while she was pregnant, at least in the early months. This led to two fetuses developing at different rates in the same pregnancy, so there was a satisfactory explanation for one baby being born an appreciable time before the other. Browne¹ records the case of a woman who, in 1748, delivered viable babies five months apart. Smellie² in 1752 scouted the idea of superfetation and also said "by some accident, the first and largest may be born some days or weeks before the full time, and afterwards the Os Tincae (cervix) contracts so as to detain the other 'till the due period."

¹ Browne, F J, *Antenatal and Postnatal Care*, 7th edn. London, J and A Churchill, 1951.

² Smellie, W, *A Treatise on the Theory and Practice of Midwifery*. London, Baillière Tindall, facsimile edition, 1974.