Learning Medicine

The process of selection

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Unfortunately the qualities which count for most in medicine are not precisely measurable. The measurable—examination performance at school—neither necessarily relates to these qualities nor guarantees intellectual potential. Furthermore, there is no acceptable objective measure of the quality of a doctor against which to test the worth of earlier decisions. In this sea of uncertainty it is not surprising that selection processes are imperfect and open to criticism or that the remedy is not readily apparent.

Selection for interview (and at some schools for offer without interview) is made on the strength of an application submitted through the Universities Central Council on Admissions (UCCA), an application completed partly by the applicant and partly by a referee, usually the head or a member of the school staff, who submits a confidential reference.

In 1980-1, some 9296 home students and 1514 from overseas applied to read medicine in Britain; 3859 home students and 138 from overseas were accepted. Women comprised 41% of applicants and 43% of those accepted.

It is worth completing the UCCA form accurately and legibly. Deans and admissions tutors who have to scan a thousand or two application forms (which they receive reduced in size from the original application) simply do not have time to spend deciphering illegible handwriting. A legible, even stylish presentation creates a good impression from the start.

Personal details

The first section of the UCCA form presents the personal details of the applicant, including age on 30 September of the coming academic year. Many applicants give instead their current age and at a glance appear to fall below the minimum age for entry or to be so young that older applicants might reasonably be given priority over them. True, the date of birth is also requested but the quickly scanning eye may not pick up the discrepancy.

Parental occupation is of some interest too but not for the commonly supposed exercise of nepotism. Children in a one parent family may have been at educational or social disadvantage. A medical parent not only raises a reasonable expectation that the applicant should have insight into the chosen career but also raises the possibility of an unquestioning career decision. A background far removed professionally and socially from medicine raises questions whether an applicant has any idea of the task ahead and would acclimatise to it. At the same time interviewers should not mistake a lack of ready repartee and social graces in such an applicant for boorishness, any more than glib talkers should readily be credited with insight.

The list of schools attended by an applicant is often a useful

guide to the educational opportunity received. More ability and determination are needed to emerge as a serious candidate for medicine from a comprehensive school with 2000 pupils, of whom only 10-15 normally enter university each year, than from a selective school from which university entry is the norm. Multiple changes in school (usually because of parental mobility) are generally a disadvantage and need to be taken into account.

Order of preference

It is conventional wisdom, encouraged by medical schools, to give all choices to medicine to indicate strength of purpose. In the past there was still a good opportunity to find a place on another university course later in the year through the UCCA continuing application or clearing procedures if no offers were received for medicine or if targets were not achieved, but the reduction in the number of university places has diminished this opportunity and few places on popular courses are filled at clearing. It therefore seems both reasonable and sensible for an applicant to use the fifth choice for an alternative course unless prepared to wait another year before entering university.

According to the information given in *Entrance Requirements for Medical School*, most medical schools prefer to see the applicants' choices arranged in order of preference rather than some or all options being bracketed as equal.¹ On the other hand, many applicants would rather not give an order of preference because they have insufficient evidence on which to make a rational decision and do not know the relative popularity (and therefore their relative chance of success) of different schools.

Little attention in selection is likely to be given to fourth or fifth choices unless the candidate is outstanding. But outstanding applicants are so likely to get offers from schools higher in their list of preferences that it may in practice be a waste of time for their last preference to call them for interview. Oxford and Cambridge are unlikely to make a conditional offer unless they have been placed first in the list of preferences. I know of no evidence to support the rumour that London University medical schools prefer to see all choices given to London, nor can I see any possible logic in such an attitude.

It is impossible to predict how much weight is given to first preferences and how high a preference has to be to be seriously considered at any particular medical school. A dean or admissions tutor would, however, be less than human not to feel some degree of special obligation towards candidates who have put his school first. If, therefore, a first choice carries an edge a candidate of less than top flight may do better to restrain the urge to bid for a place at Oxford, Cambridge, or another university which routinely requires very high A level grades. He or she should consider using the first preference to stake a claim in a school with lower minimum academic requirements (see article on requirements for entry) and wider admission criteria. A study at St Mary's Hospital Medical School of the fate of applicants suggests that those who bracket all their choices as of equal preference are less likely to gain acceptance to any medical school; the reason seems, however, not to be

that equal preference is itself a disadvantage but that academically weaker candidates are more likely to hedge their bets in this way.

Other information

Examination results should be clearly listed by year in the UCCA application form. It is sensible to list first those subjects immediately relevant to the science requirements for medicine and those subjects needed for university matriculation, usually English language, mathematics, and a foreign language. All attempts at examinations should be entered and clearly separated. The time and number of A level or degree examinations yet to be taken complete the picture.

Though it probably never pays to try to amuse on an application form it is worth being interesting. The section about interests, spare time activities, and practical experience presents an opportunity to catch the eye of a tired admissions dean, because medicine demands so much more than academic ability. Small details, such as the information that an applicant spends his free moments delivering newspapers, assisting in the village shop, and acting as "pall bearer and coffin carrier to the local undertaker" converts a cipher into a person. None of those particular activities should be immediately relevant to his future medical practice but at least they show initiative.

Other activities, such as music, drama, and sport, indicate a willingness and ability to acquire practical skills and to participate, characteristics useful in life in general but also to a medical school, which needs its own cultural life to divert tired minds and to develop full personalities during a long course of training. Some applicants offer a remarkably wide variety of accomplishments, such as the boy who declared in his UCCA form:

I play various types of music, including jazz, Irish traditional, orchestral and military band, on trombone, fiddle, tin whistle, mandolin, and bohran. . . .

If Irish music be the food of medicine, play on. But that was not all, for he continued,

I also enjoy boxing and I have a brown belt (Judo). My more sociable pastimes include ballroom dancing, photography, driving, and motor cycling.

Would this young man have time for medicine?

It is not sensible to enter every peripheral interest and pastime lest it appears, as may indeed be so, that many of these activities are superficial. It is also unwise for an applicant to enter any interest that he or she would be unable to discuss intelligently at interview.

The applicant's own account of interests and the confidential report (for which a whole page is available) sometimes bring to life the different sides of an applicant's character. For example, one young man professed "a great interest in music" and confessed that he was "lead vocalist in a rowdy pop group" while his headmaster reported that he was "fairly quiet in lessons . . . science and medicine afford him good motivation . . . his choice of career suits him well. There is no doubt that he has the ability and temperament successfully to follow his calling." All in all this interplay of information is useful, for medicine is a suitable profession for multifaceted characters.

The confidential report is always important and is sometimes crucial. The headmaster, housemaster, or tutor usually takes great care to give a balanced, realistic assessment of progress and potential. Most teachers are painstaking over these confidential reports, and the few who are not (and they are very few) do their pupils a disservice. Readers of UCCA forms quickly discover the few schools pupilled entirely by angels. Cautionary nuances are more commonly conveyed by what is omitted than by what is said, but a few heads are sufficiently outspoken to write from the hip in appropriate circumstances.

UCCA forms no longer include a formal prediction separate

from the report itself of the grades expected at A level. Nevertheless, the confidential report usually includes a prediction of performance, which is more useful because it is set in the context of the report as a whole. Most schools manage to predict remarkably accurately and when wrong the fault is usually in overestimation. Occasionally a candidate is seriously underestimated, with the result that an interview is not offered and the applicant is at the mercy of the clearing procedure after the results are declared or has to apply again next year.

Getting an interview

What in the mass of information counts in the decision to shortlist a candidate for interview or even, at some schools, for an offer without interview? I cannot speak for other schools but we pay attention especially to the grades achieved at O level and at A level if already taken; to outstanding achievement in any field, because excellence is not lightly achieved; to indications of determination, perseverance, and consideration for others; to breadth and depth of other interests, especially to signs of originality; to the contribution likely to be made to the life of the school; to the confidential report; and to the dean's assessment of potential taking all the evidence together. Highly though achievement is valued, potential, both personal and intellectual, is even more important. We look for applicants who are just beginning to get into their stride in preference to those who have already been forced to their peak, aptly described by Dorothy L Sayers in *Gaudy Night* as possessed of "small summary brains, that flower early and run to seed."

Although our shortlisting process deliberately sets out to view applicants widely, analysis of the outcome has shown that academic achievement still carries the greatest weight in selecting candidates from their UCCA forms. The great majority of applicants called for interview are academically strong, and it is then that their personal characteristics decide the outcome (see next week's article).

Applicants could legitimately ask whether factors other than the strength of the UCCA application weight the balance of selection for interview. There are two. One usually ensures an interview but no subsequent advantage and the other occasionally gives a well merited advantage but normally confers none.

Traditionally most if not all schools which interview (and the tradition is by no means confined to medical schools) interview as a matter of courtesy the children of members of staff or graduates of the school. The study of admissions at St Mary's Hospital Medical School showed that this potential advantage did not result in a higher admission rate among such applicants.

Unsolicited letters of recommendation are a sensitive matter. Factual information additional to the UCCA confidential report is occasionally important and is welcome from any source. For example, one applicant had left another medical school in his first term against the advice of his dean to work to support his mother and younger brother. Three years later, when the family was on its feet, and he wanted to reapply to medical school he was potentially in difficulty. The UCCA form did not tell the full story, and a note from the family doctor was most helpful in giving the full background to a courageous and self sacrificing young man. Other unsolicited letters add only the information that an applicant is either well connected or has good friends and it is difficult to see why such applicants should be given an advantage over those whose friends, weighty or not, do not feel it proper to canvass.

It is not only unsolicited testimonials that recommend in glowing terms. How could any dean resist the angel described thus by her headmaster:

The charm of her personal character defies analysis. She is possessed of all the graces and her noble qualities impress everybody. She has proved the soul of courtesy and overlying all her virtues is sound common sense. She has

always been mindful of her obligations and has fulfilled her responsibilities and duties as a prefect admirably well. Amiable and industrious she appears to have a spirit incapable of boredom and her constructive loyalty to the school, along with her unflinching good nature, has won her the high esteem and admiration of staff and contemporaries alike.

We recommend her warmly as a top-drawer student.
A "top drawer" student indeed—and a top drawer headmaster.

When to apply

When is it best to apply: in September at the first opportunity, in October–November, or at the last possible moment? To apply late is not good strategy because applications reach schools from September to January and applicants are selected for interview or offer sequentially, as applications are received. The early applications are often the strongest, and by Christmas most of the offers a school can give have been given. All schools doubtless have a formula based on experience which determines how many offers can be given to allow for A level failures and successful higher preferences at other schools.

While there seems no advantage in being among the very first—indeed an average candidate may appear relatively unattractive against the Oxford and Cambridge applicants—applications should preferably be submitted to UCCA by early October.

The final consideration is whether to apply for admission a year before planned entry so as to be able to take a year off between school and university. Few schools commit themselves firmly on their attitude to delayed entry but most are prepared to consider individuals on their merits. Schools may be reluctant to offer a place a year ahead to any but outstanding applicants because of the possibility that competition will be even keener the next year. Applicants who have decided to take a year off but have not obtained deferred entry are wise to submit their applications at the first possible opportunity in the application period of the year of intended entry; if they are planning to travel they should send a note to the deans of the schools to which they have applied requesting early consideration.

Reference

- ¹ Secondary Heads Association. *Entrance requirements for medical school*. 3rd ed. London: Secondary Heads Association, 1982.

Aviation Medicine

Special forms of flight

IV: Manned spacecraft

F JOHN MILLS, RICHARD M HARDING

"We set sail on this new sea because there is new knowledge to be gained and new rights to be won, and they must be won and used for the progress of all people. For space science, like nuclear science and all technology, has no conscience of its own." (President J F Kennedy)

Since Gagarin first orbited the earth on 12 April 1961 over 100 human beings have been into space. It has become clear that weightlessness is the major physiological challenge to man in space. Before experiencing microgravity, however, man must first tolerate the increased accelerations imposed by the launch of his spacecraft and be provided with a life supporting environment.

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Acceleration

A velocity of 8 km/s (21 600 kph, 17 900 mph) must be attained to enter earth orbit, while a velocity of 11.6 km/s (41 760 kph, 25 950 mph) is needed to leave the earth's gravitational field. Such velocities may be reached by an infinite number of combinations of acceleration and time provided that their product is 828 G-seconds for orbit or 1152 G-seconds for escape. In practice the acceleration profile is limited by the design of rocket motors, which produce high thrust for only a relatively short period. The two stage Gemini launch, for example, produced peak accelerations of 5.5 G and 7.2 G.¹ During Apollo launches accelerations were not much greater than 4 G, but re-entry from lunar missions has produced levels of 6.7 G.²

Because of hydrostatic circulatory effects, such levels of acceleration are poorly tolerated unless the body is exposed to them transversely ($\pm G_x$) (see previous article, 14 May, p 1557). Thus the astronauts adopt a reclined position during high G exposure. Human tolerance to $\pm G_x$ is limited by chest pain and an inability to breathe as a result of the increased effective weight of the chest wall. The latter is reflected by a reduced vital capacity: at $\pm 6 G_x$, for example, the vital capacity is halved.³ Ventilation-perfusion inequalities are created and lung collapse may develop by the same mechanisms that produce