Selecting medical students
Tests of cognitive ability are probably the best method at present

The selection of the doctors of tomorrow is a subject of constant interest because it raises questions about ensuring equity, predicting human behaviour, and defining the characteristics of a good doctor. In the United Kingdom, it costs about £200000 (£260000; £400000) to train each medical student, but the cost of getting the selection wrong is much greater.

Selection takes place under considerable time pressure—in the UK around 19000 applicants must be screened for some 8000 places in less than six months, and each applicant may apply to four medical schools. The selection ratio in the United States is remarkably similar—around 42% of 42000 applicants were successful in 2007, although each student made an average of 13 applications.

Different specialties have different requirements, but from our reading of the literature we distill three broad attributes that doctors should have—cognitive ability (including linguistic and mathematical intelligence, problem solving capacity and memory); humanity (kindness, empathy, emotional intelligence, bedside manner and ability to work in a team); and diligence (care in clinical practice, capacity to work hard, punctuality, honesty and conscientiousness). Although the best option would be to screen potential doctors for all these attributes, the evidence suggests that only cognitive ability can be assessed with reasonable accuracy by a mass selection process. School examination results have been shown to predict academic performance at medical school. However, it has been argued that British A levels are not useful because most candidates applying for medical school achieve the top grades and also not fair because they favour students from more privileged backgrounds. These criticisms could be rectified by basing selection on actual marks awarded rather than course grades on an A-E scale and adjusting entry requirements according to the applicant’s background.

Despite these potential solutions, some medical schools have introduced aptitude tests, based mainly on cognitive tasks. Some tests, such as the biomedical admissions test, correlate well with preclinical examination results, whereas others, such as the graduate Australian medical school admissions test, are less predictive. These aptitude tests do not seem to predict clinical performance, so they may have little value as independent predictors of performance beyond medical school. Furthermore, aptitude tests are costly for candidates and universities and do not seem to improve prediction over public examination marks alone.

Can psychological tests be used in selection? Personality influences career progression and job satisfaction; doctors who score highly for introversion and neuroticism make relatively heavy weather of their professional lives. These same traits, however, may also predispose doctors towards safe and careful clinical behaviour. We simply do not know the mixture of traits that is most predictive of both diligent service and personal progression.

Tests to measure “empathy” are not useful for selection because the results vary over time and such tests are poor predictors of clinical performance. In addition, unlike IQ scores or examination results, psychological tests can be manipulated to provide socially desirable answers. Questions designed to spot “faking” are far from foolproof, and it would be unfair to exclude students on the basis of alleged gaming.

In the meantime, we are left with another relatively unstudied process: the short medical student interview. Interviews promise much and can be an effective recruitment tool, but their predictive accuracy is low. Agreement among interviewers is slightly greater at the extremes of the rating scale, so interviews could help eliminate extreme phenotypes. Even in these cases, however, interviews let through people they are meant to eliminate, and they may be biased towards people with a pleasing appearance. Interviews have been described as “a very elaborate, labour intensive and expensive lottery,” and we recommend that they are used only in the context of research, to test whether improvements to the interview process can predict a desirable behaviour downstream.

As interviews and psychological tests seem unable to select for desired attributes, we think that tests of cognitive ability are the best option for the present. We favour examination percentage scores over IQ scores or aptitude tests because the cognitive processes they test are similar to those used in clinical practice—the application of knowledge to a problem.

Clever people are not known to be systematically less humane than others. So, in selecting students we might as well test for the one attribute for which valid methods of prediction exist—cognitive ability—while using the opportunity to “test the test” and add to the currently sparse evidence base. For example, the proposed pilot schemes for specialty selection in the English Modernising Medical Careers programme will be evaluated prospectively. Many countries in continental Europe use random selection, with each student’s chances weighted by school leaving examination results. While we would rather rely on examination marks alone, such a “weighted lottery” at least avoids the illusion of scientific probity inherent in psychological tests or interviews.

7 All references are on bmj.com