The demography of medical schools: A discussion paper

June 2004

BMA

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Editorial board

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Acknowledgements

Contents

Tables and Figures

Foreword

In recent decades, the student composition of medical schools has changed with regards to the age, ethnicity and gender of students. Many of these changes have made a positive contribution to the medical profession and have gone some way to increasing the extent to which the profession reflects wider society. However, the demography of medical schools remains an enormously important topic of discussion. This paper examines the socio-economic background, age, ethnicity and gender of medical school applicants and students. After looking at these areas, it also briefly examines admissions policy and procedures. Annex 1 contains some data on disability and medical schools. This data is limited due to a dearth of research in this area and because disabilities are thought to be widely under-reported by medical school applicants.

Despite demographic changes in medical schools, the majority of medical school students are still drawn from professional and managerial backgrounds. Fears that medical education will become less accessible to students from non-traditional backgrounds following the introduction of top-up fees in England in 2006, make this a particularly timely issue. The age, ethnicity and gender profile of medical school students also continues to raise important questions, both about the most appropriate forms of medical education and about the future composition of the profession.

This paper is intended to outline the current demography of medical schools and to highlight important questions for further discussion and research. It is hoped that it will be informative and form a basis for debate and future policy decisions.

> The board of medical education, a standing committee of the British Medical Association (BMA), provides an interface between the medical profession, the government, the education sector and the public. The board advises the BMA on matters relating to the development and promotion of all stages of medical education. It also provides up-to-date information resources for students applying to medical school, as well as information for doctors.

Dr Peter Dangerfield
Chairman, board of medical education
June 2004

Executive summary

This BMA publication examines the socio-economic background, age, ethnicity and gender of medical school applicants and students. It also briefly examines admissions policy and procedures, and disability in the context of medical schools. This paper is intended to highlight important questions for further discussion and research and to form a basis for debate and future policy decisions.

Socio-economic background

The majority of applicants to medicine and dentistry come from the highest social groups – the managerial and professional classes. In 2003, 59 per cent of UK applicants to medical and dental school came from managerial and professional backgrounds. The proportion of *accepted* applicants from these social backgrounds is even higher (64 per cent in 2003). In fact, the likelihood of an applicant being accepted to medical school generally declines with socio-economic background: in recent years, applicants with a professional background have been twice as likely to be accepted as those from an unskilled background. This results in a medical student body unrepresentative of the social distribution in the UK: The proportion of students accepted to medicine and dentistry from the highest social group in the UK in 2003 was around four times the proportion of the working population with this social background. Data show that, between 1996 and 2001, one third of students came from a professional background, while only one per cent came from an unskilled background.

Increasing the number of applicants to medicine from students with less advantaged backgrounds is of primary importance in redressing the social balance of medical schools. Indeed, many medical schools have initiatives to encourage wider access to medicine. However, the BMA is concerned that high tuition fees may hinder this objective. Moreover, attempts to widen access may be partially ineffectual in the face of certain current selection criteria. Differential acceptance rates should prompt a thorough investigation of the selection processes for medical school. Even if there is no direct discrimination against students with lower socio-economic backgrounds, it is still likely that these applicants experience a certain degree of disadvantage during the application and selection process.

Age

In recent years there has been a consistent annual decline in the proportion of applicants and accepted applicants to medical school represented by students under 21 years old. In 1996, students aged 20 and under constituted 91 per cent of those accepted to medical school. This group now makes up only 78 per cent of acceptances. Despite this, the acceptance rate continues to be higher for younger applicants.

There may be several reasons for the increase in older applicants and accepted applicants, including the establishment of new medical schools, the role of access courses and, in particular, graduate entry to medicine courses. Graduate entry

courses have proved hugely popular, perhaps because they often recognise qualities previously excluded from selection criteria for medical school. They increase flexibility in career choice by allowing people to make the decision to be a doctor long after they have left school. The BMA recognises the positive experiences and attributes that mature students, graduate students and students with families can bring to medical schools and to the profession. There is little research on differences in outcome between older and more traditional students.

Ethnicity

Medicine and dentistry attract a proportion of ethnic minorities higher than that in the general university population. In 2003, 30 per cent of UK domiciled medical and dental students came from minority ethnic backgrounds. However, there was significant variation in the application and acceptance rates between ethnic groups. Of the minority ethnic students entering medicine, over two thirds were from Asian backgrounds.

Differential acceptance rates between ethnic groups raise important questions about the selection process. It is possible that differences in previous educational attainment may account for some of the differences in application and acceptance rates. Social class, rather than ethnicity per se may also help explain some of these differences. However, admissions rates for minority ethnic groups differ between medical schools, suggesting that structural factors in the selection processes of some medical schools may influence minority representation. In the past, several pieces of research have suggested that medical schools have discriminated against minority ethnic groups. The most important consideration is that of equality of opportunity, both before application and during the selection process.

Gender

The gender of medical students has played a central role in the changing demography of medical schools. Over the past four decades, the proportion of women in medicine and at medical schools has increased dramatically. In 2003, over 60 per cent of all accepted applicants to medical school were female. In the context of the changing female/male ratio of medical students, it is important to consider the role played by gender in individual experiences of medical education. Sexism may still exist within medical schools, though its effects are probably less pronounced than they were when women were in the minority. Women are still not reaching the top of the profession in equal numbers to men and in some specialties the career progression of women may still be hampered by direct or indirect discrimination.

Concern has been expressed about the implications of the changing gender profile of medical schools for the future medical workforce. There is no certainty that the increasing number of women will have any particular effect on human resource issues. Improving working conditions within the NHS as a whole, and raising the

morale of doctors, could have a beneficial effect on the retention rates of both men and women and help to allay some of these concerns.

Admissions policy and procedures

Selecting medical students from a pool of well-qualified applicants is a demanding task, particularly due to the wide diversity of medical careers and the range of qualities needed by doctors across the profession. Many types of instruments are used to select students including academic record, school reports, referees' reports, psychometric tests and interviews. Criteria for admissions are not always made as clear as they could be. Moreover, there is ongoing concern that some of the methods used to select students may represent a significant barrier to some groups of students. It is important to ensure that selection policies do not cause unfair differentials in acceptance rates between groups of students – particularly between socio-economic and minority ethnic groups. Selection processes must be based on objectivity and transparency, and medical schools should audit thoroughly the outcomes of their policies.

Disability

Data indicate that medical schools receive few applications from students with disabilities. However, these figures may not be accurate. Of those medical students with disabilities, dyslexia is by far the most common disability. There are also many examples of students with mobility, hearing or visual difficulties successfully completing medical degrees. Medical schools have been criticised in recent years for not doing enough to provide opportunities for disabled applicants.

Introduction

The demography of medical schools – defined by the characteristics of medical students – has changed rapidly in recent decades. In the mid-20th century most United Kingdom (UK) medical school students were male school-leavers from white, middle class backgrounds. For example, in the early 1960s, fewer than one in three medical students were female and almost 80 per cent came from professional and 'intermediate' backgrounds (social classes I and II).[1] By comparison, in 2003:

- over 60 per cent of all entrants to medical school (UK, EU and 'other overseas' domiciled students) were female
- over 30 per cent of UK domiciled medical and dental students came from minority ethnic backgrounds. There was significant variation in the application and acceptance rates between ethnic groups. Of the minority ethnic students entering medicine, over two thirds were from Asian backgrounds
- 22 per cent of those accepted to medical school were over 20 years old
- just over 9 per cent of students accepted to medical school were not UK residents: two per cent came from other EU countries, and 7 per cent came from 'other overseas' countries
- medical students were still predominately drawn from professional and managerial backgrounds.[2]

Access to higher education for all sections of society is a central aim of the UK government's education policy.[3] The strategies and rationale for achieving this objective have been set out in a series of white papers including *Higher education in the 21st century* (1998),[4] *The future of higher education* (2003),[5] *Widening participation in higher education* (2003)[6] and *Medical schools: delivering the doctors of the future* (2004).[7]

In addition to these broad higher education initiatives, there are several important, ongoing debates about access to medical education. Successive government reports have emphasised the need to attract medical students from a broader range of social backgrounds.[7] The BMA supports this aim. For too long, various groups of individuals in society have been denied an equal opportunity to attend university or to study medicine. In some cases this has been caused by differences in prior educational opportunity or lack of exposure to the possibility of becoming a doctor. At other times this lack of opportunity has been perpetuated by bias and discrimination during the application process and selection.[1]

Several different arguments have been made for increasing the diversity of the medical profession. For example, there is a widely held belief, shared by the BMA, that doctors should be as representative as possible of the society they

serve in order to provide the best possible care to the UK population. An alternative argument for widening access can be made based on the case for ensuring that those who become doctors are the best suited to a career in medicine.

Provision of medical education in the UK is currently expanding: the number of medical school places in England increased by over 2,150 (55%) since 1997.[7] It is estimated that by 2005 there will be 7,300 places a year for new medical students – a rise of 60 per cent since 1999 when the Department of Health and the Higher Education Funding Council for England (HEFCE) set out to stem the national shortage of doctors.[8,*] This expansion has involved the creation of four new medical schools, an additional four new centres of medical education (satellite courses affiliated with existing medical schools), the expansion of graduate entry programmes as well as additional places at established medical schools.[7] While the number of medical school places available has been expanding, there has been a decline in the ratio of applicants to places available since the mid-1970s.[9] The ratio of applicants to accepted applicants was 1.8:1 in 2003.[7] Although medical schools are currently receiving more than enough strong applicants for the places available, it is important that medical schools cast their nets wide in selection and focus increased attention on selection procedures to ensure that the best candidates are recruited.

There is currently little research evidence on gender, age, social class and ethnicity in medical schools. Papers published on these subjects are often based on research outside the UK. Moreover, although data on applications and admissions to medical school are available from 1961 onwards, earlier years provide statistics only on gender and examination results; ethnicity is not analysed until 1989. The collection and analysis of medical schools' demographic information is becoming more common, but efforts have not gone nearly far enough. In particular, detailed demographic data for individual medical schools, very little of which exists in any central form, is an important basis for detecting both good practice and bias in selection procedures.

The issues surrounding demography of medical schools cannot be separated from changes in the medical workforce. The board of medical education and the equal opportunities committee will continue to look at the implications of these changes. The BMA and BMJ are currently leading a national initiative looking into career services for doctors. Also, the equal opportunities committee is publishing a qualitative research study this year investigating barriers to career progression faced by some ethnic minority doctors, women, doctors with disabilities and gay, lesbian and bisexual doctors.

* Allocation of places for Scottish, Welsh and Northern Irish medical schools is the responsibility of the devolved nations.

Due to uncertainty regarding future demographic trends in medical schools, this discussion paper raises questions that are not currently easy to answer. A number of these questions are listed at the end of each chapter. These have been formulated in consultation with the BMA's board of medical education and with the reviewers of this report. It is hoped that these questions will provide the basis for further debate and research within the medical and academic communities.

This paper is based on a wide literature search using Medline, PubMed and the *BMJ* and *Student BMJ*. It draws heavily upon published data from UCAS, from its predecessor the Universities Central Council on Admissions (UCCA) and from information held by the Council of Heads of Medical Schools (CHMS). It also includes short opinion pieces and original case studies from current medical students and lecturers; these are included to give more depth and meaning to the statistics.

Socio-economic background

There is a widely held belief that the medical profession should be as representative as possible of the society it serves, both to ensure equality of opportunity and potentially to optimise the treatment received by patients

This section discusses and presents data on the social class and socio-economic background of UK medical students (those studying in, and coming from the UK).

Quality and sources of data

At its broadest, 'socio-economic status' (SES) refers to an individual's position based on social class, income, education level and occupation. The SES of medical school applicants and students is, however, usually determined by their parents' occupations, giving only a proxy indication for students' financial situation. Up until 2002, UCAS assigned 'social class' to applicants based on parental occupation or, if the applicant was aged 21 years or over, based on the occupation of the person contributing the highest income to the household. The social class classification scheme used was the Registrar General's (outlined below). From 2002, 'socio-economic status' replaced social class in UCAS data. This uses a simplified version of the National Statistics socio-economic classification. This change in categorisation means that data for entry after 2002 are not directly comparable with data for previous years.

Registrar General's social class classification[10] – used in UCCA/UCAS statistics until 2002		
Class	**Description**	**Example occupations**
Non-manual		
I	Professional	Doctors, accountants, engineers
II	Managerial and technical/intermediate	Marketing and sales managers, teachers
IIIN	Skilled non-manual	Clerks, cashiers, retail staff
Manual		
IIIM	Skilled manual	Carpenters, goods van drivers, joiners
IV	Partly skilled	Warehousemen, security guards
V	Unskilled	Building and civil engineering labourers, other labourers, cleaners

Historical perspectives of social composition

Concern has long been expressed about the social composition of medical schools in the UK. As noted above, there is a widely held belief that the medical profession should be as representative as possible of the society it serves, both to ensure equality of opportunity and potentially to optimise the treatment received by patients. Yet medical schools are far from representative of the population as a whole. UCAS data on the social class of medical students are unavailable for early years, making analysis of long-term social change impossible. However, as

an example of the historically skewed composition of the medical student body, the social class composition of medical students in 1966, and of the general population (1961), is shown in table 1.

Table 1 – Social class of first year medical students 1966, and of the general population, 1961 census		
Social class	Medical students (%) n=2131	General population (%)
I	39.6	2.8
II	36.1	15.5
III	21.7	49.9
IV & V	2.5	31.8
Source [11]		

Recent perspectives of social composition

Table 2 shows UK applicants and acceptances for medical and dental school by social class 1996-2001.[*] Table 3 shows applicants and acceptances for medical and dental school by socio-economic group 2002-03. [Acceptances are not the same as admissions. Universities make offers to students roughly based on the number of places available, but have no control over how many of these students achieve the required grades.] It is notable that the majority of applicants to medicine and dentistry come from the highest social groups – the managerial and professional classes. It is also clear from the acceptance rates that the proportion of accepted applicants from these social backgrounds is even higher than the proportion of applicants made up by these students.

Figures 1 and 2 show data for 2003 broken down by nation. For each nation, the data shown refer to applicants and accepted applicants *from* these countries (not data for students going to the medical and dental schools within them). The proportion of Scottish applicants to medical and dental school from higher managerial and professional backgrounds exceeds 40 per cent.

The majority of applicants to medicine and dentistry come from the highest social groups – the managerial and professional classes...the proportion of accepted applicants from these social backgrounds is even higher than the proportion of applicants made up by these students.

[*]   The proportion of applicants whose social background is not known to UCAS has risen over these years making direct comparisons over time more difficult.

Table 2 – UK applicants and accepted applicants to medical and dental school by social class 1996-2001

Year	Applicants							Acceptances							Acceptance rate (%)						
	I professional	II intermediate	IIIM skilled manual	IIIN skilled non-manual	IV partly skilled	V unskilled	X unknown	I professional	II intermediate	IIIM skilled manual	IIIN skilled non-manual	IV partly skilled	V unskilled	X unknown	I professional	II intermediate	IIIM skilled manual	IIIN skilled non-manual	IV partly skilled	V unskilled	X unknown
1996	3,994	4,332	1,079	1,042	593	145	535	2,055	2,034	402	435	200	37	179	51.5	47	37.3	41.8	33.7	25.5	33.5
(%)	(34)	(37)	(9)	(9)	(5)	(1)	(5)	(39)	(38)	(8)	(8)	(4)	(1)	(3)							
1997	3,749	4,191	1,016	945	564	149	834	2,039	2,015	380	412	232	45	233	54.4	48	37.4	43.6	42.5	30.2	27.9
	(33)	(37)	(9)	(8)	(5)	(1)	(7)	(38)	(38)	(7)	(8)	(4)	(1)	(4)							
1998	3,670	4,073	950	914	516	117	774	1,200	2,050	411	425	210	33	227	57.2	50.3	43.3	46.5	40.7	28.2	29.3
	(33)	(37)	(9)	(8)	(5)	(1)	(7)	(37)	(38)	(8)	(8)	(4)	(1)	(4)							
1999	3,316	3,547	835	890	444	85	958	2,128	2,044	419	480	217	27	361	64.2	57.6	50.2	53.9	48.9	31.8	37.7
	(33)	(35)	(8)	(9)	(4)	(1)	(10)	(38)	(37)	(7)	(8)	(4)	(0)	(6)							
2000	3,176	3,269	799	818	405	92	1,000	2,248	2,131	433	493	233	53	449	70.8	65.2	54.2	60.3	57.5	57.6	49.9
	(33)	(35)	(8)	(9)	(4)	(1)	(10)	(38)	(35)	(7)	(8)	(4)	(1)	(7)							
2001	3,102	3,321	777	795	371	77	1,087	2,314	2,351	483	525	224	43	583	74.6	70.8	62.2	66	60.4	55.8	53.6
	(33)	(35)	(8)	(8)	(4)	(1)	(11)	(35)	(37)	(7)	(8)	(3)	(1)	(9)							

Source: UCAS

Table 3 – UK applicants and accepted applicants to medical and dental school by socio-economic group 2002-03						
	Applicants		**Acceptances**		**Acceptance rate (%)**	
Socio-economic group	**2002**	**2003**	**2002**	**2003**	**2002**	**2003**
Higher managerial and professional (%)	4,018 (36.4)	4,630 (34.1)	2,897 (40.5)	3,001 (38.4)	72.1	64.8
Lower managerial and professional	2,756 (25.0)	3,439 (25.3)	1,802 (25.2)	2,009 (25.7)	65.4	58.4
Intermediate occupations	1,090 (9.9)	1,290 (9.5)	739 (10.3)	741 (9.5)	67.8	57.4
Small employers and own account workers	488 (4.4)	577 (4.3)	300 (4.2)	342 (4.4)	61.5	59.3
Lower supervisory and technical occupations	204 (1.9)	295 (2.2)	127 (1.8)	165 (2.1)	62.3	55.9
Semi-routine occupations	722 (6.6)	821 (6.0)	405 (5.7)	443 (5.7)	56.1	54
Routine occupations	267 (2.4)	274 (2.0)	144 (2.0)	143 (1.8)	53.9	52.2
Unknown	1,485 (13.5)	2,257 (16.6)	745 (10.4)	980 (12.5)	50.2	43.4

Source: UCAS

Figure 1 – National data on applicants to medical and dental school by socio-economic group 2003

Source: UCAS
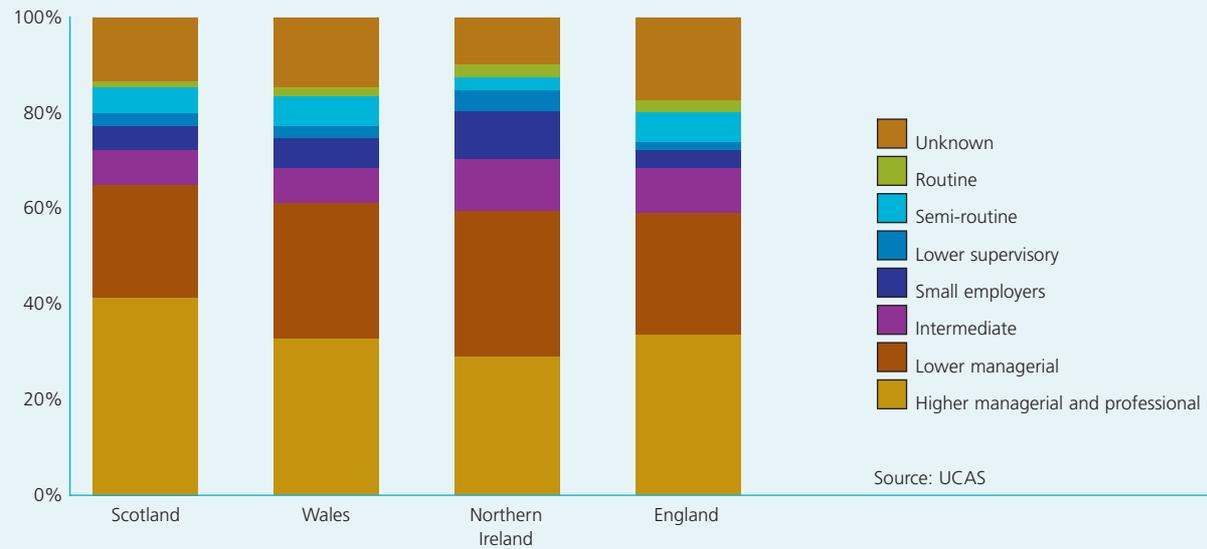
Figure 2 – National data on accepted applicants to medical and dental school by socio-economic group 2003
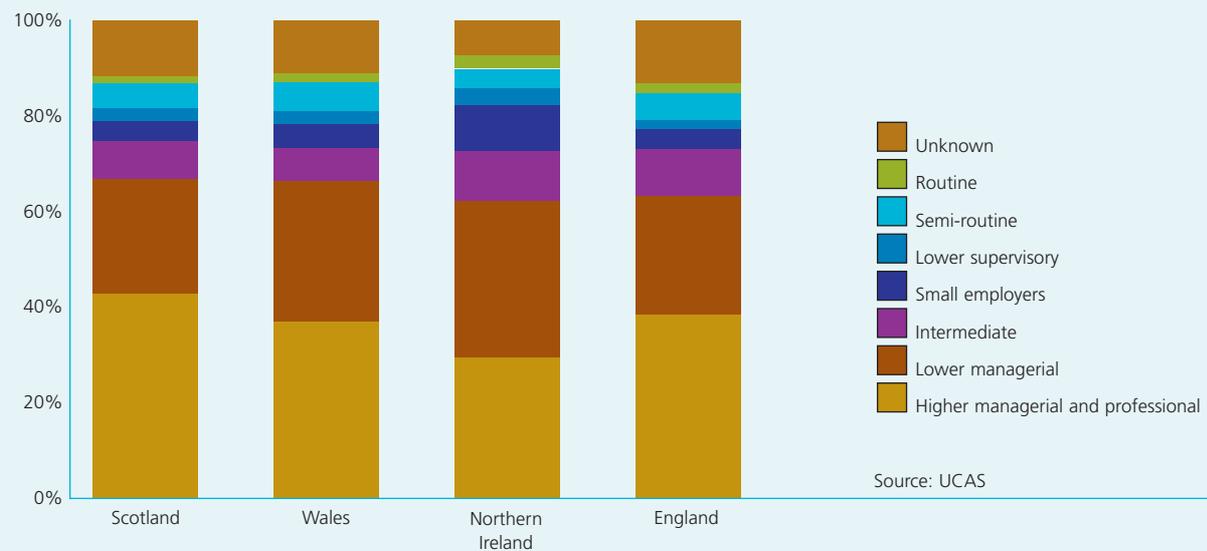
Source: UCAS

In 2003...the proportion of students accepted to medicine and dentistry from higher and managerial backgrounds was around four times higher than the proportion of the working population with this social background.

Comparative analysis of socio-economic status and application to medical school

The disproportionately high percentage of applicants from higher social classes is largely responsible for the skewed socio-economic composition of medical and dental schools, although selection may also have some effect. This distribution of applicants is not entirely unique to medicine. Figure 3 shows applicants and acceptances to medical and dental school, and to all degree courses, in 2003, by socio-economic group. This figure also shows the socio-economic composition of the UK's working age population.[*] It is clear that all degrees attract a high proportion of applicants from high social groups. However, this is particularly true of applications to medicine and dentistry which, even compared to law, attract a much higher proportion of applicants from the highest (higher managerial and professional) socio-economic group. In 2003, the proportion of applicants to medicine and dentistry coming from higher managerial and professional backgrounds was twice as high as the proportion of applicants to all degrees coming from this background (34% compared to 17% for all degrees), and over 50 per cent higher than the proportion of applicants to law coming from this background (20%). Moreover, the proportion of students accepted to medicine and dentistry from higher and managerial backgrounds was around four times higher than the proportion of the working population with this social background. Conversely, lower socio-economic groups are less well represented among applicants to medicine and dentistry than among applicants for all degrees.

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* This includes men aged 16 to 64 and women aged 16 to 59. The long-term unemployed category includes those who have never worked. This last category is not included in the UCAS statistics.

Source: UCAS and Source: Labour Forced Survey, Office for National Statistics

There are several reasons for students from lower social classes being under-represented among applicants to university and medical school. Progression to further or higher education may not be a tradition in the school or family of pupils from less advantaged socio-economic backgrounds. This can have several consequences. Perhaps most importantly, it may mean that students do not aspire to go to university. They may see higher education, and particularly medicine, as 'not for them'. In some cases, a disadvantaged upbringing will result in additional barriers to university and entry to medical school, including time spent in part-time employment or caring, rather than on studying for exams.

Students from less advantaged backgrounds are more likely to attend a secondary school that does not have a record of high academic achievement.[12] This may mean that students of high natural ability are not encouraged to meet their potential and may consequently perform worse in their exams than students with the same level of ability in other schools. Even where students show an interest in studying medicine, they may lack support and advice in applying. A large amount of sociological literature testifies to the unequal distribution of extensive and resourceful social networks.[13] In the context of socio-economic status and medical school, there may be an important distinction between emotional and informational/instrumental family support. In some cases, families may provide good emotional support for medical school application, but be unable to provide informational or instrumental support such as advice on writing the application or help arranging work experience. It is this type of differential informational and instrumental support which is likely to perpetuate the socio-economic distribution of medical students. Levels of support also vary between schools. For example, private and high performing state schools may be more likely to write better references and ensure better presented application forms.

Lack of support and guidance for applying to medical school is a major barrier for many students from less advantaged backgrounds. However, lack of guidance for applying to medicine is not a problem found exclusively among lower socio-economic groups. Here, a medical student explains her school's failure to provide support for her decision to study medicine.

'As a current final year student, who attended a very "old-boys" boarding school which prided itself on its excellent academic record and Oxbridge acceptance rates – not extending to excellence in science subjects and in particular the study of medicine – I hit several large hurdles during my application process to medical college. Different schools "rate" themselves in different ways including number of places gained at university per year, and in particular, the number of places gained to study at Oxbridge per year no matter in what subject. As far as my school was concerned, I was an easy bet to get accepted to Oxford to study English Literature. When I made it explicitly clear that this was not going to happen, the tack changed to the study of law, once more at Oxford. The motivation was clear – I was a clever girl and would be lost as a useful statistic if I applied to study medicine in London, which was what I wanted, and despite huge amounts of pressure, eventually came to do.'

Comparative analysis of socio-economic status and acceptance to medical school

Acceptances to medical school further skew the socio-economic distribution of students. One third of students accepted to medicine and dentistry between 1996 and 2001 came from professional backgrounds, while only 1 per cent came from an unskilled background.

Between 1996 and 2001, the percentage of applicants accepted (acceptance rate) increased across *all* social classes. This is because, between 1996 and 2001, the number of applicants to medical and dental school declined each year while the number of places available increased. However, as shown in figure 4, there is a sustained differential in the acceptance rate to medical and dental school across socio-economic groups. An applicant from a professional background is proportionately most likely to be accepted to medical or dental school, and the likelihood of being accepted generally declines with socio-economic background. For example, in 1998 and 1999 applicants with a professional background were over twice as likely to be accepted to medical school as those from an unskilled background.

Figure 4 – Acceptance rate to medical and dental school by social class 1996-2001

Legend:
- I professional
- II intermediate
- IIIM skilled manual
- IIIN skilled non-manual
- IV partly skilled
- V unskilled
- X unknown

Source: UCAS

Figure 4 shows a remarkable increase (of 81%) in the proportion of applicants from unskilled backgrounds being accepted to medical and dental school after 1999. Overall, the relative differences in acceptance rates between the most and least privileged groups seems to have narrowed between 1996 and 2001. The narrowing gap between acceptance rates to medicine and dentistry between social classes, and the increasing proportion of applicants accepted from unskilled backgrounds, may be a positive sign that barriers in selection are diminishing.

The diminishing relative difference in the acceptance rate between social classes, and the increasing proportion of applicants from unskilled backgrounds being accepted to medical and dental school after 1999, are almost certainly in part a reflection of the increased number of medical school places in the past five years. By increasing the number of places available, more chances become available to applicants from lower SES backgrounds. Between 1999 and 2001, over 2,000 new medical school places were created in English and Welsh universities. In England this expansion occurred in four tranches:

January 1999	141 places from September 1999
June 1999	684 places
June 2000	287 places
March 2001	1,033 places[7]

Throughout this expansion period, when assessing bids to expand medical schools, the Department of Health/HEFCE Joint Implementation Group looked at the extent to which medical schools' plans or student recruitment, including their admissions policies, addressed the need to increase successful applications from students from social backgrounds currently under-represented in medicine.[7]

The continuing differential acceptance rates to medical school across socio-economic classes raises important questions about when and why lower SES groups experience disadvantage when applying to medicine. Large differences in the numbers of applications received from different social groups have led to an important focus on students' aspirations and earlier attainment. However, this should not be allowed to detract attention from the differential acceptance rates. These should prompt a thorough investigation of the selection processes for medical schools. The possibility of bias or discrimination during selection against students from lower social classes must be considered. This is discussed in more detail in the final chapter.

Unfortunately, there is still little research on the effect of medical school selection processes on their social composition. Although it is apparent that acceptance rates are lower in less advantaged SES groups, the reason for this is unclear. Analysis of applications and admissions statistics from 1996 and 1997 showed a

clear disadvantage in four medical schools of applicants from further and higher education institutions and sixth form colleges. Simply coming from a lower social class was found to disadvantage applicants to two medical schools (Charing Cross & Westminster and Imperial College, London).[14] This suggests that discrimination was occurring in some medical schools. In other studies of medical school entry, social class has not been found to be a significant independent factor in selection.[15] However, since analysis of admissions has been limited, these findings may be due primarily to lack of data.

Effect of socio-economic group on the admissions process and the potential for disadvantage

The academic achievement and ability of all medical school applicants is essential in understanding the degree to which those from lower SES groups experience discrimination during the selection process. Research suggests that children from different social classes demonstrate different distributions of intellectual ability (although this does not prove anything about innate, potential or maximum abilities).[11] However, an analysis of the social class of students entering medical school in 1966, which controlled for this social distribution of ability, concluded that the excess of medical school students from social class I could *not* be explained in terms of the demonstrated social class differences in intellectual ability. The same study found that a large proportion of the students from social class I (53%) had medical fathers. It was suggested that this may have explained part of the social class bias, but neither intellectual ability nor a medical background fully explained the disproportionate number of students from social class I backgrounds. The research concluded that there were two distinct 'disproportions', one in favour of the children of doctors, and the other in favour of social classes I and II.[11]

Even if no direct discrimination is found in medical school selection, it is still likely that applicants from lower SES groups experience a certain degree of disadvantage during the application and selection process. As discussed above, those with little school or family encouragement may be given less informational and instrumental support in applying to medical schools. They may lack the opportunity and contacts that allow other students to talk to doctors about medicine and undertake voluntary work in a medical environment. This means that during application to medical schools, they may experience relative difficulty in demonstrating that they are knowledgeable about, and committed to medicine. If their application forms do not contain the type of features usually looked for by admissions tutors (work experience, positions of responsibility or voluntary work), they may not be considered further.

Despite several types of disadvantage, there are many examples of students from lower socio-economic groups who, determined to be doctors, ensured that they did everything within their power to achieve that goal. A fifth year medical student from a non-professional background talks about her struggle to get to medical school.

'Before I came to university, I spent three years at college doing my A-levels. Unfortunately, I got grades A, B, C and D so I had to spend a year resitting the lower three A subjects as I was determined to be a doctor. I then got ABB, but was rejected from my conditional offer as the A was not in chemistry. As I did not particularly want to go to university except to do medicine, I decided to reapply the following year when I was accepted. During this year I carried on working for Tesco and attended a Princes' Trust course for three months. I then started supporting adults with learning disabilities full time until I started university aged 21. I am very grateful to my university for giving me the opportunity to study medicine, when it appeared very likely that I would not be accepted anywhere.

I found university a bit of a culture shock as I come from a working class background, with no family history of university education. As a good performing fifth year with an intercalated BSc, I feel that I proved myself and would like to see allowances made for students from working class backgrounds, like myself, who attended poor performing state schools.

In addition, I would like to see more support given by medical schools to those medical students who have limited finances. I have limited finances and support myself through studying. I supplement my income through a casual job as a support worker for adults with learning disabilities. Although I try not to let it interfere with my studies, it inevitability does. I often miss out on study or placement time if it is possible to go to work. Whereas most students enjoy their holidays as time off, I spent my time at work. I do not think medical school properly considers or supports students with a limited income.'

The costs of studying medicine

It is impossible to discuss the differential rates of application to medical school without mentioning the costs of studying medicine. The government introduced tuition fees in England and Wales for the first time in 1998, a year after it ceased paying student maintenance grants. The BMA strongly opposed this. At the time of writing, most students' families pay an annual upfront means-tested tuition fee of £1,125, although about 30 per cent of students, from families with an income below £20,970 are exempt.

Medicine is already significantly more expensive than other university courses due to additional costs for travel and equipment and fewer opportunities to supplement income through paid work. Fifth year medical students owe an average £14,497 in student loan repayments; this is higher still in London.[16] BMA surveys of medical students' finances show that 23 per cent of students

have a job during term time.[16] Despite part-time work (averaging about nine hours per week for those with jobs), and student loans from the government, around two-thirds of medical students have a bank overdraft and about 18 per cent have bank loans.[16] The inadequate financial support currently available to medical students may act as a significant obstacle to those from poorer backgrounds.

The Westminster Parliament has now passed a bill to introduce variable tuition fees for all university students, up to a maximum of £3,000 per year, with payment deferred until after students graduate and earn at least £15,000 a year. [Wales and Northern Ireland are currently deciding on the future of their tuition fees and student support.] Since medicine is an expensive degree to run, and because courses are long, it seems likely that many medical students will leave university with large graduate debts. The BMA's medical students committee (MSC) has estimated that medical graduates could leave medical school with debts as high as £64,000. This level of debt could deter students from a wide range of social backgrounds, but is most likely to deter students from the lower SES groups, the very students who are already under-represented in medical schools and medicine. It is estimated that for a student coming from a family with a residual income of £20,000, a medical degree will necessitate a commitment to levels of debt 91 per cent higher than that for a three-year university course. Since some financial support will be provided for the very poorest students, those hardest hit by variable tuition fees may prove to be students from lower middle class families who do not qualify for the full range of financial support.

What can be done to encourage a more representative medical profession?

Increasing the number of applicants to medicine from able students with less advantaged backgrounds is of primary importance in redressing the social balance of medical schools. The most obvious way to increase the proportion of medical school applicants from lower socio-economic backgrounds is to raise the aspirations of school pupils, in order to encourage both university application and an interest in medicine. The BMA supports all attempts to encourage medical school applications from a wider socio-economic base. Much of this work may need to be focused on children at an early age. However, schemes run by universities may have a positive impact. The BMA believes that all medical schools should seek to develop outreach programmes with schools and sixth form colleges to encourage suitable applicants who would not traditionally consider a career in medicine.[17] In fact, medical schools have developed a variety of initiatives to attract students to medicine. For example, some medical schools run summer schools or outreach programmes to local schools to increase interest in medicine among secondary school pupils.

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Attempts to widen access may be partially ineffectual in the face of certain current selection criteria, such as high academic requirements, personal statements and referee reports that may work in the favour of higher social class students. An internal investigation into the selection processes at one medical school in 1989 demonstrated the sort of structural problems which could easily disadvantage applicants from lower social class or ethnic minority groups (see below).

Comments on a review of one medical school's selection procedure

'When we examined our admissions criteria following accusations of discrimination on the grounds of ethnicity we found that the initial screening process attempted to assess several things. One of these was leadership potential. The criteria used were evidence of responsibility at school – for example being a prefect. State schools and sixth form colleges do not operate a prefect system, yet students were being given extra marks as part of the screening process if they had this evidence.

Also, we found that students from selective schools (the majority of which are private schools) were predicted to get higher grades. One of our criterion for selection for interview was predicted grades of two A's and a B. If the teacher predicts three Bs then the student is less likely to be invited for interview.

At interview the student from the private school performs well and is offered the standard two As and a B. The student from the state school does not even get an interview even though getting three Bs at some state schools must be a huge achievement. Come the exams the student from the private school gets an A and two B grades. She or he is, however, in a pool from which students will be selected, having already been interviewed. Because not all students offered a place will obtain the required grades, that student gets a place. In the meantime, the student from the state school who also got an A and two Bs was never interviewed so was never even offered a place. Who has the greater potential? The state school student who surmounted adversity having obtained higher grades in an inner city school or the student who got all the benefits of private education?

The fact remains that about 20 per cent of our students do not get the required offer yet still get given a place at medical school. The majority of these are from selective/private schools'.

'Who has the greater potential? The state school student who surmounted adversity having obtained higher grades in an inner city school or the student who got all the benefits of private education?'

The effect of selection procedures on the demography of medical schools is discussed in greater detail in the final section of this paper.

Ideally, in addition to raising aspirations, initiatives should be available to school students to provide some sort of compensation for pupils' disadvantage. This could include providing additional academic support and tutoring, making work experience available, and teaching students generic skills such as communication skills and interview technique.[12] Many of these challenges need to be met by secondary or even primary schools rather than by the higher education sector. In particular, secondary schools should provide good careers guidance for students interested in becoming a doctor. It is important that all medical school applicants have a good understanding of what a medical career and medical education involves. This will help to minimise drop out rates and disaffection during study. It is important to note that – with the exception of students with a doctor as a parent – socio-economic background does not seem to be significantly correlated with a student's likelihood of dropping out of medical school.[18]

Under current UK statutory obligations, medical schools are lawfully permitted to modify pre-recruitment strategies in order to increase applications from under-represented groups. Pre-admission positive action strategies are supported by UK public funding.[19] Many medical school staff enthusiastically support the principles of widening participation in medicine and have invested time and energy in initiatives to bring about change.[20] Access to medicine courses are run by some medical schools to encourage wider access to medicine. These are targeted at secondary school students. In some cases, students from non-traditional backgrounds will also benefit from additional support at medical school. Some examples of these schemes are outlined below:

- Sheffield University runs an Outreach and Access to Medicine Scheme (SOAMS) which provides places and additional financial support to pupils with an aptitude for medicine and no family history of higher education
  w (www.shef.ac.uk/rao/recruitment/outreach/soams/soamsintro.html)

- Guy's, King's and St Thomas' medical school recruits some local students on the basis of their potential and suitability for medical training, rather than their actual or predicted at A-level performance. It then runs a six year course for them allowing the students to study at a slower pace and with more support for the first three years of the course. The majority of these students come from social classes III, IV and V. Applicants engage in a test profiling cognitive reasoning skills and personality type, followed by an extended interview
  w (www.kcl.ac.uk/depsta/medicine/access/index.html)

- similarly, Southampton's New Pathway into Medicine Programme, in partnership with local schools and further education colleges, includes an extra preparatory year of study before the degree course to prepare students for medicine. There are flexible entry requirements to this scheme including A-level equivalents, retakes and access courses
- **w (www.soton.ac.uk/prospectus/ugc/A102.html)**

- the Pathways to the Professions project was set up in 2001 to widen access to law and medicine courses at the University of Edinburgh. Working with the Faculties of Law and Medicine, school staff, careers staff and professional bodies, an outreach programme for local state school students in Edinburgh and the Lothians has been developed. The desired outcomes of the project are an increase in applications from the state sector and an increase in under-represented groups accessing the professions
- **w (http://www.rals.ed.ac.uk/widening/pathways.html)**

- since 2003, St George's Hospital Medical School has run a foundation year for medicine jointly with Kingston University. Entry level is GCSE with three years' work experience and evidence of ability from the workplace. Successful students progress to year one of the MBBS
- **w (www.sghms.ac.uk/Courses/undergrad/foundation_med.htm).[7]**

Over 40 per cent of students progressing to medical school from some access courses come from socio-economic groups IV and V.

Medical schools are currently evaluating many of their widening access schemes. The Higher Education Bill sets out plans for access agreements and an access regulator to ensure that universities make an effort to widen participation. The BMA is campaigning for these access agreements to be applied separately to medicine to ensure that universities do not try to compensate for the highly skewed social distribution of medical students by filling other courses with students from lower SES groups.

Expanding the availability of access courses (described on page 36) could help to widen participation in medicine. Over 40 per cent of students progressing to medical school from some access courses come from socio-economic groups IV and V. [21]

Four new medical schools have recently opened: the Peninsula Medical School, University of East Anglia Medical School, Brighton and Sussex Medical School, and Hull York Medical School (HYMS). In addition, four new centres of medical education have been established: University of Durham, Queen's Campus, Stockton; University of Keele; University of Warwick; and the University of Nottingham Medical School at Derby. The development of new medical schools has given rise to opportunities for scrutiny of selection practice and the development of new approaches to recruitment.[22] For example, the Peninsula Medical School interviews all applicants reaching its minimum academic standard.

This structured interview is designed to reveal attributes such as cooperativeness, empathy and insight. The resulting intake is more diverse than most medical schools. New medical schools, therefore, attract cohorts of students that differ demographically from those in more traditional medical schools. Students at Brighton, Sussex, for example, are drawn from a wide range of backgrounds including post A-level students, those from access to medicine courses and mature students. Some of the new medical schools have a regional focus and all are determined to widen participation. Many places on the courses offered by new medical schools are ear marked for those from socially deprived backgrounds.[8]

The facts outlined above, particularly regarding selection procedures and the disadvantage faced by applicants from lower SES groups, present a strong case for measures to counter disadvantage. However, it is important to acknowledge that some initiatives to widen participation in medicine, particularly those that focus on factors other than ability, are occasionally regarded as controversial.

New medical schools... attract cohorts of students that differ demographically from those in more traditional medical schools. Some of the new medical schools have a regional focus and all are determined to widen participation. Many places on the courses offered by new medical schools are ear marked for those from socially deprived backgrounds.

A current medical student explains his reservations about widening participation initiatives
'As a student from a "minority" background (not professional or managerial) I find widening access initiatives which set different standards for those from a lower socio-economic background inherently condescending. Access to medicine can only be based on merit. Anything else compromises the integrity of the medical student body and by extension the entire profession.

I would not be comfortable having been admitted to medicine on any grounds other than my own ability. The thought that my place exists only as a sop to the poor, is extremely offensive and I certainly would not study in such a situation'.

Medical schools should thoroughly audit their selection procedures and, where necessary, redesign them to ensure that they are in no way discriminatory.

Summary

The social demography of medical schools in the UK has changed little over time. The majority of students still come from professional and managerial backgrounds. The main reason for the under-representation of other socio-economic groups seems to be their low rates of application, a phenomenon which is likely to be due to a complex combination of factors. Financial considerations may be one important barrier to a wider social mix of medical school applicants and this is likely to become much more important when top-up fees are introduced from 2006. Initiatives to raise aspirations and to support applicants are both likely to be important in widening access to medical school. Medical schools should thoroughly audit their selection procedures and, where necessary, redesign them to ensure that they are in no way discriminatory.

Questions for discussion

- How can we find out the most important reasons that lower socio-economic groups apply to medicine in such low numbers?
- How can medical schools ensure that they are getting the best candidates from the broadest socio-economic groups?
- What are the options for widening access to medical school?
- How can we monitor the effect of top-up tuition fees on the demography of medicine?
- Does the content of applications from students of different economic groups differ in style or substance?
- Would making medicine a postgraduate degree improve the situation?
- Would lowering the minimum academic criteria required for entry to medical school increase the number of applications received from students from lower socio-economic groups?

Age

Age and application to medical school

UCAS provides data on the age of medical school entrants, broken down into four age groups: 20 and under, 21 to 24, 25 to 39, and 40 and over. Table 4 shows the changing composition of applicants and acceptances to medical school by age between 1996 and 2003.

In the last five years there has been a consistent annual decline in the proportion of applicants represented by students under 21 years of age. In 1996, students of 20 years and under made up 83 per cent of those students applying to medical school; this group now makes up 66 per cent of applicants. The number of applicants to medicine has increased since 2000, but this increase has been much more marked in older age groups. The past two years have witnessed a particularly sharp increase in the number of mature applicants. Between 2002 and 2003 the total number of applicants to medicine increased by 26 per cent. Although the number of applicants from all age groups increased, this increase ranged from 10 per cent in the 20 and under age group, 51 per cent in the 21 to 24 age group, 95 per cent in the 25 to 39 age group and 191 per cent in the over 40 group.

As figure 5 shows, the decreasing proportion of applicants and acceptances to medicine from those under 21, does not reflect recent trends for all degrees. In 1996, medicine had a much higher proportion of younger applicants and admissions than other degrees. However, trends in medicine over the last seven years, and a slight increase in the proportion of applicants aged 20 and under to all degrees, has led to convergence: under 21s are now less represented among applicants to medicine than they are for all degree courses.

Table 4 – All applicants and accepted applicants to medical school by age group 1996-2003

Year	Applicants				Acceptances				Acceptance rate (%)			
	20 and under	21 to 24	25 to 39	40 and over	20 and under	21 to 24	25 to 39	40 and over	20 and under	21 to 24	25 to 39	40 and over
1996 **(%)**	7,836 (83.30)	885 (9.41)	676 (7.19)	10 (0.11)	4,079 (91.03)	275 (6.15)	125 (2.80)	1 (0.02)	51.94	31.07	18.49	10.00
1997	7,921 (84.47)	821 (8.76)	612 (6.53)	23 (0.25)	4,210 (91.98)	237 (5.18)	130 (2.84)	0 (0.00)	53.15	28.87	21.24	0.00
1998	7,802 (84.62)	799 (8.67)	602 (6.53)	17 (0.18)	4,296 (91.74)	239 (5.10)	147 (3.14)	1 (0.02)	55.06	29.91	24.42	5.88
1999	7,118 (83.45)	846 (9.92)	549 (6.44)	17 (0.20)	4,386 (90.04)	330 (6.77)	154 (3.16)	1 (0.02)	61.62	39.01	28.05	5.88
2000	6,507 (80.25)	929 (11.46)	644 (7.94)	28 (0.35)	4,549 (87.00)	465 (8.72)	222 (4.25)	2 (0.04)	69.91	49.09	34.47	7.14
2001	6,451 (79.35)	1,026 (12.62)	618 (7.60)	35 (0.43)	4,842 (85.32)	589 (10.38)	236 (4.16)	8 (0.14)	75.06	57.41	38.19	22.86
2002	7,169 (75.48)	1,357 (14.29)	903 (9.51)	69 (0.73)	5,138 (81.72)	736 (11.71)	395 (6.28)	18 (0.29)	71.67	54.24	43.74	26.09
2003	7,904 (66.31)	2,053 (17.22)	1,762 (14.78)	201 (1.69)	5,421 (77.97)	892 (12.83)	610 (8.77)	30 (0.43)	68.59	43.45	34.62	14.93

Source: UCAS

Source: UCAS

Age and acceptance to medical school

The proportion of applicants receiving offers increased in all age groups between 1996 and 2002. This reflected a declining ratio of applicants to places; a fall in absolute numbers of applicants and a concomitant increase in numbers of places available. However, the increase in the acceptance rate was more dramatic among older age groups. For example, the acceptance rate of 25 to 29 year olds increased consistently and was over twice as high in 2002 as it was in 1996. The 1996-2002 statistics seem to suggest that medical schools were adopting a more favourable attitude towards applicants from older age groups, although the statistics for 2003 show a decrease in the acceptance rate of mature applicants. In 1996, students of 20 years and under constituted 91 per cent of those students accepted to medical school. This group now makes up only 78 per cent of acceptances.

Looking at figure 5 it is clear that, in all years between 1996 and 2003, the proportion of offers made to those of 20 years and under is much higher than the proportion of applicants in this group. In other words, as table 4 shows, the acceptance rate is higher for students 20 years and under. This has raised

questions about whether older age groups experience disadvantage in applying to medicine. Analysis of applications and admissions statistics from 1996 and 1997 found significant evidence that applicants over the age of 21 were at a disadvantage when applying to four of the 27 medical schools included in the study (Dundee, Leicester, Queen Mary and Westfield College and St George's).[14] However, in one medical school (Nottingham), older applicants were at an advantage.[14] Other research has shown that age does not significantly affect selection.[15]

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At East Anglia, over half of the students are mature.

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The age of medical students varies greatly between medical schools. In some medical schools (Belfast, Cambridge, Dundee, Edinburgh, Imperial, Leeds, Liverpool, Oxford and St Andrews) students over the age of 21 – mature students – constitute only around 5 per cent of entrants. In several other medical schools (Aberdeen, Barts, Brighton & Sussex, East Anglia, St George's and Southampton) mature students make up over a quarter of the student body. At East Anglia, over half of the students are mature.[23]

There may be several reasons for the increase in older applicants and accepted students, including important recent changes in the structure of medical education. Some of these factors are discussed below.

Access courses

Access courses, sometimes geared specifically to medicine and normally lasting one year, are now available at a number of further and adult education colleges.

Access courses, sometimes geared specifically to medicine and normally lasting one year, are now available at a number of further and adult education colleges. These represent one potential route into medicine for non-traditional students and undoubtedly play a role in the changing demography of medical schools – particularly since they often recruit mature students and students from less advantaged backgrounds. For example, one access course run in Norfolk, and developed in cooperation with the University of Leicester Medical School, only accepts students over 21 years old, around 85 per cent of whom progress to medical school.[21] It has been predicted that growing numbers of mature students will enter medicine via access courses without having obtained the normal AAB A-level requirement which still holds for the majority of traditional school-leavers.[8]

New medical schools

New medical schools play an important role in the changing composition of the medical student body; this includes welcoming older students. To take one example, 15 per cent of the entrants to Hull York Medical School, are mature students.[24] New medical schools and their part in the changing demography of medicine are discussed in greater detail on page 30.

Graduate entry to medical school

Graduate entry to medical school is not new. In 1976, around 1,000 graduates applied for places in medical school, and around one in six was successful. A minority of medical schools even reserved a small proportion of places for older applicants, though only a very small minority of schools would consider reducing the length of their course for graduate entrants. In all, around 5 per cent of medical students were graduates though certain newer medical schools (for example, Southamptom and Leicester) aimed to fill up to 15 per cent of places with graduates.[25] Mature students often experienced considerable barriers to studying medicine such as lack of flexibility in entry requirements and course structure, lack of consideration of past experience and financial barriers.[26] Graduate students were rarely given any reduction in the time allowed to complete the course and frequently stumbled upon financial barriers. In addition, A-level results were normally considered, making entry for mature students with experience or good degree results less flexible. Graduate applicants had a significantly lower rate of entry to medical school than all UCCA students.[25]

Graduate entry to medicine has become more common with the introduction of graduate entry courses. A 1997 report by the Medical Workforce Standing Advisory Committee saw scope for developing graduate entry schemes to allow faster expansion of the profession than traditional courses and to broaden the field from which doctors are recruited.[27] Leicester Warwick and St George's medical schools began to run accelerated four-year medical courses for graduates in September 2000. By 2003/04 there were 622 entrants to four year courses for graduates in England.[7] The introduction of graduate entry courses may also have encouraged general graduate entry. For 2003 entry to medical school, over 3,300 UK applicants had a UK degree already (of whom 1,303 were accepted). This is a substantially higher number than the 879 UK graduate applicants for 1994 entry (of whom 281 were accepted).[7] A list of medical schools now running graduate programmes is presented in table 5.

Table 5 – Medical schools running graduate programmes

Medical school	Implementation date
St George's Hospital Medical School	2000
Leicester/Warwick Medical School	2000
University of Cambridge Medical School	2001
University of Oxford Medical School	2001
St Bartholomew's and The London Queen Mary's School of Medicine and Dentistry	2002
University of Birmingham Medical School	2003
University of Liverpool Medical School	2003
University of Newcastle Medical School	2003
University of Southampton School of Medicine	2003
University of Wales (Swansea with final years at Cardiff)	2003
Nottingham/Derby Medical School	2003
Guy's, King's & St Thomas'	2004
University of Bristol	2004

Source: BMA *Becoming a doctor* (2004)[28]

Graduate entry courses have proved hugely popular. About 3,500 people applied for graduate entry at medical school in 2002 although there were only 550 places on offer.[29] The popularity of graduate entry courses may be partly attributable to their shortened duration.[*] However, other characteristics of these degrees may be equally important. Graduate entry courses often take into consideration a wide range of factors when selecting students. In some cases this may mean that they recognise qualities previously excluded in the selection criteria for medical school. Although most demand science degrees or science A-levels, and still consider past examination performance,[30] selection is often based on an entrance exam and structured interview, rather than on A-level and GCSE results.[31] Cambridge, Newcastle, Nottingham, St George's and Swansea all consider graduates of any discipline. For students accepted to graduate entry medical degrees, the financial burden of medical school is eased by publicly funded bursaries from the second year onwards; this may also contribute to the appeal of graduate entry programmes. However, very little is known about the debt levels and financial circumstances of graduate entry students.

The Graduate Australian Medical Schools Admission Test (GAMSAT) is used to select students for the four-year graduate entry programme at St George's medical school in London, Nottingham, Swansea and Peninsula medical schools. This is an internationally acknowledged medical school entry selection tool, which involves reasoning in the humanities and social sciences, written communication

* Generally, shortened graduate courses fulfil EU medical training directives by having longer terms and modified basic science components on the basis of the assumption that graduate students will be able to assimilate basic science more quickly.

and reasoning in biological and physical sciences. GAMSAT does not test medical knowledge, but broadly based intellectual aptitude for medical study – high order reasoning, problem solving, critical thinking, as well as mastery of basic science concepts. This makes it possible for graduate students, without detailed scientific or medical knowledge, to be selected for medicine on the basis of their potential. At the BMA's 2004 conference of medical students, concern was expressed that a white, western world-view might be implicit in parts of the GAMSAT entrance exam; students at the conference called for an independent review of medical school entrance examinations to ensure that ethnic bias and institutional racism are not inherent.

Graduate entry programmes increase flexibility in career choice, allowing people to make the decision to be a doctor long after they have left school.

Implications of graduate entry and an increasing proportion of mature students

In light of warnings that the ratio of applications to places at medical school is declining,[32] expanding graduate and professional access and entry to medical programmes has been welcomed as one way to increase the pool of potential medical students.[33] [Whether or not it is important to increase the absolute number of applicants per place is debatable as courses are already oversubscribed and increased competition could create further disadvantage for under-represented groups.] Graduate entry programmes also increase flexibility in career choice, allowing people to make the decision to be a doctor long after they have left school.[30] Research in Australia found that reasons for the delayed entry of mature students to medical school include late consideration of medicine as a career, financial problems, dissatisfaction with previous career, poor academic results, or a combination of these factors.[34] It has long been recognised that the fierce competition for places at medical schools means that large numbers of frustrated and capable applicants find their way into other university degrees while retaining a strong desire to study medicine.[25]

Graduate and mature entrants to medicine are less likely to have been influenced by parents or schools in their career choice than younger students.[30,34] It is also often assumed that they have greater awareness of what constitutes a career in medicine. It has been suggested that mature and graduate students have and retain a higher motivation than their younger colleagues, a dedicated approach to learning, high standards and breadth of experience.[9] They may also have better developed communication skills and a demonstratable ability to get on with others[35] – both skills increasingly recognised as essential in medicine. Medical schools assume that graduate entrants have already developed study skills. For this reason, graduate entry courses are often based on small group and self-directed learning techniques including problem-based learning.[30]

There is little research evidence on differences in subsequent performance between graduate entrants and undergraduate entrants.[30] As graduate entrance

becomes more established, research is needed to investigate the relationship between graduate entry and drop out rates, and to monitor the specific demographic make-up of graduate programmes. At the moment there is little, if any, publicly available information on how this differs from undergraduate courses. Research is divided as to whether older students are more likely to fail exams, but age does not predict clinical performance. [36] Research in the UK in the early 1990s found no association between age at entry to medical school and choice of eventual specialty. Graduates at entry to medical school were a little more likely than non-graduates to choose general practice, but this relationship was not a strong one.[37] It has been suggested that a trend towards graduate entry to medical education will equip practitioners to view medical education and practice more broadly and to value experience or qualifications in management and public health.[38]

A senior lecturer at St George's Medical School discusses the benefits of graduate entry
'The graduate entry programme (GEP) is more than a "second chance" for students to study medicine. It is an opportunity for those who had not really contemplated medicine to move from arts or science subjects to then train to be a doctor. GEP students seem to have greater maturity and more confidence to say what they think. That is not to say that students on the traditional five-year medicine course are immature, rather that the GEP students have come into medicine with fewer misconceptions and eyes wider open to the possibilities.

The GEP course has a higher staff-student ratio than the five-year course at St George's. It allows the use of much more small group tutorial work, problem-/case-based learning and self-directed approaches. This is usually more satisfying for both teacher and student. It is fascinating to hear the broader range of ideas from outside science such as political, philosophical and sociological aspects discussed with some depth. This broadens medicine and encourages both students and teachers alike to focus on the various bigger pictures such as the NHS as an organisation, moral/ethical issues and the effect of spirituality on health and well being.

An interesting question is whether or not having more mature questioning students will produce a workforce more suited to the modern NHS. The first cohort is yet to graduate (June 2004) and I anticipate eagerly how they will approach the custom and practice, tradition and sometimes downright institutional approaches to healthcare we see in the various health systems we deal with. Certainly their breadth and diversity of background and experience will enrich clinical practice, first in a small way and, in the future, as a strand within medicine.'
Senior Lecturer, St George's Medical School – November 2003

It is important to recognise that graduate entry medical students on graduate courses are not synonymous with graduate or mature medical students as a whole. Many mature students fail to secure a place on a graduate course, do not have the necessary entry requirements or prefer to undertake a full five, or six, year course. For graduates on standard five, or six, year courses, studying medicine will be an even more expensive undertaking than for those on graduate programmes. Students on graduate entry programmes not only undertake shorter courses, but are also eligible for NHS financial support from the second year of their studies. Others studying medicine as a second degree are likely to incur even larger student debts by the time they qualify. For all mature students, studying medicine may entail foregoing a salary, moving house or significant alterations to family life.

A mature student studying medicine as a second degree explains his financial situation

'Academically, I was bright enough, but financially, I was very weak. I had two big money problems, I could not get a grant (I had already received one for my first degree) and also, I would have to pay my own fees. I did, however, qualify for a student loan and a rather large professional studies bank loan. I come from a modest working class family (combined gross income – £22,000), my mam and dad both help me out when they can but with sizeable commitments of their own I do not want to burden them further. Despite having had numerous part-time jobs and financial help from trusts and charities I will still finish my degree in about £50,000 worth of debt… if the current government get their way, it will be impossible for people like me to get a decent education and to try to make a better life for ourselves.'

Mature medical students may experience more stress throughout the medical course, especially with regard to financial difficulties, family problems and loneliness or isolation from other students.[34] Concern about money, especially the prospect of beginning a career with large debts, is a possible reason that more mature students do not apply for medicine.[39] It will be interesting to research the effect top-up fees have on the number of mature entrants to medicine. Fees of up to £3,000 per year may have a particularly deterrent effect on students who already have debts from a first degree.

Is there an optimal age-range to enter medical school?

The increasing numbers of mature and graduate students entering medicine raises important questions about the optimal age range to enter medical school. The BMA recognises the positive experiences and attributes that mature students, graduate students and students with families can bring to medical schools and to the profession. It welcomes the development of graduate courses and the increasing number of such students on conventional medical courses. It also

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believes that mature and graduate medical students should be encouraged and supported in applying for medical school.[17] Similarly, the Council of Heads of Medical Schools (CHMS) encourages medical schools to welcome applications from mature students. However, CHMS also suggests that medical schools take account of the length of postgraduate general and specialist training that doctors are required to undertake.[40] Until recently, most medical schools had age limits for graduate entrants. In the 1970s this was normally between 25 and 30 years old.[25] The normal age for retirement in the NHS is 60. In 2003 a 53-year-old man was offered a place on a medical school's graduate programme.[41] This raises questions about the cost effectiveness of putting mature students through medical school, which could be framed against the context of workforce concerns or future earnings. Pressure to raise the age of retirement and the possibility of shorter, more focused training programmes should also be taken into consideration. Eventually, medical schools may be forced to ask themselves 'how old is too old?'.

A medical student in his 40s shares his experiences of mature entry to medicine

'I was a professor of Physics but I reached a point when I felt I had done all the physics I wanted. I wanted to move on and learn about new areas of life. I decided medicine provided this as well as providing the challenge and vocation that might justify throwing away a settled life as an academic - and living for five years on reduced income. I don't have any regrets.

Coming from an academic background it was quite easy to become a student. I was worried about the amount of material we have to learn but that proved not too taxing. I thought it would be easy to put the knowledge into practice but I think I have gone through the same difficulties that my younger colleagues have in the clinical years. In the first year I could see a big difference between myself and the 18 year olds on the course in approach and study skills but by the end of the five years they had matured to such an extent that I felt no different from them.

I think there should be an upper limit - it is a vocational course training doctors for the future. I would put the upper limit at something like 45 to 50. Gone are the days when people could retire at 55 and most people will be working until they are 70. Most people who enjoy their career want to work, so someone starting at 50 can expect to contribute 15 years to the profession - which is more than some who start in their twenties and leave the profession. I am looking forward to being a doctor for 26 years... I was only a Physicist for 15...and yet I contributed more than most in those 15 years.

What can older people bring to the profession? Well there is the old cliche of more life experience. But I think one thing they bring is a fresh outlook. Having worked in other fields they know what is possible. Someone coming straight from school comes to a profession full of people who have never known anything but medicine and the NHS.'

In the United States, prospective medical students are required to have a degree before they can enroll on a medical course. Since 1997 several Australian medical schools have also become exclusively graduate entry.[30] The Irish government is also proposing to change to a system requiring prospective medical students to complete an undergraduate health science degree before applying for medicine.[42] The increasing number of mature students being accepted onto medical courses, and the popularity of graduate entry programmes, suggests that there might be support within the UK for making more, or indeed all, medical degrees graduate entry courses. Already some medical schools (such as St George's in London) have developed basic science first degree courses which are seen as a potential platform for later graduate entry to medical school.[7]

Summary

A higher proportion of applicants under the age of 21 receive acceptances than in other age groups; mature applicants sometimes appear to be at a disadvantage. However, more than one in five students now accepted to medicine is 21 years old or over. The proportion of mature applicants and acceptances is increasing. This suggests that medical schools may be adopting a more favourable attitude towards older applicants. This changing demography of medical schools may be due in part to the effect of graduate entry programmes, new medical schools and access courses, all of which have helped to reduce barriers to medical school faced by older students. There are several perceived advantages of admitting mature students to medical school. However, there is little research on the differences in outcome between older and more traditional students. Mature and graduate students still face some problems in entry to medicine, including financial barriers.

Questions for discussion
- Why is the acceptance rate of applicants aged under 21 higher than in any other age group?
- What is the optimal age for entry to medical schools? How old is too old?
- Should the UK move towards making medicine a graduate entry subject?
- Why are not all medical schools offering access courses and graduate entry courses?

Ethnicity

Ethnicity and application and acceptance to medical school

The ethnic composition of the UK population in 2001 was 92.1 per cent white and 7.9 per cent minority ethnic groups; 4 per cent of the population were Asian or Asian British, 2 per cent were black or black British, 1.2 per cent were of mixed ethnicity and 0.4 per cent of the population were classified as Chinese or 'other'. Minority ethnic groups have a younger age structure than the white population, reflecting past immigration and fertility patterns.[43] The age composition of each ethnic group, taken from the national census 2001, is shown in figure 6.

Figure 6 – Great Britain's age distribution by ethnic group, April 2001
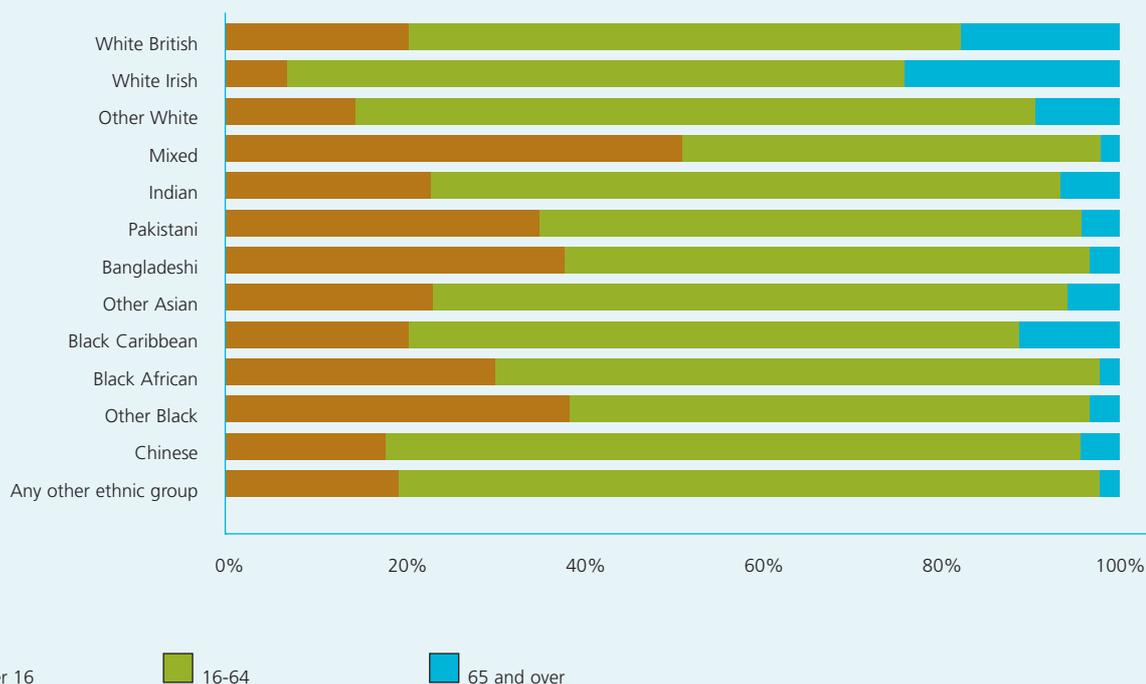
Source: ONS

Because non-white ethnic groups in the UK have a younger age structure, it could be anticipated that the university population would contain a greater proportion of ethnic minority groups than the population as a whole. In fact, 24 per cent of UK UCAS applicants and 23 per cent of UK UCAS accepted applicants in 2003 were non-white.

Medicine and dentistry attract a proportion of ethnic minorities higher than that in the general university population. UCCA, the predecessor of UCAS, only started collecting routine data on the ethnic origin of medicine and dentistry applicants in 1989. Before this date, the proportion of ethnic minority applications and acceptances to medicine can be roughly estimated by indexing non-European surnames. These estimates indicate that the proportion of ethnic minority students applying to medicine increased from 11.2 per cent in 1981 to 22.9 per cent in 1986.[15] This is a significantly lower proportion than the 36 per cent of applicants received from minority ethnic groups in 2003.

The UCAS data for medicine and dentistry by ethnicity 1996-2003 is presented in table 6. The proportion of ethnic minority students entering medical and dental education appears to have been relatively stable over the past six years (although there has been an increase in the proportion of offers made to black applicants).[*]

It should be noted that the proportion of minority ethnic students differs between medical schools. In many cases this is a geographical issue. In the UK, minority ethnic groups are concentrated in England and in large urban centres. The 2001 census showed that 45 per cent of minority ethnic groups lived in London.[43] Since many students choose to study close to home, the proportion of ethnic minority students at any medical school will vary somewhat according to the ethnic composition of the surrounding area. This is also reflected in the medical workforce: In the London area, 51 per cent of specialist registrars are now from minority ethnic backgrounds.[44]

* Although UCAS data on ethnicity is given for medical and dental schools combined, differences in applications and admission by ethnicity have been found between medicine and dentistry. While both disciplines attract a greater proportion of minority ethnic applicants than their relative size in the general population, dentistry appears to be more attractive to applicants from minority ethnic groups. For example, between 1994 and 1997, 48.3 per cent of dental students and 33.8 per cent of medical students were from ethnic minorities.

Year	Applicants						Acceptances					
	White	Asian	Black	Mixed	Other	Unknown	White	Asian	Black	Mixed	Other	Unknown
1996	6,953	3,665	403	**data not**	398	301	3,727	1,296	83	**data not**	138	98
%	(59.33)	(31.27)	(3.44)	**collected**	(3.4)	(2.57)	(69.77)	(24.26)	(3.44)	**collected**	(2.58)	(1.83)
1997	6,899	3,410	380		366	393	3,773	1,260	72		119	132
	(60.26)	(29.79)	(3.32)		(3.2)	(3.43)	(70.44)	(23.53)	(3.32)		(2.22)	(2.46)
1998	6,680	3,215	402		352	352	3,874	1,275	73		115	119
	(60.65	(29.19)	(3.65)		(3.2)	(3.31)	(71.00)	(23.37)	(3.65)		(2.11)	(2.18)
1999	6,052	2,945	357		363	358	3,816	1,430	115		181	134
	(60.07	(29.23)	(3.54)		(3.6)	(3.55)	(67.23)	(25.19)	(3.54)		(3.19)	(2.36)
2000	5,808	2,770	325		355	301	4,086	1,535	116		185	120
	(60.76)	(28.98)	(3.40)		(3.71)	(3.15)	(67.65)	(25.41)	(3.40)		(3.03)	(1.99)
2001	5,801	2,665	358	275	200	231	4,374	1,590	154	184	103	118
	(60.87)	(27.96)	(3.76)	(2.89)	(2.1)	(2.42)	(67.06)	(24.38)	(6.64)	(2.82)	(1.58)	(1.81)
2002	6,768	2,986	445	310	227	284	4,910	1,644	171	200	117	117
	(61.36)	(27.07)	(4.03)	(2.90)	(2.06)	(2.57)	(68.58)	(22.96)	(6.94)	(2.79)	(1.63)	(1.63)
2003	8,479	3,494	195	234	110	112	8,479	3,494	578	434	257	341
	(62.42)	(25.72)	(4.26)	(3.20)	(1.89)	(2.51)	(69.52)	(22.16)	(2.49)	(2.99)	(1.41)	(1.43)

Source: UCAS

The Council of Heads of Medical School (CHMS) also holds data on applications and acceptances to medicine by ethnicity. In 2001, 60 per cent of the total number of students accepted to study medicine were white, 9 per cent were of Indian origin and a further 8 per cent were of Pakistani or other Asian origin.[45] The high proportion of Asian applicants and students is likely to be a reflection of the fact that a large number of Asian doctors work in the NHS as a result of the immigration policies of the 1960s and 1970s. As with white students in medicine, choice of profession among Asian groups is likely to partly reflect the

views of their parents, some of whom may be medical personnel.[46]

Many minority ethnic students applying to medical school are British citizens: in most non-white ethnic groups in Britain, the majority of people describe their national identity as either British, English, Scottish, Welsh, or Irish. Moreover, the vast majority of UK students from several ethnic minority groups were born in Britain.[43]

The proportion of applicants and accepted applicants from each minority ethnic group varies considerably by gender, as shown in table 7. The female/male ratio among Asian applicants is more even than among other ethnic groups. Of all applicant groups, the proportion of females is highest in the 'black' group. In all ethnic groups, the acceptance rate is higher for women. This is most noticeable in the 'unknown' and 'black' ethnic groups.

Table 7 – UK applicants and accepted applicants to medicine 2003 by ethnic group and gender							
	White	Black	Asian	Mixed race	Other	Unknown	Total
Applicants							
Female (%)	61.80	62.77	51.97	60.03	53.30	52.91	59.14
Male (%)	38.20	37.23	48.03	39.97	46.70	47.09	40.86
Accepted applicants							
Female (%)	63.68	67.58	54.11	61.24	54.02	61.17	61.64
Male (%)	36.32	32.42	45.89	38.76	45.98	38.83	38.36

It is clear that overall, minority ethnic students are over-represented in medical schools in comparison with the UK population. However, this is a crude way of interpreting the data. Both application and acceptance rates differ widely between ethnic groups. This is apparent in the UCAS data and is shown in more detail in the data collected by CHMS. However, even these more detailed classifications may hide important differences in application and acceptance rates between ethnic subgroups.

Applicants and acceptances to medical school by ethnicity in 2001 is presented by ethnic group in table 8.

Table 8 – Applicants and accepted applicants to medical school by ethnicity 2001

Ethnicity	Applicants	% of all applicants	Acceptances	% of all acceptances	Acceptance rate %
White and Asian	162	1.50	118	1.89	72.84
White British	5,146	47.52	3,737	59.89	72.62
Indian	855	7.90	562	9.01	65.73
White Irish	143	1.32	93	1.49	65.03
White and Black Caribbean	11	0.10	5	0.08	45.45
Chinese	185	1.71	112	1.79	60.54
Other Asian	415	3.83	251	4.02	60.48
Other mixed	63	0.58	34	0.54	53.97
Bangladeshi	133	1.23	70	1.12	52.63
Black Caribbean	44	0.41	23	0.37	52.27
Other	148	1.37	77	1.23	52.03
White Other	185	1.71	94	1.51	50.81
Pakistani	520	4.80	263	4.21	50.58
White and Black African	17	0.16	11	0.18	64.71
Black Other	16	0.15	7	0.11	43.75
Black African	301	2.78	117	1.88	38.87
Unknown	2,484	22.94	666	10.67	26.81
Total	10,828	100	6,240	100	57.63

Source: CHMS

Does the ethnicity of medical students matter?

The extent to which medical students should reflect the ethnic diversity of society is a controversial topic in many different countries. In some cases these beliefs have influenced selection and admissions policies. For example, the US has a history of using affirmative action policies to increase the diversity of medical school students. This has led to a better representation of African-American and other under-represented ethnic minority groups in medical schools. These students have been found to be highly successful once in the system, indicating that providing students with an opportunity can be a positive stepping stone for career advancement.

It has been suggested that those who believe that ethnic proportionality is important in medical schools, may offer three arguments:[46]

- that a diverse student body enriches the university experience (this type of argument is often used in the UK to underpin widening access initiatives)
- that minority ethnic communities are better served by minority ethnic

professionals – i.e. a balanced representation of minority groups among doctors would serve to improve the health service[47]

• that ethnic minorities are needed in the profession to reflect the population at large.

Each of these arguments is controversial. Although a good case can be made for each one, there are also fundamental dangers in these approaches. Esmail has drawn attention to several such problems:

• the use of race as a proxy for diversity seems to confuse race with both ethnicity and culture, and fails to take into account differences within ethnic groups

• allowing the racial views of patients to dictate the choice of doctor could be very dangerous, not least to minority doctors. This argument also risks 'pigeon-holing' ethnic minorities and potentially denying opportunities to minority ethnic physicians in the most sought-after specialties in medicine. It is also highly questionable whether high quality healthcare to minorities is dependent on minority physicians

• there is no neat relationship between discrimination and under-representation as not all under-represented groups are defined by racial categories. Moreover, in the UK context, a strict proportionality argument could harm the chances of students from minority groups with high application rates.[46]

Since there is no strong argument for strict proportionality in medicine, the most important consideration must be that of equality of opportunity, both before application and during the selection process.

Acceptance rates by ethnicity

Among ethnic groups, there are significant differences in application and acceptances to medicine. In 2001, the highest overall acceptance rate was for students of a mixed white and Asian origin. Acceptance rates vary between 73 per cent of students from a mixed white and Asian background to 39 per cent for those whose ethnicity is black African.[45] The 2001 acceptance rates for medical school are shown by ethnicity in figure 7.

These differential acceptance rates raise very important questions; the most important of which is whether some ethnic groups experience discrimination during the selection process. This is a difficult question to answer. For many years, no data were collected on the ethnicity of medical students. When UCCA did begin collecting statistics from 1989, it did not have any strategy to analyse and report them, except in the aggregate. No attempt was made to analyse reasons for the apparent disadvantage faced by minority ethnic applicants.[46] Possible explanations for the differential acceptance rate between ethnic groups are discussed below.

Figure 7 – Acceptance rate to medical school by ethnicity 2001

Source: CHMS
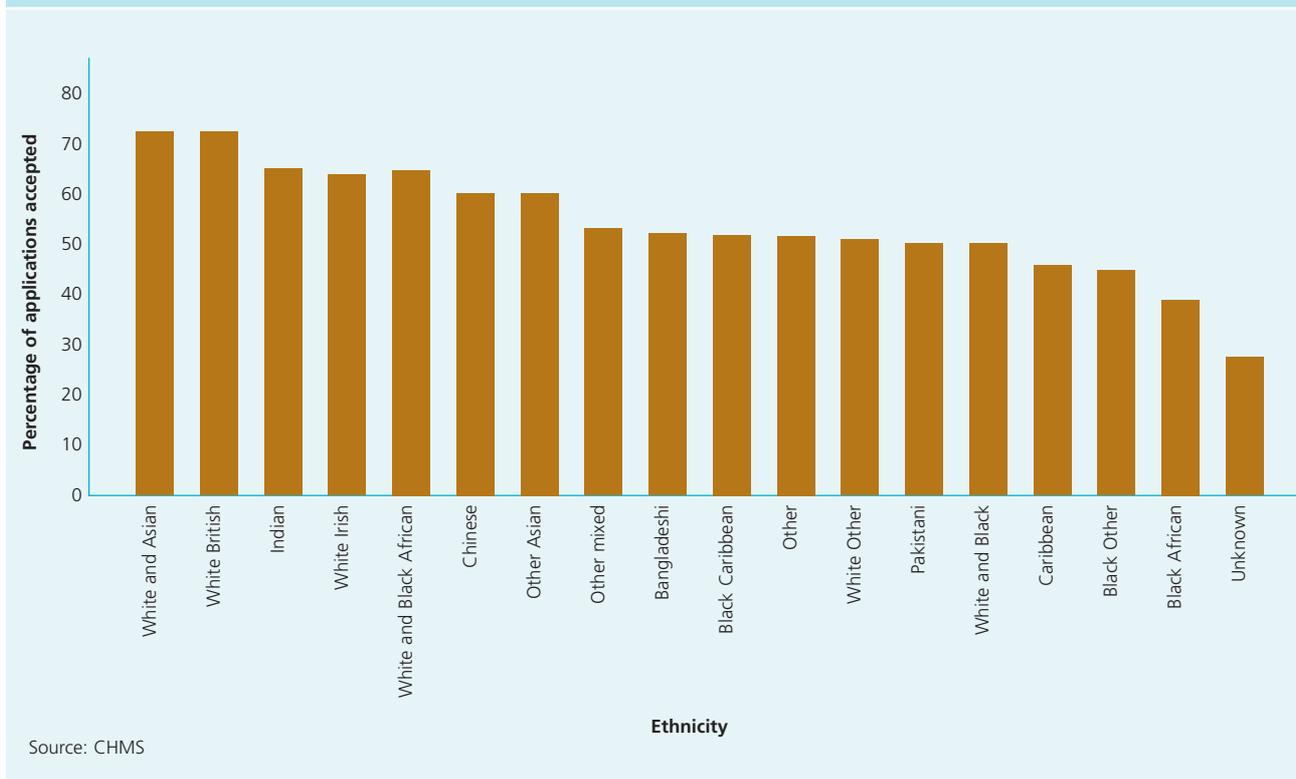
A London medical school student of Asian descent discusses her perceptions of ethnicity at medical school
'Medical students in London are a mixed bunch on the surface of things – there are many brown faces among the white for example. But this does not mean that students from many different ethnic backgrounds are represented in medical school. While there are many Asian students there are just a handful of Afro-Caribbean students and when I think about it, very few East Asian/Far-East students. I don't think this is a reflection of racism in medical school admissions procedures, but more representative of the numbers of people of certain ethnicities applying to medical school in the first place.

I have never experienced racism in medical school (but definitely sexism!). There is a general medical studentism that every student experiences when they enter hospitals, but on the whole no one is picked on or excluded because of their race. I feel that most of our generation of medical students are very open-minded and that only the much older generations have a trace of racism in them. But I must admit that in medical school there is sometimes an invisible divide between groups of students based on their ethnicity, these groups fuelled by societies exclusively for people of a certain ethnicity. Personally I think societies like this are more likely to separate people according to race. Mind you, for international students one would argue that they need societies like this as it is harder for them to integrate. Does this mean that medical school as a whole is not welcoming to international students? I don't know. It seems to be a vicious circle.'

Ethnicity and educational attainment
As noted above, UCAS and individual medical schools initially failed to analyse the available data on acceptance rates of minority ethnic applicants controlling for factors such as social class, school attended and educational qualifications. It has been suggested that this led to a common belief that differences in the acceptance rate existed because minority ethnic candidates were applying for medical school without the required qualifications.[46]

It is possible that differences in application and acceptance rates between minority ethnic groups may be explained partly by previous educational attainment; for example, Indian pupils, who have high application and acceptance rates, are more likely than most other ethnic groups to get the best GCSE results.[48] Figure 8 shows the percentage of pupils from each minority ethnic group achieving five or more A* – C grades at GCSE/GNVQ level in England 2002. It is important to note that this table refers to all GCSE pupils, and not to medical school applicants or acceptances. As a result this can only give a rough indication of possible factors explaining application and admission statistics.
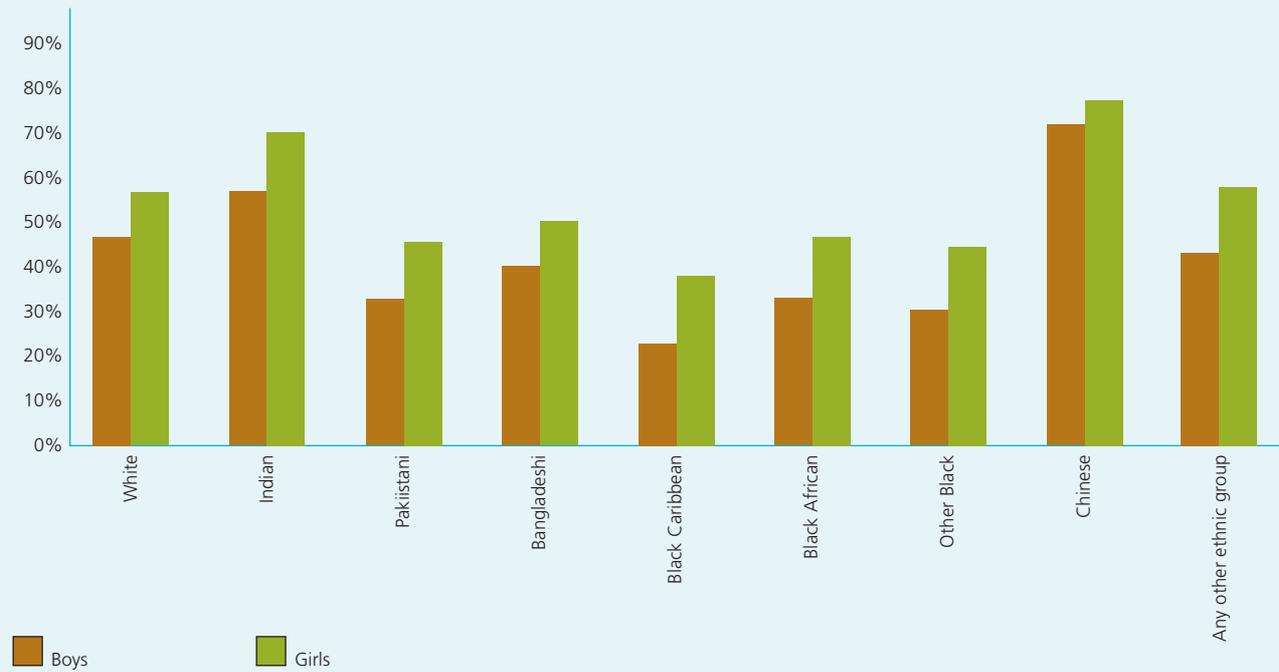
Source: National Statistics[49]

A study of students applying to study medicine in 1990 found that minority ethnic students were less likely to be accepted than white applicants partly because they were less well qualified and applied later in the application process.[15] Analysis of applications to St George's medical school between 1988 and 1990 also found a clear difference in the O-level scores between European and Asian applicants without A-levels, for whom O-level results would be the main indicator of academic attainment. European applicants had an average GCSE score higher than that of Asian applicants.[50] It has sometimes been suggested that, since the proportion of ethnic minority groups applying for medicine is greater than that for white students, the ethnic minority applicant groups might be expected to contain more comparatively weak applicants.[50]

If differential examination results is a key reason for the rejection of a greater proportion of ethnic minority than white applicants, it would be reasonable to expect many to be rejected early in the selection process. Analysis of applications to Nottingham Medical School in 1997 found that significantly more non-white applicants were rejected in the early stages – after being screened for academic requirements and having completed questionnaires about work experience and

extra curricular activities. At the later stages of statement review (applicant's and referee's) and interview, more white applicants were rejected. The net effect was that significantly more white applicants were offered a place.[51] This suggests that examination results may play a part in the rejection of a greater proportion of ethnic minority than white applicants.

Ethnicity and social class

It has been argued that social class, rather than ethnicity per se, is a central reason that some minority groups are disadvantaged in application to medical school. Bedi and Gilthorpe[52] examined ethnic variations in the social background of successful applicants to undergraduate medical and dental schools in the UK for the academic years 1994/95 to 1996/97. There were significant inter-ethnic differences observed in the social background of students entering medicine. Black, Indian and white applicants generally shared a similar socio-economic profile, with fewer students from lower social class backgrounds. Students from Bangladeshi, Chinese or Pakistani communities tended to have a lower social class background, although this was more true for applicants to dentistry than to medicine.

Figure 9 shows applicants and acceptances to medical and dental school in 2002 by ethnicity and socio-economic group. This figure does not include students of 'unknown' ethnicity since the majority of these students are also of an 'unknown' socio-economic status.

Figure 9 – Applicants and accepted applicants to medical and dental school by ethnicity and socio-economic group, 2002

Legend:
- Unknown
- Routine occupations
- Semi-routine occupations
- Lower supervisory and technical occupations
- Small employers and own account workers
- Intermediate occupations
- Lower managerial and professional occupations
- Higher managerial and professional occupations

Categories: Mixed applicants, Mixed accepts, Other applicants, Other accepts, White applicants, White accepts, Asian applicants, Asian applicants, Black applicants, Black accepts

Source: UCAS

It is clear from figure 9 that, in 2002, there were considerable inter-ethnic differences in the socio-economic backgrounds of medical school applicants. The 'mixed' ethnicity group of applicants contained the highest proportion of students from managerial and professional occupations. This was closely followed by the white applicants and those from 'other' ethnic backgrounds. Applicants from Asian and particularly black backgrounds had, on average, lower socio-economic status. The socio-economic differences between ethnic applicant groups may go some way to explaining the differential acceptance rates to medicine.

Whether or not these social class differences account for the differences in applications and acceptances to medical school, it should prompt researchers to consider black and minority ethnic groups in the context of social class issues, rather than as a single entity. If social class does lie at the heart of ethnic differences in access to medicine, strategies to improve access to higher education based upon minority ethnic group per se may be inappropriate.[52]

The socio-economic differences between ethnic applicant groups may go some way to explaining the differential acceptance rates to medicine.

Disadvantage in selection and discrimination

It has been suggested that the overall 'over-representation' of ethnic minority groups in medical education has led to ambivalence and denial that discrimination could be involved in selection.[46] However, this view stems from an over-simplistic interpretation of the data. As figure 7 demonstrates, there are significant differences in acceptance rate by ethnicity. Many have argued that, in the context of the demography of medical schools, the main issue is that many students continue to be denied equal opportunities in accessing the career of their choice.[46]

Admissions rates for minority ethnic groups differ between medical schools. This suggests that structural factors in the process of selection at some medical schools are to blame, rather than (or in addition to) intrinsic differences between groups of applicants.[14] In 1986, Collier and Burke published one of the first studies claiming to find evidence of racial discrimination in selection to medical schools. This study analysed the surnames of final year students in London medical schools between 1982 and 1984. The ratios of European to African, Asian or Arabic students was found to vary significantly between schools. In 1984, there was a five-fold difference between the numbers of non-European students sitting finals at different medical schools. These differences were interpreted as demonstrating that racial discrimination was operating during selection. They were thought unlikely to result from chance alone since differences tended to be consistent from year to year.[47] The results of this study are shown in table 9 below. It is important to note that the findings and validity of this study have been questioned.[53] The data is historical and is presented here for reasons of historical interest. Several of the medical schools included in the table no longer exist as separate entities and the data should not be taken as any indication of the situation in these medical schools today.

Table 9 – Percentage of non-European students taking the June final examinations in London 1982-84

Medical school	June 1982	June 1983	June 1984	Mean
Westminster	7	4	3	5
Guy's and St Thomas	6	9	7	7
London	5	7	10	7
St Bartholomew's	10	7	3	7
St Mary's	8	8	5	7
Middlesex	9	8	7	8
Charing Cross	7	9	11	9
King's	14	12	3	10
University College	9	10	10	10
St George's	12	9	16	12
Royal Free	14	19	16	16

Source: Collier J & Burke A (1986)[47]

Despite studies suggesting that educational attainment is responsible for differences in acceptance rates between ethnic groups, other evidence has shown that differences in educational attainment cannot fully explain acceptance differentials between minority applicants to medical schools. In 1989 a study of applicants to St Mary's Hospital Medical School in London found disadvantage of applicants from ethnic minority groups, even after taking into account differences in achievement at O- and A-level, the date of application, and application after A-levels. After taking all these variables into account, the predicted acceptance rates for home students on the basis of their application forms were 47.8 per cent for white applicants and 35.6 per cent for applicants from ethnic minority groups. The actual acceptance rates were 49.6 per cent and 27.3 per cent respectively. Differences in non-academic factors could not fully explain the different acceptance rates.[54]

A study of medical school acceptance rates, published in 1995, found large differences between white and minority ethnic candidates in some medical schools, even after controlling for A-level grades.[55] In some medical schools (Charing Cross and Westminster, Royal Free, Cambridge, St Mary's, Wales, Nottingham, Glasgow, Birmingham, Belfast, Royal London and St Andrews) the data suggested that white candidates were between two and five times more likely to be accepted for a place compared to minority ethnic candidates. The difference was clearer among applicants with lower A-level scores. There did not seem to be any selection bias in favour of white candidates among applicants with UCAS point scores between 26 and 30 (the equivalent of two As and a C to

three As or more). This research produced a league table of medical schools based on their admission rates for minority ethnic applicants. One version of this league table is reproduced in table 10. Again, this data does not necessarily bear any relation to the situation in medical schools today.

Table 10 – League table of likelihood of applicants being accepted for medical school compared to minority ethnic applicants 1994				
Medical school	Odds of acceptance for white candidates compared to minority ethnic candidates	Odds of acceptance for white candidates compared to minority ethnic candidates controlling for A-level grades	95% confidence interval	Statistically significant?
Liverpool	0.98	0.84	0.52-1.39	no
Manchester	1.01	0.83	0.59-1.18	no
King's College	1.05	0.99	0.61-1.62	no
St Bartholomew's	1.16	1.07	0.63-1.85	no
Guy's and St Thomas'	1.20	0.96	0.65-1.40	no
Leicester	1.37	1.06	0.64-1.79	no
Southampton	1.47	1.19	0.63-2.41	no
Newcastle	1.47	1.46	0.73-2.99	no
Bristol	1.50	1.22	0.66-2.45	no
Oxford	1.76	1.63	0.86-3.26	no
Dundee	1.78	1.76	0.80-4.47	no
University College	1.78	1.5	0.98-2.35	no
Sheffield	1.82	1.55	0.92-2.69	no
Leeds	1.98	1.61	1.01-2.60	yes

Table 10 – League table of likelihood of applicants being accepted for medical school compared to minority ethnic applicants 1994

Medical school	Odds of acceptance for white candidates compared to minority ethnic candidates	Odds of acceptance for white candidates compared to minority ethnic candidates controlling for A-level grades	95% confidence interval	Statistically significant?
St George's	2.02	1.85	1.23-2.83	yes
Charing Cross and Westminster	2.02	1.93	1.30-2.95	yes
Royal Free	2.08	1.88	0.90-3.93	no
Cambridge	2.12	1.88	1.21-2.97	yes
St Mary's	2.14	2.03	1.20-3.56	yes
Wales	2.18	1.79	1.00-3.38	no
Nottingham	2.28	1.98	1.04-4.14	yes
Glasgow	2.39	1.81	0.51-7.72	no
Birmingham	2.54	1.88	1.12-3.26	yes
Belfast	2.83	2.71	0.15-15.90	no
Royal London	3.01	2.77	1.89-4.31	yes
St Andrews	5.40	3.83	1.12-20.53	yes

Source: Esmail A (2001)[46]

This research provoked much controversy at the time of its publication. The researchers acknowledged that the study had several weaknesses including the rough stratification of A-level results, the small number of applicants from ethnic minority groups and the use of data from only one year. They were also unable to comment on the influence of other factors such as type of schooling, gender or social class.[55] Despite these problems, it was concluded by the researchers that

some medical schools could be accused of discriminatory policies.

Another paper, also published in 1995, showed that minority ethnic groups applying to study medicine in 1990 were significantly disadvantaged in nearly half of medical schools. Even after taking educational and other significant predictors into account, applicants from ethnic minority groups were 1.46 times less likely to be accepted. Having a European surname was found to predict acceptance better than ethnic origin itself, implying direct discrimination rather than disadvantage secondary to other possible differences between white and non-white applicants. After taking other significant predictors into account, no significant differences were found in the success rates of black, Asian and other minority ethnic groups, or between Asian subgroups.[15]

A similar research project published in 1998 analysed applications and admissions to medical school in 1996 and 1997.[14] This also found significant evidence that, in virtually all medical schools, non-white applicants were less likely to receive an offer across the whole range of A-level achievement, with a qualitatively similar effect in applicants taking the Scottish Highers. There were only small differences between minority ethnic groups. Interestingly, the interaction between sex and ethnic origin was also found to be significant; women from minority ethnic groups were found less likely to receive an offer than expected. The only medical schools *not* found significantly to disadvantage ethnic minority applicants were Aberdeen, Birmingham, Bristol, Edinburgh, Glasgow, Oxford, Belfast and the Royal Free. The study concluded that results at GCSE and predicted A-level grades were unlikely to explain the differences between white and minority ethnic applicants. Assessments of personal attributes were thought to be a possible explanation for the differences in admissions rate, but this was not fully explored. Since schools showed different effects of ethnicity, structural differences in the process of selection, rather than intrinsic differences, were thought to be the most likely explanation of differences.[14] The report by McManus was published in conjunction with a statement of aims from the CHMS, calling on medical schools to assess their selection process to make sure that discrimination was not occurring.[46]

The proportion of medical school students from minority ethnic backgrounds is considerably higher than that in the UK population. It has been suggested that some medical schools may be trying to restrict the overall numbers of students from ethnic minority groups in an attempt to reflect population distributions in the UK.[55] Some research suggests, for example, that minority ethnic disadvantage in selection to medicine is principally due to the fact that estimated A-level grades on application forms are given less weight in minority ethnic candidates.[15] Favouring one group of applicants over another is not legitimate. UK law is clear that selection or rejection of a candidate must be based entirely

on the student's merits.[56] Moreover, if selection criteria are set and candidates meet those criteria it should not matter what proportion of students from minority ethnic groups are selected.[46]

Legally, direct and indirect discrimination are separate concepts. Direct discrimination hinges solely on an individual's race while indirect discrimination arises from some hurdle in the selection procedures that is more difficult for ethnic minority candidates to clear.[57] Indirect discrimination has often been judged to be a more likely cause of the disadvantage faced by ethnic minority students, perhaps due to the assessment of A-level achievement indirectly from estimated grades or from assessing motivational and personality factors indirectly through achievements and experiences with different meanings in different cultural groups.[14] However, much of the evidence presented above implies direct discrimination by some medical schools, particularly in the past.

What can be done to change the situation?

The BMA supports efforts to attract students from a wide variety of cultural and social backgrounds into medicine. In some cases, the initiatives used to attract applications from lower SES groups will also reach students in target minority groups. For example, some medical schools in London are based in areas with large black populations. Hence any local initiatives designed to attract students from surrounding state schools are likely to help attract under-represented ethnic groups. The most important issue is one of equality of opportunity. Medicine should attract and recruit the people best suited to medical practice. Any discrimination in favour of one group of students over another may threaten the quality of the profession.

The BMA has called on medical schools to acknowledge that unintentional discrimination against certain groups can occur. It suggests that medical schools should closely audit their selection procedures, and amend them accordingly to make sure that such discrimination is eliminated.[17] As noted above, some research suggests that minority ethnic groups are disadvantaged in selection to some universities due to structural elements of the selection process. The Race Relations (Amendment) Act 2000 states that bodies must take steps to ensure that unfair discrimination does not happen.

It is BMA policy to exclude the applicant's name from the written information considered by medical school short-listing panels.[9] This is supported by some research showing that having a non-European surname predicts disadvantage in medical school admissions better than ethnic origin itself.[15] However, evidence suggests that this approach may not work well in practice. For entry in 1998, Leeds School of Medicine assessed the feasibility of anonymising applications; UCAS forms had all references to name and nationality deleted before the form

The BMA supports efforts to attract students from a wide variety of cultural and social backgrounds into medicine.

Medicine should attract and recruit the people best suited to medical practice. Any discrimination in favour of one group of students over another may threaten the quality of the profession.

Having a non-European surname predicts disadvantage in medical school admissions better than ethnic origin itself.

was scored by admissions tutors for shortlisting. This experiment found that deleting names was a cumbersome process. It also proved to be largely ineffective since admissions tutors were still able to identify ethnic minority candidates by references to religious activities and certain GCSE subjects such as Asian languages. More thorough editing of the forms to omit these references could disadvantage minority ethnic candidates. Moreover, anonymity did not improve the evaluations of candidates with non-European names. The admissions tutors who conducted this experiment in Leeds concluded that anonymous assessment of applications cannot be recommended.[58]

Excluding the applicant's name from the application form would seem to have both strengths and weaknesses. There is a good argument to go further and to remove all irrelevant information from the application form. However, other measures such as raising awareness of ethnic minority issues among admissions staff may provide better long term solutions to selection bias.[57] Perhaps most importantly, selection statistics should be thoroughly audited by medical schools to ensure that differences in admissions rates between ethnic (or socio-economic or gender) groups are not caused by discriminatory practices. At the moment very few medical schools are systematically monitoring their application and admissions statistics and making changes based on the findings.

If, as some research suggests, minority ethnic candidates are disadvantaged due to the weight given to their predicted A-level grades, changing to a post qualification application system (as discussed on page 78) may help to make the medical school admissions process more equitable.[15]

A medical student who converted to Islam in the middle of her second year explains the difficulty in combining her faith with aspects of medical school
'Since converting I have become aware of the size of the Muslim population in medical school, and it is large and increasing each year. This must be considered more when planning things around religious festivals. For example, the Eid festival at the end of the Month of Ramadan, falls on my final exam for Obs and Gynae, Paeds and Child Health, and the OSCE is a day later, so it has not only been making revision more difficult, but I imagine it will make celebrating more difficult too! Can you imagine having your finals on Christmas day and your OSCE the day after boxing day? I do understand that it is difficult and I am not complaining as such, because we are living in a predominantly non-Muslim land, but I think it is something people in power need to be aware of. Also the introductory day of our Paeds course (which is the day where you find all the vital info on what to do and who to contact etc) was on Yom Kippur, which is the big Jewish festival which requires people to be in the synagogues all day...'

Diversity and medical education

The increasing ethnic heterogeneity of medical schools may necessitate a re-evaluation of medical school practices. Increased sensitivity to varied religious observance may be one necessary adjustment. Traditional dress is also an emerging issue, particularly with regard to the impact of the partial covering of students' faces on communication skills and their assessment.

It may be helpful to increase teaching on cultural awareness in medical schools. This could improve cultural understanding and standards of care provided by doctors to the ethnically diverse UK population.

An Afro-Caribbean student describes her medical school experience

'I find it hard when doctors ask if your parents are from a medical background. This I suppose is fine if they want to find out why you came into medicine. However my parents aren't medical, so my answer is no, to which they often ask "So what do they do?" My parents aren't professionals. I can't understand how that is ever relevant unless they plan to pre-judge and label you. These situations give me a taste of the hierarchy and Old Boys Club, that because of my lack of contacts and correct family name I will find extremely hard to enter.

Occasionally when on the wards I have been mistaken for a nurse. This I know doesn't happen to many of my colleagues. It worries me that patients look at me and don't consider I could be a student doctor. What is so different about me that I don't fit a Medical Student image?

The vast majority of the time I don't feel like my race has had any effect on the education I've received or the way I've been treated by medical staff. I work as hard as any other student and know I deserve to be at Medical School. With all this though, racism is subtle, hidden and difficult to substantiate. There have been occasions when I wonder why I have had a seemingly worse experience with a member of staff or patient than one of my fellow students. There are 101 reasons why this is often the case though and I have to put it to the back of my mind, and ensure I give no cause to others to perpetuate any discrimination.'

As medical schools become more diverse demographically they need to ensure that examinations and assessments do not contain any source of potential bias that might lead to disadvantage.

Students from ethnic minorities seem to perform less well overall than white students in both undergraduate and postgraduate medical examinations.[59] Differences in performance in examinations between ethnic groups has been identified as an increasingly important issue in assessment. As medical schools become more diverse demographically they need to ensure that examinations and assessments do not contain any source of potential bias that might lead to disadvantage.[59] A study of objective structured clinical examinations (OSCEs) found that a small group of male students from ethnic minorities used particularly poorly rated communicative styles. Although there were no obvious cultural and linguistic differences between white and ethnic minority students, those from ethnic minorities were more likely to have pronounciation, word stress and intonation influenced by their heritage language. The study found that some of the ethnic minority students used a medical model of consultation rather than a more social one preferred by examiners. It concluded that institutions may not be aware of hidden processes that reward some students and penalise others in final examinations.[59] The BMA is concerned with these types of issues throughout medical careers. For example, the equal opportunities committee is currently working to ensure that Royal College exams are non-discriminatory.

Summary
Medicine attracts a higher proportion of ethnic minority students than that in the general university population. This proportion seems to have remained relatively stable in recent years. However, there are large differences in the acceptance rates between ethnic groups. This could be due to several factors including educational differences, social class and direct or indirect discrimination. In the case of ethnicity it appears to be especially important that medical school's selection processes are evaluated and made as transparent, fair and objective as possible.

Questions for discussion
- What are the best ways of raising expectations among minority ethnic pupils to encourage them to consider applying for medical school?
- How can the ethnicity of medical school applicants and accepted applicants be monitored more robustly?
- What are the most important steps that should be taken to reduce discrimination both within medical schools and within the NHS?

Gender

The gender of medical students has played a central role in the changing demography of medical schools. This section discusses the changing gender profile of applicants and accepted applicants at medical school and the reasons for this change; the role of gender in medical education; and the implications of the changing gender composition of the profession for the future workforce.

The changing gender profile of medical schools

The London School of Medicine for Women (later the Royal Free), founded in 1874, was the first UK medical school to accept women. Other medical schools in the UK did not become coeducational until 1947, three years after the Goodenough Committee recommended that up to one fifth of medical students should be women.[60] Even 40 years ago, medical careers and medical schools were both heavily male dominated. In 1963, when UCCA first collected data on university admissions, under 34 per cent of applicants were women; moreover, women constituted only 29 per cent of applicants admitted to medical school.[61] The proportion of women students in the 1963/64 intake varied greatly between medical schools in Britain from 8.5 per cent in Cambridge to about 38 per cent in Sheffield and 61 per cent at the Royal Free.[1]

Over the past four decades, the proportion of women in medicine and at medical school has increased dramatically; it has been predicted that women doctors will outnumber men by 2012.[62] The percentage of female medical school applicants increased to 35 per cent in 1977,[47] over 40 per cent in 1980, around 50 per cent in 1990 and over 55 per cent in 2000.[32] Statistics from UCAS, presented in table 11, show that this proportion has continued to increase in recent years.

The London School of Medicine for Women (later the Royal Free), founded in 1874, was the first UK medical school to accept women.

Table 11 – Number and percentage of applicants and accepted applicants to all medical schools by gender 1996-2003								
	1996	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
Female applicants	6,075	6,281	6,170	5,937	5,771	5,932	7,014	8,724
Male applicants	5,950	5,795	5,637	5,035	4,455	4,299	4,921	6,109
% all applicants female	50.52	52.01	52.26	54.11	56.43	57.98	58.77	58.81
Female acceptances	2,664	2,724	2,842	2,994	3,308	3,681	4,236	4,717
Male acceptances	2,230	2,305	2,277	2,318	2,406	2,559	2,723	2,953
% all acceptances female	54.43	54.17	55.52	56.36	57.89	58.99	60.87	61.48

Source: UCAS

In 2003, 61 per cent of all acceptances to medical school were female.

In 2003, 59 per cent of all applicants to UK medical schools were women. This may not yet be high enough to make medicine a 'female dominated' degree,[63] but current trends may continue in future years. Notably, in the UK, women constitute an even higher proportion of accepted applicants to medical school than they do of all applicants. In 2003, 61 per cent of all acceptances to medical school were female. In some medical schools the percentage of women is higher still. An approximate ratio of males to females in each of the medical schools is listed in table 12. These data were collected by the BMA in 2002-03.[64]

Table 12 – Approximate ratio of male to female medical students at each medical school 2002-03	
Medical school	**Approximate male: female ratio 2002-03**
Belfast	34:66
Royal Free & UCL	45:55
Sheffield	35:65
Leicester/Warwick	45:55
Edinburgh	35:65
Dundee	45:55
Newcastle & UDSC	35:65
Birmingham	45:55
Nottingham	35:65
Cambridge	47:53
Liverpool	36:64
St Bart's & Royal London	47:53
Glasgow	39:61
Aberdeen	49:51
Guy's, King's & St Thomas'	39:61
St Andrews	49:51
Wales (Cardiff)	40:60
St George's	52:48
Leeds	40:60
Brighton & Sussex	N/A
Bristol	41:59
Hull & York	N/A
Manchester, Keele & Preston	42:58
Southampton	N/A
Imperial	44:56
East Anglia	N/A
Oxford	45:55
Peninsula	N/A

Source: BMA *The insiders' guide to medical schools 2003/04*

There is some variation in the gender of applicants and accepted applicants by student nationality within the UK. Figure 10 shows applicants and accepted applicants by gender of students from each of the UK's four nations. Sixty-three per cent of Scottish applicants to medical school are female. For both Scottish and Northern Irish students, females constitute a smaller proportion of accepted applicants than of all applicants. This contrasts with the data for English and Welsh students. More research would be useful to investigate the significance and reasons for this difference.

Figure 10 – Percentage of applicants and accepted applicants, female from each of the UK's four nations

Source: UCAS
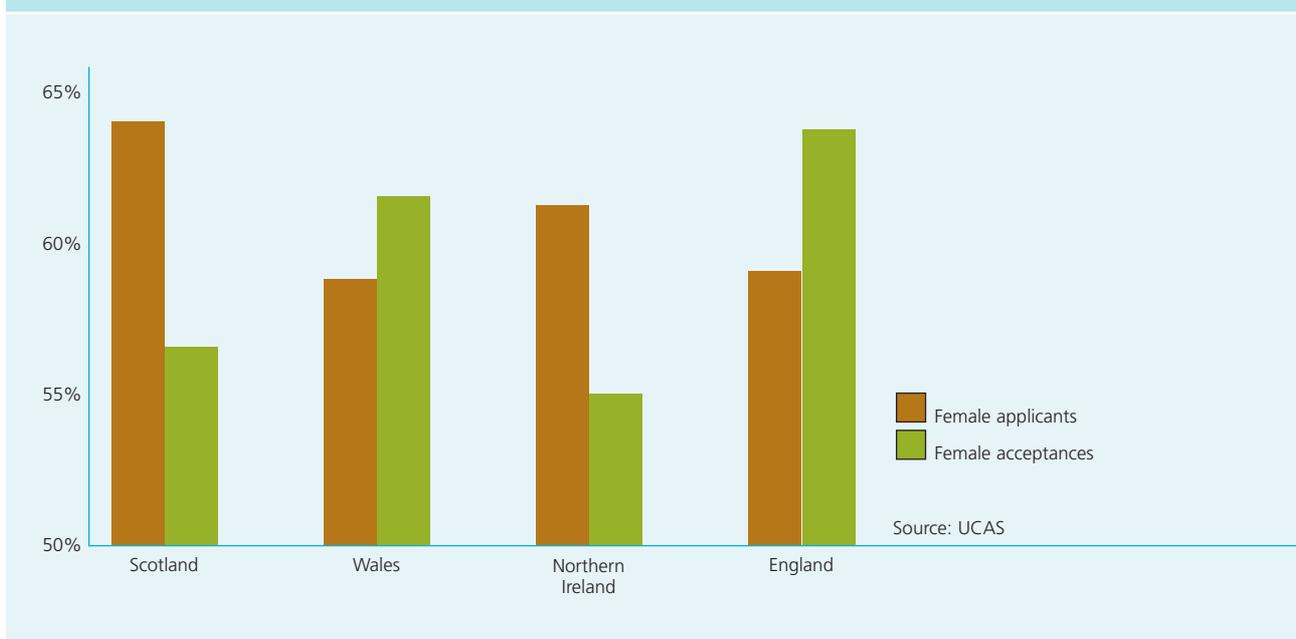
The increasing proportion of female medical school entrants may have been affected by the admissions process. In particular, the increase in female students over the past 40 years may have been influenced by the introduction of fairer selection processes which reduced discrimination against female applicants.[65] There is evidence that discrimination against women candidates has existed in the past in selection to medical school. At the time of the 1968 report of the Royal Commission on Medical Education, medical schools were widely believed to apply more stringent selection criteria to women than to men.[1] A study published in 1986 analysing the names of final year London medical students 1982-84 found large differences in the proportion of female students between medical schools. Although the mean percentage of women per year was 38, the London Hospital Medical College had only 30 per cent women while University College had

51 per cent. This study concluded that sexual discrimination was operating during selection for medical education at London colleges.[47] The data indicate that discrimination occurred both against, and in favour of, women.

Despite the apparent historical discrimination against women during selection to several medical schools, it is clear that the increasing proportion of women in medical school is largely attributable to the increasing proportion of female applicants. The reasons for this trend are unclear. Over the long term it is likely to have been influenced by changing social norms including economic factors, changing family composition and, perhaps, the feminist movement and equality legislation. This hypothesis is supported by the fact that the increasing proportion of female medical students partly reflects that for degree courses in general:[32] The majority of higher education students are now women – in 2002 they constituted 54 per cent of acceptances to degree courses.[66]

Over the short term, influences on the gender composition of medical schools are less obvious. Medicine seems to have become an increasingly attractive career option for women. There are probably several reasons for this. Importantly, it could follow partly from the subject choices made by girls in school. In the 1960s, many girls did not take the relevant science subjects in the sixth form. It was also suggested that some teachers discouraged female pupils to apply to medicine.[1] Even 20 years ago, females rarely went into medicine because they did not often study the necessary science A-levels. This situation has changed. The introduction of the National Curriculum in 1988 led to an increase in the number of girls studying science up to the age of 16. In 1987, about 26 per cent of girls and 34 per cent of boys achieved a pass in a science subject equivalent to a GCSE A–C grade. In 1992, the percentage of girls and boys achieving a grade A–C in a science subject was roughly equal and by 1994, 41 per cent of girls achieved an A–C grade in a science subject against 40 per cent of boys.[67] Female students now perform as well, or better, than male students in every science examination between age 11 and 18,[68] a fact that may be partly attributable to the design of curricula.[69] More female than male students now take A-level biology. If current trends continue, this could happen in chemistry as well.[68]

Women may be increasingly attracted to medicine by the changing nature of the profession. It is possible that the changes in medical school curricula towards problem-based learning, continuous assessment and the acquisition of a wider set of skills (for example, communication skills) are appealing to some women. Medical careers are also changing. Although it may not have much affect on the choices of school leavers, the employment of salaried GPs is becoming increasingly common. In many cases this makes part-time medical practice more feasible. Looking at the changing female/male ratio in medical schools from a slightly different perspective, it is plausible that, for similar reasons, men are

being discouraged from medicine. There has, for example, been a dramatic decline in interest in general practice among male medical graduates.[70] In some cases a declining interest in medicine among men may be due to negative press coverage of, for example, long hours, loss of autonomy and relatively low pay.[71] Negative perceptions of medicine may be especially common among men from certain ethnic groups. Applicants to medicine by gender and ethnicity (2003) are shown in table 7 on page 48. Only 38 per cent of black applicants, 39 per cent of white applicants and 40 per cent of mixed race applicants to medicine in 2003 were male. This proportion was considerably higher in other ethnic groups; 48 per cent of Asian applicants were male.

Selection processes for medical school are worth closer examination in the context of gender. Analysis of applications and admissions data from 1996 and 1997 indicated that male applicants experience disadvantage during selection for some medical schools. McManus found significant evidence that female applicants were at an advantage when applying to Cambridge, Imperial, King's, Leeds, Liverpool, Newcastle, Nottingham, Queen Mary and Westfield, Royal Free and Sheffield medical schools. At no university did female applicants experience significant disadvantage during selection.[14]

The role of gender in medical education

In the context of the changing female/male ratio of medical students, it is very important to consider the role played by gender in individual experiences of medical education. A study in 1986 of medical students qualifying in 1966, 1976 and 1981 found considerable evidence that women medical students were thought to be treated differently by staff at all levels in medical school. Women reported 'sexist' remarks, 'prehistoric' attitudes and a refusal to take women medical students seriously or to rate them highly. There was evidence that women were often alienated from hospital medicine at medical school, particularly the acute specialties.[72]

There is evidence that sexism still exists in medical education, though its effects are probably less pronounced than they were a few decades ago when there were fewer women in medical school. Indeed, with women now outnumbering men in medical education, the possibility of discrimination against men is becoming increasingly salient. Sex discrimination, against both women and men, has occasionally been reported in the form of unequal learning opportunities, students' relationships with teaching staff and sometimes overt sexism.[73] It has been suggested that men are increasingly discriminated against in medical training, particularly in certain disciplines such as obstetrics and gynaecology.[74] It is very important that gender discrimination at medical schools is researched, understood and remedied. The BMA's equal opportunities committee is currently undertaking research into barriers to career progression for doctors. This looks at

the issues experienced by women doctors (among others) during their career. It is hoped that this will go some way towards exploring gender discrimination issues in medicine. It would appear that both men and women sometimes experience sexual discrimination during their medical careers.

Future implications of the female/male ratio of medical students

The gender of medical students is largely irrelevant to the care delivered by the health service.[69] Instead, gender is now a concern primarily in the context of workforce planning. Planning the medical workforce has been a concern in Britain for over 50 years and is now dealt with by the Medical Workforce Standing Advisory Committee.[70] Workforce planning involves a complex process based on estimates of future demand for health services and supply of staff, both of which can be highly uncertain. Planning for the supply side is based both on numbers in training and on an understanding of staff career plans and projectories.[75]

Concerns have been raised, though rarely openly debated in recent times, that the growing proportion of women students in medical school will result in a future health service that is understaffed due to part-time working and career breaks. This is an issue of critical importance. Among the medical graduates of 1977, almost half the women worked part time in the NHS 18 years after qualifying.[75] Around 40 per cent of all specialist registrars (SpRs) holding national training numbers in medical specialties are now women, but little is known about their career intentions.[76] More specifically, it is unknown how many of these women will opt to work part time. A study in 1993 found that a similar proportion of men and women questioned towards the end of their medical training intended to practise in the UK for the foreseeable future.[37] However, a survey of specialist registrars in 1999 found that about 75 per cent of female SpRs have considered working part time as consultants (compared to 25% of males).[76] Similarly, a study in 2001 of female trainees found that 92 per cent expressed an interest in part-time work.[77]

Policy options have been suggested to address concerns regarding the future human resource capacity of the NHS. For example, the long-term trend towards an increasing proportion of female medical school students could be reversed. There have been suggestions that there is a case for considering biasing entry to medicine towards men on the grounds of women's career choices and the relatively constrained capacity of medical schools.[78] This is founded on a very questionable basis. For a start, both men and women in medicine are increasingly aiming for 'portfolio careers'. In the future, flexible training and practice is likely to appeal increasingly to men, as well as to women. It is anticipated that men will gradually seek greater participation in family life and a better work-life balance.[76] Consequently, it is possible that discussion of 'female' oriented policy will become increasingly obsolete. In addition, it would not be

legitimate to base selection on the gender of a candidate; nor would this be beneficial to the profession since it should aim primarily to recruit the most suitable candidates for the job.

It is interesting to note that the option of restricting the number of female medical students was considered in 1968 by the Royal Commission on Medical Education. Many of the sentiments expressed by this publication are shared today:

'As long as there are shortages both of doctors and of places in medical schools a case can be made for giving some preference to male candidates for admission. There is, as might be expected, a higher rate of 'wastage' of women doctors from the profession…the shortage of doctors might be eased to some extent if a limit were imposed on the proportion of women admitted to undergraduate medical schools, provided there were enough male applicants suitable to fill all the remaining places available. In our view, however, the main criterion for admission to a university medical course should be the ability of the applicant to profit from the course and to become a good doctor…We think the imposition of an arbitrary upper limit on the number of women admitted to the medical course would imply that obstacles which at present prevent full use of the capacities of women doctors were being accepted as insurmountable: the adoption of such a defeatist attitude is, in our view, unnecessary and would have most unfortunate consequences for medicine.'[1]

In addition to concerns about part-time working and career breaks, a potential problem with the current gender balance in medical schools is that fewer women currently choose a career in hospital medicine.[68] The government does not attempt to achieve a specific ratio between specialists and general practitioners.[79] However, it is important to consider, in so far as is possible, the future career preferences and expectations of medical students in order to ensure a balanced profession. Some of the potential human resource problems anticipated to result from a female dominated profession could be ameliorated by attracting women doctors to hospital careers. At present, only one quarter of consultants and 4 per cent of consultant surgeons are women.[77] Women are still not reaching the top of the profession in equal numbers to men.[80] [It has, however, been noted that the currently low proportion of women consultants is mostly explained by the historically low numbers of women entering medical school in earlier cohorts. The proportion of women in hospital training grades has grown rapidly and this increase should soon be reflected in consultant numbers.][81] The relatively small number of women choosing careers in hospital medicine has been attributed partly to the design of postgraduate training for hospital specialties which is based on an 'obstacle course' concept and the need to provide 24-hour cover.[68] The Department of Health (England) found that 37 per cent of female survey respondents were deterred from working in specialties because of inflexible working opportunities.[82] It has been suggested that these careers could be made

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In some specialties, such as surgery and hospital medicine, the career progression of women may still be hampered by direct or indirect discrimination.

more attractive to many women (and to many men) if training was skill based and offered family-friendly options and greater flexibility.[68] The BMA has called for training in all specialties to make positive efforts to be attractive to women doctors.[83] It should be noted that, in some specialties, such as surgery and hospital medicine, the career progression of women may still be hampered by direct or indirect discrimination.[84]

The changing gender demography of medical schools means that the NHS has to strive to make it easier for women to remain in the profession if they wish. More specifically, retention of female doctors could perhaps be improved if trusts and deaneries gave increased support for flexible training and 'returners'. Flexible training is defined by European law as part-time training which involves participation in medical activities for at least half the time of a full-time trainee.[82] Flexible training and employment contracts may offer opportunities to retain experienced individuals who might otherwise leave the workforce because of family commitments.[85] At the moment it is debatable as to whether the NHS can provide the support necessary to maximise retention. Moreover, some concern still exists that introducing more flexibility to medical careers may result in a less stable and less skilled workforce, with adverse consequences for clinical care.[85] Changing career needs of doctors are particularly relevant to the work of the Specialist Workforce Advisory Group. It is likely that many more part-time consultant posts will be needed and correspondingly more trainees will be required to maintain an adequate supply of consultants in future years.[76] Other family-friendly work practices, including parental leave, compassionate leave and childcare may also prove important for the future healthcare workforce, many of whom will be women.[85] Improved working conditions within the NHS as a whole, and raising the morale of doctors, could have a beneficial effect on the retention rates of both men and women.

Retention of female doctors could perhaps be improved if trusts and deaneries gave increased support for flexible training and 'returners'.

Improved working conditions within the NHS as a whole, and raising the morale of doctors, could have a beneficial effect on the retention rates of both men and women.

At its annual representative meeting in 2002, the BMA called upon the Department of Health to ensure that extra numbers of doctors are incorporated into the future medical workforce planning in order to take full account of both changes in the gender mix of the medical workforce and of the increased maternity and paternity rights of doctors.

Summary

The proportion of female applicants and acceptances to medical schools has increased over time. Women now make up the majority of medical students. Long-term social trends have probably contributed to this situation. Other factors influencing the changing gender profile of medical schools may include curricula and examination changes in schools and medical education, and the changing nature of medical careers. Changing attitudes towards medical careers among men have not yet been adequately explored but this too may be a factor in the increasing proportion of female medical students. The role of gender in medical education is an important topic for future research. Both men and women may experience discrimination on account of their gender. Concern has been expressed about the implications of the changing gender profile of medical schools on the future medical workforce. There is no certainty that the increasing number of women in medicine will have any particular effect on the workforce. However, anxiety regarding this issue may be reduced by improving working conditions in the NHS, supporting flexible training (for both men and women) and making hospital careers more accessible to women.

Questions for discussion
- What are the main reasons for the consistently increasing proportion of women applicants and medical students?
- What are the future workforce and health policy implications of the increasing proportion of women medical students?

Admissions policy and procedures

Selection for medical school

Medical schools are the gatekeepers to medical practice; as such, the selection process plays a vital role in determining the composition of the medical profession.[86] The task of selecting medical students from a pool of well-qualified applicants is complex and demanding.[9] Not all analyses of medical schools' selection policies and procedures are negative. In particular it should be noted that the currently competitive and challenging selection processes for medicine may contribute to the fact that it has the lowest non-continuation rates of all degrees.[87]

Many factors contribute to the changing demography of medical schools. The application rate from various groups is, for obvious reasons, of primary importance in determining the composition of medical schools and the profession. However, analysis of applications and admissions statistics in previous sections of this discussion paper has also shown that certain groups of students seem to face disadvantage in selection to medical schools. This has raised concern about selection procedures and has inspired calls for change.[57]

Dissatisfaction with the basis for selection to medical school is not new. In the 1960s, for example, many believed that disproportionate weight was given to family connections in medicine.[1] However, selection is still often seen to be too arbitrary. It has been noted that the lack of clearly definable criteria for admissions gives selectors huge discretion, not only as to how they select medical students, but also whom they select.[46] Medical schools vary greatly in their admissions procedures. Until recently, no criteria for admissions were ever made public.[46] Even now, while some admissions procedures, such as interview, may be explicit, less tangible criteria, often depending on the decisions of relatively few senior staff, may be covert – for example, the weight given to sporting activity, schooling or the teacher's report.[47]

The BMA believes that all selection processes must be based on objectivity and transparency.[88] More specifically, all successful approaches to recruiting medical students, widening participation and reducing discrimination are likely to be based on clear, objective selection criteria free of bias, with training for selectors to eliminate the effects of any prejudice. This could be backed up with monitoring of shortlisting and selection.[89]

Some medical schools manage not to disadvantage certain groups of students and it may be possible to promote good practice through learning from the admissions procedures they employ.[57] As many have pointed out, any worthwhile changes to the selection process for medical schools need to be based upon knowledge of the progress rates of medical students, the reasons for failure or premature withdrawal and the qualities of a good doctor.[90] However, the

diversity of medical careers and the range of qualities needed by doctors across the profession make identification of the qualities of a good doctor difficult.[86]

In February 1999, CHMS worked with the Commission for Racial Equality (CRE) to produce a list of 'guiding principles' for selecting students. These are outlined below:

1   Selection for medical school implies selection for the medical profession.
2   Medical schools have agreed that the selection process for medical students must be transparent and involve procedures that respect obligations under the Race Relations Act and offer equality of opportunity.
3   The selection process attempts to identify the core academic and non-academic qualities which doctors must possess.
4   Candidates should have obtained some experience of what a career in medicine involves and demonstrate their suitability for a caring profession.
5   A high level of academic attainment will be expected.
6   The practice of medicine requires the highest standards of professional and personal conduct.
7   The primary duty of care is to patients.
8   The practice of medicine requires the highest standards of professional competence.
9   Failure to declare information that has a material influence on a student's fitness to practise may lead to termination of their medical course.[91]

Admissions instruments are often debated in the context of creating barriers to the selection of non-traditional students (ie facilitating or obstructing widened access to medicine). There are many types of instruments used to select students for medical school; these may include academic record, school report, referees' reports, self reports, psychometric tests, structured tasks, organised group activity and interviews.[90]

Academic record
Assessing an applicant's academic record is normally the main criterion for selection to medical school. Very often it is used as the first means of limiting the number of potential entrants. In Scotland, Higher grades are achieved before applications begin. In England, by contrast, most applications to medical school are made by students before they have taken their A-level (A2) exams. In these cases, universities may consider grade predictions made by teachers, AS level results and GCSE results.

The use of academic record to select medical students has aroused some controversy. Commentators are divided both as to the rationale of using academic record for selection, and as to whether it is a valid (predictive) selection

tool. It has been suggested that three arguments underpin the use of academic record in selection:

- the achievement argument – academic records are said to ensure a minimum competence in the sciences basic to medicine
- the ability argument – academic success depends mainly on intellectual ability, and achievement tests, such as A-levels, indirectly assesses intelligence
- the motivation argument – academic record is an effective method of selection because university education requires not only intellectual ability but also good study skills and motivation which are demonstrated through past achievement.[92]

There are few prospective studies testing the validity of using achievement tests, such as A-levels, in relation to outcomes in medical careers.[92] Intellectual ability is generally regarded a crucial part of predicting a student's ability to complete the medical course[93] and become a good doctor. Various retrospective studies have concluded that A-levels have long-term predictive validity for both undergraduate and postgraduate careers.[92] A-level results have been shown to correlate with drop-out from medical school,[92] later performance in basic medical science examinations, finals and postgraduate membership and fellowship exams[32] – although some A-level subjects may predict later exam success better than others.[37] Overall, previous academic performance seems to be a good predictor of achievement in medical training, particularly during undergraduate education.[94]

Despite the apparent predictive validity of A-level results, it is not clear whether public examination results and predictions are the best means of establishing the intellectual ability of medical school applicants. School examination results may be influenced by a number of factors including educational background and personal circumstances. For this reason, an over-reliance on academic records may disadvantage intellectually able students from non-traditional backgrounds. It has been suggested therefore that there is a strong case for replacing A-levels with other measures of aptitude and ability.[92]

In contrast to the predictive potential of A-level results, in at least one study, tests of ability or aptitude were found to have little predictive validity for subsequent medical careers.[92] This suggests that a test of ability does not underpin the use of academic records as a means of selection. Instead, A-levels may have validity because they assess achievement which predicts future achievement or because they demonstrate good study skills or motivation.[92] A-levels have an additional, practical advantage over other tests of ability as their use is less costly than administering a separate test for entry to medical school.

A-levels may have some predictive validity over the course of medical careers. However, they are not the only predictors and, it is argued, should not be the

sole basis for selection.[92] It has been questioned whether A-level results are a good indicator of broader cognitive skills such as logical reasoning, problem solving and critical reasoning.[90] Moreover, since educational background influences A-level achievement, medical schools may wish to find alternative or supplementary measures of intellect for mature students or those from disadvantaged social backgrounds.[36]

The A-level grades required by medical schools tend to be very high. This may really be a reflection of 'market forces' (the supply of applicants is higher than the number of places available), rather than of the intellectual ability required to succeed in medicine.[86] There is some debate about whether A-level requirements should be lowered in order to expand the potential pool of medical students and widen opportunity. As noted earlier, research suggests that socio-economic groups demonstrate different distributions of academic attainment. Reducing the required A-level grades for medicine may increase the proportion of applicants from lower socio-economic backgrounds.[11] Among those that believe in the predictive ability of A-level results, there are concerns that this suggestion entails a risk of increased numbers of students dropping out of medical school,[95] or the longer term risk of less well qualified medical entrants becoming less competent doctors.[32]

Some medical schools in Australia have lowered the threshold for academic marks and instead select students based on an interview and psychometric tests measuring cognitive skills, ethical orientation and aspects of empathy and creativity. Evaluation studies performed 10 years after this was introduced at the University of Newcastle, Australia found it to be a superior selection procedure in terms of how far students achieved the medical programme objectives.[90]
A structured combination of psychometric tests and interviews has also been suggested as best practice in the UK.[57]

The UK government is currently considering changing the admissions system to one of post qualification applications (PQA), as used by other European countries. There are substantial practical difficulties in changing to a PQA system. These could include introducing a later start to the university academic year or making A-level/Higher results available earlier. Making a gap year between school and university compulsory for medical students would also be a possibility. The BMA believes that PQA would provide a fairer criterion for admission than teachers' predictions. At present, some students may be put off applying for courses such as medicine because they lack self confidence in their ability to achieve the required grades. As noted above, it may also be the case that A-level predictions for ethnic minorities are given less weight than those for other applicants.[15] The PQA system would remove this bias and may encourage more diversity in applications to medicine. One drawback of the PQA is that it might encourage

further emphasis to be placed on academic achievement at the expense of students' potential. This could further disadvantage students from underprivileged backgrounds and hamper efforts to widen participation in higher education. It is essential that, if PQA is introduced, this is not allowed to happen. The efficiency of using PQA to select students in the current examination environment may be limited by the fact that grade boundaries are wide and do not easily distinguish good candidates from excellent candidates.

Applicants to medical school are normally expected to have proven subject knowledge of science subjects, particularly chemistry. However, only a small proportion of university applicants gain good science qualifications. As the number of places available at medical school expands, assuming the number of science students in schools remains stable, universities may be forced to reconsider the subject knowledge required by applicants.[32] The necessity of several science A-levels as a prerequisite to a medical degree has long been questioned.[1] Some commentators have identified a new trend in which personal qualities and commitment are just as essential as chemistry, biology and physics.[8]

School and referee reports

Reports from applicants' schools may provide universities with information about cognitive abilities, attitudes and behaviours. However, they may be biased or omit uncomplimentary material. School reports can also make comparisons between candidates difficult.[90] Research has found that the academic reference has no predictive value in subsequent achievement.[94] The motivation of the referee is often uncertain. Some may feel compromised by the recent requirement to make references available to the student.[36]

Self reports

Self reports usually form part of the university selection procedures. The UCAS application form contains a personal statement section that allows applicants to write about their hobbies, motivations and aspirations. Virtually no research has examined the predictive power of personal statements.[94] However, at least one study found that information in the personal statement was predictive of clinical aspects of training.[96] Personal statements may give some insight into candidate's interests, but do not facilitate objective comparisons between candidates. Like academic records, the use of self reports may bias the selection process in favour of students with better school or parental support and guidance. Self reports, as well as several other admissions instruments, give candidates the opportunity to demonstrate non-academic achievements. This frequently includes work experience as well as participation in sports and music. The BMA has expressed concern about the use of work experience or work observation as a criteria for selection because students do not have equal access to these opportunities. There are certainly anecdotal reports of very able, disadvantaged students being

rejected from medical school due to the lack of extra curricula activities on their applications.

Written psychometric tests

A psychometric test is a standardised procedure for measuring traits such as sensitivity, memory, intelligence and aptitude. Written psychometric tests are available, or can be constructed, to measure these traits in an unbiased way as part of the admissions process for medical schools. Nottingham University was the first medical school in the UK to use explicit pychological criteria to select medical students. A structured questionnaire is used as part of a second phase of selection, after the number of candidates has been reduced by applying basic academic criteria. The structured questionnaire assesses academic and non-academic criteria in detail, after which a short-list for interview is drawn up. Candidates are asked to provide examples which demonstrate communication and motor skills, personal attitudes and attributes, insight into medical careers and personal limitations, reasons for wanting to be a doctor and reasons for wanting to come to Nottingham to read medicine. The final component of the questionnaire checks that there are no factors that might affect the applicant's fitness to practise as a doctor including behavioural difficulties and addiction to drugs, including alcohol .[97]

Psychometric tests to measure desirable personal characteristics do predict future job performance. However, some believe that their validity may be compromised if they are used as a selection tool. This is because the desired answer is not usually difficult to identify and because applicants who lack integrity are the most likely to manipulate results.[36] In many cases, a well conducted interview can provide similar information to a psychometric test and can give a reasonably reliable evaluation.[36]

As this paper has already noted, it is difficult to specify a definitive list of characteristics that make a good doctor. A more important element of psychometric tests may be the exclusion of candidates with extreme tendencies such as, excessively high or low self criticism and psychopath and antisocial personalities.[86] Personality characteristics show substantial continuity in adulthood.[36] This suggests that selecting medical students partly on the basis of characteristics desirable in medicine – for example, the ability to deal with stress – could be an important factor in choosing the 'right' candidates.

Structured tasks and observed group activity

Structured tasks to assess manual and reasoning skills and creativity could be used as part of the assessment process. However, they are expensive to organise and may not be a cost effective means of selecting medical students.[90] Similarly, observed group activity could be used to assess verbal, interaction, debating and team skills, but is expensive to organise.[90]

Personal interview

Personal interviews have been used to select medical students for many years. However, the use of interviews by medical schools varies widely between UK medical schools. For example, in 2002/03, while Edinburgh interviewed only 2 per cent of eligible candidates, Cambridge interviewed 99 per cent.[64]

Interviews may be used to assess verbal reasoning, language and interaction skills and attitudes.[90] The interview panel looks for:
- candidates' understanding of what a medical career means
- how committed students are to medicine
- whether they will be suited to the style and structure of the course
- evidence of basic communication skills.[86]

The BMA medical students committee (MSC) recommends that medical schools should interview all prospective students to ascertain whether applicants are suitable. This is particularly important now that medical students have access to patients at the earliest stages of the course.[17]

There is evidence to suggest that interviewers tend to choose people like themselves.[98] Also, interviews may bias the selection process in favour of students from more advantaged backgrounds. Some schools put much more effort into training students for interviews, often because they have long experience of putting candidates forward for medicine and know what to expect.[86]

It is very important that interviews are properly structured and constituted for the fair (objective) assessment of candidates. This reflects BMA policy for interviews for medical appointments which it believes should be objectively structured. Research shows that the structured interview is a useful addition to intellectual ability in predicting later job performance.[36] All members of the interview panel should be trained in interviewing techniques and equal opportunities awareness and appropriate lines of questioning must be pursued. In addition, MSC recommends that a senior medical student should form part of the panel.[17] In order to help compensate for the effect of schooling on interview performance, some medical schools such as St George's in London provide interview training to candidates, as well as taking into account educational opportunity.[7]

It has been claimed that 'the greatest single barrier to a more careful selection process in the UK is the amount of resources that each school has to invest'.[36] Prospective medical students currently apply to up to four medical schools. As a consequence, most medical schools interview between 500 to 1,000 applicants for their courses. This volume of interviews means that few last for more than 15 or 20 minutes.[36] Some people believe that interviews could be fairer and more reliable if medical schools used a centralised interview system and selection process. This would mean that resources were available to ensure that all interviewers are fully trained and all interviews properly structured.[36]

Random selection

There are about 10 applications to medical school for every place on undergraduate courses. In some schools this is closer to 15 applications per place. Queen Mary College in London (Bart's and The London Medical School) has recently become the first medical school in the country explicitly to employ random selection as part of their admissions criteria. This has been used partly because of the great difficulties involved in distinguishing the range of experience and qualifications of graduate entry applicants. Bart's and The London Medical School randomly selects 120 interviewees from the 650 graduate applicants who meet their criteria. Following interview, these students are then reduced to the 40 graduates needed.[99] This is a controversial instrument for selection. However, it is currently used only in the first stages of selection. It is unlikely in the UK that this method will be extended to form a more substantial part of the selection process.

Questions for discussion
• What are the most effective instruments for selecting medical students?
• What steps, if any, should be taken to make selection as fair as possible?

The way forward

It is hoped that the data presented in this report will provide the basis for further discussion. However, it is clear that much more research needs to be done on the issues highlighted. Ideally, this will be combined with thorough audit of application and selection data by medical schools to ensure that any differences in admissions rates between groups of applicants are not caused by discriminatory policies. At the moment very few medical schools are systematically monitoring their application and admissions statistics and making changes based on the findings.

Throughout the document, questions have been raised for discussion. These are listed below, although they are by no means exhaustive.

Questions for discussion
- How can we find out the most important reasons that lower socio-economic groups apply to medicine in such low numbers?
- How can medical schools ensure that they are getting the best candidates from the broadest socio-economic groups?
- What are the options for widening access to medical school?
- How can we monitor the effect of top-up tuition fees on the demography of medicine?
- Does the content of applications from students of different economic groups differ in style or substance?
- Would making medicine a postgraduate degree improve the situation?
- Would lowering the minimum academic criteria required for entry to medical school increase the number of applications received from students from lower socio-economic groups?

- Why is the acceptance rate of applicants aged under 21 higher than in any other age group?
- What is the optimal age for entry to medical school? How old is too old?
- Should the UK move towards making medicine a graduate entry subject?
- Why are not all medical schools offering access courses and graduate entry courses?

- What are the best ways of raising expectations among minority ethnic pupils to encourage them to consider applying for medical school?
- How can the ethnicity of medical school applicants and accepted applicants be monitored more robustly?
- What are the most important steps that should be taken to reduce discrimination both within medical schools and within the NHS?

- What are the main reasons for the consistently increasing proportion of women applicants and medical students?

- What are the future workforce and health policy implications of the increasing proportion of women medical students?

- What are the most effective instruments for selecting medical students?
- What steps, if any, should be taken to make selection as fair as possible?

The board of medical education would welcome views on any of these questions or on other issues raised by this discussion paper. Comments, opinions and personal or institutional accounts may be sent to:

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Appendix 1 – Disability

The Disability Rights Commission (DRC) estimates that there are 8.6 million people in Britain with a disability.[100] However, there is not very much data (quantitative or qualitative) collected on doctors or medical students with disabilities.

The DRC's definition of disability
A person is disabled if they have:
- a mental or physical impairment
- this has an adverse effect on the ability to carry out normal day-to-day activities
- the adverse effect is substantial
- the adverse effect is long-term (meaning it has lasted for 12 months, or is likely to last for more than 12 months or for the lifetime.

The DRC's definition of disability is shown above. Other broader definitions include recognition of the disabling environment, for example, in the UN definition. This terminology recognises the necessity of addressing both the individual needs (such as rehabilitation and technical aids) and the shortcomings of the society (various obstacles for participation).[101]

UCAS statistics indicate that medical schools receive few applications from students with disabilities. However, these figures may not be accurate. UCAS has reservations regarding the robustness of this data. It has been suggested to UCAS that students may be unwilling to declare a disability at the time of application, preferring to 'go it alone' without 'special' consideration, or declare it once they have enrolled or when difficulties arise. These figures are, therefore, not necessarily indicative of the number of medical students with disability. In some cases applicants will not be aware of their disability when they apply or may acquire a disability between applying to and attending medical school. UCAS data on disability for medical school applicants and accepted applicants is shown in table A.

Dyslexia is by far the most common disability among medical students, but there are also many examples of students with mobility, hearing or visual difficulties successfully progressing through medical degrees.[102]

The Special Needs And Disability Act 2001 makes it unlawful to discriminate against disabled people or students by treating them less favourably than others. Institutions are required to provide certain types of reasonable adjustments to provision where disabled students or other disabled people might otherwise be substantially disadvantaged. Institutions are responsible for making adjustments involving the provision of auxiliary aids and services and, from October 2004 will be required to make adjustments to physical features of premises where these put disabled people or students at a substantial disadvantage.

The General Medical Council's guidance states that students with a wide range of

disabilities can achieve the necessary standards of knowledge, skills, attitudes and behaviour in medicine. The CHMS also believes that disabilities should not be a bar to becoming a doctor and is currently considering medical conditions in relation to core competencies for medical students.[103] As part of its Equality and Diversity Strategy, the Department of Health is looking at improving access and support for medical students and prospective students with disabilities.

Despite this law and guidance, medical schools have been criticised in recent years for not doing enough to provide opportunities for disabled applicants. *Pushing the boat out* (2003), a publication by the Learning and Teaching Support Network, called for a specific and dedicated approach in medical, dental and veterinary schools to ensure that potential applicants with a disability are treated 'with the same level of justice as other under-represented sectors of the population'.[104] The *Pushing the boat out* and *Sequel to pushing the boat out* (2004)[105] make recommendations regarding disability.

Table A – Applicants and accepted applicants to pre-clinical medicine, by disability 2000-03

Year	Applicants										Acceptances									
	No disability	Dyslexia*	Blind/ partially sighted	Deaf/ hard of hearing	Wheelchair/ mobility difficulties	Need personal care support	Mental health difficulties	Diabetes, epilepsy, asthma	2+ disabilities/ special needs	Other disabilities/ special needs	No disability	Dyslexia*	Blind/ partially sighted	Deaf/ hard of hearing	Wheelchair/ mobility difficulties	Need personal care support	Mental health difficulties	Diabetes, epilepsy, asthma	2+ disabilities/ special needs	Other disabilities/ special needs
2000	10,597	69	4	11	6	3	4	78	3	40	5,602	37	3	9	4	0	1	39	2	17
(%)	(98)	(0.6)						(0.7)		(0.4)	(98)	(0.7)						(0.7)		(0.3)
2001	10,565	83	8	11	3	0	3	90	2	63	6,100	51	2	5	0	0	2	46	2	32
	(98)	(0.8)						(0.8)		(0.6)	(98)	(0.8)						(0.7)		(0.5)
2002	12,368	145	7	15	8	3	5	67	4	69	6,791	79	1	6	3	1	1	39	1	37
	(97)	(1.1)						(0.5)		(0.5)	(98)	(1.1)						(0.6)		(0.5)
2003	15,428	198	11	23	12	N/A	11	113	16	78	7,455	101	4	9	7	N/A	6	48	5	32
	(97)	(1.3)						(0.7)		(0.5)	(97)	(1.3)						(0.6)		(0.4)

Source: UCAS

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