

## Working with schools in deprived areas to raise aspirations for medicine and other healthcare science careers

Sarah J Pearce

**ABSTRACT** – Educational attainment is inversely related to socio-economic status. The achievement gap widens as children progress through the system. Take up of science options is particularly poor and difficulties are compounded by lack of relevant science-based work experience in deprived areas. The interaction of these factors is examined in some detail in an area of socio-economic deprivation. High attainment in sciences is usually considered a core requirement for acceptance into medicine and widening access to medicine for school leavers is therefore very difficult in these circumstances. A partnership between hospitals and local schools, including science-based work placements, is described. Cooperation between the NHS and schools by provision of work experience and teaching materials could help to address these issues as well as potential staffing difficulties in other healthcare science careers in the future. Expenditure can be justified on the grounds of known links between health, education and employment.

**KEY WORDS:** A levels, NHS outreach schools, raising aspirations sciences, socio-economic disadvantage, widening access medicine

### Introduction and background

Widening access to higher education is a priority for UK universities and is chiefly about levelling the playing field for students who are socio-economically disadvantaged. Widening access to medicine is particularly difficult because of high academic requirements and a competitive selection process. Low attainment at A level in socio-economically disadvantaged areas is associated with a number of factors: low aspirations, adverse peer group pressure, difficult teacher recruitment and lack of parental support. National statistics highlight this trend but may not reveal the depth of the disadvantage suffered in some localities.<sup>1,2</sup> Research has shown that raising aspirations in disadvantaged groups is key to these challenges.<sup>3</sup> Low aspirations may be obvious: a boy in a science class who enjoyed learning about the heart through dissection said at the end, 'Perhaps I could be a butcher' (P Dodds, personal communication, 2004).

In the NHS, recruitment is a challenge for many professions, especially those that are science based. Recent publicity about redundancies is likely to be replaced by shortages of staff within a few years as school rolls fall, the population ages and expected retirements take place. Within the NHS, the issue is seen as one of widening participation (rather than access) – people not seizing opportunities provided for higher education and careers in the NHS.

County Durham includes some of the most deprived wards in England and a number of these are in the worst 10% (highest score on the index of multiple deprivation – an index which incorporates the effects of poor health, unemployment, income, educational attainment, crime and environment).<sup>4</sup> It is recognised that access to good healthcare in these wards is unsatisfactory, clearly illustrating the 'inverse care law', though attempts are being made to address this.<sup>5</sup> Primary schools not achieving targets in literacy and numeracy are overwhelmingly located in these areas (Keith Mitchell, Director of Education, personal communication, 2000). Figure 1 relates student progression through school to socio-economic factors – the gap at key stage (KS) 1 (age 7) widens progressively and is more marked when higher achievements are considered. In this county half the schools, particularly in the more deprived areas, do not have sixth forms, depriving younger students of aspiring role models.

For application to medicine, and many other NHS careers, sciences are usually regarded as essential;<sup>6</sup> it is therefore a matter of grave concern that few pupils in these areas take up science subject options at A level. Accurate figures are not available because of cross-boundary movements but in 2005, only 84 students out of a GCSE cohort of about 6,000 took A level biology and chemistry in the sixth forms catering for the vast majority of students. Only 10 of these were from the less affluent half of the county. Science A/B grades come almost exclusively from more affluent areas so it is clear that very few would get A/B grades in sciences from a less affluent area. Only four were identified in this study. Any attempt to improve this situation would require interventions well before GCSEs.

This pattern is likely to be replicated in other socio-economically disadvantaged areas. Half of all

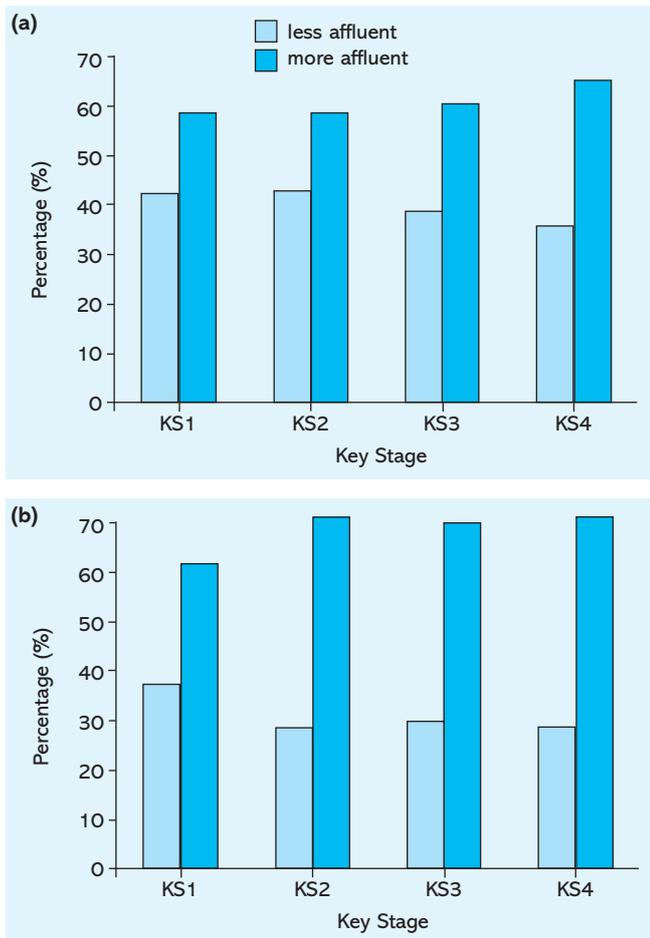
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science A level entries come from just 18% of schools with unacceptable variation in science attainment and teacher availability across types of student, particularly social class but also ethnicity and locality.<sup>7</sup>

Research has shown that students from the state sector perform better at university than those from the independent sector.<sup>8</sup> This work, however, was carried out before the current drive to widen access and for disadvantaged groups it is reasonable to postulate that the difference could be greater. Medical schools have shied away from accepting disadvantaged students with lower A level grades (coupled with other selection tests). Instead, as A levels are no longer regarded as sufficiently discriminating, it has been suggested that the hurdle be further raised from AAB to AAA or starred A levels.<sup>9</sup> Some have set up a 'year 0' for disadvantaged students to which those with much lower A levels may apply if judged to have potential. Others have focused their efforts on widening access through graduate entry and access courses which cater for mature students, not school leavers.



**Fig 1. Comparison of the success of students in the less affluent 50% of the population (by Income Deprivation Affecting Children Index<sup>4</sup>) in reaching particular levels at different stages in their education. a) Illustrates success in achieving the approximate median mark. b) Illustrates success in reaching the upper quartile of marks. Key stage (KS) 1 represents start of primary education while KS 4 represents year 11 (GCSE).**

### The place of work-based learning in the school curriculum

Work experience is compulsory in KS 4 (14–16 year group). Its potential for motivating and enhancing self-esteem is recognised. At this stage, students are making substantive decisions about their post-GCSE options, though the process of decision-making starts much earlier.<sup>2,10</sup> New science curricula emphasise an applied approach to teaching science and provide opportunities for the NHS to be introduced into the curriculum.<sup>11,12</sup> Common clinical conditions such as diabetes, asthma and heart disease are included and the teacher is expected to link teaching with local careers opportunities.

As of 2007, only 2% of employers in County Durham offer science-based work placements and 0.6% of pupils are taking up opportunities for work experience in sciences or technology (Fig 2). Lack of availability may be a factor. Work experience in medicine is difficult to obtain and tends to be given to older students who are also the friends and family members of doctors. Medical schools do not insist on NHS work experience but it is widely perceived by students as an advantage when applying. Thus already disadvantaged students feel further disadvantaged for medicine.

### NHS support for the science curriculum

Energetic support of science teaching by universities and the NHS from as early a stage as possible could be motivating and help to raise aspirations. There is evidence that this might be effective.<sup>10,13,14</sup> Work placements provided by the NHS in science areas from age 14 onwards would raise the profile of other NHS careers besides medicine (giving students an alternative and still satisfying career if they do not achieve the grades required for medicine). The perceived risks (confidentiality, emotional trauma) need to be balanced against the opportunity costs and risks of not staffing these areas in the future. Whatever approach is taken, investment in promoting links between the NHS, schools and employment opportunities can be defended on the basis of recognised links between health, education and employment.<sup>15</sup>

Provision of work placements, and other outreach activities to schools, appeals to NHS staff who are often parents themselves and trained communicators at all levels. The chief concern among local NHS staff is that students are often poorly selected for placements. A charitably funded partnership between local hospitals and eight schools has been developed (The William Harvey Project). Four students from each of the schools, competitively selected by teachers for motivation and potential in science, are offered structured placements with workbooks to complete, university visits and other events, together with careers events for the whole class. Linked with this is problem-based study (analogous to the approach now taken by many medical schools) focused around clinical scenarios such as a 15-year-old boy with asthma. This can be supplemented by visits to the hospital (eg X-ray department, lung function testing) or by relevant NHS staff. This has been enthusiastically received by teachers

and students and now forms the basis of a module of continuing professional development. Early indications are that teaching around a clinical scenario can be motivating.<sup>14</sup>

Early outcome measures of our partnership with schools will be in the post-GCSE choices made by the enrolled students. The ultimate aim is to ensure recruitment of high calibre local staff to the NHS while at the same time publicising the rich variety of NHS careers to schools. Health education for the students, their families and friends is an additional benefit. The whole project supports local efforts to widen access to medicine. It is hoped that science careers outside the NHS will also benefit.

## Challenges

Outreach to schools is not at present perceived by the NHS as 'core business' but within the next few years the need for this is likely to become obvious as school rolls fall and more staff are expected to retire. It requires committed leadership. The William Harvey Project is charitably funded. A case can be made for shared funding by the NHS and the education sector. Evaluation of educational interventions is very difficult as good controls (same school, teacher and other variables) are not available. It is clear that the interventions offered are highly appreciated and the project's second intake is over subscribed. Post-GCSE choices will be examined closely and compared with controls matched by age, socio-economic status and grades predicted at end of year 9 (two years before GCSE).

## Conclusion

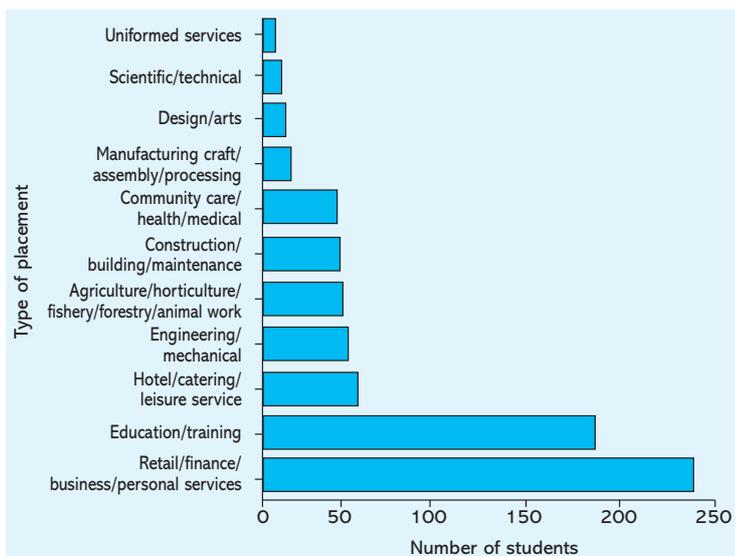
Widening access to medicine for school leavers in disadvantaged areas is very difficult, particularly because of low achievement in sciences. Links with the NHS can enliven the curriculum and has the potential to raise aspirations for medicine and other science-based NHS careers. Expenditure can be justified by accepted links between health, education and employment.

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**Fig 2. Work experience placements arranged by County Durham Local Education Authority in 2004-5 by occupational category. Placements in community care/health/medical were predominantly in nursing homes.**

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